

SJIF Impact Factor : 7.032
ISI I.F.Value : 1.188

ISSN (Online): 2455-3662
DOI: 10.36713/epra2013



EPRA International Journal of
MULTIDISCIPLINARY RESEARCH
(IJMR)

Monthly, Peer Reviewed (Refereed) & Indexed International Journal

Volume - 7 Issue - 1 January 2021



Chief Editor
Dr. A. Singaraj, M.A., M.Phil., Ph.D.

Managing Editor
Mrs.M.Josephin Immaculate Ruba
Editorial Advisors

1. **Dr.Yi-Lin Yu, Ph. D**
Associate Professor,
Department of Advertising & Public Relations,
Fu Jen Catholic University,
Taipei, Taiwan.
2. **Dr.G. Badri Narayanan, PhD,**
Research Economist,
Center for Global Trade Analysis,
Purdue University,
West Lafayette,
Indiana, USA.
3. **Dr. Gajendra Naidu.J., M.Com, LL.M., M.B.A., PhD. MHRM**
Professor & Head,
Faculty of Finance, Botho University,
Gaborone Campus, Botho Education Park,
Kgale, Gaborone, Botswana.
4. **Dr. Ahmed Sebihi**
Associate Professor
Islamic Culture and Social Sciences (ICSS),
Department of General Education (DGE),
Gulf Medical University (GMU), UAE.
5. **Dr. Pradeep Kumar Choudhury,**
Assistant Professor,
Institute for Studies in Industrial Development,
An ICSSR Research Institute,
New Delhi- 110070.India.
6. **Dr. Sumita Bharat Goyal**
Assistant Professor,
Department of Commerce,
Central University of Rajasthan,
Bandar Sindri, Dist-Ajmer,
Rajasthan, India
7. **Dr. C. Muniyandi, M.Sc., M. Phil., Ph. D,**
Assistant Professor,
Department of Econometrics,
School of Economics,
Madurai Kamaraj University,
Madurai-625021, Tamil Nadu, India.
8. **Dr. B. Ravi Kumar,**
Assistant Professor
Department of GBEH,
Sree Vidyanikethan Engineering College,
A.Rangampet, Tirupati,
Andhra Pradesh, India
9. **Dr. Gyanendra Awasthi, M.Sc., Ph.D., NET**
Associate Professor & HOD
Department of Biochemistry,
Dolphin (PG) Institute of Biomedical & Natural Sciences,
Dehradun, Uttarakhand, India.
10. **Dr. D.K. Awasthi, M.SC., Ph.D.**
Associate Professor
Department of Chemistry, Sri J.N.P.G. College,
Charbagh, Lucknow,

ISSN (Online) : 2455 - 3662
SJIF Impact Factor :7.032
ISI.I.F. Value : 1.188
DOI : 10.36713/epra2013



EPRA International Journal of
**Multidisciplinary
Research**

Monthly Peer Reviewed & Indexed
International Online Journal

Volume: 7 Issue: 1 January 2021

Indexed By:



Published By :EPRA Publishing

CC License





EPRA International Journal of Multidisciplinary Research (IJMR)

Peer Reviewed Journal|| Journal DOI URL: <https://doi.org/10.36713/epra2013>

CONTENTS

S.NO	TITLE	AUTHOR/S	PAGES
1	SOCIO-PSYCHOLOGICAL CHARACTERISTICS OF NATIONAL CHARACTER	B.Norbekova	1-4
2	CENTRAL ASIAN THINKERS ON THE ROLE OF PHILOSOPHY IN THE ISSUE OF PREVISION	Tulenova K. J., Rasulev E.H.	5-9
3	EVALUATION OF THE METHODS USED FOR OPTIMISING THE CONSUMPTION OF PRINTING SUBSTRATES IN SHEET-FED OFFSET PRINTING PRESS	Abhishek Gautam, Abha Gautam	10-13
4	A CASE STUDY ON SETTLEMENT OF NORTH DISTRICT OF SIKKIM IN EASTERN HIMALAYA'S	Mrs. Sharmila Karki	14-17
5	DETERMINANTS OF EARLY MARRIAGES AMONG TEENAGERS IN GANJONI AREA, MOMBASA COUNTY	Joshua K. M, Aggrey A, Marriam A	18-24
6	ALTERNATIVE CONCEPTIONS OF ELEMENTARY SCHOOL STUDENTS IN ASTRONOMY	Felicita G.A.	25-31
7	A STUDY OF FIRST LITERARY ARABIC SHORT STORY 'THE TRAIN'	Dr. Irshad Ahmad Mir	32-33
8	'WASTAGE' IS A CHALLENGE OF TRIBAL EDUCATION -A REVIEW BASED STUDY https://doi.org/10.36713/epra6062	Abhisek Panda, Laxmipriya Ojha	34-38
9	TO STUDY THE IMPACT OF MTWP IN PINCH STRENGTH AMONG PEOPLE WITH WRIST INJURIES https://doi.org/10.36713/epra4999	Dr. Surendra Kumar Meena, Dr.Neha Jain	39-44
10	LAW REGULATING CONTROL AND MANAGEMENT OF EPIDEMICS IN INDIA: A COVID-19 EXPERIENCE	Dr. Pankaj Kakde	45-48
11	INVESTIGATION OF VIBRATIONS OF A LIGHTWEIGHT GRATE ON ELASTIC SUPPORTS OF A COARSE LITTER CLEANER WITH RANDOM DISTURBANCE FROM RAW COTTON https://doi.org/10.36713/epra6042	Orif Murodov, Shavkat Madrahimov, Ziyodullo Shodiyev	49-53
12	TOPICAL ISSUES OF INNOVATIVE AND COMMUNICATIVE METHODS IN TEACHING ENGLISH LANGUAGE TO NON-LANGUAGE UNIVERSITY STUDENTS	Nuritdinova Saida Sabirovna, Eshankulova Lola Sayfullaevna	54-56
13	TOPICAL ISSUES OF TEACHING THE RUSSIAN LANGUAGE AT THE PHARMACEUTICAL UNIVERSITY	Shukurjanova Samiahon Alimovna, Matyusupova Shakarzhon Begmamatovna, Makhmudbekova Gulnora Ubaidullaevna	57-60

14	AT THE CONFLUENCE OF SCARCITY AND MANAGEMENT: CONTEXTUALIZING INTER-STATE WATER DISPUTES IN INDIA	Zulafqar Ahmed	61-66
15	NATIONALISM AMONG INDIAN WOMEN IN MALAYA, 1941 – 1948 https://doi.org/10.36713/epra6063	Dr.Syamala Nair Gopal, Dr.Ganesan Shanmugavelu	67-72
16	PROSPECTIVE COOPERATION OF UZBEKISTAN WITH THE EUROPEAN UNION https://doi.org/10.36713/epra6026	Ismatullayev Farhodjon Odiljonovich	73-76
17	AGRICULTURAL PRODUCTIVITY IN INDIA: ISSUES AND CONCERNS	Dr. Mrs. Manisha Vinay Aole	77-79
18	AN ANALYTICAL OVERVIEW OF DOCTRINE OF FINALITY AND JUDICIAL RESPONSE IN INDIA https://doi.org/10.36713/epra6078	Dr Vikrant Sopan Yadav	80-83
19	THE EFFECT OF COMPETITIVE STRATEGIC ON ORGANIZATIONAL PERFORMANCE IN TELECOMMUNICATION COMPANIES IN MOGADISHU SOMALIA	Daahir Farah Elmi	84-91
20	REFLECTIVE TEACHING: AS AN INNOVATIVE APPROACH IN TEACHERS' PROFESSIONAL DEVELOPMENT	Indrani Ruidas	92-96
21	ANALYSIS OF THE VOLUME AND COST OF IMPORT OF METOCLOPRAMIDE TABLETS IN THE REPUBLIC OF UZBEKISTAN https://doi.org/10.36713/epra6105	Yunusova Kholida Mannanovna, Samedinova Dilnoza Nuriddin qizi	97-102
22	THE ROLE OF GOVERNMENT IN THE PROVISION OF INFORMATION AND COMMUNICATION TECHNOLOGY: A FIELD STUDY ON BURDWAN DISTRICT	Swarup Biswas	103-105
23	THE EFFECT OF TAX INFORMATION SOCIALIZATION AND TAX KNOWLEDGE ON TAXPAYER COMPLIANCE WITH TAXPAYER AWARENESS AS MEDIATION VARIABLES (Case Study on Personal Taxpayers at KPP Pratama Jakarta Kramatjati) https://doi.org/10.36713/epra5087	Hasian Purba	106-119
24	SOME ASPECTS OF THE METHODOLOGY FOR DEVELOPING THE NORMS OF CORRECT RUSSIAN PRONUNCIATION IN THE UZBEK AUDIENCE	Seydanova Gulnash Kaldibekovna	120-122
25	IMPROVEMENT OF AGROBIOLOGICAL STRUCTURES AND STRUCTURE-FORMING PROPERTIES OF SIEROZEM SOILS	Khodjibolaeva Nozima Mamurovna, Parpiev Doniyor Akmaljon ugli.	123-124
26	APPLICATION OF CYBORGS AND ENHANCEMENT TECHNOLOGY IN BIOMEDICAL ENGINEERING	Cebo Daniel, Robert G. Dunder	125-131
27	PURIFICATION OF GROUNDWATER IN ARYAD PANCHAYATH: IRON AND E.COLI	Soorya Narayan	132-136
28	ACTIVATED CARBON FROM WASTE BRANCHES OF ACACIA ASAK TREE: SINGLE, TWO AND THREE STEPS	Dr. Muhammad Saleem	137-148

	ACTIVATION PROCESSES		
29	THE EFFECT OF STRATEGIC MANAGEMENT PRACTICES ON ORGANIZATIONAL PERFORMANCE IN NGOS IN MOGADISHU SOMALIA	Abdullahi Omar Mohamed' Said Abdi Mohamud (Shaani)	149-154
30	SKILL GAP IN VARIOUS SECTORS-A REVIEW	Ms Sipra Karmakar, Dr. Bibhunandini Das	155-165
31	TOPISCHE FRAGEN, DEUTSCH ALS ZWEITE AUSLÄNDISCHE SPRACHE IN EINER NICHT SPRACHLICHEN UNIVERSITÄT ZU UNTERRICHTEN	Aimatova Gulchekhra Bozorovna, Ashurova Shakhnoza Shavkatovna	166-168
32	INDIAN CULTURE IN THE WORKS OF RUSSIAN POETS AND WRITERS	Milovanova Elena Valerievna, Murodova Khurshida Bakhtiyorovna	169-172
33	QUESTIONS OF TEACHING THE RUSSIAN LANGUAGE AT UZBEK GENERAL EDUCATIONAL SCHOOL	Meilieva Mohiba Olmurodovna, Khamraeva Dilafruz Zhuraevna	173-175
34	THE ROLE OF BANKS IN THE DEVELOPMENT OF THE ECONOMY AND SOCIETY OF THE COUNTRY. (ON THE EXAMPLE OF BANKS IN UZBEKISTAN AND SOUTH KOREA)	Nuralieva Barnokhon Kudratovna	176-184
35	BOBUR'S CREATIVITY IN THE VIEWS OF THE WORLD LITERATURE SCHOLARS	Polvonova Rano Mamatkulovna, Murodova Takhmina Bakhtiyorovna	185-188
36	GERMAN POETICAL EXAMPLES IN UZBEK TRANSLATIONS	Yangiboeva Anorkhol Koraboevna, Abdurakhimova Gulasal Khamidovna	189-191
37	THE EFFECT OF STRATEGIC PLAN ON ORGANIZATIONAL PERFORMANCE IN REMITTANCE COMPANIES IN MOGADISHU SOMALIA	Ali Yusuf Omar, Mr. Mohamed Abdulle Sabriye	192-198
38	THE DEVELOPMENT OF STUDENTS' INTEREST IN THE RUSSIAN LANGUAGE	Abdusalomova Moxchexra Ergashevna, Gafurova Savlat Tolibovna, Saliyeva Ziroat Zokirovna, Tagayeva Taxmina Odilbekovna	199-201
39	UTILISATION DE TERMES ET DE CONTENUS SCIENTIFIQUES DANS L'ENSEIGNEMENT DU FRANÇAIS AU SECONDAIRE	Jurakobilova Hamida	202-211
40	SOME FEATURES OF TEACHING GERMAN LANGUAGE AT A PEDAGOGICAL UNIVERSITY	Nazarova Shakhnoza Ismat kizi, Yuldosheva Vohida Nazarovna	212-216
41	TOPICAL ISSUES OF LANGUAGE, ITS FUNCTION IN SOCIETY AND CULTURE	Otajonova Shakhnoza Shavkatovna Inogamova Nargiza Shavkatovna	217-221
42	EPIDEMIOLOGICAL CASE ANALYSIS OF NIPAH VIRUS: A META-ANALYSIS	Jayakumar K, Sarath Babu Kurra	222-231
43	A STUDY OF ACCIDENTS OCCURS IN KOLHAPUR CITY USING STATISTICAL MEASURES	Prakash S. Chougule, Abhijit M. Nimbalkar, Savita C. Pujari	232-240
44	AYURVEDIC HEALTH TOURISM IN KERALA	Priya Chandran, Dr. Johnson V	241-248
45	DESIGN AND CHARACTERIZATION OF STAVUDINE LOADED NANOPARTICLES	Mrs.Rama Shukla, Dr.G.Jagadish	249-253
46	CONSUMER BEHAVIOUR DURING A CRISIS: THE IMPACT OF COVID-19 ON FOOD CONSUMPTION PATTERNS IN THE URBAN AREAS IN THE WESTERN	Tharindu Udayanga, Segar Dhanukshaan, Krishanth Murugadas	254-262

	PROVINCE OF SRI LANKA		
47	ABOUT BASIC RULES, TYPES AND ELEMENTS OF LEGAL TECHNIQUE	Berdiyarov Shukhrat Namazboevich	263-266
48	SOCIAL MEDIA ADDICTION AND ACHIEVMENT IN HISTORY AT THE HIGH SCHOOL LEVEL	Sr. Jackulin, Dr. A. Edward William Benjamin	267-269
49	SOCIAL MATURITY OF STUDENTS IN RELATION TO THEIR ACHIEVEMENT IN SCIENCE	Sr. Fabiola Ricci, R.Selvaganapathy, Dr. A. Edward William Benjamin	270-272
50	DRUGS DISSOLUTION ENHANCEMENT BY USING SOLID DISPERSION TECHNIQUE: A REVIEW	Bhavik Sharma	273-280
51	NACHNI: THE OUTCAST ENTERTAINERS, WITH SPECIAL REFERENCE TO POSTOBALA DEVI KARMAKAR	Arif Ansari	281-284
52	LOW BIRTH WEIGHT AMONG THE NEWBORN AT EL-OBIED MATERNITY AND GYNECOLOGICAL TEACHING HOSPITAL (2013-2015)	Dr. Kawther ALbashir Mohamed Adam, Dr. Kubra Ali Ebrahim Hammad, Dr. Mohammed Ismail Humaida	285-295
53	THE PROBLEM OF TEACHING RUSSIAN AS A FOREIGN LANGUAGE	Khalilova Luiza Adilovna, Milovanova Elena Valerievna	296-298
54	TECHNOLOGIES PÉDAGOGIQUES MODERNES POUR L'ENSEIGNEMENT DE LA LANGUE FRANÇAISE POUR LA PRÉPARATION DANS LES UNIVERSITÉS ÉTRANGÈRES	Kushaeva Gulchekhra, Juraeva Ugiloy	299-303
55	THE RESULTS OF PRACTICAL RESEARCH OF THE SEPARATOR IN AN EFFICIENT DESIGN THAT SEPARATES THE RAW COTTON FROM THE AIR https://doi.org/10.36713/epra6098	Ozod Rajabov, Shukhrat Khayitov, Mukhriddin Yokubov	304-308
56	THE IMPACT OF SERVICE QUALITY ON USER SATISFACTION: A CASE STUDY OF SELECTED PUBLIC LIBRARIES IN BANGLADESH https://doi.org/10.36713/epra6218	Md. Amanullah, Mahamudul Hasan, Md.Hafez	309-316
57	ASSESSMENT OBESITY AMONG CHILDREN IN LIKONI SUBCOUNTY, MOMBASA COUNTY https://doi.org/10.36713/epra5836	Kailong J. M., Adem A	317-324
58	PREVALENCE OF CONTRACEPTIVE USE AMONG KENYA COAST NATIONAL POLYTECHNIC STUDENTS https://doi.org/10.36713/epra5664	Kailong J. M., Adem A,	325-330
59	COMMUNITY PHARMACY ROLE IN UNIVERSAL HEALTH COVERAGE IN MOMBASA COUNTY https://doi.org/10.36713/epra5722	Kailong J. M., Aggrey A., Mulinya S	331-341
60	ASSESSMENT OF CHILD MORTALITY IN CHILDREN UNDER FIVE YEARS AT THE COAST GENRAL TEACHING AND REFERRAL HOSPITAL, KENYA https://doi.org/10.36713/epra5744	Kailong J. M., Adem A,	342-348
61	REGIONAL AND ECONOMIC INTEGRATION OF SOUTH ASIA (SAPTA AND SAFTA): THE	Amitava Dey	349-355

	CHALLENGES AHEAD		
62	IDENTIFICATION INDIGENOUS KNOWLEDGE FOR SUSTAINABLE DEVELOPMENT-A STUDY ON SANTHAL COMMUNITY	Chinmoy Singh, Shaktipada Mahato, Dr. Laxmiram Gope	356-362
63	IMPLICATION OF PERFORMANCE RELATED PAY (PRP) MODEL IN STEEL INDUSTRY https://doi.org/10.36713/epra6223	Dr.Himanshu Saxena	363-371
64	Isolation and Identification of Bacteria Responsible for the Spoilage of Fluted Pumpkin (<i>Telfaria occidentalis</i>) and Bitter Leaf (<i>Vernonia amygdalina</i>) in Sokoto Metropolis https://doi.org/10.36713/epra4997	A.S. Muhammad, S.A. Ani, A.M. Nasiru	372-378
65	EFFECTIVE WAYS TO INCREASE STUDENTS' THINKING ACTIVITY	Baxtixon Qurbonova, SHaxnozaxon Nazirova	379-382
66	AN OVERVIEW OF THE EFFORTS MADE BY THE MUJADDIDEENS TO RENEW ISLAM https://doi.org/10.36713/epra6205	Dr Muhammad Sajjad, Muhammad Usman Khalid, Dr Iftikhar Aalam	383-391
67	INVESTIGATING THE FACTORS INFLUENCING INCIDENCE AND FATALITY OF COVID-19 IN INDIA	Ashi Lama, Amitava Mitra	392-404
68	CARBONACEOUS NANOMATERIALS FOR WATER POLLUTION REMEDIATION: AN OVERVIEW https://doi.org/10.36713/epra6185	Dr. Shweta Vyas	405-410
69	A STUDY OF CHALLENGES AND METHODS OF PRIVACY PRESERVATION IN SOCIAL NETWORKING DATA	Himani Saini, Gopal Singh	411-414
70	SOCIOLINGUISTIC APPROACH TO THE SUBJECT OF LINGUISTICS	Lola Takhirovna Abdullaeva	415-417
71	CREATING AN EFFICIENT PARALLEL CORPUS FOR BANGLA-ENGLISH STATISTICAL MACHINE TRANSLATION	A. A. Tanveer Hossain, Foyisal Ahmed Bhuiyan, Md. Adnanul Islam	418-423
72	PERCEIVED MENTAL HEALTH AND LEARNING ENVIRONMENT OF STUDENTS IN NEPAL DURING COVID-19 OUTBREAK https://doi.org/10.36713/epra6333	Noora Shrestha	424-430



SOCIO-PSYCHOLOGICAL CHARACTERISTICS OF NATIONAL CHARACTER

B.Norbekova

Teacher

Jizzakh State Pedagogical Institute,
Uzbekistan

ABSTRACT

The article examines national character, understanding of national identity and socio-psychological characteristics of its formation. And also, the scientific and theoretical foundations of the national character are described.

KEYWORDS: national character, national identity, socio-psychological characteristics, national pride, spirituality

INTRODUCTION

It is known that in the upbringing of a harmoniously developed person with a national character and feelings worthy of our world-renowned ancestors, it is important to understand the psychological nature of changes in society and clearly define the appropriate measures. Because the great creative work carried out in our country, the conditions created for the development of a harmoniously developed person urges him to mobilize all his abilities and mind in order to realize his identity, work with national pride and work for the development of the country.

Today's reforms are aimed at understanding the national identity, the formation of national pride and pride in young people, and a deeper understanding of their true meaning by schoolchildren. The work of educating the younger generation on the basis of new educational standards, love for the Motherland, confidence in its future, a sense of national pride, the implementation of the most effective methods of educating children and adolescents in families, and thus inculcate the idea of national independence. It is expedient to know the important laws concerning. Therefore, below we will try to think about the socio-psychological features of the formation of national character in children and adolescents.

It is well known that the emergence of every national character traits that a nation has acquired throughout its history is due to the long-term influence of the surrounding realities on the psyche of the people. What spiritual qualities and attributes can be incorporated into the understanding of national identity? In this regard, it should be noted that although there is still no common view on the concept of 'national character', there are common views on the qualities that go into it. Many researchers introduce such qualities as national

character, attitude to work (diligence, patriotism), patriotism, militancy, bravery.

In our view, in addition to the above qualities and attributes, the structure of the national character also includes the mental structure of the nation, its attitude to other peoples and the features that determine the relationship between the representatives of this nation.

MATERIALS AND METHODS

The different character traits of peoples are determined by their socio-economic experience, historical development and natural living conditions. At the same time, social relations play an important role in the formation of national character. Each historical epoch creates its own national character ideal, which is in line with the interests of the national ideology on the basis of the laws of social development of that period. The character type of this period reflects the lifestyle of the people [1].

It should be noted here that it is absolutely wrong to generalize the national character. Pure national character, which is not found in other peoples and nations, but is unique to one nation, is not found in nature at all.

Every nation can only be taken with all its features and seem unique ..., each of its ethnic features cannot be an absolutely unique feature if considered separately. Reflecting on the complexity and confusion in the study of the problem of national character, I.S.Kon says that it often arises as a result of a lack of understanding of generality and specificity, commonality and individuality in dialectics. He emphasizes that when it shows this or that feature of the national character, it must of course be studied in relation to it. "In works devoted to the Russian national character," writes I.Kon, "they often display a quality called emotional calmness." If you are right compared to the Italians, I



agree. But not only in comparison with Finns or Estonians"[3, 123].

Of course, the national character traits of the Russian people are not absent. Russia's vast lands, as in some other countries, lack of political divisions, all the peculiarities of economic development, created, as Gertsen puts it, a "luxury-loving, tolerant" Russian, a Russian peasant who was not inclined to run a single farm.

On the contrary, in the character of the Uzbek people, there is a tendency to cling to a husband, not to leave the land of "umbilical cord blood". The emergence of these character traits is associated with the peculiarities of the historical development of the Uzbek people. For example, the existence of several feudal states in Central Asia, in particular in present-day Uzbekistan, the political and economic fragmentation of khanates, frequent bloody conflicts between them, the existence of patriarchal methods of management, the preservation of tribal traditions, and finally, factors such as the limited availability of irrigated, arable land for agriculture, give rise to these characteristics of the Uzbek people.

In Uzbek families, several generations (even 3-4 generations) lived inseparably, living together in the same yard, in the same neighborhood, eating from the same pot. Therefore, within the large family that previously existed, we may encounter representatives of several generations. Even after the father, who was the head of the family, married his sons, he did not separate them as an independent family for a long time.

The son, who was newly married, worked under his father, who was the head of a large family, and helped him with the running of the farm. Even if the new family is separated from the parents, they have bought a house or land for the family from a place not far from the father, or have allocated a place from their husband to build a house. Household items, which are necessary for the daily needs of the new family, are allocated. But even then, the father did not allow his husband to fall apart. The son worked under his father on his land, helping the father run the farm. What is the reason for this, why in the peoples of Central Asia, especially in the peoples engaged in agriculture, patriarchal relations have been relatively long maintained in the family and economic spheres?

It is known that land is of great economic importance in irrigated agriculture, especially in Central Asia. Even in winter and summer, when labor is required to work with great force, the disintegration of the labor force and the land would make it much more difficult to cultivate the land and harvest crops. That is why the settled peoples of Uzbekistan had very large families, even three or four generations. The children worked under the head of the family and became economically dependent on him. The father or the eldest son in the family was

the head of this family. His word, his opinion, was at the level of law for other members of the family.

In almost all nations ruled by such a patriarchal system of management, respect for the head of the family, the elders, and the uninterrupted observance of what they said became a habit, and later it became a characteristic of the people.

In relationships in the family hierarchy, everyone in a particular age group is, of course, obedient and respected by those older than them. This, of course, was of great importance so that large families would not break up in the conditions in which they needed to live together.

In addition, Uzbeks have developed such qualities as good relations, mutual assistance and cooperation not only between brothers or relatives, but also with neighbors.

From time immemorial, a tribe or tribe lived together in a neighborhood or an entire village. In rare cases, a representative of a foreign tribe or tribe moved to an unfamiliar place. Even today, in many villages, mahallas are formed on the basis of kinship. This means that the neighbor next door is also your close relative. Therefore, if in ancient times a meal was cooked in a family - of course, the devormion neighbor will be the first to serve both the good day and the bad day of the neighbor, who was released to the neighbor, the relative. Not attending a maraka at a neighbor's house, especially not attending funerals, is a major crime for Uzbeks. That's why we have very figurative proverbs about our neighbors, such as "don't buy a house, buy a neighbor", "a close neighbor is better than a distant relative", "my neighbor is my neighbor" and so on.

In addition, our national nature has such unique qualities as mutual kindness, compassion, kindness, modesty, modesty, modesty, generosity, hospitality, kindness.

Such solidarity, mutual support is strongly developed not only between neighbors, but also among the entire neighborhood and the rural population. When a resident of a neighborhood or village hears that there is mourning in a house, he or she may come to the home of the deceased to express his or her condolences and help as much as he or she can, even if he or she quits his or her job. The coffin of the deceased is carried shoulder to shoulder until it reaches the grave. Everyone he meets on the road - whether he is on horseback or in a car - thinks it is his human duty to get down and carry the coffin a few steps.

Neighbors, neighborhoods, and neighbors support each other and protect each other's interests as a result of people living together for a long time, and the people of the neighborhood and the village being related to each other by kinship.

The existence of small independent khanates in Central Asia, the lack of systematic administrative and economic development of the country by the



large united government, as a result, many large-scale economic activities - digging canals, cleaning canals, construction of mosques and other buildings, harvesting and similar labor-intensive work was carried out by the people themselves with the help of "hashar." Therefore, it is the sacred duty of every old and young person to go to the hashars that take place in the neighborhood and among the neighbors.

The national character is reflected in the people. But the character of a nation is not a simple sum of the character of some individuals. It manifests itself as a mass phenomenon, finding content when the common traits of individual characters are socially reworked and become a new, special quality. For example, just as the voice of a choir is not like the voice of any choir member, the national character is not like the character of a representative of any nation, or the character of a nation is not fully reflected in the representative of any nation.

DISCUSSION

It is known from history that it is the duty of every human being to cherish the honor of his nation, to protect it, to remain his human virtue. The glory of each nation, its national characteristics have been formed over the centuries. The honor of the nation also in many ways reflects the socio-psychological aspects of the national character.

The honor of the nation, its origins have been advanced by many scholars. Speaking about the honor of the nation, Ibrahim Karimov, one of our famous scholars, said: "Honor is self-realization and belonging to a certain commonality (social group, class, society, nation, etc.) and recognizes the interests of that commonality through national ideas and ideology. It is a rare inner feeling, state of mind and human quality that is formed in a person in the process of struggle for protection on the ground, in any situation [2].

The history of human society proves that only when there are many people who can show such qualities in any period, in any region, in any society, if the society itself is interested in the activities of such people, if their activities are evaluated correctly, then the honor of this nation will be high. Qualitative people who can raise the dignity of the nation play a big role in finding the place of each nation in the world community.

When we talk about the glory of a nation, there are other words that serve the development of a nation, its future.

Factors such as interethnic harmony, nationalism, national consciousness, national pride play an important role in bringing up people of all nationalities living in Uzbekistan as selfless people for the development of our country.

In multi-ethnic nations, the national issue has a special place, because no nation wants to lose its national characteristics, national territory, and

strives to preserve its national values. Their timely and positive resolution will serve as a basis for ensuring interethnic harmony.

The basis of the national question is the end of national oppression and violence, the establishment of equal relations between different nations, the creation of conditions for their free, all-round development.

No matter how many different nationalities there are in a multi-ethnic country, if the characteristics of that nation are respected and the connection is maintained, it will lead to peace and stability in the territory of that country.

"In the early nineteenth century," wrote I. Kon, "the Germans were considered incapable of practical work, prone only to philosophy, music and poetry, uneducated in the study of technology, and a less active people (they themselves agreed). With the industrial revolution in Germany, this stereotype became an unreliable anachronism"[3, 98].

However, it should not be concluded that socio-economic changes change all the characteristics of the national character. Some of its qualities are relatively stable and do not lose their inheritance even in the new social conditions. Passing on to future generations serves to assimilate the material and spiritual heritage of the ancestors. History consists of the coming of one generation instead of another. Each of them uses all the materials, wealth, and productive forces left by previous generations. The result is intergenerational succession. National characteristics are intertwined with universal values.

National character does not contradict universal characteristics. Therefore, it cannot be separated or contrasted with the character of other nations and peoples. Every nation, when it enters into close socio-economic and cultural relations with another nation, takes from it what it does not have and gives from itself what it does not have.

But these character traits, inherited from other peoples, when assimilated by the representatives of the nation, take on a peculiar national expression, without being copied without change.

The qualities that have been formed over the centuries and permeated the way of life of our people, that have become an integral part of its national nature, have proved their importance on the eve of independence and in the first years of our independence. Uzbeks have always had friendly, fraternal, cooperative and good-neighborly relations with the peoples and nations living around them. The fact that this nation has been able to retain its unique sense of compassion is its unique noble feature. It is no secret that in some of the newly independent republics there has been a disrespectful attitude towards the representatives of the nation, who have been living in the vicinity of independence and



claiming to be our brothers and sisters. The fact that this has not happened in Uzbekistan shows the high morale of our people.

Mistakes and shortcomings in the process of resolving the national issue, along with the confusion of interethnic relations, make it an international issue. The legal self-determination of nations is one of the universally recognized principles of inter-ethnic relations. This expands the choice of the form of relations with other nations, as well as the possibility of resolving political, social, spiritual and educational issues [4, 132].

In our national ideology, the main goal of which is to create a free and prosperous homeland, to further liberalize the life of society, it is emphasized the importance of ensuring interethnic harmony in the implementation of this main idea. At the same time, it is emphasized that evil, destructive ideas such as nationalism and chauvinism are among the main threats to the life of society. Every member of society must always be aware of the consequences of such evil, destructive ideas and the need to avoid them.

CONCLUSION

In summary, the understanding of national identity, the development of national character and national consciousness is decided in the mind of the individual on a real social, economic, legal, political, psychological, cultural and educational basis, and it is connected with the will and becomes a practical action. Indeed, those who understand their national identity understand the need to increase their potential in all spheres of life in the current historical context. Those who understand the true history of their nation, who have historical memory, will have a strong desire to understand national identity, to protect national character and the honor of the nation. During the years of independence, many measures have been taken by governmental and non-governmental organizations to eradicate the scandals of national consciousness in the former Soviet Union. As long as nations exist, so does national character. There is no nation that does not pay attention to the development of national character. Because the national character is closely connected with the nation, it will continue to develop along with the development of the nation.

REFERENCES

1. Merlin V.S.(1990).*Struktura lichnosti. Karakter, sposobnosti, samosoznaniye.* – Perm.
2. Karimova V.M. (1994). *Ijtimoiy psixologiya asoslari.* – Toshkent.
3. Kon I.S. (2003). *Eticheskaya psixologiya pod red. I.I. Yegorovoy «Rech» Sankt- Peterburg.* – S.123
4. Shayxova X. Nazarov Q. (1992). *Umuninsoniy qadriyatlar va ma'naviy kamolot.* T.– B.132
5. Norbekova, B. (2020). *OILADA BOLALARNING ETNOPSIXOLOGIK XUSUSIYATLARGA*

6. Norbekova, B. (2020). *SHARQ MUTAFAKKIRLARINING OILADA BOLALAR VA O'SMIRLAR SHAXSIDA ETNOPSIXOLOGIK XUSUSIYATLARNI TARBIYALASH HAQIDAGI QARASHLARI.* Архив Научных Публикаций JSPI, 1(38). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/5946>
7. Norbekova, B. (2020). *MAKTABGACHA YOSHDAGI BOLALARGA IKKINCHI TILNI O'RGATISHNING ETNOPSIXOLOGIK ASOSLARI.* Архив Научных Публикаций JSPI, 1(17). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/5944>
8. Norbekova, B. (2020). *ЎЗБЕК МИЛЛИЙ МЕНТАЛИТЕТИГА ХОС БЎЛГАН АСОСИЙ ХУСУСИЯТЛАР.* Архив Научных Публикаций JSPI, 1(79). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/6613>
9. Turaev, A. (2020). *Диний баарикенглик – умуминсоний қадрият сифатида.* Архив Научных Публикаций JSPI, 1(64). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/3381>
10. Turaev, A. (2020). *ЁШЛАР АҲЛОҚИЙ ОНГИ ШАКЛЛАНИШИ ВА РИВОЖЛАНИШИДА СИЁСИЙ МАФКУРАНИНГ ЎРНИ.* Архив Научных Публикаций JSPI, 2(1). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/301>
11. Mukhammadsidiqov, Mukhammadolim and Turaev, Abrar (2020) "INFLUENCE OF US NEOCONSERVATISM ON FORMATION OF NATIONAL SECURITY PARADIGM," *The Light of Islam: Vol. 2020 : Iss. 3 , Article 12.* Available at: <https://uzjournals.edu.uz/iiu/vol2020/iss3/12>
12. Toshboyev, B. (2020). *МИЛЛИЙ ХАРАКТЕР ШАКЛЛАНИШИДА ТАРИХИЙ ОМИЛНИНГ ЎРНИ.* Архив Научных Публикаций JSPI, 1(69). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/6224>
13. Toshboyev, B. (2020). *“Миллий характер” тушунчасининг ижтимоий-фалсафий мазмуни ва намоён бўлиши шакллари.* Архив Научных Публикаций JSPI, 1(79). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/6470>
14. Toshboyev, B. (2020). *МИЛЛИЙ ФУРУР МИЛЛАТ “МЕН”ИНИ ШАКЛЛАНТИРУВЧИ ВОСИТА.* Архив Научных Публикаций JSPI, 1(87). извлечено от <https://science.i-edu.uz/index.php/archive/jspi/article/view/6898>
15. Mukhammadsidiqov, M., & Turaev, A. (2020). *The Influence Of The Energy Factor On Modern International Relations. The American Journal of Political Science Law and Criminology, 2(12), 5-15.*



CENTRAL ASIAN THINKERS ON THE ROLE OF PHILOSOPHY IN THE ISSUE OF PREVISION

Tulenova K. J.

Doctor of philosophical sciences, Professor
of the Department of Philosophy,
Tashkent State
Pedagogical University named after Nizami,

Rasulev E.H.

Candidate of philosophical sciences,
Docent of the Department of Social and Political
Sciences,
Tashkent Institute of Chemical Technology

KEY WORDS: Al-Khwarizmi, Al-Farabi (Alpharabius), Al-Biruni, Ibn Sina (Avicenna), Ulugbek, A. Navoi, philosophy, scholars, encyclopaedist, physician, astronomy, medicine, science, mathematics, geography, algebra, arithmetic, geology, minerology, literature, history, physiology, biology, natural science, knowledge, patterns, cause, effect, Earth, mind, rationalism, faith, will, cybernetics, cosmogony, prevision, heritage, theory, method, world, matter, experience, creativity, observatory, nature, phenomenon, explanation, comprehending, thought, intellect, fact, time, contribution, concept, teaching, views, decision, development, movement, celestial bodies, system, approach, problem, humanism, man, learning, fate, physician, illness, education, justice, management, ideal, culture, household, society, ruler, state, issue, well-being, attention, perfection, quality, utopia, activity, labour, influence, increasing, happiness, patriot, perspective, future, era, freedom, equality, optimism, respect, West, Central Asia.

DISCUSSION

As it is known, the peoples of *Turon, Turkistan* (Transoxiana) have been distinguished with their rich history, priceless heritage, diverse and great culture, customs and traditions. Great representatives of them have made a significant contribution to the development of all spheres of national and world science and culture. The peoples of the world remember and pronounce the names of such great scientists with great respect as the founder of algebra Al-Khwarizmi, the second teacher recognized as Aristotle of the East Abu Nasr al-Farabi, the great *khakim* (physician or wise man – *tr.*) Shaikh-ul-raisi Abu Ali Ibn Sino, scientist encyclopedist Abu Raihan al-Biruni, great man of science of astronomy Mirza Ulugbek, founder of the Uzbek literary language, genius poet Alisher Navoi, great thinker Ismail Bukhari, great thinkers of the teachings of Sufi Ahmad Yassavi, Abdu-al-Khaliq Gijdivani, Najm-al-din Kubra, Muhammad al-Ghazali (Latinized Algazelus or Algazel), Mahmud al-Zamakhshari and others.

The leading representatives of social and scientific thought in Central Asia such as Al-Khwarizmi, Al-Farabi, Ibn Sina, Ulugbek and others made a significant contribution to the development of philosophical and natural-scientific thought of their

time, in particular, to the increase of the concept of foreseeing natural appearance.

The activity of the brilliant scientist encyclopedist, the greatest humanist al-Khwarizmi (783-850) is a vivid example of the creative development of scientific knowledge. His research in mathematics, astronomy, geography and history contributed greatly to the further development of these academic subjects. His great merit is that he is the founder of algebra, which is a generalized theory of equations and methods for their solution. The formation of the philosophical, socio-political views of Al-Khwarizmi was influenced by the philosophical works of Ancient India, the peoples of Central Asia and Iran, Ancient Greece and Rome as well. In turn, the rich and diverse culture of the peoples of Central Asia had a beneficial effect on the development of the culture of the West.

The fundamental concept of modern cybernetics ‘algorithm’ is etymologically associated with the name al-Khwarizmi. First of all, his activities were aimed at the development of natural science knowledge, knowledge of nature, and the study of the world by experience. ‘Elements of algebra were known even before al-Khwarizmi. This is evidenced by the ancient Egyptian papyrus of *Ahmes*, which has existed for almost four thousand years. For instance, in ancient Babylon arithmetic as



well as elementary algebraic problems were solved using special tables. However, the pre-al-Khwarizmi period (from ancient times to the beginning of the 9th century) is characterized by the absence of a unified theory and method for solving algebraic problems, i.e. the absence of a separate, special science – ancient mathematics was unified, abstract.’ [1]

According to the famous scientist of Uzbekistan A. Fayzullaev, ‘the generalization of a huge number of partial quadratic equations in the form of finite types of their classification, carried out by the great scientist of the Middle Ages al-Khwarizmi, laid the foundation for modern algebra.’ [2]

Significant mathematical and astronomical treatises by Al-Khwarizmi brought him immortal fame. With the help of mathematical and astronomical calculations, astronomical tables, the scientist-astronomer determined the location and daily movement of the planets of the Sun, Moon and others, predicted solar and lunar eclipses.

Another representative of this culture is Abu Nasr al-Farabi (c. 870-950), known as the ‘Second teacher’. He was the first major philosopher of the peoples of Central Asia during the beginning of the Eastern Renaissance. His rich heritage testifies to the fact that his philosophical system was the most optimal and rational, and in solving a number of issues, he ‘went forward his time.’

Basing on the generalization of the achievements of medieval philosophy and sociology, Al-Farabi built his own socio-philosophical system. In his teaching, Al-Farabi pays special attention to the problems of public life and the state. He created the ideal of a perfect state, a virtuous city, led by an ideal ruler, who, as Al-Farabi writes, should ‘possess astuteness and shrewdness, allowing him to learn at any time both the existing state of affairs and future events.’ [3]

In his opinion, any person cannot be the head of a city (state), in order to become one, that must have the following qualities: initially, have perfect organs; secondly, must understand; thirdly, have a strong memory; fourthly, be discerning and perspicacious; fifthly, have an expressive syllable and clearly express his thoughts; sixthly, be diligent in teaching; seventhly, be abstinent in food and beverages; eighthly, love the truth; ninthly, have a proud soul; tenthly, love justice; eleventhly, despise wealth; finally, be persistent.

A person endowed with all these qualities has the highest degree of human perfection and is at the pinnacle of happiness. That is such a person who can best direct people to find happiness and the actions by which it is achieved. The main thing is Al-Farabi’s belief in a person, his strength, capabilities and abilities. A person can be happy, but he should not wait for happiness as a donation, but earn it with his own hands, through training and labour. Thus, the

ideal of the ruler of the state coincides with Al-Farabi’s idea of a perfect person as a person endowed with the ability to see the perspective, and on this basis only a perfect person can be entrusted with the fate of other people.

Al-Farabi imagines the future of humanity with a great deal of optimism, where freedom, universal equality, mutual respect, and complete well-being will reign. In science and its foresight capabilities, he saw the only way to transition to such a society. Al-Farabi, being the greatest humanist of his era, opposed feudal wars, seizures, robberies, against injustice and deception, defended human rights to work, knowledge, and a peaceful life. He dreamed of a prosperous society based on the mutual assistance of people.

In his time, the role of the city as a centre of trade, culture, and state administration especially increased in the life of society. Al-Farabi divides city-states into ‘virtuous, or ideal (*al-madinat al-fazilah*) and ignorant (*al-madinat al-jahiliyah*).’ [4]

Cities where evil is done are ignorant. And ‘the city in which the unification of people is aimed at mutual assistance in matters by which true happiness is obtained is a virtuous city, and a society where people help each other in order to achieve happiness is a virtuous people. In the same way, the whole earth will become virtuous if nations help each other to achieve happiness.’ [5]

Affirming the ideals of a virtuous city and a perfect person, that time, Al-Farabi expressed the foundations of universal humanism.

Al-Farabi’s humanistic ideals, preaching justice, friendship of peoples, equality of all people in the development of culture, science, mental abilities and aiming them at achieving prosperity, happiness, perfection, are consonant with the pressing problems of the countries of Central Asia and all the peoples of the world. Preaching friendship between peoples, humanism, exalting the person himself, his abilities and intelligence, Al-Farabi in his works highly appreciated the abilities and will of a person, defended the real happiness of people, encouraged them to improve themselves through constant training and determining the prospects for further development. The philosophical and socio-utopian ideals of Al-Farabi, his views were influenced by progressive teachings, the ideas of humanism of the peoples of the Near and Middle East. Due to historical conditions, he was greatly influenced by Aristotle and Plato, but he very critically approached the assimilation of their heritage. Al-Farabi’s social philosophy is permeated with the spirit of humanism and faith in the future, further human improvement. Therefore, it is no coincidence that his philosophical views entered the treasury of human thought, the history of the formation of humanistic ideals that excite all of mankind.



In the works of another no less famous thinker of Central Asia, Al-Biruni (973-1048), the prospects for the further development of astronomy and geography, geology and mineralogy, biology and medicine, history and physiology, mathematics and sociology are considered, as well as numerous scientific guesses of a truly prophetic nature.

It should be noted the special merits of the philosophers of Uzbekistan in this direction, who, in fact, for the first time raised the question of the methodological aspects of the historical and philosophical research of Al-Biruni, pointed out a number of their common features in the context of historical and scientific achievements that determine the direction of further research in this area.

Al-Biruni worked out his own scientific method to study the nature. [6] The characteristic features of this method are the requirements to clear the mind of outdated customs, fantasies, stereotypes. In explaining the phenomena of nature, he recommended proceeding from nature itself, from facts. The study of the subject begins with the study of the elements of which it consists, to conduct an objective observation, to compare the obtained data, to compare with the opinions of others. In research, it goes from the known to the unknown, from the general to the particular.

Attaching great importance to his method, Al-Biruni stated that this is the closest path to truth. Guided by this method, Al-Biruni achieved significant success in his multifaceted scientific activity. In his work, Al-Biruni strictly adheres to the scientific principle and seeks to explain reality on the basis of it, which opened up the possibility of increasing knowledge for the development of the methodology of scientific foresight of that time.

According to Al-Biruni, based on the interdependence of phenomena and objects, the reason for the connection, the laws that exist in nature, it is possible to cognize the world scientifically. He warned scientists, when studying natural phenomena, not to confuse the scientific approach with religious ideas. So, in the book 'India', referring to the mistakes and delusions of some scientists in astronomy, Al-Biruni writes that this delusion and error are explained, initially, by the lack of genuine knowledge and experience of these people, and secondly, by the habit of 'confusing scientific questions with religious traditions.' [7]

Al-Biruni, proceeding from the scientific method developed by him, relying on its principles, he anticipated on many issues the achievements of natural scientists of a later time. So, for example, in the field of astronomy, some phenomena, like the change of seasons, day and night, he explains by the influence of the Sun. Al-Biruni put forward the bold assumption that the Earth is moving, although it seems to us that it is stationary.

Although Al-Biruni was under the influence of the doctrine of geo-centrism, at the same time did not reject the doctrine of heliocentrism, spoke of the need for research in this area and thereby contributed to the correct solution of the extremely important issue of cosmogony.

The greatest services of Al-Biruni to science are related to astronomy. In this area, he left such bold guesses and thoughts that they found their recognition and development only a few centuries later. Al-Biruni in the conditions of the Middle Ages presented for the natural sciences amazing ideas for his time, conclusions and scientific hypotheses, which after several centuries found their confirmation in European sciences.

Zidj, a catalogue of stars, compiled by Al-Biruni is one of the largest and contains the coordinates and magnitudes of 1029 stars, that is, more than the Ptolemy catalogue, although it relied heavily on it. A. Sharipov writes 'the foresight of our great compatriot, who in the conditions of universal recognition of the Ptolemy system, nevertheless saw its weaknesses, is amazing, took a big step towards heliocentric ideas, which subsequently made a whole revolution in science.' [8]

Another very remarkable guess of the great scientist was that he was one of the first to speak out about the possibility of an ellipsoidal shape of the trajectories of the motion of celestial bodies. The scientific significance of this assumption of his is undoubtedly great: it anticipated Kepler's later discoveries.

Observing natural phenomena for a long time, Al-Biruni noticed their periodicity, cyclicity, the natural features of their development. In relation to society, Al-Biruni shows a great inclination towards the theory of circles. 'Al-Biruni,' writes Y. Yakovets, 'put forward the idea of large historical cycles, which was a significant step already at that time.' [9]

'Although the activity of a person and society,' he goes on, 'is largely predetermined by natural laws and cycles, historical heritage, the natural and social environment, historical processes have a regular cyclical character in similar situations, people retain a certain freedom of choice / and responsibility to future generations / in creating their own diverse future.' [10] For this, history must be studied in order to solve the dilemmas of our own future.

The greatest scientists and unsurpassed authorities of science Euclid, Ptolemy, Al-Razi, Ibn Sina and others, were supporters of geo-centrism, Al-Biruni dared to doubt the correctness of this theory, arguing that the Earth is moving, and that it only seems to us that it is motionless. It is possible that Al-Biruni also took some practical steps in the field of studying the motion of the Earth. So, some sources report that the largest astronomer and mathematician



As-Sakhri, with whom Al-Biruni was personally acquainted, invented an astronomical instrument based on the principle of the Earth's motion, not without Al-Biruni's participation. Al-Biruni repeatedly mentions his name, not hiding his sympathy for him.

The formulation of the question of the Earth's motion was a huge progressive step in terms of the Middle Ages, when the theory of heliocentrism was paid with life.

In the field of geology, he anticipated many specific discoveries, in particular, indicated changes in the course of the Amu Darya and so on.

The development of astronomy played an important role in planning the cycle of agricultural work in the conditions of irrigation agriculture in Khorezm.

Al-Biruni's research was not limited to the framework of his time. His views on the importance of the natural sciences in the development of society, his research method were much ahead of the existing era, respectively, many of his guesses, conclusions were confirmed by the further development of science.

The greatness of Al-Biruni is most vividly expressed in the fact that 'about thousand years ago, as V. Zakhidov writes, Al-Biruni, rising to a small hill, looked at the horizon line. The world-out-looking expanded. Not much for the mere man. The genius saw the endless! He calculated the circumference of the Earth / prosaic '41 550 km' in modern measure / with an accuracy that was not significantly shaken by thousands of further measurements, looking from above after thousand years and from a cosmic height ...' [11]

Al-Biruni's views on social development issues are also of considerable interest. According to him, a society should be governed by individuals with a deep mind, objectivity, enterprise, philanthropy and other high qualities.

The essence of management and the possession of power, according to him, is deprivation of peace for the sake of the peace of the ruled, this is fatigue of the body while protecting and protecting their families, their property and life. These and other humanistic ideas of Al-Biruni are especially relevant today, when the current policy of independent Uzbekistan proceeds from the position: 'The people do not serve the state, but the state does them.'

The great '*tabib*' (doctor) Ibn Sina (980-1037) is one of the largest medieval thinkers made his invaluable contribution to medical and philosophical thought. Including his ideas on scientific foresight are of great interest.

Ibn Sina studied almost all the known sciences of that time and strove to say his word, his understanding about each of them. He is the author of many books such as 'The book of healing', 'The book of salvation', 'The book of knowledge', 'The

book of directions and admonitions' and others that are still world famous today.

Ibn Sina's main medical work 'The Canon of Medicine' was not only the result of a thousand-year development of medicine, but a new stage in the development of science, an application, a program of actions, a testament for subsequent generations of doctors.

This is in many ways an anticipation of those paths and achievements that took several more centuries to complete. For hundreds of years, doctors of all countries used the book by Ibn Sina as an inexhaustible source of knowledge. It taught the recognition, treatment and prevention of diseases, the peculiarities of the approach to a sick person, set out the foundations of the theory of medicine. Fundamental ideas in the field of surgery, the doctrine of the brain, internal medicine, formation, very interesting from the point of view of modern science, are set out in this main work. 'The Canon of Medicine' is truly a medical encyclopaedia. It is no coincidence that this work has been a guide for many generations of doctors for many centuries.

As a philosopher, Ibn Sina recognized the eternity of matter, its inconceivability and indestructibility. Cause and effect are in unity and cannot be separated from one another. Based on his doctrine of the eternity of matter, he considered it to be the basis, the cause of all single, concrete things. Matter is in constant motion, change, development. Ibn Sina believed that plants, animals, man are at different stages of development: plants are at a low, animals are at a middle, man are at a higher level.

According to Ibn Sina, the world is cognizable and there are two types of cognition: cognition of the general, abstract, divine and cognition of the particular, concrete, worldly. A person realizes the first one through theoretical reason, and the second one is realized by 'external' organs – sensations and practical reason. In addition to five external senses, a person also has five internal 'senses', internal cognitive organs. In his works, he gives a detailed description of the five senses, their functions and role in the cognitive process.

Ibn Sina did not specifically deal with the development of foresight problems, but in his works, proceeding from the causal determinism of both the physical, animal world and human society, put forward bold guesses about the future development of events. This can be seen especially clearly in his statements about the causes of various diseases, the patterns of the course of illnesses, their treatment and prevention, which were confirmed with great accuracy in practice.

Ibn Sina claims that *mijaz* / mixing / is an essential quality of the organism, a necessary part of its nature. And this doctrine forms the foundation of his thoughts on human health and his diseases, determines the natural foundations of a healthy



lifestyle, nutrition, treatment of diseases, and the use of drugs. Ibn Sina also described the forms of manifestation of *mijaz*, its intervention during biological processes in living beings, healthy people and the patient, scientifically-philosophically substantiated its nature and origin. Although Ibn Sina's ingenious guess is based on numerous facts, observations not only of himself, but also of many outstanding scientists who were doctors, and on the experience of oriental medicine for many centuries, scientifically, its depth was limited by the state of science in the distant Middle Ages.

The doctrine of *mijaz* and other scientific ideas of Ibn Sina on theoretical and clinical medicine arose in the medieval period of the life of society, when there was no reliable knowledge about nature, its diversity, about the structure of the human body, about the functions of its organs, about the causes of diseases, and so on. Of course, there were not any instrumental research methods.

And only in the 2nd half of the 20th century, when new methods and branches of science appeared, which made it possible to study life at the cellular and molecular levels, conditions arose for a comprehensive study of this mysterious natural phenomenon and opportunities arose for a scientific interpretation of *mijaz*.

His views on social issues are of great interest. He attached great importance to the development of agriculture, crafts and trade. As the greatest humanist, he recognized that the ruler compiled a code of laws, took into account the moral characteristics of the people, and national traditions and customs that encourage justice. 'It, justice,' Ibn Sina states, 'is the best adornment of human actions.' [12]

Ibn Sina notes in 'The book of directions and admonitions' that a person is not isolated in the sense of the independence of his personal needs, since he can satisfy them only in communication with other representatives of the human race.

In the processes of exchange and interdependence that are established between people, each relieves the other of any concern, while if each did everything himself/herself, too heavy and hardly feasible burden would fall on his/her shoulders. As a result, agreements between people, established norms of justice and law are necessary. These and other thoughts of Ibn Sina indicate that he, like Al-Farabi, Al-Biruni, dreamed of an ideal society, made guesses, assumptions about a better life in the future, about a free and just society.

The principles of upbringing and education of the younger generation set up by Ibn Sina are a good pattern for modern scientific life. Abu Ali Ibn Sina became one of the first scholars of the East, who gave a coherent system of methods for educating the young, considered moral actions in the context of his professional activities.

The educational and upbringing views of Abu Ali Ibn Sina should be noted. The focus of his attention was always a person as an individual with his knowledge, spirituality, moral character.

Above-mentioned data despite being incomplete, statements of the thinkers of Central Asia show that since ancient times philosophical thought sought to know not only the present and the past, but also to look into the future state of phenomena and things. On the basis of empirical data, they strove to foresee, predict the direction of development of events in natural and social processes, phenomena in the future. Their statements, although they were not framed in the form of a holistic concept of scientific foresight, are of great interest as a vivid evidence of a man's natural desire to look into the future, to penetrate the essence of future happenings.

REFERENCE

1. *Классическая наука Средней Азии и современная мировая цивилизация*. - Т.: Фан, 2001. - С.5.
2. *Классическая наука Средней Азии и современная мировая цивилизация*. - Т.: Фан, 2001. - С.32-33.
3. *Аль-Фараби. Философские трактаты*. - Алматы, 1994. - С. 222.
4. *Аль-Фараби. Избранные трактаты*. Алматы. 1994. С.220.
5. *Аль-Фараби. Избранные трактаты*. Алматы. 1994. С.220.
6. *Абу Рейхан Беруни. Избранные произведения*. - Т., 1963. Т.2. - С. 342.
7. *Абу Рейхан Беруни. Избранные произведения*. - Т., 1963. Т.2. - С. 343.
8. *Шарипов А. Великий мыслитель Беруни*. - Т.: Узбекистон, 1972. - С.20.
9. *Яковец Ю.К. История цивилизаций*. - М.: Гуман.изд.центр Владос, 2007. - С.17.
10. *Яковец Ю.К. История цивилизаций*. - М.: Гуман.изд.центр Владос, 2007. - С.86-87.
11. *Захидов В. Три титана*. - Ташкент: Фан, 1973. - С.54.
12. *Абу Али ибн Сино. Канон медицины. Избранное*. Т.1., - Т., 1992. - С.85.

ABOUT THE AUTHOR

1. *Tulenova Karima Zhandarovna*
2. *Tashkent State Pedagogical University named after Nizami*
3. *Professor, Doctor of Philosophical Sciences*
4. *Phone +998 94 607 05 04,*
5. *100066, 10, Bog tepa st., 5th passage, Yakkasaray district, Tashkent, Uzbekistan*



EVALUATION OF THE METHODS USED FOR OPTIMISING THE CONSUMPTION OF PRINTING SUBSTRATES IN SHEET-FED OFFSET PRINTING PRESS

Abhishek Gautam

M.Tech (Printing Technology) from
Guru Jambheshwar University,
Hisar

Abha Gautam

Associate Professor at Bhai
Parmanand Institute of
Business Studies, IP
University/MBA from
University of Central
Lancashire, United
Kingdom

1. INTRODUCTION

Offset printing is defined as the printing technique in which inked image or offset is transferred from a plate to a rubber blanket and then to the printing surface. This transfer of offset printing ink to the printing substrate or intermediate carrier through splitting the ink layer is dependent on the following factors:

a) Supply of ink

Offset ink transfer depends on the thickness of the ink layer on the offset printing plates.

b) The period of contact

It also depends upon the period of contact among the printing components to ensure better printing speed and geometry.

c) Printing pressure

The transfer of the ink depends upon the contact pressure exerted by the printing press.

d) Rheological properties of the offset printing inks

The property of the flow of the ink and its viscosity affects the offset printing.

e) Temperature ratios

Rheology of ink depends upon the temperature and hence has an impact on the ink properties.

f) Surface properties

Offset printing has a marked impact of the surface properties like wettability, absorbency, roughness, etc. which makes the printing substrate, printing plate and intermediate carrier.

Structure of Sheetfed Offset Presses

A sheetfed press comprises of a feeder, one or more printing units, a sheet register system along with transfer devices to move the paper through the press, a delivery, and various auxiliary devices like control console.

There are three primary cylinders in the printing unit of a sheetfed offset lithographic press along with the systems for dampening and inking the plate as shown in the figure below-

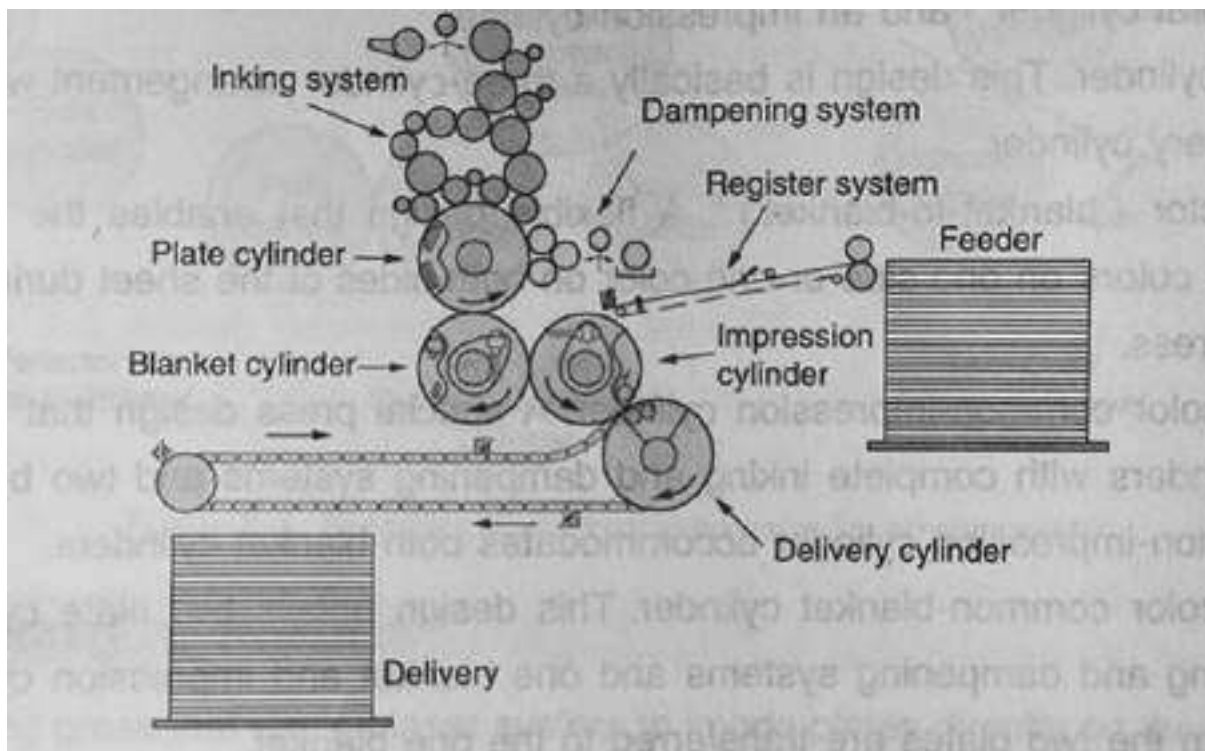


Figure:1 A single-color sheetfed press showing the basic systems common to all sheetfed presses

Plate cylinder-It carries the printing plate which is a flexible image carrier having ink-receptive image areas which when moistened with a water-based solution forms ink-repellent non-image areas.

Blanket cylinder-It carries the offset blanket which is a fabric coated with synthetic rubber which is responsible for transferring the image from the printing plate to the substrate.

Impression cylinder- It runs in contact with the blanket cylinder and helps in transporting the paper or other substrate and forces the paper against the inked blanket.

Dampening system- It is a system which comprises of a series of rollers that carry a metered film of water mixed with other important chemicals which helps in dampening the printing plate. The water-based dampening solution has additives such as acid, gum arabic, and isopropyl alcohol or other wetting agents.

Inking system- Inking system contains an ink fountain that acts as an ink reservoir and a series of ink rollers that transport and mill the ink. These rollers depositing a metered film of ink onto the printing plate.

Feeder- It lifts and forwards the sheets of paper or other substrate from a pile to the first printing unit.

Sheet register system- It provides-

- (1) Alignment that enables every sheet to be registered and printed in the exact same location
- (2) Transfer devices that facilitate sheet transports through the press.

Delivery- It receives and stacks the printed sheet.

Printing substrates- The substrate on which printing takes place are categorised into following categories-

1. Paper
2. Adhesive Substrates for Label Printing
3. Special Laminated Products
4. Polyart Synthetic Substrates
5. Substrates for shrink sleeves
6. PVC(Poly vinyl Chloride) film
7. PET(Polyethylene Terephthalate)
8. Polypropylene Film
9. BOPP (Biaxially Oriented Polypropylene) Film for in mould label printing
10. CAST PP(Cast Polypropylene) Film for in mould label printing
11. PET Film (Polyester)

2. LITERATURE REVIEW

1. An overview of sheet-fed offset presses for optimum consumption of printing substrate (Yadav, Yadav & Singh, 2018).

In this research, the authors have used a case study on Akriti Printers, Noida to explore the possible methods of optimum consumption of the printing substrates in Sheet-fed lithography. The substrates which are used by the researchers are Coated, Un-coated & Polypropylene (PP) substrates



2. Sheet-Fed Offset Printing Press: Analysing & Optimizing The Consumption Of Printing Substrates Like Uncoated Paper, Coated Paper, & Polypropylene (PP) Sheets (A Case Study Of Akriti Printers, Manesar)(Goyat, Singh & Bhupender, 2019)

According to this case study carried out by Goyat, Singh and Bhupender(2019) at Akriti Printers, Manesar, the optimisation of consumption of printing substrate is possible by incorporating some factors like speed of machine, type of printing substrate in In-feed unit at start of Machine, function of printing unit, suitable grade of printing substrate for respective jobs, preparation of job for machine, thickness of printing substrate applied for each particular job, printing time for printing substrate, proper amount of work dampening unit & inking unit, applying of substrate according to printing job, proper water ratio according to printing substrate, machine speed setting according to job and substrate. And printing time for printing substrate. The substrates which have been used for this study are coated Paper, uncoated Paper, and Polypropylene (PP) Sheets

3. Coated paper for sheet-fed offset printing(Haenen, Resch and Scholte,2012)

According to Haenen, Resch and Scholte (2012), when coating paper is used in sheetfed offset printing, image receptive coating layer is formed which contains a top layer and a layer below it having a pigment part made up of 1-95 of 80-95 in dry weight of a fine particulate carbonate or kaolin or clay and 1-100 of 6-25 parts in dry weight of silica and also a binder part made up of 5-20 parts in dry weight of binder and in proportionate to it less than 4 parts in dry weight of additives.

4. Sheet-fed offset printing process and sheet-fed offset printing machine(Koch & Heidelberg, 2003)

According to Koch and Heidelberg(2003), delivery of a sheetfed offset printing machine helps in preventing the uncontrolled spread of powder in the housing by emerging out the powder-laden air from the housing and feeding in the air into the housing from conveyor belt. There is a channel of air created inside the housing which creates drag and drift effects through which machine works.

5. Investigation of the printing pressure level application influence on sheet-fed offset print quality(Milosevic, Stancic, and Adamovic, 2013)

Milosevic, Stancic and Adamovic claim that the sheet-fed offset printing technique requires high contact pressure between blanket and impression cylinders to transfer the adequate ink onto printing substrate. The research aims to find out the impact of different print quality factors on applied printing pressure levels between blanket and impression

cylinders, during four colour sheet-fed offset printing process with the help of different image processing tools. The printing substrates which are taken into consideration for testing are gloss and matte-coated papers.

6. Offset printing unit(Koppelkamm, et.al., 2002)

Koppelkamm and others in their research describe the structure of an offset printing unit which has at least one-cylinder pair with a form cylinder and a transfer cylinder. The transfer cylinder helps in supplying the ink to the printing material with the help of impression cylinder. In order to enhance the production output, the form cylinder combines with five printed pages-one in the circumferential direction and in the longitudinal direction with at least four.

7. Most Common Printing Defects in Sheet-fed Offset Printing on Various Grades of Printing Paper(Baral, Gupta and Kumar, 2014)

According to Baral, Gupta and Kumar, 2014, there are many defects which increase the wastage during a press run. As per the results of the study, the average sheet wastage due to various defects in typical sheet-fed offset is 5 (+/-2) %. Some of the common defects are Dot gain, hickey and mottle on uncoated paper stocks. Matte and Gloss grade coated stocks also undergo defects like picking, set-off and rub off. However, there are some defects which are independent of paper stocks used like tinting, scrumming, slur and ghosting.

8. Optimizing Solid Ink Density of Various Inks on Uncoated Printing Substrate in Sheet Fed Offset Press. (Baral and Joshi, 2016)

This research indicates that solid ink density is an important factor in analysing the print quality. It also explains that for the study uncoated papers are chosen as they have medium quality and their consumption is higher than other types of papers.

9. Optimizing Make Ready and Waste Minimization in Sheet Fed Offset Printing for Cost Effective Packaging and Printing(Mehra, S., 2017)

This paper explains the need of reduction in costing to attain the competitive advantage without compromising with the quality of the product. This research paper has explained the necessity of minimising the wastage and unproductive activities by taking care of environmental impact of industries.

3. RESEARCH OBJECTIVES

To evaluate the methods used for optimising the consumption of printing substrates like uncoated paper, coated paper and Polypropylene(PP) sheets in Sheet-fed offset printing press-A case study of GroPrint, Noida.



Objectives' framework

1. To analyse the consumption of printing substrates in sheet-fed offset printing press.
2. To find out the ways of optimising the consumption of the printing substrates like uncoated paper and Polypropylene sheets in sheet-fed offset printing press of GroPrint.
3. To evaluate the percentage of wastage reduced and number of substrates decreased by using the optimisation.

4. RESEARCH METHODOLOGY

This research is using the mixed approach by incorporating qualitative case study approach in which different printing substrates used in printing industries are studied and the quantitative approach in which the results of the percentage of wastage and reduced number of substrates claimed by other researchers will be evaluated. The company which is chosen for the research is GroPrint under which different jobs of Sheet-fed offset printing done on different substrates are studied to consider their consumption.

5. DATA COLLECTION AND ANALYSIS

The data which has been collected during the case study for the consumption of different printing substrates has been compared with each other to analyse their optimum utility.

6. RESULTS AND DISCUSSION

There is a case study by Goyat, Singh & Yadav (2019), stating that wastage can be minimised by 12-15% and consumption of substrate can be reduced by 400-600 pages if some strategies are used in the sheetfed offset printing process. This result has found that wastage can be reduced to 8-12% by using some precautions which is evaluated through the comparative analysis of the obtained data has been used for discussing the consumption of printing substrate in sheet-fed offset to check the validity of the outcomes. It is important to use change management and waste management tools to reduce the wastage.

REFERENCES

1. Baral, A.K. and Joshi, A., 2016. *Optimizing Solid Ink Density of Various Inks on Uncoated Printing Substrate in Sheet Fed Offset Press. International Journal of Science, Engineering and Computer Technology*, 6(1), pp.45-47.
2. Baral, A.K., Gupta, V. and Kumar, S., 2014. *Most Common Printing Defects in Sheet-fed Offset Printing on Various Grades of Printing Paper. International Journal of Science, Engineering and Computer Technology*, 4(3/4), pp.94-96.
3. Goyat, A., Singh, N & Bhupender(2019), *Sheet-Fed Offset Printing Press: Analyzing &*

- Optimizing The Consumption Of Printing Substrates Like Uncoated Paper, Coated Paper, & Polypropylene (PP) Sheets (A Case Study Of Akriti Printers, Manesar), DOI-10.5281/zenodo.2578901*
4. Haenen, J.P., Resch, P. and Scholte, B., *Sappi Netherlands Services BV, 2012. Coated paper for sheet-fed offset printing. U.S. Patent 8,101,250.*
5. Izdebska-Podsiadly, J. and Thomas, S. eds., 2015. *Printing on polymers: fundamentals and applications. William Andrew.*
6. Koch, H.P., *Heidelberger Druckmaschinen AG, 2003. Sheet-fed offset printing process and sheet-fed offset printing machine. U.S. Patent 6,606,946.*
7. Koppelkamm, G., Schädlich, R. and Behmel, J., *Manroland Druckmaschinen AG, 2002. Offset printing unit. U.S. Patent 6,408,747.*
8. Mehra, S., 2017. *Optimizing Make Ready and Waste Minimization in Sheet Fed Offset Printing for Cost Effective Packaging and Printing. International Journal of Science, Engineering and Computer Technology*, 7(2), pp.111-113.
9. Milošević, R., Stančić, N.K.D.N.M. And Adamović, S., 2013. *Investigation of the printing pressure level application influence on sheet-fed offset print quality. reproduction*, 10, p.13.
10. Yadav, S., Yadav, B. and Singh, R., 2018, *international journal of engineering sciences & research technology an overview of sheet-fed offset presses for optimum consumption of printing substrate.*



A CASE STUDY ON SETTLEMENT OF NORTH DISTRICT OF SIKKIM IN EASTERN HIMALAYA'S

Mrs. Sharmila Karki

Assistant professor Department of
Geography NBBDC Sikkim

ABSTRACT

The paper is based on field survey & investigation which was carried out in different blocks of North districts of Sikkim. As settlement not only shows the multi-relational dimension but it also exhibits the variation, boundaries as a whole, it also generates a typical landscape. The focus is given more on Rural Settlement of particular area ,particularly focuses on demographic growth and land use changes of area using integration of remote sensing to identify various types of changing land use pattern This includes house type or style, food habits, dressing, belief etc, the leпча and bhutia have some kind of similarities in the construction of houses unlike Nepalese who developed a different style of constructing houses all together. With an objective of Identification of different settlement pattern/ form and their classification on the basis of ecological and non-ecological factor

KEYWORDS: GIS, SETTLEMENT, Morphology, House Type, Nepali, Bhutia, Lepcha

INTRODUCTION

Sikkim lies at 27.33°N latitude and 88.62°E longitude, in the eastern Himalayan range at an elevation of 1,650 m (5,410 ft). It is one of the fastest growing town of Sikkim. it has a major portion of its area under the snowy mountain rugged topography and ranges of greater, middle Himalayas which hinder the growth and development of the settlement. Sikkim is of immense important to India due to its typical location it shares international borders with Tibet (China), Bhutan and Nepal, therefore majority of its area is under restricted area for the defense purpose Due to unavailability of suitable plots for settlement, Agricultural land and Forest land are being utilized ,Settlement mainly occurs those places where lack of job opportunities extreme climate rugged terrain under developed in agriculture etc. Sikkim is small hilly state in north east, most of part of this state is covered with mountains specially north Sikkim faced extreme climatic condition over the year this problem is associated with extreme terrain rugged in accessibility and interrupt growth in settlement. oberoy and singh (1980) discussed main cause of settlement employment, unemployment ,Nath and Chaudhart (1995) said that main settlement is rural settlement. East Sikkim has highest rate of settlement because it has great opportunity is job and various sectors.

METHODOLOGY AND DATA BASE

First of all we collect those methods and techniques, which are concerned with the collection of data, both primary and secondary data. For the study of past land-use, processing and re-evaluation of secondary data available can be done from numerous departments such as Urban Development & Housing Department, Census of India, Survey of India, Rural Management Development Department, Gangtok Municipal Corporation, etc. Primary data can be collected through field survey or field research by means of Questionnaires, Opinionaire, Personal Interviews, Focused Interviews, Group Interviews, Telephone survey etc.

2nd method include those statically techniques and calculations, which are used for establishing relationship between the available data and the unknowns.

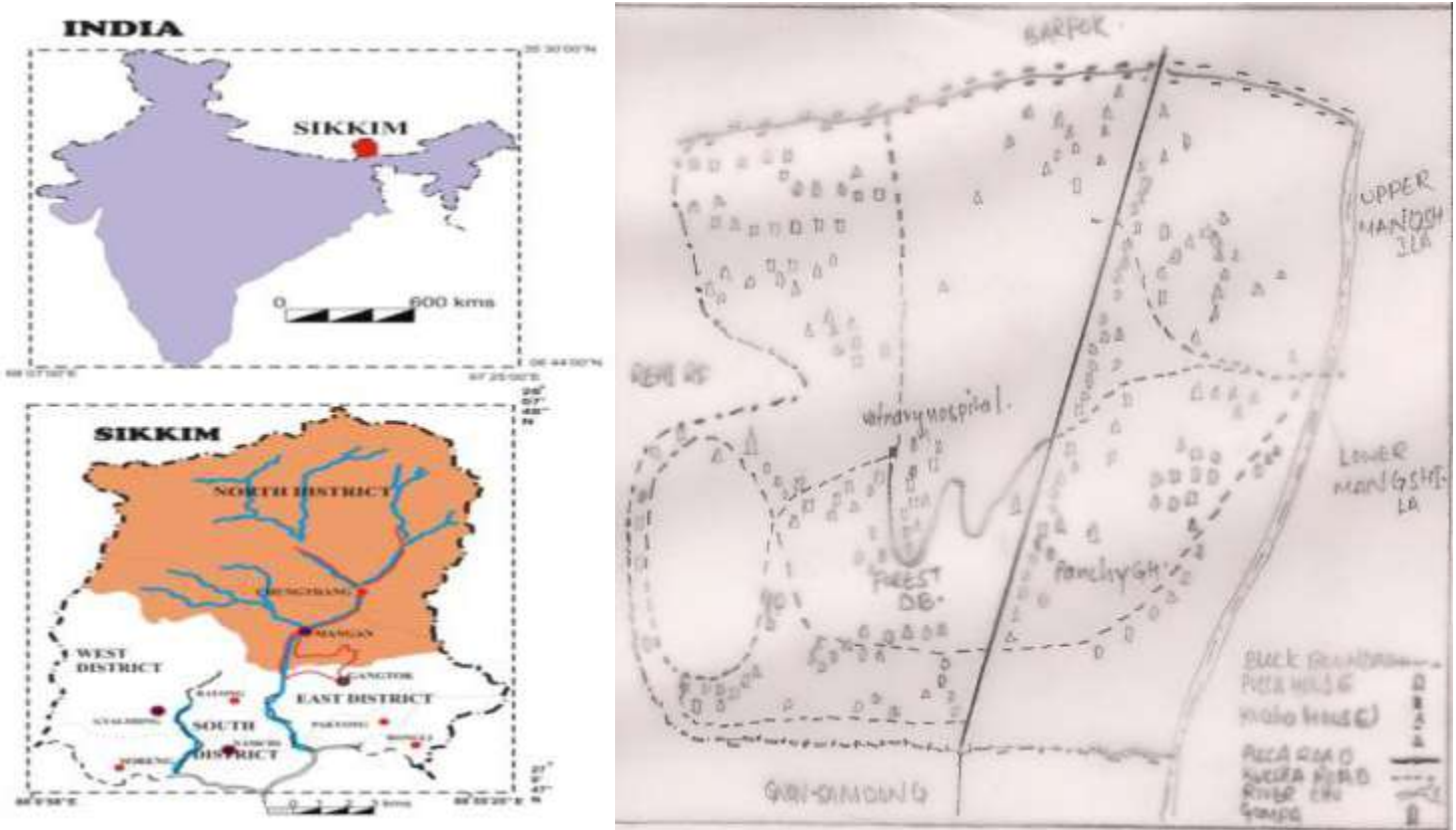
METHOD-3

3RD method include those methods, which are used to evaluate the accuracy of result obtained.



SURVEY SAMPLE STUDY AREA

Sikkim: North District, Hee-Gyathang Busties



The selected sample area is located in lower “Dzong” named “HeeGyathang”. In north district (Mangan, the area is border by the ringchu on the north and on the east by tista river. The altitude ranges from 1500 to 2500 meters it is separated from Gnon-Samdong by the Manmuchu. Gnon-Samdong has block status as far as land use and survey departments are concerned uncer separate Mandal but comes under one panchayat know as HeeGyathang Panchayat, here the member of panchayat is selected from both the blocks.

it is found that Hee Gyathang block has revenue busties, forest, cultivated lands they also have uncultivated lands due to topographical difficulties much of the land here are left fallow which are basically waste land and are called “Banjo” in local language, the total area of Hee Gyathang is 1922.33 hectares which is inhabitant by 1162 populations (census 2001) which has increased to 1576 persons (primary data). Population here are consist of schedule tribe 90.99 person schedule caste 1.08 person other back ward classes 2.73 persons, Most backward classes 4.00 person and others consisting of 1.21 person. The immigrant are usually laborers who comes here for cardamom harvesting, here the cultivation of cardamom is one of the most important agricultural activity.

MORPHOLOGY

Morphology of urban and rural area as well as necessity of individual and society. Due to its geographical location Sikkim has a scarcity of flat land which hinter the proper growth, development and extension of settlement.

The first phase in the constructing of the housing was constructed at landing this area is in periphery of Gangtok, recently the department has constructed the housing for the slums who are residing in the market area specially near M G Marg star hall. The department of UD & HD has provided social housing in several Urban areas. The following are the numbers and location of such housing in the state Irrigation system has developed here however it has benefitted only a fringe of population of Sudur busty, Mathyong, Tartong. The transport and communication is very poorly maintained jeepable road runs parallel to the water channel. The electricity is in a slow progress. Unlike other tribes were adopting modern culture technology and education the lepcha population of this region sticked to their tradition. But now a days they are coping with the modern way of life though slowly competing with other diatricts of the state, few house



hold gadgets are used. They build their houses with traditional way of construction in which the thatched were seen but now this thatched roof mud wall are replaced by tin and tiles etc, in Hee Gyathang out of 277 houses 28 are pukka 165 are semi pukka and 84 are kachha. The literacy rate was very low in this block but with the government effort more and more educational institutions are being opened in Hee Gyathang block there are 3 primary schools and one middle school is situated in Mathyong and for the high school facilities students has to go to Mangan Sr, Secondary School. In 1982 the total strength of the student in the middle school was 184 and there were 16 teachers, children would learn only English and forget their own language and culture but slowly that fear was gone and with the new enthusiasm they adopted education system. Here the Lepcha government encourage education in this region by introducing Lepcha as a state language, in the olden days the people here were not in favour of sending their ward to school due to fear that their language is taught first than Nepali, Hindi and than English, due to the trend of the lepcha language as a state language there are more language teachers coming from this region as a graduate teacher in the department.

RESULTS & DISCUSSION

The house type in the state has been modified as per the availability of construction material. Previously connectivity of Sikkim with other surrounding region was considerably poor and ill maintained which resulted into the high cost of construction, hence the most of the houses were constructed with cheap and locally available material, after the merge with Indian Union the connectivity, infrastructural and technology developed in the state which resulted in development of the construction methods and advancement of the technology which changes the shape, size and the style of the houses. slope specially along the connectivity lines such as NH31A district highway, sub district roads Hee Gyathang block out of 1576 population 279 are under 0 to 6 years who are not sent to school 251 of population are illiterate 1046 are literate making the literacy rate of 80.65 % (primary source data)

Location	No of units
Rongali	8
Chandy	4
Sishney	6
Tashiding	4
Lingding	24 in first phase and 40 in second phase

CONCLUSION

After a vivid analysis of evolution of settlement its form and pattern, it can be concluded that the settlement of Sikkim has drastically changed, the number of house hold are continuously in increasing as a consequence of population explosion, Morphology of urban and rural area as well as necessity of individual and society. Due to its geographical location Sikkim has a scarcity of flat land which hinders the proper growth, development and extension of settlement. Majority of settlement has developed along the hill.

In the urban area the demand of the house is more from the middle and the lower income group as there is less number of Government land, the pressure on the Government to provide suitable sites and houses to the people. In the Urban area there is a high demand of rented house, there are many Urban problems faced by almost all the urban centers in the state the more is in the capital. The government as well as the NGO's like Sikkim Development Foundation, VHAS and ECOSS are doing the need full.

REFERENCES

1. Ariti, A.T., Vliet, P. and Verburg, H. (2015). *Land-use and land cover changes in the Central Rift Valley of Ethiopia: Assessment of perception and adaptation*

of stakeholders. Applied Geography, 65, 28–37.

2. Arsanjani, Jamal Jokar (2012). *Dynamic Land-Use/Cover Change Simulation: Geosimulation and Multi Agent-Based Modelling. Springer-Verlag, Berlin.*

3. Bhagwati, J (1979). "International Migration of the Highly Skilled: Economics, Ethics and Taxes", *Third World Quarterly, 1(3): 17–30.*

4. Casado-Diaz, M. A. (1999). *Socio-demographic impacts of residential tourism: a case study of Torrevieja, Spain. The International Journal of Tourism Research, 1(4), 223.*

5. Dyson, T., and Moore, M. (1983). *On kinship structure, female autonomy, and demographic behavior in India. Population and development review, 35-60.*

6. Gallego, F. J. (2004). *Remote sensing and land cover area estimation. International Journal of Remote Sensing. 25(15), 3019-3047*

7. Gangtok. (1997). 'Sikkim State: Annual Plan 1996–7', Bureau of Economic and Statistics, Planning and Development Department, Gangtok.

8. Government of Sikkim (2001). 'Sikkim State Annual Plan 2000–2001', Planning and Development Department, Gangtok. Google Map (2011):

9. Herold, M., Couclelis, H., & Clarke, K. C. (2005). *The role of spatial metrics in the analysis and modeling of urban land use change. Computers, Environment and Urban Systems, 29(4), 369-399.*



- 10 Huang B., Zhang L., and Wu, B. (2009). Spatio-temporal analysis of rural-urban land conversion. *International Journal of Geographical Information Science*, 23(3), 379–398.
- 11 Joseph, Jolin and Vishnu Narendran (2013). "Neither Here nor There: An Overview of South-South Migration from Both Ends of the Bangladesh-India Migration Corridor", Working Paper No 569, The Hague: International Institute of Social Studies.
- 12 Khadria, B. (2009). Adversary analysis and the quest for global development: Optimizing the dynamic conflict of interest in transnational migration. 53(3), 106-122.
- 13 Kandrika, S. and Roy, P.S. (2008). Land use land cover classification of Orissa using multi-temporal IRS-P6 awifs data: A decision tree approach. *International Journal of Applied Earth Observation and Geoinformation*, 10, 186–193.
- 14 Kashagili, J.J., and Majaliwa, A.M. (2010). Integrated assessment of land use and cover changes in the Malagarasi river catchment in Tanzania. *Physics and Chemistry of the Earth*, 35,730–741.
- 15 Lambin E.F., and Geist H.J. (2006). *Land-use and land-cover change: local processes and global impacts*. Springer-Verlag, Berlin.
- 16 Lillesand, T.M., Kiefer, R.W., and Chipman, J.W. (2004) *Remote Sensing and Image Interpretation*. John Wiley & Sons Ltd, NY.
- 17 Mayunga S D, Coleman D J, and Zhang Y. A. (2007). Semi-automated approach for extracting buildings from Quick Bird imagery applied to informal settlement mapping. *International Journal of Remote Sensing*, 28(10), 2343-2357.
- 18 Meshesha, D., Tsunekawa, A., and Tsubo, M. (2012). Continued land degradation: cause- effect in Ethiopia's CRV. *Land Degradation Development*.23, 130–143.
- 19 Mukhopadhyay, A., Mondal, A., Mukherjee, S., Khatua, D., Ghosh, S., Mitra, D., & Ghosh, T. (2014). Forest cover change prediction using hybrid methodology of geoinformatics and Markov chain model: A case study on sub-Himalayan town Gangtok, India. *Journal of Earth System Science*,123(6), 1349-1360.
- 20 Nandy, Chandan (2005). *Illegal Immigration from Bangladesh to India: The Emerging Conflicts*", Mellon-MIT Foundation on NGOs and Forced Migration, SLIFKA Program in Inter-Communal Coexistence, Brandeis University.
- 21 NERDUP reoprt(2012). *North Eastern Rural Development Urban Project*. Government of India, Delhi. Available at <http://mdoner.gov.in/content/sikkim-2>
- 22 Paul, K., & Sharma, D. (2016). Post facto, trends and pattern of Urbanity in Sikkim. *Archives of Applied Science Research*, 8(5), 43-54.
- 23 Peijun, D., Xingli, LI., Wen,C., Yan, L., and Huapeng, Z. (2010). Monitoring urban land cover and vegetation change by multi-temporal remote sensing information. *Mining Science and Technology* 20, 0922–0932
- 24 *Provisional Population Totals, (2011), Sikkim State District Profile, Census of India, New Delhi.*
- 25 Rawat, J.S., Biswas, Vivekanand., Kumar, Manish (2013). Changes in land use/cover using geospatial techniques: A case study of Ramnagar town area, district Nainital, Uttarakhand, India. *The Egyptian Journal of Remote Sensing and Space Sciences*, 16, 111–117.
- 26 RGI, (1971). *Series 21 Sikkim, part XII- A&B.*
- 27 RGI (1981). *Series 19 Sikkim, Part XIII- A & B.*
- 28 RGI (1991). *Series 22 Sikkim, Town Dictionary, Part XII A & B, District Census Handbook.*
- 29 RGI (2001) *Town Dictionary, Part XII A & B, District Census Handbook.*
- 30 RGI (2011). *General population tables, A-series, Registrar General of India, New Delhi, India.*
- 31 Roth, D. Moreno-Sanchez, R., Torres-Rojo, J. M. and Moreno-Sanchez, F. (2016). Estimation of human induced disturbance of the environment associated with 2002, 2008 and 2013 land use/cover patterns in Mexico. *Applied Geography*, 66, 22-34.
- 32 Sharma, V. V. L. N., Murali Krishna, G., Hema Malini, B., and Nageswara Rao, K. (2001). *Landuse/Landcover Change Detection through Remote Sensing and its Climatic Implications in the Godavari Delta Region. Journal of the Indian Society of Remote Sensing*, 29, 1&2, 86-91.
- 33 Shrivastava, Prashant K., Han, Dawei., Rico-Ramirez, Miguel A., and Bray, Michaela., and Islam, T. (2012). Selection of classification techniques for land use/land cover change investigation. *Advances in Space Research*, 50, 1250–1265.
- 34 Voogt, J. A., & Oke, T. R. (2003). Thermal remote sensing of urban climates. *Remote Sensing of Environment*, 86, 370–384.



DETERMINANTS OF EARLY MARRIAGES AMONG TEENAGERS IN GANJONI AREA, MOMBASA COUNTY

Joshua K. M.¹

¹Assistant Lecturer,

Department of Medical Sciences,
School of Pure and Health Sciences,
Technical University of Mombasa,
Kenya

Aggrey A²

²Lecturer,

Department of Mathematics and Physics,
School of Pure and Health Sciences,
Technical University of Mombasa,
Kenya

Marriam A³

³Community Health Student,

Department of Medical Sciences,
Kenya Coast National Polytechnic,
Kenya.

ABSTRACT

The purpose of the study was to investigate reasons contributing to early marriage among the teenagers living in Ganjoni, Mombasa County, Kenya. The objective of the study was to establish the extent to early marriage among teenagers, contributing factors and the effects of early marriage among teenagers. The study employed cross sectional study design with a target population of 18,000. The study was recruited a sample size of 196 that was derived using Fishers formula. Structured questionnaire was used to collect quantitative data and interview for qualitative data then data was analyzed using SPSS version 20. The study results were presented using tables and pie charts. The predominant age group was 19-29 years (57.1%). About 82% had gone through primary education and 89.6% dropped from education in order to be married off. Based on bivariate analysis; the respondents age ($p = 0.001$), marital status ($p = 0.001$), occupation ($p = 0.003$) and income ($p = 0.000$), maternal and child health were significant to teenage marriage.

KEY WORDS: *Teenage, marriage, Mombasa*

INTRODUCTION

Early marriage defined as any legal or customary union involving a person below the age of 18. Although child marriage is considered a human right violation more than 30% of today's women in developing countries were married before their 18 birthday and a total of 70 million girls worldwide are affected (WHO, 2012)

Early child marriage risk the beginning of frequent and an protected sexual intercourse, leading to a greater risk of sexual transmitted infections (STIs), HIV, early pregnancy and a high number of children with limited spacing (Williamson 2013). Research indicates that worldwide 90% of the teenage pregnancy take place within marriage and the complication related

to this pregnancy and child birth are among the leading causes of death among young women aged 15-19 in low and middle income countries (WHO, 2012)

Young brides often have less excess to information, education and health services, which is directly linked to decrease investment in education and health for their children (Persons *et al*, 2015). Literature on child marriage highlights that when young women marry early, their formal education often terminate, which prevents them from acquiring knowledge and skills that determine their prospects for employments (Muthengi *et al*, 2015). School do not only provide education but also allow girls to develop social skills and networks; less chance of participation in decision making, greater risk of being subjected to



violence, isolation from school, friends and work places and therefore lack social support which is critical for their emotional-wellbeing and economic opportunities, and also less abilities to negotiate safe sex, birth spacing, contraceptive use and to protect themselves from gender-based violence (Williamson, 2012).

In Kenya especially in Mombasa, the research shows that the age at first marriage has increased over time, from 19-20 as the mean age UNICEF 2015. First marriage among women age 25-49 (KDHS, 2014, 2003, 1998). However, child marriage is common even though is illegal (KNBS and ICF macro 2010). Data indicate that the percentage of women first marriage by the age of 18 was 32.6% in 2003 and 28.7% in 2014 (KDHS, 2014, 2003)

OBJECTIVES

Broad Objective

To establish the determinants of early marriage among teenagers in Mombasa County

Specific Objective

- To establish the extent of early marriage among teenagers in Mombasa County.
- To establish teenage marriage contributing factors in Mombasa County.
- To determine the effects of early marriage among teenagers in Mombasa County.

METHODOLOGY

The study employed a descriptive cross sectional design. This design was appropriate for the study because it aim at identifying factors that contribute to teenage marriage in the area of the study. Both qualitative and quantitative data were collected by use of questionnaires and interviews. Structured questionnaires were administered face to face and interviews were conducted among selected group of respondents and data recorded.

SAMPLING

Systematic random sampling was used to recruit the subjects within the study area. Ganjoni has an approximate of 1800 households (KNBS, 2012). The respondents were recruited using a 5th interval amongst household until desired sample size was obtained. A written informed consent was given to the respondents to sign before taking part in the study. The collected data was checked for consistency with data obtained from questionnaire in order to eliminate misleading data which could arise from misrepresentation of questions in the questionnaire. Data was gathered and coded for analysis using SPSS version 20

SAMPLE SIZE

The required sample size was calculated using fisher`s formula (Mugenda, 2006)

$$N = \frac{z^2 pq}{d^2}$$

n= desire sample size

z= standard normal deviation (1.96)

p= anticipated population proportion (15%)

q= 1 – p

d= allowable error

$$n = \frac{(1.92)^2(0.15)(0.85)}{(0.05)^2} = 196$$

STUDY AREA

Ganjoni is located in Mombasa urban city city. It has a large population of both local and immigrant communities where the predominant tribe is the Mijikenda. Mombasa County is one of the 47 counties of Kenya. It's the capital and the only city in the county of Mombasa. Initially it was one of the former districts of Kenya but in 2013 it was reconstituted as a county, on the same boundaries. It is the smallest county in Kenya, covering an area of 229.7 km² excluding 65 km² of water mass. The county is situated in the south eastern part of the former Coast Province. It borders Kilifi County to the north, Kwale County to the south west and the Indian Ocean to the east. Administratively, the county is divided into seven divisions, eighteen locations and thirty sub-locations.

RESULTS

The purpose of this study was to examine determinants of early marriage among teenagers in Ganjoni area. The study achieves the questionnaire return rate of 100 percent. Demographic

Finding shows that the predominant age group was 19-29 years (57.1%) and 64.2% of the respondent were married below the age of 18 years. About 66.3% of the respondents were married, while others were single, divorced or widowed. The education level was low among the respondents, where 82% had gone through primary education and 89.6% dropped from education in order to be married off. On occupation, about 54.1% of the respondents were unemployed while 60.2% of those employed were earning an income of below ksh. 10,0000. The bivariate analysis of socio demographic factors show the respondents age (p= 0.001), marital status (p = 0.001), occupation (p = 0.003) and income (p = 0.000) to be statistically significant to teenage marriage.



FIGURES

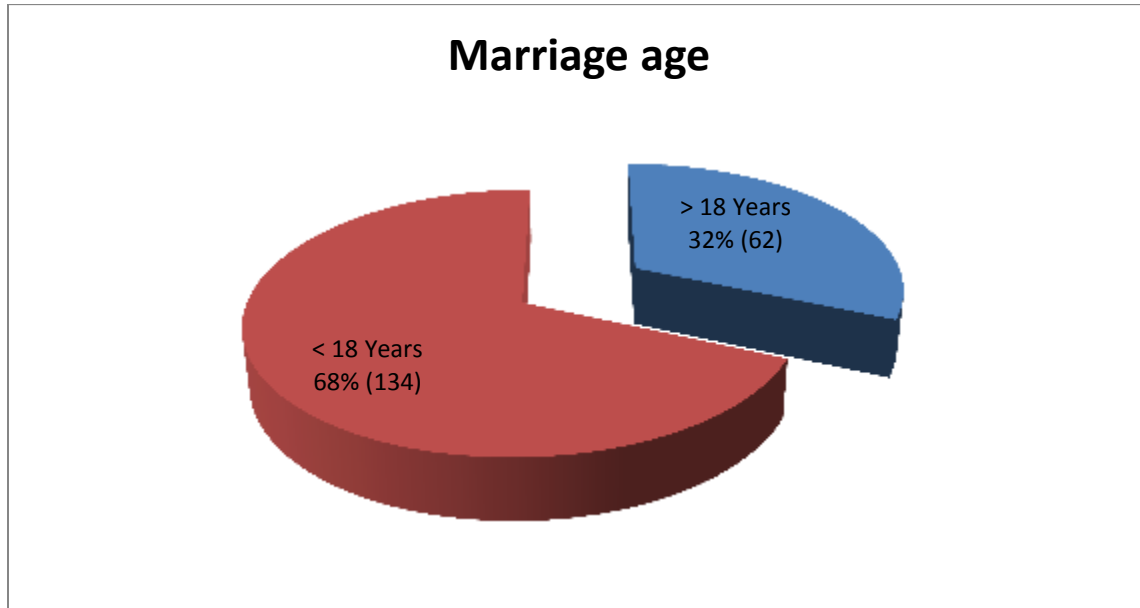


Figure 1: Level of teenage marriage among the respondents

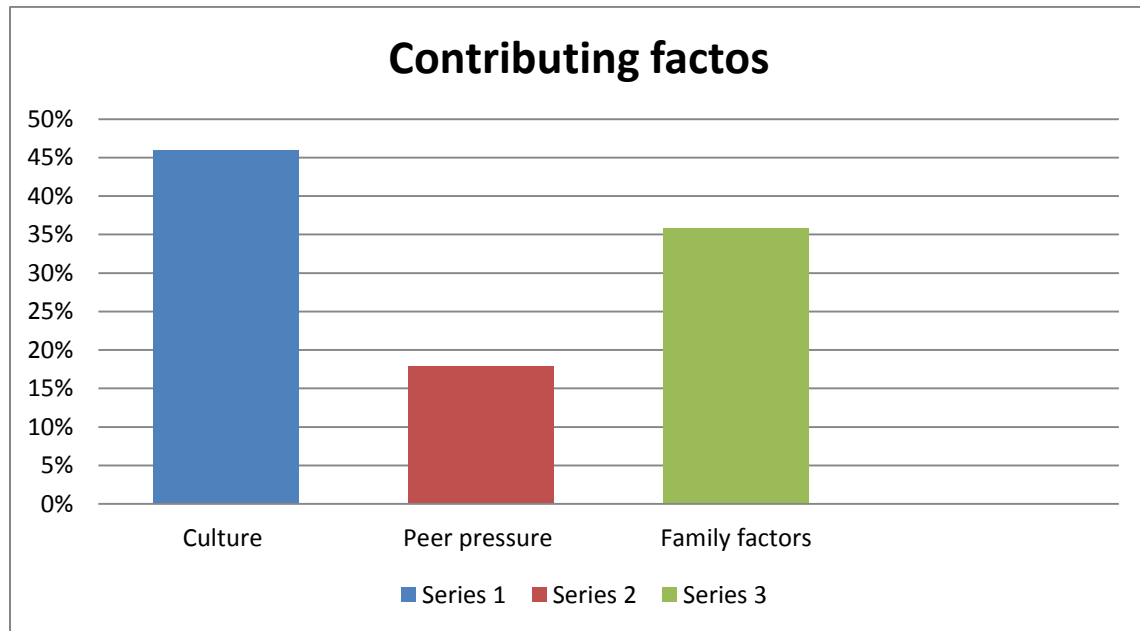


Figure 2: Teenage marriage contributing factors



TABLES

Table 1: Socio demographic factors of the respondents

Variable	Category	Frequency (%)	Marriage age	
			< 18 years (n=134)	>18 years (n=62)
Age	<18 years	59 (30.1%)	28 (20.9%)	31 (50%)
	19-29 years	112 (57.1%)	86 (64.2%)	26 (41.9%)
	> 30 years	25 (12.8%)	20 (14.9%)	5 (9.1%)
Marital status	Single / divorced / widowed	66 (33.7%)	32 (23.9%)	30 (48.4%)
	Married	130 (66.3%)	98 (73.1%)	32 (51.6%)
Occupation	Employed	90 (45.9%)	52 (38.8%)	38 (61.3%)
	Unemployed	106 (54.1%)	82 (61.2%)	24 (38.7%)
Education	Primary	173 (82.3%)	120 (89.6%)	53 (85.5%)
	Secondary	16 (8.2%)	9 (6.7%)	7 (11.3%)
	Tertiary	7 (9.5%)	5 (3.7%)	2 (3.2%)
Monthly income level	<Ksh. 10,000	118 (60.2%)	112 (83.6%)	16 (9.7%)
	>Ksh. 10,000	78 (39.8%)	22 (16.4%)	56 (90.3%)

Table 2: Bivariate analysis of respondent's demographic factors

Variable	Category	Marriage age		Df	Chi square	P - value
		< 18 years	> 18 years			
Age	<18 years	28 (20.9%)	31 (50%)	2	17.162	0.000
	19-29 years	86 (64.2%)	26 (41.9%)			
	> 30 years	20 (14.9%)	5 (9.1%)			
Marital status	Single / divorced / widowed	32 (23.9%)	30 (48.4%)	1	10.850	0.001
	Married	98 (73.1%)	32 (51.6%)			
Occupation	Employed	52 (38.8%)	38 (61.3%)	1	8.629	0.003
	Unemployed	82 (61.2%)	24 (38.7%)			
Education	Primary	120 (89.6%)	53 (85.5%)	2	1.275	0.529
	Secondary	9 (6.7%)	7 (11.3%)			
	Tertiary	5 (3.7%)	2 (3.2%)			
Monthly income level	< Ksh. 10,000	112 (83.6%)	16 (9.7%)	1	74.950	0.000
	> Ksh. 10,000	22 (16.4%)	56 (90.3%)			

Table 3: Effects of teenage marriage

Variable	Category	Marriage age (%)		Df	Chi square	P - value
		<18 years n=134	>18 years n=62			
Maternal health	Delivery complication	78 (58.2%)	15 (24.2%)	1	32.409	0.000
	Family planning	47(35.1%)	58 (93.5%)			
Childhealth	Immunization	98 (73.1%)	60 (96.8%)	2	82.195	0.000
	Malnutrition	92 (68.7%)	2 (3.2%)			
	Infections (diarrhea)	105 (78.3%)	1 (1.6%)			
Family conflicts	Agree	83(61.9%)	5(8.1%)	1	1.186	0.276
	Common	110 (82.1%)	12(19.4%)			



The study findings shows that among 196 respondents 134 (68%) were below the age of 18 years. A study by Manda and Meyer (2005) study found out those 67% women aged 20 to 24 with no education and 57 per cent with primary education were married below the age of 18 years. In a study by UNFPA in developing countries found out that 70% girls were likely to be married before 18th birthday (UNFPA, 2007)

On cultural practices; the study found 46% of the respondents entered into teenage marriage due to cultural practices. Muslim being a predominant religion in the area, most children are sent to attend *madrassas* (religion school) than formal school. The person live as polygamy families set up and inter marriage between cousins is promoted. When a family die, the community usually eulogize by playing music (*Ngoma*) for a number of days. These among others give the teenage opportunity to explore marriage at early age

According to Chege and Sifuna study finding, religion beliefs constrain girls from making their own opinions. While Choe *et al* (2004), show 63% - 82% of adolescent girls are married off due to parents wish. The study also found out that 17.9% of the respondents were influenced by peer pressure to enter into teenage marriage and 68.4% of the respondents entered marriage due to family related factors. The respondents feel their family set up was not supporting them realize the career goals (90%) and encouraged them being married off at early age using examples of other girls who had married off and were successful. The family was also eager to get dowry and other monetary rewards as soon as their daughters got married early

Save the Children (2005) indicates that cultural norms and beliefs constrain girls' economic empowerment especially in many developing parts of the world. In these societies, traditional values and some religious beliefs constrain girls from making their own decisions and expressing their own opinions.

According to Marston and King (2006), cultural norms in Kenya impose barriers for discussing about sexual matters. Even mentioning the word sex" can imply the sexual experience and promiscuity that may damage reputation. Hence, many adolescent girls ignore sexual issues discussion in order to preserve their reputation. Some parents also think that if they marry their daughter earlier then they can reduce the expenditure of food and education (Sharma, 2002).

Parents are also prompted to arrange early marriage for daughters due to a perceived need to preserve girls" pre-marital virginity and to protect her and her family from the risk of shame or dishonor attached to the "immoral" or "inappropriate" behavior of sex outside marriage. If a girl becomes pregnant

outside marriage, the stigma can lead families to view her rights and well-being as secondary to the preservation of family honor. Child marriage is also used to punish or control girls who rebel against family or communities" expectations.

On effects of maternal and child health, the study found out that 58.2% of the respondents who had been married below age of 18 years developed delivery complications on their first delivery while 6.5% using family planning services. The bivariate analysis findings show maternal health ($p = 0.000$) to be statistically significant to teenage marriage. About 96.8% of the respondents who were married past 18 years of age better utilize infant immunization services and their children rarely develop common ailments like diarrhea (8.3%). However, 68.7% of the children from women married below 18 years had developed nutrition related disorders. Bivariate analysis found out that child health was statistically significant ($p = 0.000$) to teenage marriage. Family domestic conflicts were common (61.9%) among women married below 18 years

Specific studies investigating the determinants of child marriage are conducted mostly in developing countries. In India, Johnson-Lans and Jones (2011) examines the relative importance of economic and social factors in determining the probability of a girl becoming a child bride. The findings reveal that economic factors is way behind social conformity in explaining child marriage as none of economic variables such as household income, poverty status, and land ownership significantly affect the probability of child marriage in rural India.

CONCLUSION

Traditional cultural practices among Ganjoni community significantly influenced early marriage

Statistics indicates that most of the residents among the Ganjoni community were not economically independent because of them are unemployed thus most parents do prefer teenage marriage to their daughters in order to get wealth as well avoid responsibilities.

Most of the respondents were primary certificate holders and therefore access to education by both parent and children are significant determinant on decision to early marriages among Ganjoni community. Level of teenage marriage is high in Ganjoni community therefore many teenagers are involved in early marriage poverty is high effect of early marriage in Ganjoni community.



RECOMMENDATIONS

To be effective and transformative, to eliminate child marriage most span multiply sectors and include different approaches. Based on findings discussed, the study recommends that;

- I. Expanding access to primary, secondary and tertiary education by the government offering financial aid to the disadvantaged girls to stay in school in order to reduce dropout rate which delay early marriage.
- II. The community and religion leaders should be key stakeholders on issues of girl child empowerment in order to fight outdated cultural practices.
- III. The girl child should be trained from childhood about importance of education and related benefits as well as the possible outcomes of teenage marriage

REFERENCES

1. Abena, F. D., (1991), "The Emancipation of Women An African Perspective," Accra: Ghana Universities press xv.107: 103-104. ISBN 996430188X
2. Atayi, J. B. (2008), "Disabling Barriers to Girls,,Primary Education in Arua District - An Intersectional Analysis," Ibadan: Ibadan University Press.
3. Axinn, W.G. and Thornton, A., (1992), "The influence of parental resources on the timing of the transition to marriage," *social science Research*, 21: 261-285
4. Bates L, Maselko J, Schuler SR (2007), "Women's education and the timing of marriage and childbearing in the next generation: evidence from rural Bangladesh,". *Stud Fam Plann*; 38:101
5. Blossfeld, H.-P. and J. Huinink (1991), "Human capital investments or norms of role transition? How women's schooling and career affect the process of family formation," *American Journal of Sociology*, 97(1): 143-168
6. Blossfeld, H.P., and Jaenichen, U. (1992), "Educational expansion and changes in Women's entry into marriage and motherhood in the Federal Republic of Germany," *Journal of Marriage and the Family*, 54: 302-315
7. Bongaarts J (1983), "The proximate determinants of natural marital fertility. In: Bulatao RA, Lee RD, Hollerbach PE, Bongaarts J, eds. *Determinants of fertility in developing countries*". Vol. I. New York: Academic Press: 103-38.
8. Chege FN, Sifuna DN (2006). *Girls' and Women's Education in Kenya: Gender Perspectives and trends*. Nairobi: unesco

9. Choe, M.K., Thapa,S., Mishra, V., (2004), " Early marriage and early motherhood in Nepal," *Journal of Biosocial Science*, 37(2):143-162
10. Febriany, Vita. (2005). "Community Synthesis Report: Bulu-Kraksaan". Jakarta: SMERU Research Institute
11. Febriany, Vita. (2006), "Community Synthesis Report: Semampir". Jakarta: SMERU Research Institute
12. Francoeur, R. T., Noonan, R.J., (2004). *The Continuum Complete International Encyclopedia of Sexuality: Updated with more countries.*
13. Fuller, B. & Liang, X. (1999), "Which girls stay in school? The influence of family economy, social demands, and ethnicity in South Africa". Washington, DC:
14. Fuller, Bruce Liang, Xiaoyan (1999), "Critical Perspectives on Schooling and Fertility in the Developing World," Washington, DC: National Academy Press. 181-225
15. Ghosh, Biswajit (2011), "Child Marriage and Its Prevention: Role of Adolescent Girls". *Indian Journal of Development Research and Social Action*, 7(1-2): 49-62
16. Goode, W. (1963). "World Revolution and Family Patterns". New York Press.
17. Johnson-Lans, Shirley., and Patricia Jones. (2011). "Child Brides in Rural India," VassarCollege, Working Papers No. 094
18. Jensen, Robert and Rebecca Thornton (2003), "Early female marriage in the Developing world," *In Gender, and Development*, Oxfam GB, Oxford, 11 (2): 9-19
19. Jones G, Straughan PT, Chan A (2009), "Very low fertility in pacific Asian countries: Causes and policy responses," New York: Routledge; 1-22
20. Kingdon, G.G., (2005), "Where Has All the Bias Gone? Detecting Gender Bias in the Intrahousehold Allocation of Educational Expenditure," *Economic Development and Cultural Change*, 53 (2): 409-451.
21. Leung, M. C. M., & Zhang, J. (2008), "Gender preference, biased sex ratio, and parental investments in children in single-child households," *Review of Economics of the Household*, 6(2): 91-110
22. Manski, C.F. (1993b), "Identification of endogenous social effects: the reflection problem," *The Review of Economic Studies*, 60(3): 531-542.
23. March of Dimes, PMNCH, Save the Children, WHO. *Born Too Soon (2012): The Global Action Report on Preterm Birth*. Eds CP Howson, MV Kinney, JE Lawn. World Health Organization (2012) Geneva
24. Marston, C., King, E., (2006). *Factors that shape young people's sexual behavior: a systematic review*. *Lancet*, 368 (9547):1581-1586.
25. Mensch, B. S., Bruce, J., Greene, M.E., (1998). *The Uncharted Passage: Girls adolescence in the Developing World*. Population Council



26. McLaughlin, Diane K., and Daniel T. Lichter. (1997), "Poverty and the Marital Behavior of Young Women," *Journal of Marriage and the Family*, 59 (3): 582-594
27. Mugenda O. M & Mugenda A.G (1999), "Research Methods; Quantitative and Qualitative Approaches," Africa Center for Technology Studies (ACTS) press, Nairobi Kenya
28. Mueller, E. (1983), "Measuring women's poverty in developing countries. In (M. Buvinic, M.A. Lycette & W.P. Greevey, eds.) *Women and Poverty in the Third World*. Pp. 272- 285. The John Hopkins University Press, Baltimore.
29. Sarkar, Prosannajid (2009). "Determinants and Effect of Early Marriage in Bangladesh," *Research Journal of Applied Sciences*, 4 (5): 178-184
30. Savitridina (1997), "Determinants and Consequences of Early Marriage in Java, Indonesia," *Asia Pacific Population Journal*, 12(2): 25-48
31. Sharma,A.K., Verma,K., Khatri,S., KAnnan,A.T., (2002), "Determinants of Pregnancy in Adolescent in Nepal," *Indian Journal of Pediatrics*, 69: 19-22
32. Singh, Susheela., and Renee Samara (1996), "Early Marriage Among Women in Developing Countries," *International Family Planning Perspectives*, 22: 148- 157 & 175
33. Thornton, A., Axinn, W. G., and Teachman, J. D. (1995). "The influence of school enrollment and accumulation on cohabitation and marriage in early adulthood," *American Sociological Review*, 60 (5): 762-774.
34. UNICEF, (2005). *Early Marriage: A Harmful Traditional Practice*. UN Committee on the Elimination of Discrimination Against Women (CEDAW), (1994). CEDAW General Recommendation No. 21: Equality in Marriage and Family Relations.
35. United Nations Children's Fund (2001). *Early Marriage and Child Spouses*. Florence, Italy: UNICEF.
36. WHO (2012). *Adolescent Pregnancy. Fact Sheet*. Retrieved November 14, 2012,
37. UNFPA (2007). *Giving Girls Today and Tomorrow: Breaking the Cycle of Adolescent Pregnancy*. New York: UNFPA.
38. UNAIDS, UNICEF (2001). *A survey of Teenagers in Nepal: for life skills development & HIV/AIDS prevention, Nepal*.
39. Voeten, H., Rijksuniversiteit te Utrecht., UNITWIN Network., & Ecumenical Institute for Namibia (1995), "Teenage pregnancy in Namibia: Problems, causes, and policy recommendations. Utrecht] Netherlands: Dept. of Cultural Anthropology, University of Utrecht.
40. WHO (2007). *Adolescent pregnancy-Unmet needs and undone deeds: A review of the literature and programmes: Issues in Adolescent Health and Development*.
41. WHO (2008). *Adolescent Pregnancy. MPS Notes, Department of Making Pregnancy safer, Vol 1. No.1.*
42. WHO (2012a). *Adolescent pregnancy. Maternal, newborn and adolescent health. Available International Planned Parenthood Federation (2000). IPPF Charter on Sexual and Reproductive Rights.ISBN 0860891097.A Banson production, p52.*



ALTERNATIVE CONCEPTIONS OF ELEMENTARY SCHOOL STUDENTS IN ASTRONOMY

Felicita G.A.

Research Scholar

Department of Education

EFL University, Hyderabad, India

ABSTRACT

Students do not come into formal instruction without any pre-instructional knowledge or beliefs about the phenomena and concepts to be taught in astronomy. Besides, Children develop their everyday concepts about the world based on daily observations, from text books and conversations with adults. During the process of acquisition of this knowledge, learners may view the world in the form of weird concepts which are deviant from accepted notion of knowledge, termed as alternative conceptions or alternative frameworks or misconceptions. The acquired knowledge of elementary astronomy is a part of basic scientific literacy. Alternative conceptions in astronomy are a road block to new scientific learning. If the alternative conceptions are not addressed at the elementary level, the probability of sustaining the alternative conceptions may continue at higher learning as well. Therefore, it is important for teachers to have a clear understanding of the alternative conceptions that students bring with them into the science classroom. This research paper attempts to identify alternative conceptions of elementary school students in certain astronomical topics like apparent motion of sun and moon, day and night, seasons, phases of the moon etc. The sample consists of 56 seventh grade students from a school in Hyderabad. An Astronomy test consisting of six open ended questions prepared by the researcher was administered to the students. Students' responses were analysed to elicit information about their knowledge and understanding of astronomical phenomena and to identify any alternative conceptions held by them. Results showed that students exhibited many alternative conceptions about these astronomical phenomena. Implications and recommendations were made for teachers to integrate well – constructed pedagogical design in the teaching - learning process, so that alternative conceptions in elementary astronomy could be redirected to conceptual change among learners.

KEY TERMS: Science education, Astronomy, Alternative conceptions, Conceptual change

INTRODUCTION

Students cannot be thought of as empty containers to be loaded with the knowledge but rich with experience, knowledge and beliefs of their own understanding of the phenomena that occur in nature. Prior to beginning school, children have a wealth of experiences, and these have led them to develop a common-sense understanding of their social and natural environment. Children construct an initial understanding of the observed world based on their everyday experience from the environment, interaction with parents and friends, media, culture and socialization factors. They bring ideas that have formed from their daily experiences to their learning environment (Driver & Bell, 1986). Children synthesize (construct) their knowledge of the world based on two information sources—observations of the world and explanations given by other people (Kikas, 2003).

The Next Generation Science Standards (NGSS) are built on the notion that learning is a

developmental progression in which children continually build on and revise their knowledge and abilities, starting from their observations and initial conceptions about how the world works. They act as strong frameworks to interpret things that happen in classrooms and they help people to interact with their environment. It is these improper interpretations that are collectively known as alternative conceptions. Different researchers have labelled students' constructs that are alternative to the accepted science beliefs as misconceptions, preconceptions, children's science, alternative frameworks, non-scientific views, erroneous notions, private versions of science, synthetic mental models, unfounded beliefs, and naïve notions (e.g., Finegold & Pundak, 1990; Sneider & Ohadi, 1998; Vosniadou, 1991; Wandersee, Mintzes, & Novak, 1994). The preferred term used by many researchers is *alternative conception* because "it refers to experience-based explanations constructed by a learner to make a range of natural phenomena and objects intelligible, but it



also confers intellectual respect on the learner who holds those ideas" (Wandersee, Mintzes, & Novak, 1994, p. 178).

The term alternative conceptions refer to ideas that people have which are inconsistent with scientifically acceptable ideas. Sometimes these can be individual versions of students' understanding of concepts that have not been tested through scientific methodology. Following an extensive review of the research literature, Wandersee, Mintzes, & Novak (1994) generated "emerging" research-based claims relating to alternative conceptions in science:

Students come to formal science instruction with a diverse set of alternative conceptions concerning natural objects and events.

The alternative conceptions that students bring to formal science instruction cut across age, ability, gender, and cultural boundaries.

Alternative conceptions are tenacious and resistant to extinction by conventional teaching strategies.

Alternative conceptions have their origins in a diverse set of personal experiences including direct observation and perception, peer culture, and language, as well as in teachers' explanations and instructional materials.

Learners' prior knowledge interacts with knowledge presented in formal instruction, resulting in a diverse variety of unintended learning outcomes. Instructional approaches that facilitate conceptual change can be effective classroom tools.

Exploring children's misconceptions about the nature and natural phenomenon and the sources of their knowledge may strengthen the teachers' efforts to improve their teaching practices about science concepts. For meaningful learning to take place, teachers should consider what knowledge the learner already possesses. Knowing children's preconceptions will provide the teachers, information about the children's mental models that they have constructed before the instruction. "If their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom" (How People Learn, Bransford, Brown & Cockling, p. 14-15).

By this way it will be possible to create instructional methods, strategies and aids that may help the students to change the wrong mental models and construct meaningful and useful ones. Therefore, teachers should be well informed about the alternative conception's children hold in order to facilitate conceptual change through effective strategies of teaching astronomy. In the course of conceptual development, the children eventually

revise these initial constraints and can acquire the scientific conceptions that is presented to them in the course of schooling (Samarpongavan et al., 1996). Therefore, this study attempts to explore children's knowledge about the basic astronomical bodies such as sun, moon and stars and astronomical phenomena such as day and night, occurrence of seasons and phases of the moon.

SOURCES OF ALTERNATIVE CONCEPTIONS

The literature suggests that there are many reasons why students hold alternative frameworks about astronomical objects and events. A common problem is one of reconciling everyday experiences, such as observing the rising and setting sun, with abstract models, which attempt to explain why this occurs (Vosniadou, 1991). Another factor is the difficulty of interpreting two-dimensional diagrams, which attempt to represent three-dimensional space (Parker & Heywood, 1998) or from the enormous astronomical scales of size, distance, and time. Misleading diagrams and illustrations in the traditional science textbooks can encourage alternative frameworks (Ojala, 1992). Books in which text and diagrams do not correspond can also be a source of alternative frameworks (Vosniadou, 1991). A further reason child hold alternative frameworks could be that mythological beliefs of the society affect children's astronomical beliefs.

In India, children start learning rudiments of astronomy from primary classes, as a part of science or geography. Textbooks recount explanations of phenomena, but more in an informative fashion rather than as reasoned arguments. The use of diagrams is limited and not very carefully done. Consequently, even the diagrams are rote-learned and reproduced in examinations. Besides, in India many festivals and rituals are associated with astronomical phenomena. The lack of scientific temper and adherence to superstitions like astrology are found in the highest strata of society. Astrological beliefs are in direct conflict with astronomy, they hinder correct and scientific understanding of the world, promote wrong beliefs about the nature of science, and consequently hamper the development of scientific attitude. Astrological beliefs can be even more damaging, since they can lead to irrational decisions in daily life. Such beliefs are transmitted in groups by passive social influence and they do not change easily or simply in response to disconfirming evidence.

Alternative conceptions often result when new experiences are interpreted considering prior experiences, and new understandings are grafted onto prior understandings. Memories in general are retrieved by first recalling the schema and then the associated details. If a concept does not fit a pre-existing schema and is not at all that salient, it likely will be forgotten or even rejected. The origin of a



given alternative conception is often difficult if not impossible to determine. Misunderstanding, miscommunication, and even a misapplication of well-established physical principles leads to the formation of alternative conceptions. According to Neil F. Comins (1993) the following are the various sources for alternate conceptions: Factual Misinformation, Media Minimalism, Cartoons and Science Fiction, Mythical Concepts, Language Imprecision, Erroneous Personal Cosmology, Incomplete Understanding of the Scientific Process and Scientists, Incomplete Information / Reasoning, Misinterpreting Sensory Information and Inaccurate or Incomplete Observations.

ALTERNATIVE CONCEPTIONS IN ASTRONOMY

Extensive research on children's cosmologies (primarily examining their understanding of the Earth, Sun, Moon, and stars as astronomical objects) has found that young children have constructed alternative frameworks that they use to interpret their world. Children's alternative frameworks also include their understanding of the Sun, Moon, and stars, how and why these objects move, and how they cause familiar phenomena such as the day-night cycle, seasons and phases of the Moon. According to Dunlop (2000), many children have difficulty understanding some concepts in astronomy, such as the size and shape of the Earth; the cause of day and night; the cause of seasons; and the movements of the Earth, the Sun, and the Moon. In this regard, Klein (1982) and Jones, Lynch and Reesink (1987) have found that only a few primary school pupils are able to model the relationships between the Sun, the Earth, and the Moon.

Alternative conceptions of students in these basic astronomical events that were documented in the previous research are presented here.

Children's explanations for the day-night cycle cover range of possible non-scientific mechanisms, including clouds occluding the Sun, the motion of the Sun (moving out into space, up and down on the ground, going to the other side of the Earth or going around the Earth), and that the Earth moves around the Sun (Baxter, 1989; Vosniadou & Brewer, 1994). These studies suggest that while elementary-aged children know that the Sun is involved in the switch from day to night, some may not be familiar with the apparent motion across the sky. Another prevalent alternative conception is that movement of the clouds causes day and night. Sharp (1995) examined 6-7-year-old children's conceptions of different astronomical phenomena after they had been involved in teaching activities targeting the various phenomena. The results showed that most children recognized the shape of the Earth and the Sun as spherical and indicated that the Sun is much bigger than the Earth. However, they could not provide adequate explanations for the day/night cycle.

Another common alternative conception is distance between the Earth and the Sun causes the seasons, an extension of this being that the Earth has a highly elliptical orbit, changing the distance between the Earth and the Sun (Starakis & Halkia, 2014).

Sharp (1996) in his study, found that the majority of 10-11 year-old children concluded that the Sun and the Earth resemble the shape of a sphere, but they did not know and did not readily accept that the Earth rotates around its axis. They were, furthermore, unable to relate this movement to the day/night cycle.

Children's explanations for the motion of the Moon also suggest that many children have a limited understanding of the apparent motion of the Moon. From elementary school through to college levels, the 'eclipse model' as an explanation for the phases of the Moon (in terms of the Earth blocking the light from the Sun and causing a shadow across the Moon) has been found to be the most commonly held alternative conception. (Trundle, Atwood & Christopher, 2002).

Radhakrishnan (2001) conducted a study to find the misconceptions of children in Kerala and revealed that, 95% knew that Sun rises in the East and 94% knew that Sun sets in the West. Only 25% said that Sun emits light at night also. About 75% said that Sun is the biggest star and about 55% said that we can replace Sun with Moon. About 80% said that Sun goes under the sea at night as they have seen it directly and in picture and videos. About 40% said that the position of Sunrise and Sunset changes over the year. Only 56% know that time of sunrise and sunset changes every day. Only 2% knew that sun does not come overhead every day.

Vosniadou and her colleagues conducted a series of experiments investigating children and adults' knowledge of observational astronomy. In addition to studies conducted in the USA, they collected data from children and adults in India (Samarapungavan *et al.*, 1996) and Greece (Vosniadou & Brewer, 1990). These studies have provided us with specific information on children's and adults' knowledge of the size, shape, movement, temperature, composition, and location of the Earth, Sun, Moon, and stars, and their explanations of phenomena such as the day-night cycle, the seasons, the phases of the Moon, and the eclipses of the Sun and the Moon. They showed that most children have well defined mental models (Vosniadou, 1992, Vosniadou & Brewer, 1994). They differentiated three types of models: (a) initial models that are derived from and are consistent with the observations of everyday life, (b) synthetic models that are the attempts to integrate scientific and everyday information, and (c) scientific models that agree with the accepted scientific view.

PURPOSE OF THE STUDY

The main purpose of the study is to identify the alternative conceptions of elementary school students



about celestial bodies and basic astronomical events such as the sun, moon, seasons, day and night cycle and the phases of the moon.

RESEARCH QUESTION

What types of alternative conceptions do elementary students' have about celestial bodies and basic astronomical events?

METHODOLOGY

Based on the previous literature, the researcher framed a free response test consisting of five open ended questions. The following open ended questions were included in the questionnaire:

1. What is moving Sun or Earth?
2. Where did the Sun go at night?
3. What causes day and night?
4. How do seasons occur on earth?
5. What causes day and night?

This free response test was administered to a sample of 56 seventh grade students in a school at Hyderabad. The responses to this test were analysed. The main thrust of data analysis for this study is centred on the qualitative data generated from students' justifications for their answers/ responses to the open-ended questionnaire. The meanings from the statements and explanation given by the students are identified and interpreted in the following section.

FINDINGS AND DISCUSSIONS

The study revealed that alternative conceptions do exist among students in the just mentioned astronomical concepts and phenomena. The alternative conceptions identified for each open-ended question are presented below with a discussion.

1. What is moving Sun or Earth

This question was asked to find out whether students recognize that the Earth orbits around the Sun and the apparent motion of the sun. About 80% of the participants gave the correct response but without giving any supporting evidence or explanation about the apparent movement of the sun. Although all students had learned about the motions of the Earth, 20% of the participants were confused about what went around what. Some of their responses contained the following alternative conceptions:

Sun moves around the earth once a day.

Sun moves around the earth, that's the reason we have day and night.

2. Where did the sun go at night

The analysis of the responses obtained to an item "where did the sun go at night" reveal that most of the students (80%) have scientifically correct understanding. Their response was "the Sun is on the

other side of the Earth during the night." Since the Earth spins on its axis once a day, sometimes we are on the side of the Earth facing the Sun, and sometimes we are on the side of the earth facing away from the Sun. Some students (12%) also expressed an idea that the "Sun is *beneath* the Earth during night-time". Although this idea is closer to the scientific idea than some of the others, they are not thinking of the Earth as a sphere in space, but rather as an object with an absolute down direction—so that some celestial objects are above the Earth and others are beneath it. A few (8%) also expressed a flat Earth viewpoint by responding as the Sun being "below the horizon" or "over the horizon" in their explanation. The following alternative conceptions were found in their responses:

Sun goes to the other side of the earth during the night.

We turn away from the sun at night and thus we cannot see the sun.

Sun goes beneath the earth.

The earth faces away from the sun due to its motion.

3. What causes day and night

This question was asked to find out if students can relate the earth shape and its spin to why we have day and night. Interestingly, children held naive views in explaining why the day and night occur. Although 43% of the students explained correctly what cause of day-night, 52% of the students have the misunderstanding and 15 % did not respond. Some of the responses of the participants clearly explain their alternative conceptions:

Sun's moving down to the ground in the evening and coming up in the sky causes day and night.

Clouds move in front of the Sun and block its light.

It is caused by sun going around the earth once a day.

Though some students gave the correct explanation that due to earth's rotation day and night occur but had a misconception that sun and moon are stationary at the opposite side and earth in the middle rotating. Some children explained day and night by extending their everyday experience with light. If the Sun is no longer visible, it must be hiding behind something, such as behind clouds, mountains, or the Moon. The daily usage of words such as sunset and sunrise have caused misconception in the children that sun goes up and down which causes day and night. The same findings were recorded in the study conducted by Sadler (1987). The children provided accounts of the alternation of day and night in terms of the sun going down behind the hills or being covered by clouds, or they gave explanations based on the notion that the sun revolves around the earth



or that the earth revolves around the sun or rotates around its axis. There was one explanation identified by Sadler (according to which the moon blocks the sun at night) which was not identified in the present sample. Also, in the study conducted by samarpungavan et al. (1996) the Indian children who explained the day-night cycle say that the sun and moon go down into the ocean underneath the earth. This idea was not found in the participants of this study.

4. How do seasons occur on earth

It was found that students have alternative conceptions about the phenomena of day and night. Out of 56 participants, just 10% of the participants completely and accurately answered the question, 41% participants replied that the seasons were related to the tilt of the Earth, and 49% participants answered incorrectly. The correct answer to this is: seasons on the Earth are the result of the angle of the Sun's rays. The different alternate conceptions surfaced in their responses were:

Seasons are caused by the Earth's distance from the Sun (the distance model)

The Earth comes closer to the Sun during summer and moves away in Winter.

Clouds in winter block light coming from the Sun weakening it.

The Sun is hot in summer and cool in winter.

Some mentioned that the direction of the Sun's rays caused the seasons but made no specific mention of the Earth's tilt. A few commented that the Earth faces away from the Sun in winter, evidently confusing winter with night. Some students also discussed about climate which is not the effect, but the cause for seasons to occur. The dominant alternative concept for the cause of seasons was that the distance from the Sun to the Earth changed during the year; when the Earth is closer to the Sun, we experience summer and when the Earth is farther, we experience winter. This has been the dominant research findings in many studies.

5. What causes the phases of the moon

The analysis of student responses for the *moon phases* showed another misconception area of astronomy for young children. In this study, only 10% of the participants gave the correct explanation and majority of the participants (90%) held common alternate conception about the cause of Moon phases which are caused by the Earth's shadow. Some of their responses which contained misconceptions are:

Clouds cover the part of the moon that we cannot see;

The shadow of the earth falls on the moon, blocking our view;

Phases of the Moon are caused by the Sun covering Moon.

It is very clear why students have misconception about the moon phases because the phases are explained in terms of the portion of illuminated side of the moon visible from the earth. students' conceptions of the lunar phases are divergent from the scientific perspective, yet they also have components that are consistent with it. It appears that some students adopted some scientific information such as the moon's revolution around the earth or the observed shapes of the moon. However, they also constructed their own notions that are inconsistent with the scientific view. For example, some students asserted that cloud coverage determines the lunar phases, whereas others believed that one's location on the earth with respect to the moon's position determines the lunar phase.

The results presented in this research indicate that there are many such mixed models expressed as alternative conceptions about simple astronomical phenomena in students' responses. The majority of grade 7 students in this research held alternative conceptions or were unable to provide a scientifically correct explanation about concepts that are supposed to be covered in primary school such as, the causes of day and night, the lunar phases and the seasons.

TEACHING FOR CONCEPTUAL CHANGE

The influence of everyday experiences, mythological beliefs, and teaching tools used in the schools was found to be a key reason for the alternative frameworks held by students. A failure to address students' alternative conceptions could lead to an inability on the part of the students to understand subsequent concepts. Assessing students' knowledge base and using appropriate teaching tools and methods would foster students' understanding and help reduce their alternative conceptions regarding astronomical concepts and events.

Traditional teaching methods (whole class instruction, failing to consider students' preliminary knowledge, too little time for discussions, too much emphasis on factual knowledge) have proven inefficient in changing children's preliminary knowledge if it is consistent and conceptual change is needed (e.g., Diakidoy & Kendeou, 2001; Vosniadou et al., 2001).

The most important single factor influencing learning is what the learner knows. Ascertain this and teach accordingly (Ausubel, 1978). Research has shown that preconceived ideas in science develop early in a student's experience and can be tenacious. Sometimes these ideas are congruent with scientific knowledge. Other times they conflict with the scientific view. This formation of students' conceptions, which may be correct, partially correct,



or incorrect, continues throughout their school years. If these ideas are ignored, they may get in the way when new ideas are introduced. They simply do not go away, even as students' progress from elementary grades to middle school and even into high school and adulthood. Thus, simply presenting a new concept or telling the learners that their views are inaccurate will not result in conceptual change.

Teaching for conceptual change primarily involves 1) uncovering students' preconceptions about a topic or phenomenon and 2) using various techniques to help students change their conceptual framework. Teaching for conceptual change requires a constructivist approach in which learners take an active role in reorganizing their knowledge. Cognitive conflict strategies, derived from a Piagetian constructivist view of learning, are effective tools in teaching for conceptual change. These strategies involve creating situations where learners' existing conceptions about phenomena or topics are made explicit and then directly challenged in order to create a state of cognitive conflict or disequilibrium. Cognitive conflict strategies are aligned with Posner's (1982) theory of conceptual change in that their common goal is to create the four conditions necessary for conceptual change. That is, learners must become dissatisfied with their current conceptions and accept an alternative notion as intelligible, plausible, and fruitful.

The goal of teaching for conceptual change is for students to adopt more fruitful conceptions while discarding the misconceptions they bring to the learning environment. Science educators should create such learning environments in which the children meet challenges that can encourage them to activate and evaluate what they already know in the light of scientific knowledge that they encounter in the school. By this way it will be possible to promote a conceptual development which is consistent with our existing scientific knowledge about the nature.

To promote conceptual change teacher should integrate educational technology, such as 2D models, 3D visualization, animations, movies, formative assessment probes, concept cartoons, interactive simulations, kinesthetics and use the planetarium as an educational resource (Türk & Kalkan, 2015) which can offer explanations from two different reference systems (from a point on the Earth's surface or from a point external to the Earth).

CONCLUSION

The results of study showed that many seventh graders possess very limited ideas about the apparent motion of celestial bodies, day and night cycle, phases of moon and seasons. There some reasons why students encounter difficulty of understanding about the Earth-Moon-Sun concepts. Common reasons are one of reconciling out of school experiences, such as observing the rising and setting sun, seeing stars only at night, moon during the night,

school experiences, such as misleading diagrams, ambiguous terminology (rising sun, setting sun) and inappropriate teaching methodology used by teacher. The findings of this study may provide impetus to teachers and curriculum developers for designing classroom activities and teaching strategies that could address students' alternative conceptions in astronomy related topics and textbook writers to provide ample visualisations, graphs, concept cartoons, and explanations to bring more conceptual clarity to the readers. These inputs might be helpful for the science teachers to use strategies such as conceptual change model to transact the concepts and subsequently science learning of students especially astronomy related topics may be optimised.

REFERENCES

1. Ausubel, D., Novak, J. & Hanesian, H. (1978). *Educational psychology: A cognitive view*. 2nd ed. New York: Holt, Rinehart, and Winston.
2. Baxter, J. (1989). *Children's understanding of familiar astronomical events*. *International Journal of Science Education*, 11, 502–513
3. Bransford, J. D., Brown, A. L., & Cocking, R. R., eds., 1999, *How People Learn: Brain, Mind, Experience, and School*, Washington: National Academy of Sciences.
4. Comins N.F. (1993). *Sources of Misconceptions*. In *Third International Seminar on Misconceptions and Educational Strategies in Science and Mathematics* J. Novak, ed, Ithaca, NY: Cornell University, 1993.
5. Cumhuri, T. & Hüseyin, K. (2015). *The Effect of Planetariums on Teaching Specific Astronomy Concepts*. *Journal of Science Education and Technology*. 24. 10.1007/s10956-014-9516-6.
6. Diakidoy, I.-A. N., & Kendeou, P. (2001). *Facilitating conceptual change in astronomy: A comparison of the effectiveness of two instructional approaches*. *Learning and Instruction*, 11, 1–20.
7. Driver, R. and Bell, B. (1986). *Students' thinking and the learning of science: A Constructivist view*, *School Science Review*, 67, 443 (1986).
8. Dunlop, J. (2000). *How children observe the Universe*. *Publications of the Astronomical Society of Australia*, 17, 194–206.
9. Finegold, M., & Pundak, D. (1991). *A study of change in students' conceptual frameworks in astronomy*. *Studies in Educational Evaluation*, 17, 151–166.
10. Jones, B., Lynch, P., & Reesink, C. (1987). *Children's conceptions of the Earth, Sun and Moon*. *International Journal of Science Education*, 9(1), 43–53.
11. Klein, C. A. (1982). *Children's concepts of the Earth and the Sun*. *Science Education*, 65(1), 95–107.
12. Kikas, E (2003). *Constructing knowledge beyond senses: worlds too big and small to see*. Toomela, Aaro (ed.). *Cultural Guidance in the Development of the Human Mind*. Westport, CT & London: Ablex, pp. 211–227.



13. Kikas, E. (1998). *The impact of teaching on students' definitions and explanations of astronomical phenomena. Learning and Instruction*, 8(5), 439–454.
14. Ojala, J. (1992). *The third planet. International Journal of Science Education*, 14(2), 191–200.
15. Parker, J., & Heywood, D. (1998). *The earth and beyond: Developing primary teachers' understanding of basic astronomical events. International Journal of Science Education*, 20(5), 503–520.
16. Posner, G. J., Strike, K. A., Hewson, P. W., & Gertzog, W. A. (1982). *Accommodation of a scientific conception: Toward a theory of conceptual change. Science Education*, 66, 211–227.
17. Philips, W.C. (1991). *Earth science misconceptions. The Science Teacher*, 58, 21–23.
18. Radhakrishnan, R. (2013). *Astronomical Misconceptions Prevalent Among High School Students of Kerala. Issues and Ideas in Education*, Vol. 1, No. 2 September 2013 pp. 151–159.
19. Sadler, P. (1992). *The Initial Knowledge State of High School Astronomy Students (Science Misconceptions)*, Dissertation Abstracts International, 53, no.05A, 1470.
20. Samarapungavan, A., Vosniadou, S., & Brewer, W.F. (1996). *Mental models of the Earth, Sun, and Moon. Indian children's cosmologies. Cognitive development*, 11, 491–521.
21. Schwandt, T.A. (1994). *Constructivist, interpretivist approaches to human inquiry. In N.K.Denzin & Y.S. Lincoln (Eds.), Handbook of qualitative research (pp. 118–137). Thousand Oaks, CA: Sage.*
22. Sharp, J. G. (1995). *Children's astronomy: Implications for curriculum developments at Key Stage 1 and the future of infant science in England and Wales. International Journal of Early Years Education*, 3(3), 17–49.
23. Sharp, J. G. (1996). *Children's astronomical beliefs: A preliminary study of Year 6 children in south-west England. International Journal of Science Education*, 18(6), 685–712.
24. Sneider, C. & Ohady, M.M. (1998). *Unravelling students' misconceptions about the Earth's shape and gravity. Science Education*, 82(2), 265–284.
25. Starakis I. & Halkia K. (2014). *Addressing k5 students' and preservice elementary teachers' conceptions of seasonal change, Physics Education (IOP Science)*, 49, 2, 231–239, DOI: 10.1088/0031-9120/49/2/231.
26. Taylor, I., Barker, M., & Jones, A. (2003). *Promoting mental model building in astronomy education. International Journal of Science Education*, 25, 1205–1225.
27. Trundle, K. C., Atwood, R., & Christopher, J. (2002). *Preservice elementary teachers' conceptions of Moon phases before and after instruction. Journal of Research in Science Teaching*, 39(7), 633–658.
28. Vosniadou, S. & Brewer, W. (1990) *A cross-cultural investigation of children's conceptions about the Earth, the Sun, and the Moon: Greek and American data. In H. Mandl, E. DeCorte, N. Bennett and H. Friedrich (eds) Learning and Instruction: European Research in an International Context (Oxford: Pergamon), pp. 605–629.*
29. Vosniadou, S. (1991). *Designing curricula for conceptual restructuring: Lessons from the Study of knowledge acquisition in astronomy. Journal of Curriculum Studies*, 23(3), 219–237.
30. Vosniadou, S. (1994). *Capturing and modeling the process of conceptual change. Learning and Instruction*, 4(1), 45–69.
31. Vosniadou, S., & Brewer, W. F. (1992). *Mental models of the Earth: A study of conceptual change in childhood. Cognitive Psychology*, 24, 535–585.
32. Vosniadou, S., & Brewer, W. F. (1994). *Mental models of the day/night cycle. Cognitive Science*, 18, 123–183.
33. Vosniadou, S., Ioannides, C., Dimitrakopoulou, A., & Papademetriou, E. (2001). *Designing learning environments to promote conceptual change in science. Learning and Instruction*, 11(4), 381–419.
34. Wandersee, J. H., Mintzes, J. J., & Novak, J. D. (1994). *Research on alternative conceptions in science. In D. L. Gabel (Eds.), Handbook of research on science teaching and learning (pp. 177–210). New York: Simon & Schuster and Prentice Hall International.*



A STUDY OF FIRST LITERARY ARABIC SHORT STORY 'THE TRAIN'

Dr. Irshad Ahmad Mir

Department of Arabic language and literature,
Islamic University of Science and Technology
Awantipora Kashmir India.

Literary activities develop in the 19th century on new lines. Among those three new forms of literature were introduced in Arabic literature during the last decade of nineteenth century. The first literary short story "the train" had been written in Arabic in 1917 by Muhammad Tymoore, a well-known Arabic writer and literary person. This fiction has been written to draw the real picture of the Egyptian society and the problems which the peasants face due to the misconduct and misuse of the power by the elite class. The concept and mindset of the people was that only elite class have exclusive right to get good and quality education. They are the only people who can live civilized life and maintain marvelous life style. While observing the socio-political conditions of Egypt, the writer has raised the issue of peasants and the problems which they face in the society but simultaneously, He has started the fiction in a dialogue form to discuss the issue with the civilized and well qualified people in order to reach any conclusion to solve the issue but he only concluded it with the suggestions of both the categories of the society with out any conclusion. Hence it is up to the readers to find out the solution of the problem after going through this fiction. I tried my level best to present the conclusion of the fiction so that the people of the day may get some clues from the same to spend a peaceful life without any discrimination because it is very famous quote and slogan of the day that we should make unity in the diversity. (1¹)

The writer initiated fiction by drawing attention towards the natural scenery of early dawn and the fresh air by which people get rid of from their sufferings and problems. He says that even though we have such a beautiful and fresh air and natural beauty but I am still in tense and fail to understand

how to overcome the problems which I face and how it is possible to get rid from it.

To get rid of from the tiresome conditions so as to get some relief, he tried to read the fiction of French writer Maupassant but couldn't achieved the respite due the sadness and mental disturbance. So he left the book and sat on the chair to think over it to overcome the problems. When he failed to overcome the sadness, he left his home and travelled some where else where he may get some relief. While travelling he reached railway station and started his journey without knowing the destination. He boarded the compartment of the train to reach his village to get some relief. He sat near the window and no one was in his buogie when he took his seat. After some time, Newspaper seller passed by him while he was saying loudly: Newspaper... AND ... with their Arabic name. He purchased one newspaper and started reading till an aged person having hand kerchief in his one hand. He joined him and soon another person a young boy joined them an old student to him. The student got admission in Cairo and was going to his home to spend his holidays in the village. He opened his bag and started to read a story book. They were about to leave when fourth one joined them. They all were silent and every one of them was busy in their work. The writer was busy in reading newspaper, the student was reading a story book and old man was busy in reciting the holy words and sentences. The train was about to depart from station, fifth person joined them and they started their journey. He was Turkish in complexion and origin. Now train started to run and they were now five persons in one compartment. When they reached shibra station, this Turkish person asked him whether there is any latest and interested news. He replied: No sir there is not any interested news except about a literacy campaign and fight against illiteracy. He without any permission snatched his newspaper and started to search for some excited news at the Shibra railway station. Soon one more person

¹ تاريخ الادب العربي لأحمد حسن الزيات، دار الثقافة، بيروت. لبنان.



boarded and joined with them, having some check fox on his face. The Turkish started to read the newspaper and he wrapped it and then he throw it on the earth and said angrily they want to spread the education and to fight with illiteracy. Their aim is to equal them with elite class and are ignorant about the facts. They committed a great sin by this act will face consequences.

Then they started discussion about the issue which is as under:

He said: what sin is it?

The Turkish replied: you are still young and you don't know the real treatment of peasants or farmers to get the real goal.

He again asked: which type of treatment u mean? Is there any better way than education.

Turkish replied angrily and furiously: whip or lash and government needs no finance for the same as for as education is concerned that needs lot of money and financial support. And farmers only need lashes being habitual of it since their birth and will get till their death. Then the village surpunch or chowkidar replied to him: you are right brother because I live there and I am well experienced.

Then Turkish gazed at him and said: do you live in that village?

He replied: I am by birth from that village dear brother.

The student was silent and was ashamed to indulge in discussion with the elders. So, asked him: dear sir we are human and it is our duty to respect all the humans and value them equally without any discrimination.

Then village surpunch again said, I am well experienced and I agree what Turkish person has said because farmer is not ready to accept any language except the language of stick.

Then Turkish said with ridicule: no body can educate better than this person as he is well experienced.

The student who couldn't control his emotions said to him: respected sarpanch: you are absolutely right because you have made them habitual of the same. If you would have made good relations with them then in response you may get the same but you always took harsh steps to civilize them and in return you got the same fruits.

The sarpanch replied: this is the result of education.

At last, sarpanch requested to teacher that you are well educated among us and well experienced, so helps us by your opinion about the issue:

The teacher replied: don't educate the lower cast people of the society.

The student responded; it is sin dear teacher to have such thoughts and feelings. There is another way which is more valuable and respectable and civilized way than to create discriminations and

differences between rich and poor. A good character and civilized behavior is more important than to have a money.

Then teacher replied to him with abhorrence: you are getting the education which is fruitless and you have no guts and don't know how to talk to elders. Neither have you known the values of the elders because of the education which is being taught nowadays nor do have moral value to behave as a human being.

The above conversation helps to understand the value of life and would like to conclude it in ended discussion. The writer has ended this story with out any conclusion so that readers themselves decide the conclusion as issue being raised in the fiction is peasantry rights and their education and to raise the voice against those who try to make confusion in society by different slogans with out having any proper knowledge on the issue so the focus is to fight against those who try to snatch the rights of farmers and to those who make decisions without any proper knowledge. This fiction helps to understand the value of life what so ever, so that people can get their rights in societies without any discrimination, on the basis of class, tribe, casts or religions and races.(2²)

² في القطار لمحمد تيمور مؤسسة هندواي للتعليم و الثقافة 2012



'WASTAGE' IS A CHALLENGE OF TRIBAL EDUCATION -A REVIEW BASED STUDY

Abhisek Panda

Student of RIE, Bhubaneswar

Laxmipriya Ojha

Guest faculty, DIET, Puri, Odisha

Article DOI: <https://doi.org/10.36713/epra6062>

ABSTRACT

India is a motherland of large number diverse communities. Tribes are called as 'Adivasi' or socially backward class people mainly lives in forest, hills, and rural remote area. There are more than 8.6 % of total population (Wikipedia) are tribes with around 645 tribes communities in India. In the question of tribal education a huge number of students are out of school, the literacy rate is below of national average literacy and significant literacy gap is found among the tribal male and female. So, in this juncture the objectives of this review based study are a comprehensive understanding regarding the Tribal dropout based on the existing literature reporting govt. initiatives and reasons of dropout in India. The study identified many reasons behind the dropout and explored equity and equality related issues faces challenges and a huge number of tribal children are out of school and deprived from accessing quality education

INTRODUCTION

Education is a powerful weapon by which we can eradicate the all types of social and economical barrier can help for the upliftment of the society, man making as well as the development of the nation. According to Nelson Mandela "Education is the most powerful weapon which you can use to change the World"

India is a motherland of a large number of tribal peoples with a diverse of socio economical background. Tribes are called as 'Adivasi' or socially backward class people mainly lives in forest, hills, and rural remote area. There are more than 8.6 % of total population (Wikipedia) are tribes with around 645 tribes communities in India. Many of them isolated themselves within their conservative culture (North Sentinel) and many of them trying to adopt the modern science and technology and enhance their culture and life by accessing the quality education. Some times its have a adverse effect. As a example Annamalai (1999) explained that how tribals loose their skill by so much depending on govt. Andamanese tribal forgot their fishing skill and boat making skill which they learned informally generation by generation, now waiting for speed boat if they want to go portblair In the field of education ,According to census 2011 report, the tribal literacy rate is only 59% where the overall literacy rate is 73%. Gender wise and state wise tribal literacy also

show a crucial image, Where Mizoram has the highest tribes literacy rate and Andhra Pradesh exists with lowest.

We all know that education is the fundamental right for all and it is the responsibility of the Govt. for provide it without any discrimination. But in real accessing education is far cry for million of children. A report published in 2017 in Telengana that more than half of total primary education enrolled child (52.57%) are dropped out in 1-8 grades among the Tribal communities(Times of India,2017). Keeping mind in this problem Government of India has started an innovative scheme for the motivated towards education of Scheduled Tribes, i.e., the establishment of Ashram schools, free of cost residential school etc. But still,the overall report in India is also not satisfactory.

So, In this aspect, many questions arises in our mind that How extent the govt. education related policy implemented successfully? Why dropped out rate is high among Tribes? What the precious literature said about this? For overall understanding this problem a review based study is very much necessary.

OBJECTIVES OF THE STUDY

It was aimed to provide a comprehensive understanding regarding the Tribal dropout based on



the existing literature reporting govt. initiatives and reasons of dropout in India.

MATERIALS AND METHODS

For selecting article, search was done in Google scholar with searching keywords ranging date from January 1991 to December 2020. There are so many downloadable articles, and researcher was selected total 23 articles were found. After exclusion of repetition, screening, finally selection were done on the basis of inclusion and exclusion criteria.

Searching Words

1. Tribal dropout in India
2. Govt. initiatives for tribal education

Inclusion Criteria

1. Full downloadable article in PDF form
2. Searched done Google Scholar
3. Time January 1991 to December 2020
4. Articles those discussed on tribal education
5. English language.

Exclusion Criteria

1. Articles other than dropout topics
2. Article of tribal dropout outside the India demography.

Data Characteristics

Among the articles, there were 21 original articles, 3 news paper articles. Yearly distribution of article was 1991-3, 1993- 1, 2004-1, 2009-1, 2011-1, 2012-1, 2014-4, 2016-2, 2017-3, 2018-4, 2020-2.

BRIEF REVIEW POLICIES ON INDIAN GOVERNMENT

After 73 years of independence, india still struggle with equity and equality related issues in education. Many childs are deprived from the education in the name of caste, class, religion, creed, gender etc. When European countries achieve the Universalisation of Elementary Education goals, then India strives for 100% enrolment. The central and state govt. of India initiate and adopts different schemes, policies, project like SSA, Operation Black board, RTE act, Mid day Meal scheme etc. Article 21-A ensure that all the Childs can access free and compulsory education without any discrimination up to age of 14. Article 46 also provides that state shall be care of educational and economical interest of the weaker as well as Scheduled caste, Scheduled tribes sections. RTE act is a milestone of Indian education system and it ensure the free quality education with importance of mother tongue. 25% reservation even in private school for backward children with no detention and zero rejection. Many of tribal students became dropped out for unavailability of school within reasonable distance, poor economic condition and medium of instruction related problems. Thatswhy govt. under the SSA programme, DPEP, Operation blackboard scheme , a huge number of primary school was established

within 1km distance and upper primary school within 3 km distance, started Mid day meal scheme for giving nutrition food which can also help for school retention and reduce dropout. Govt. provided post metric scholarship was started (1945) for encouraging tribal students towards professional , technical and non technical courses with financial support. This scheme is totally 100% central govt. funded. Govt. also establish KGBV residential school in Backward districts for providing free of cost education for girls with accommodation and security. Ministry of Tribal Affairs started Rajiv Gandhi National Fellowship Scheme (2005) with the help of UGC for financial support of completing higher education of tribal students. For making them economically efficient and self dependent , govt. opens Vocational training centres in tribal areas. Cental Govt. also give the scope for research in science and technology from abroad with full scholarship. Navodaya Vidyalayas also established with high infrastructures and trained teacher and providing all facilities for inculcate and bringout the rurau talent. Ashram school scheme(1991) was also started with a view to provide quality education with residential facility to ST students. Tribal students cannot be familiar with the science and technology based education if the syllabus is not linked with their culture. So, knowing their culture and understand them from their view point, total 14 tribal research institutes was established all over india. Except of these different state took different initiatives for providing quality education which help them for adjust with the modern society. But after all these, Tribal dropout problem still create the challenges for developing their communities. So, now we should know what are reasons behind their dropout after geting all types of support.

STUDIES ON TRIBAL DROP OUT

The Hindu (2018) indicates that Tribal dropout is increased after the school merging process under SATH-E project adopted by the NITI AYOJ in tribal belt as a reason of low quality education. Students were dropout because govt. dont provide them financial support and medium of instruction is not the mother tongue. It also criticised that the government's took decision to stop funds for ashram schools without providing a viable alternative.

Narmadeswer Prased (1991) conducted a comparison study among the traditional and modern system and tribal higher education ,found that the tribe's men want that type of education which may enables them to fit in to the modern world. Most of the students are dropping their education because the present syllabus and educational activities doesnt adjust with tribal culture . The author indicated that the tribe's men should concentrate more on skilled based occupations. Another important suggestion was, there should be setting up of special schools for



them where adequate attention for them is ensured. Bairathi (1991) has examined the impact of education on tribal life has explored that the school condition in tribal areas are very much unsatisfactory. The unavailability of trained teacher, single teacher problems, low infrastructures of the schools, drinking water facilities, play ground, unavailability of smart classroom are create challenges at all time. In such a condition quality education cannot be attained. So, these leads them to demotivated from education and this force them to drop their study. He suggest that by improving the infrastructure facilities to improve the conditions of education can reduce the Drop-out. Sarangi.C (2009) also stated that most of the students were dropout due to the reason of low infrastructure facilities. Gadgil and Dandekar(1991) has studied about the problem of wastages (enrolled but not complete their primary education) in tribal education by taking a batch of students in standard one in a given year following up in the subsequent years till the last grade are reached. They find that fifth Drop-outs from school before completing the final grading of primary education constitutes wastes; and the incidence of wastage is computed from the proportion of Drop-out to the initial enrolment in the first grade. He reached the conclusion that special attention by the teacher to a great extent can remove drop out.

The National Council of educational Research and training conducted a seminar on tribal education in India (1993), discussed the various fields of tribal education like the facilities available, coverage, wastage and stagnation, utilization of financial assistance, basic problem of tribal education, socio-economic problems, curriculum, methods and text books and the relative roles of Government and NGO in the education of tribal people. The seminar altogether has suggested a new revised curriculum for tribal education where tribal language got the importance by the teachers also is essential for the improvement in tribal educational attainment. Jay & Srihari (2014) studied on Paniyan tribes of Kerala and explored that Most of the dropped out children are living with their parents who are dropped out and illiterate. That's why unemployment and poverty problem is constant in their family. But now, with the help of different govt. schemes and awareness programme parents are aware that govt. want to upliftment their life style by providing the free and compulsory education. So, financial burden is not the cause of dropout, individual attitude is totally responsible for dropout problem. Against of this statement studies also identified that low socio economic status and negative parental attitude demotivate the students from education, as a result they are dropout(Mathur, 1999). Students think that if they are engage in any work which can reduce the financial burden of family is better than going to school (Gouda.S & Sekhar,T.V, 2014). Basumatary

(2012) conducted a study on School dropout and found that various factors such as poverty level, distance of school from home, transport facilities, quality of teachers, social environment and many other factors are responsible for it. Chugh, (2011) supported this study and said that poverty, low educational level of parents the weak family structure, pattern of schooling of sibling and preschool experiences, family background and domestic problems were help to create the negative environment that are responsible for school dropout. Gautam, V. (2004) explained the reasons for high dropout among tribal students in his wrong medium of instruction, the appointment of non-tribal teachers in tribal areas and communication gap between the teachers and tribal children are the causes of high dropout rates in tribal schools.

DISCUSSION ON REASON OF DROPOUT

From the above literature it is proved that, Even govt. took the responsibility for free and compulsory education, food and accommodation, financial support for higher education But although the dropout rates continue to remain unacceptably increasing specially among tribal students(Times of India,2017). Only one reason is not solely responsible for this,there are many factors which responsible for high dropout. Where we talks about girls education, Girls education can help self dependent, engage in job which can reduce family financial burden, Organise themselves, analyse the problematic situation for solve the problem, contribute for overall development which brought a huge change in society(I.E.D, 2020) but when we see the tribal education it lost its destination. So, we must briefly understand from the review, that what actually happened with them that why they leave from the school without complete the school education.

Reasons of Drop out

1. Language problem

Language related problem is one of the important problems for their drop out. Different tribal speaks different tribal language, but medium of instruction and teachers are sometimes unknown with this facts.

2. Unavailability of Books

Books are unavailable on their script and syllabus is not linked with their culture also a reason of school dropout.

3. Geographical Barrier

SSA, RTE act ensure the free and compulsory school education but due to the geographical barrier like location of village, hilly area, forest etc create a barrier for access the school education.

4. Poverty and unemployment



Due to the low economic status poverty and unemployment is the another cause for school dropout. Childs are engaged for earning money rather than education.

5. **Negative attitude towards education**

Many more tribal parents are illiterate, school dropout and they think that sending the child to school is a luxurious activity. In other hand alcoholism of parents and peer influence also the reason of dropout (Soren.D, 2016).

6. **First generation learner**

A lot number of tribal first generation learner enrolled in school (Banerjee. J, 2013) but before completing the school they are dropped out due to the adjustment problems, academic support and illiterate parents.

7. **Quality education**

It is the another vital issue for dropout . different ASER report states the challenging faces of quality education specially in tribal area related to trained Teacher, language policy, unsuitable syllabus ,infrastructure, drinking water ,facility, are the causes of tribal dropout etc.

8. **Caste Problem:** According to census 2011, caste related problem is a problem for dropout of deprived child. They faces discrimination in all situation everyday at the school.

CONCLUSION

In this 21st century when a tremendous development of science and technology thinks about the artificial intelligence, and make a society in another planet or space, then in another side a million of children struggle with fulfilment of their basic needs. Attaining minimum level of education is still of them out of mind. Our new education policy (2020) try to make smart classroom, online based teaching learning , create education hub, allow international universities for establish their new campus in India, but study explored equity and equality related issues faces challenges and a huge number of tribal children are out of school and deprived from accessing quality education. The time limit of sustainable development goals will complete by 2030, but till now India is far away for achieving these. Govt. must give more concentration especially on tribal education where dropout rate and gender gap on literacy are very high, for achieving the selected educational development goals like RTE Act, UEE goals, which can help the development of their society as well as the nation. Establishment of many schools in tribal areas is not only solution for the problems, govt. give the importance on counselling programme of both students and parents,

Arrange awareness programme in ground level with the help of different NGOs, and volunteers, engage the stakeholders for supervising the overall activities which can help for the enroll and retention all the students in age appropriate class, for reducing dropout rate. More opportunities with easy access should be provided to the tribal children in order to bring those to the mainstream of economic development for fulfil the sustainable development goal.

REFERENCES

1. *The Hindu* (2018) published an article on "Dropout rate soaring after school mergers in tribal belts" August 18, 2018, retrieved from <https://www.thehindu.com/news/national/dropout-rate-soaring-after-school-mergers-in-tribal-belts/article24727261.ece>
2. *Times of India* (2017) published an article on "Dropout rate high among tribals, 'schools shut shop' 5th September, 2017; retrieved from <https://timesofindia.indiatimes.com/city/hyderabad/dropout-rate-high-among-tribals-schools-shut-shop/articleshow/60371444.cms#:~:text=In%20class%201%2D8%2C%20dropout.high%20as%20the%20data%20shows.>
3. *India Education Diary Bureau* published article on Literacy among tribal Girls and women- "an overview", 14 august,2020, retrieved from <https://indiaeducationdiary.in/literacy-among-tribal-girls-and-women-an-overview/>
4. Banerjee. J (2013) " First Generation Learners- Caught Between Twoworlds: With Specific Reference To Scheduled Tribesof Ranibandh Block, Bankura" Paper Submitted for National Child Rights Research Fellowship2012-13.
5. Soren. D (2016) "Impact of interventions on school dropout menace among tribal children of Odisha state" *Inter National Multi Disciplinary e-journal*, ISSN-2277 4262, Vol-V, Issue-IV, Apr-2016. Page no.65
6. Gouda, S., & T.V.Sekher. (2014). *Factors Leading to School Dropouts in India: An Analysis of National Family Health Survey-3 Data*. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 75-83.
7. Sarangi.C(2009) "The effect of psychosocial and institutional variables on school dropouts in the agegroup of 614 years with special reference to tribal children of Goalpara district", Guahati University, retrieved from <http://hdl.handle.net/10603/69834>
8. Gov.t of India (2011). 2011 Cesus Report. New Delhi: Office of the Registrar General & Census Commissioner
9. .Chugh, S. (2011). *Dropout in secondary education: A study of children living in slums of Delhi*. New Delhi: NUEPA.
10. Basumatary, R. (2012). *School dropout across Indian states and UTs : An economic study*. *International research journal of social sciences*, 1 (4), 28-35.



11. Gautam, V. (2004). *Education of Tribal Children in India and the Issue of Medium of Instruction: A Janshala Experience*, http://www-01.sil.org/asia/ldc/parallel_papers/vinoba_gautam.pdf, accessed on 11/09/2016
12. Joy, J., & Srihari, M. (2014). *A case study on the school dropout scheduled tribal students of Wayanad District, Kerala*. *Research Journal of Educational Sciences*, 2, 1-6.



TO STUDY THE IMPACT OF MTWP IN PINCH STRENGTH AMONG PEOPLE WITH WRIST INJURIES

Dr. Surendra Kumar Meena

Principal,
Mahatma Gandhi Occupational Therapy College
Director,
Paramedical Studies,
Mahatma Gandhi University of Medical
Sciences & Technology,
Jaipur.
Director, SNM Rehabilitation & Autism
Research Institute,
Jaipur

Dr. Neha Jain

Assistant professor,
Mahatma Gandhi Occupational Therapy
College,
Jaipur

Article DOI: <https://doi.org/10.36713/epra4999>

ABSTRACT

Introduction and aim: Wrist injuries by colles' or fracture of distal radius are the most prominent diagnosis referred to occupational therapy department for work program in India. In this project, a modified therapeutic work program for wrist injuries was evaluated. The objective of the study is to find out whether MTWP addressed to enhance the grip strength so as work skills and its success in the client return to work, level of work satisfaction & self-performance level post injured wrist.

Methods: Single group pretest posttest experimental design followed by descriptive analysis. 51 patients with dominant hand injured, shared similar demographic background with post-injured from 8 to 40 weeks with mean age of 16 weeks.

Results: 94% clients who completed the program returned to work and switched over to different position and different type of work. 56% clients return to competitive employment with same work type, work situation, having work satisfaction and 80-100% work skills in compare to pre MTWP work situation.

Discussion: The MTWP addresses the range of needs demonstrated by wrist injuries clients, from traditional therapy to prevocational and vocational intervention. The evaluation of the program indicates that the program was successful with wrist injury working age adult.

PROGRAM DESCRIPTION (MTWP)

The program is designed to help an individual to make a gradual, progressive transition from a medical setting to work placement and community reentry. MTWP has 6 phases. The client functional status and progress were monitored on an ongoing basis, and transition to new phases was determined by the Occupational Therapist and based on the client needs. Not all clients went through each phase or follow the sequence. Client continues with individual occupational therapy throughout their involvement in the MTWP.

KEY WORDS: MTWP, colles fracture, vocation, wrist injuries, grip strength, pinch strength.



INTRODUCTION

The importance of hand in human culture and functional activities has long been recognized. Wrist is structured to provide a stable base to allow hand to conduct complex motion, and is the major joint responsible for work tasks. In India, wrist injuries are the therapy department for work program. In this project, a modified therapeutic work program for wrist injuries was evaluated.

Colles' fracture is defined as a linear transverse fracture of the distal radius approximately 20-35 mm proximal to the articular surface with dorsal angulations of the distal fragment (1). The unstable fractures are distinctly comminuted often with corresponding avulsions of the ulnar or radial styloid that have the potential to cause compression neuropathies, especially of the median nerve (1). The other complications that have been reported include reflex sympathetic dystrophy and degenerative joint disease (1).

As the life expectancy continues to increase with increase in industrialization in country like India, the frequency of fractures to the wrist can be expected to increase in years to come. The patients with distal radial fracture are off work from 67 days upto 20 weeks (8, 9). It is for this reason that post traumatic occupational therapy is critical in restoring function and has a direct influence on the quality of life, as well as duration of sick leave, laborer compensation and therefore is of social economic interest.

The current study is primarily based on the concept of TWP. However it is intended for use on the individual with wrist injury in combination with traditional therapies. Literature search failed to reveal similar studies in Indian context.

MATERIAL AND METHODS

DESIGN- Single group pretest posttest experimental design followed by descriptive analysis. A different subject prospective, experimental, flexible design has been used for the purpose of this study. MTWP has 6 phases with treatment plan based on client capabilities, deficits, interest, work history and goals.

SUBJECTS- A total number of 51 subjects having wrist injuries by colles' or fracture distal radius of dominant hand were selected for the study. Mean age was 36 years (range 25 to 55 years) having both male and female. The post injury duration for participation in MTWP is 08 to 40 weeks, mean 16 weeks (Table 1). Period of study from April 09 to Aug 10. Clients were explained the purpose of the study and were requested to participate in the study. Written consent obtained from each participant before study begins.

Instrumentation:

- Minnesota Manual Dexterity Test (MMDT)
- Pinch meter & Hand dynamometer
- Short Form-36 (version 1) – subjective outcome assessment for functional/ work status.

PINCH METER

There are three basic type of pinch: (1) Chuck or three finger pinch (Pulp of the thumb to pulp of the index and middle finger) (2) Lateral or key pinch (Prehension of thumb pulp to the lateral aspect of the index middle phalanx) (3) Tip pinch (thumb tip to the tip of the index finger). These 3 types of pinch are usually assessed and can be tested with a pinch meter (Figure 2b). As with grip measurement, the mean of 3 trials is recorded and comparisons are made with the opposite hand. Reliability of pinch meter needs investigation. Hydraulic pinch instruments are more accurate than spring loaded.





MODIFIED THERAPEUTIC WORK PROGRAMME

MTWP Six Phases:

Phase 1- Individual assessment and treatment in occupational therapy department.

Individualized assessment by occupational therapist were obtained from Initial general occupational therapy assessment format, which includes-

- Date of injury, participation in MTWP
- About previous job specification / demand which based on information from Canadian Classification and Dictionary of Occupations.
- Obtaining background information pertinent to work.
- FIM for ADL.

Phase 2- Group treatment.

•In this phase as client progress to higher level of functioning they participate in group treatment.

- Groups are led by occupational therapist.
- Emphasis is on interaction and interpersonal skills.
- Groups are functionally based and focus on area such as functional living skills, debate and effective communication and family education.

Phase 3 - Prevocational assessment.

The first two sessions are devoted to a prevocational assessment. These assessments establish a baseline performance level and guides appropriate task selection.

- The outcome measure as mentioned earlier is used here.

•It guides appropriate secretarial task, and assembling task to be chosen as per the need of an individual client.

Phase 4 - Therapeutic work groups.

- All Initial transition from role of client to the role of worker.

•Client received 5 days per week for 1(One) hour daily for 4 weeks.

•The group structure includes sign an attendance register in and out, a daily routine, involved in variety of assembly tasks (Figure 4) and secretarial task (Figure 5).

•Emphasis is on developing prevocational and work readiness skills, not on training for specific job.

Phase 5 - Work placement within the institute.

•Supervised work placements within the institute are available on block printing, appliqué & computer programming.

•If only client show interest to participate then posted under vocational counselor for further guidance and training.

Phase 6 - Back to previous job or supervised placement in community or further education and training.

•Previously employed client go back to their respective job.

•Supervised placement in community

•Clients engage in further education and training.

RESULT & DISCUSSION

Table 1 (Demographic Details of patients participated in MTWP)

Sl. No.	Characteristic	Groups
01	No. of Subjects	51
02	Age range	25-55 yrs.
03	Mean age	36
04	Male/Female	21/30
05	Dominant hand injured Rt./ Lt.	46/05
06	Post injury duration	08 to 40 weeks, mean 16 weeks

Table - 2

Work status comparison of Pre MTWP and Post MTWP Subjects (N - 48)

Work Status	Pre morbid	Post MTWP
Competitive employment	33	31
Homemaker	15	14
Trainee	00	01
Unemployed	00	02

As table-2 shows, out of 48 clients in premorbid stage, 45 clients were working after participating in the

MTWP (31 were competitively employed, 14 primary homemaker) whereas 1 trainee and 2 were unemployed.



Table -3
Work type comparison of Premorbid (N- 48) and Post MTWP (N- 46) Subjects

Work Type	Premorbid	Post-MTWP
Managerial	12	13
Heavy labor	03	01
Light Labor (Secretarial & assembling)	18	16
Student	00	01
Home maker	15	14
Others	00	01

The work type comparison (eg. managerial, heavy labor, light labor, home maker) of premorbid and post MTWP subjects (Table-4) shows, the categories of

work vary from those prior to the wrist injuries. The clients did work that was different from the work they had done prior to the wrist injuries.

Table - 4
Work situation comparison preceding and following Wrist injury (N-46)

Work Situation	Number of subjects (N -46)
Same company / Same position	39(14)a
Same company/ other position	04
Other company/same work type	02
Other company/other work type	01(1)b

'a' for home maker and 'b' for student

Table-5 shows, the comparison of present job with former job. Return to the same or a different company was related to the length of time of prior employment.

Table -5
Number of jobs held by subjects since discharge (N- 46)

Number of jobs	Number of Subjects
1	37
2	05
3& more	03
NR	01

'NR'- Not Report

Table-5 shows, 37 out of 46 subjects had one jobs, 05 had two jobs, 03 had three or more jobs since discharge from MTWP. The majority of respondent, 44 out of 46 were working 40 or more hours per week.

As per job satisfaction level out of 46 subjects; 32 liked their job, 05 did not enjoy their work, 03 home makers want to be involved in competitive employment and 05 subjects feel the job is challenging and look forward to it.

TABLE -6
SUBJECTIVE WORK DIFFICULTY (N - 46)

Job required more physical demand	08
Job required high cognitive demand	03
Easiest job that repetitious, familiar & required few cognitive & physical demand	35

Post MTWP in the area of work difficulty, 35 subjects suggest the job that repetitious, familiar, required little cognitive & physical demand is easy to perform (Table

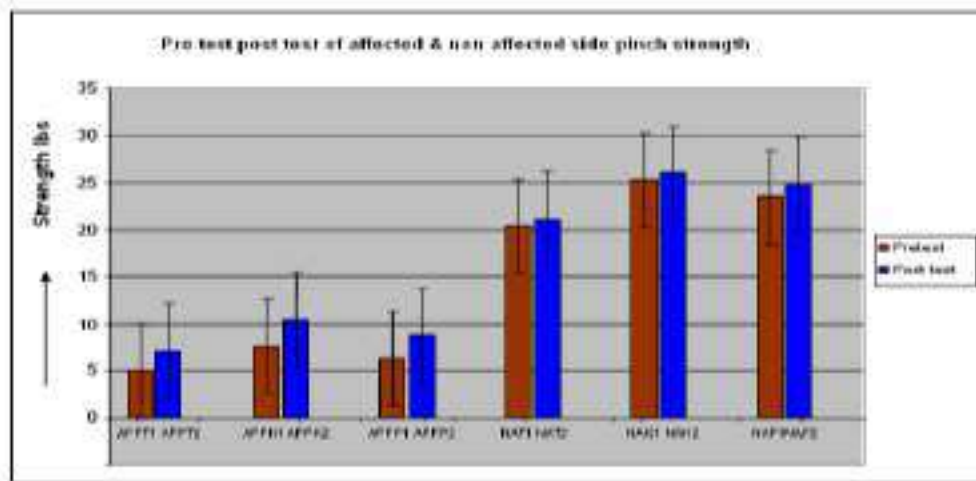
8). In comparing their present work skills with their skills prior to affection 27 subjects self reported 100 to 80 % of their prior level in job performance (Table 9).



Table -7
Self-evaluation of job performance

GROUP	Mean	SD	SE Mean	t	p
Tip to tip pinch injured side(AFFTP1-AFFTP2)	-2.10	0.85	0.15	-12.20	0.00
Tip to tip pinch non-injured side (NATP1-NATP2)	-0.72	0.66	0.12	-5.20	0.00
Key Pinch injured side(AFFKP1-AFFKP2)	-2.66	1.22	0.18	-12.36	0.00
Key Pinch non-injured(NAKP1-NAKP2)	-0.62	0.72	0.12	-4.60	0.00
Palmar Pinch injured (AFFPP1-AFFPP2)	-2.40	1.02	0.18	-10.80	0.00
Palmar Pinch non-injured (NAPP1-NAPP2)	-1.20	1.62	0.30	-4.00	0.00

Table showing mean pinch strength injured side in compare to mean pinch strength Non-injured before and after 4 weeks during MTWP.



Graph 1 showing pretest posttest of affected & non affected side pinch strength

CONCLUSION

The MTWP addresses the range of needs demonstrated by wrist injuries clients, from traditional therapy to prevocational and vocational intervention. The evaluation of the program indicates that the program was successful with wrist injury working age adult. 94% clients who completed the program returned to work and switched over to different position and different type of work. 56% clients return to competitive employment with same work type, work situation, having work satisfaction and 80-100% work skills in compare to premorbid work.

REFERENCES

1. Yochum T, Rowe L. *Essentials of skeletal radiology*. 2nd edition Vol. 1. Maryland: Williams & Wilkins, 1996; 664-665,756-757.
2. Buterbaugh GA, Palmer AK. *Fractures and dislocations of the distal radioulnar joint*. *Hand Clin*.1988; 4:361-75
3. Golden GN. *Treatment and prognosis of Colles' fracture in a North American Community*. *American Journal of Public Health* 1982; 72:605-7.
4. Gartland JJ Jr, Werley CW. *Evaluation of healed Colles' fracture*. *J Bone Joint surgery [AM]* 1951; 33-A: 895-907.
5. Bacorn RW, Kurtzke JF. *Colles fracture: a study of two thousand cases from the New York State Workmans' Compensation Board*. *Journal of Bone Joint surgery [AM]* 1953; 35-A: 643-58.
6. Golden GN. *Treatment and prognosis of Colles' fracture*. *Lancet* 1963; i: 511-5.
7. Katharine Raymond Morey, Anne Harvey Watson. *Team approach to treatment of the post traumatic stiff hand: A case report*. *Physical Therapy*; Vol. 66 No.2, February 1986.
8. Wentzensen A, Leutfink D. *External quality assurance exemplified by distal radius fracture pilot projects of legal accident insurance*. *Z Arztl Fortbild Qualitatssich* 1997; 91:484-5.



9. *Wittemann M, Jung A, Hornung R, Germann G. Die sog. "kleine Handverletzung" und ihre sozioökonomischen Folgen. Chirurg 1994; 65:1004-7.*
10. *Lyons & Morse .A Therapeutic Work Program for Head injured clients; AJOT, 1988*



LAW REGULATING CONTROL AND MANAGEMENT OF EPIDEMICS IN INDIA: A COVID-19 EXPERIENCE

Dr. Pankaj Kakde

Associate Professor

S. P. College of Law,
Chandrapur

ABSTRACT

The otherwise neglected law governing epidemics in India has garnered huge attention during Covid-19 pandemic. The critical examination of this law has led to discovery of several loopholes and grey areas in its application. It is necessary for any civilization to be prepared for the contingencies like this. This preparedness includes having good legislation in place to effectively deal with the situation. This need warrants systematic evaluation of the existing law so that the future contingencies can be mitigated effectively.

INTRODUCTION

The spread of Covid-19 novel corona virus all over the world has created serious challenges before the mankind. Different Nations responded differently to this unprecedented situation of corona virus pandemic. Response of any country in situations like this, especially of civilized country governed by rule of law, is based upon the rules and regulations it has adopted in this regard. The positive and efficient response in any such situation often depends upon how effective and relevant rules and regulation are in place to deal with it. It is experienced that the countries where strong and effective legislation was available to deal with the situation of epidemics performed better in its control and management. The pandemic also hit India severely and somehow India successfully kept it under control at least in its early stages by adopting suitable measures like lockdown and social distancing. In its fight against corona virus lot of discussion has taken place on the legality of measures adopted by the Governments in India. India being the federal nation both Central and State governments adopted different measures for controlling and regulating pandemic. Not only questions were raised on the legality of the measures thus adopted by the government but on several occasion conflicts and contradictions arose between the Central and State governments on the issue. This seriously hampered the effectiveness of the measures

adopted to control the pandemic and weakened India's fight against the deadly pandemic. Many believed lack of appropriate legislation to regulate and control pandemic in India is responsible for the lackluster approach and chaos caused in dealing with it. The situation therefore warrants for the detail exposition of the law governing epidemics in India. The analysis will lead to finding out the exact legal position and the lacunas therein. This is necessary to find out appropriate solution so that the country is better equipped and prepared to handle epidemic situations in India.

CONSTITUTIONAL POSITION

The Constitution of India though have not expressly conferred a status of fundamental right on right to health, the health is treated as part and parcel of right to life enshrined under Article 21 of the Indian Constitution and hence has acquired a status of fundamental right in India.¹ The Constitution envisages

¹ Parmanand Katra v. Union of India, AIR 1989 SC 2039, Spring Meadow Hospital v. Harijol Ahluwalia, AIR 1998 SC 180, State of Punjab v. Ram Lubhaya Bagga AIR 1998 SC 1703. In all the above cases the judiciary has given a very wide interpretation to the Art.21 of the Indian Constitution and emphasized the



upon a State a duty to protect health of the citizens in Part IV of the Indian Constitution, and owing to the status of fundamental right acquired by right to health, this duty of the State is of a mandatory nature.² The State is duty bound to take all necessary steps to protect this right of the citizens by adopting suitable measures and making arrangement for effective exercise of this right. The Indian Constitution has divided different subjects between the Union and State owing to its federal setup. In this division the subject of public health has been listed as a State subject viz. means that the State Legislatures in India are empowered to legislate on the subject of public health and the state governments in India are responsible to give effect to the provision of such laws.³ It must however be noted that the division of subjects between the Union and States is not watertight and there are several subjects that are overlapping. The Supreme Court while interpreting these list and the subjects therein has reiterated this position several times. It has been clearly laid down that each entry in the different lists must be interpreted as broadly as possible and in the process there is a possibility of overlapping of subjects to some extent. Unless the overlapping is to the extent that it robs either of the legislatures of its legitimate power to legislate on any subject completely, there is nothing unconstitutional in it.⁴ It must also be understood that the Constitution has accorded dominant position to the Union in Indian federalism and States are supposed to function under the directions issued by the Centre. The Union is responsible for protecting the interests of the States by providing them necessary assistance whenever required. In a situation of emergency the Constitution shreds its federal character and becomes unitary in nature. The declaration of emergency under the provisions of the Indian Constitution generally results into giving sweeping powers to the Centre even in the matters that normally fall within the reach of States. The States are constitutionally responsible to comply with the directions and the orders that are given by the Union while the emergency remains in force. The spirit underlying these Constitutional provisions must be understood while addressing the situations like

importance of protecting health of the citizens. Though many believe that still Right to Health does not enjoy the status of fundamental right in India and its direct incorporation as such is necessary to entail it the desired status.

² Art.39, 41, 42 and 47 of the Indian Constitution

³ Entry 6 of List II (State List)

⁴ State of Bombay v. Balasara (1951)2 SCR 682, Sajjan Singh v. State of Rajasthan AIR 1965 SC 1.

Covid-19 pandemic. Whenever these kinds of situations arise the States must adopt a role that is in line with the spirit of the Indian Constitution. No doubt the subjects of health and law and order are the State subjects and the States have every authority to take decisions upon them. But, in the situations of epidemics of the magnitude of Covid-19, there is a dire need to have a universal and uniform approach throughout the country to effectively address the challenges that are posed by it. The States if are left free to decide their own course of actions because health or law and order is a state subject, then it may produce highly uneven results in controlling the epidemic. The common guidelines issued by the Union must be adhered by the States in the interest of the citizens at large. This should not become a question of authority between the Centre and the State. The essence of cooperative federalism lies in extending the wholehearted support to the Centre in its endeavor of regulating and controlling epidemic so that lives of the maximum people can be saved. The petty party politics and the unnecessary authoritarian conflicts between the Centre and the State must be avoided in these testing times. The experience of Covid-19 shows us that the Centre though treat the situation of epidemic as emergency it refrains from making any such formal declaration by invoking Constitutional provisions. Though, it is possible for Centre to do so under Art.356 or Art.360 of the Indian Constitution. Any such declaration by the Centre may not only reduce the powers of the State to a considerable extent but will also make it difficult for the Centre to single handedly address the situation effectively. Therefore what Centre has done in addressing the situation of Covid-19 appears to be the most rational approach in dealing with the situations like these. This is the approach that is the best possible shot at effective and efficient response to the situation like Covid-19 without compromising the letter and spirit of the Indian Constitution.

THE EPIDEMIC DISEASES ACT, 1897

This is the one and the only law especially providing for dealing with epidemics in India. The law is 123 year old law that was enacted during the British rule to address the epidemic of Plague that time. This is a very small act consisting of only four provisions. The act is meant to give State Government and Central Government powers to take special measures in the outbreak of epidemics. The Act gives State government a dominant role in taking these special measures. The role of Central Government is limited to take requisite measures on ports in controlling the epidemic. The Act also provides that non-compliance of any orders made by the Government in this regard may attract



punishment under Sec.188 of the Indian Penal Code. The Act also provides protective cushion against any legal action to all those who have acted in good faith under the provisions of the law. The law thus is very general and does not contain detailed provision of how and in what manner the Governments need to act in the situation of epidemics. The Act even fails to define the word epidemics. There are no clear provisions regarding the quarantining of the people and the procedure to be followed thereupon. It lacks provisions that are necessary to deal with biological disasters as well. The comprehensive amendment to the law was always on cards however the Act was not amended all these years. Although, an Ordinance was promulgated introducing new provisions in the Act, to specially protect the healthcare workers from any kind of violence and abuse amidst the Covid-19 pandemic. The new ordinance provides that those who hurt healthcare workers engaged in the treatment of patients in epidemics will be liable for punishment. The Ordinance also expands the powers of the Central Government to some extent. Even with these amendments the law clearly is not sufficient to address the issue of effective regulation of epidemics in India. The long standing demand of repealing the law by some comprehensive legislation appears even more relevant in present set of circumstances. The government has already proposed a Bill called Public Health (Prevention, Control and Management of Epidemics, Bio-Terrorism and Disasters) Bill in 2017 to repeal the old law. However, the Bill is yet to see daylight. The Epidemics Act, 1897 has been extensively used by the State Governments in India to deal with the Covid-19 pandemic. Many States have enacted special regulations in the name of Covid-19 to adopt suitable measures in the State for effective control and management of the pandemic. But, lack of uniformity and overriding powers exercised by the Central government has considerably diluted the use of the law for regulating the pandemic in India. The law though directly provide for the regulation of epidemics in India, acquired a secondary status due to its shortcomings.

THE DISASTER MANAGEMENT ACT, 2005

The Disaster Management Act, 2005 was enacted by the Indian Parliament with the objective of effective management of Disasters in India. The Act has established the Central Agency called National Disaster Management Authority which is a high level Authority having Prime Minister of India as its Chairperson. The Authority is responsible for formulation of guidelines to deal with different forms of disasters in the country. The State Disaster

Management Authorities and the local authorities to deal with the disasters have also been established under the provisions of the Act. All these authorities are expected to work in complete coordination in case of any disasters. The Act gives sweeping powers to the Central Government in dealing with any kind of disaster in India. The powers conferred on the Central Government are strong enough to override the decisions of the State Governments. The Act clearly provides that the State governments and the entire administration must follow the directions of the Centre in this regard. The NDMA has issues different guidelines to deal with specific type of disasters. This also includes the Guidelines issued to deal with the Biological Disasters. The NDMA has also come up with a National Disaster Management Plan in the year 2019 which details the step by step guide for the measures to be adopted and actions to be taken when the country is struck by any disaster. The Disaster Management Act emerged as a principal legislation used to regulate the pandemic of Covid-19 in India. The imposition of social distancing norms, declaration of nationwide lockdown and various other measures taken amidst the deadly pandemic derives its legality from the Act. The Central Government under the aegis of the NDMA and the Prime Minister of India took a principal responsibility of regulating the situation of Covid-19 pandemic. The use of DM Act by the Centre has also attracted lot of controversy. The States especially were not happy with Centre taking the commanding role in the situation. The Guidelines issued by the Centre were also criticized and many States even went to the extent of denial to follow these guidelines. This seriously affected the effectiveness of the measures adopted to control and manage the pandemic. The sync between the central, state and local agencies in battling the pandemic was completely missing. This diluted the effectiveness of the response and resulted into worsening the situation at large.

THE INDIAN PENAL CODE, CRIMINAL PROCEDURE CODE AND ESSENTIAL COMMODITIES ACT

The Indian Penal Code contains several provisions that are useful in fight against the epidemics. These provisions have been extensively used during Covid-19 outbreak in India. Section 271 of the IPC provides that if quarantine rule is in force anyone who disobeys this rule shall be punished with imprisonment or fine or both. Similarly anyone who is responsible for performing negligent or malignant act spreading the infectious diseases are punishable with imprisonment or fine or both under Section 269 and 271 respectively. The disobedience of the order of the public servant is



also a punishable act under Section 188 of the IPC. The executive magistrate is empowered to impose restrictions on any type of assembly in public places under section 144 of the Criminal Procedure Code. These provisions have come to the rescue of the administration amidst Covid-19 outbreak for taking action against those who were found performing irresponsible acts during the fight against the epidemic. The provisions of the Essential Commodities Act, 1955 also ensure that the measures taken to fight against the epidemic do not come in the way of ensuring continuous supply of essential commodities and services to the citizens.

CONCLUDING OBSERVATIONS

When any epidemic especially of the magnitude of the Covid-19 strikes the Nation, its effective control and management becomes highly necessary, and, it is responsibility of the government to ensure that it is so effectively controlled and managed. In a country governed by rule of law the strong legislation plays a very important role in effectively responding to the situation like this. The Covid-19 pandemic has clearly brought the loopholes in our legislative framework on forefront. It is clear that India is not well equipped to respond to the situation effectively by making use of strong legislative framework. The Epidemic Diseases Act, 1897 can hardly address the contemporary concerns in the situation of epidemics. The colonial law though has been extensively used by the governments fails miserably in achieving the highest standards of regulating control and management of the epidemic. Its generality is the source of ambiguity. The Disaster Management Act, 2005 is again a general law that provides for regulation of all sorts of disasters and lacks specific *modus operandi* to be adopted in the situation of epidemics. However, the objections raised by the States and many others to the use of law in handling of Covid-19 also do not make any sense. The law has been rightfully enacted by the Parliament by making reference to entry 29 (*Prevention of the extension from one State to another of infectious or contagious diseases or pests affecting men, animals or plants*) of the Concurrent list. The structure in the form of NDMA, SDMA and other local disaster management authority is already established under the provisions of the Act. The different forces like NDRF, Police etc. are aware of the *modus operandi* to be adopted in the situation of disasters that makes the use of law to deal with situation like Covid-19 very much practical. The response to the epidemics like Covid-19 needs to be uniform throughout the country and in absence of any other law if the Centre has used the DM Act to fight against the pandemic, there is no point in making an

unnecessary hue and cry against this. The States in India must cooperate with Centre in fighting the pandemic. In situations like this unnecessary banter between the Centre and the State Government over their respective authorities is avoidable. In tune with the spirit of Indian Federalism there is no harm in following the guidelines issued by the Centre under the provisions of DM Act, 2005. Of course there is no denial of the fact that there is a dire need of a law that specially provides for the mechanism to be followed in the outbreak of epidemics in India. The lesson is learnt and the Parliament must respond immediately by positively considering the possibility of enacting the law as soon as possible. The law will enable the government to deal more effectively and efficiently in battling the epidemics in future.

REFERENCES

1. Jain, M. P., *Indian Constitutional Law*, Wadhwa and Co., 5th Edition, 2005
2. *Parmanand Katra v. Union of India*, AIR 1989 SC 2039
3. *Sajjan Singh v. State of Rajasthan* AIR 1965 SC 1.
4. *Spring Meadow Hospital v. Harijol Ahluwalia*, AIR 1998 SC 180
5. *State of Punjab v. Ram Lubhaya Bagga* AIR 1998 SC 1703
6. *State of Bombay v. Balasara* (1951)2 SCR 682
7. *The Criminal Procedure Code*, 1973
8. *The Disaster Management Act*, 2005
9. *The Epidemic Diseases Act*, 1897
10. *The Essential Commodities Act*, 1955
11. *The Indian Penal Code*, 1860



INVESTIGATION OF VIBRATIONS OF A LIGHTWEIGHT GRATE ON ELASTIC SUPPORTS OF A COARSE LITTER CLEANER WITH RANDOM DISTURBANCE FROM RAW COTTON

Orif Murodov¹

¹Tashkent Institute of Textile and Light Industry,
Tashkent,
Uzbekistan

Shavkat Madrahimov²

²Tashkent Institute of Textile and Light Industry,
Tashkent,
Uzbekistan

Ziyodullo Shodiyev³

³Bukhara Branch of The Tashkent Institute of Irrigation and Agricultural Mechanization Engineers,
Bukhara,
Uzbekistan

Article DOI: <https://doi.org/10.36713/epra6042>

ABSTRACT

The article discusses the results of theoretical studies of vibrations of a plastic grate on elastic supports of a coarse litter cleaner under accidental exposure to raw cotton. Graphical dependences of changes in displacements and vibration rate of the grate on changes in the coefficients of stiffness, dissipation and on the disturbing load from raw cotton at various values of the grate mass are constructed. Based on the analysis of the obtained graphical dependencies, the values of the system parameters are recommended.

KEYWORDS: *plastic grates, elastic supports, raw cotton, plastic pipes, mass, polyethylene, stiffness coefficient.*

INTRODUCTION

Installation of an elastic sleeve on the grate support when dragging the raw cotton with a serrated cylinder allows the raw cotton to interact with the grates and impart an oscillatory motion to them, which contributes to additional shaking of the cotton volatiles and the release of trash [1].

Cotton fiber is the main raw material of the textile industry, and its products are in high demand in the world market. "International Cotton Advisory Committee (ICAC), in the 2016-2017 season, 24.55 million tons of fiber was consumed, while 23.07 million tons. In this regard, countries such as Bangladesh, China, Turkey and Indonesia have led in the import of cotton fiber. In this regard, special attention is paid to the development of new

resource-saving techniques and technologies that will further increase the requirements for cotton fiber and its quality improve the quality and reduce the cost of cotton products. At the same time, the expansion of cotton fiber production in foreign countries remains an important task [1].

Research is being carried out around the world to develop innovative techniques and technologies for the ginning industry, which provide for the effective use of modern science and technology, and to improve existing ones. In this area, including in production, the development of working bodies, efficient, resource-efficient ginners of large cotton ginning machines is of great importance [2].

In our country, special attention is paid to the creation of technological processes of primary



processing of cotton and high-efficiency technological machines and equipment for production, as well as their control systems. In particular, one of the most important issues is the creation of efficient cotton gin constructions and the introduction of effective technology for waste treatment in order to ensure the production of high quality cotton products from processed raw materials, depending on the initial performance of ginners [3].

An analysis of scientific studies has shown that the cleaning of cotton from large wastes was carried out to determine the diameters of the columns, the size of the holes formed by the interlocking, saw-cylinder, and the frequency of rotation of the saw-cylinder. Lightweight plastic vibrating moving structures of the columns are not considered on the basis of in-depth theoretical and practical research of their parameters [4].

MATERIALS AND METHODS

It should be noted that in the case of bar

steel grates on elastic supports, the perturbing generalized force from the cotton being cleaned will be insufficient to ensure the grate vibrations with the required amplitude and frequency. Therefore, the grate is made of a plastic pipe and mounted on rubber elastic sleeves.

It is important to obtain the dependences of the change in the compressive force of the elastic support depending on the stiffness of the elastic element: a) at different masses of the grate; b) at different speeds of the serrated cylinder.

The difficult operating conditions of the grate, as well as the dependence of the nature of the vibrations on many factors, indicate the need to create a dynamic model of the vibrations of a plastic grate on elastic supports (in Fig. 1a) to calculate its rational parameters. A single mass oscillatory system (in Fig. 1b) with a random perturbing force was chosen as a dynamic model. The nature and value of the technological resistance were obtained by strain gauge during experiments with a laboratory setup [5].

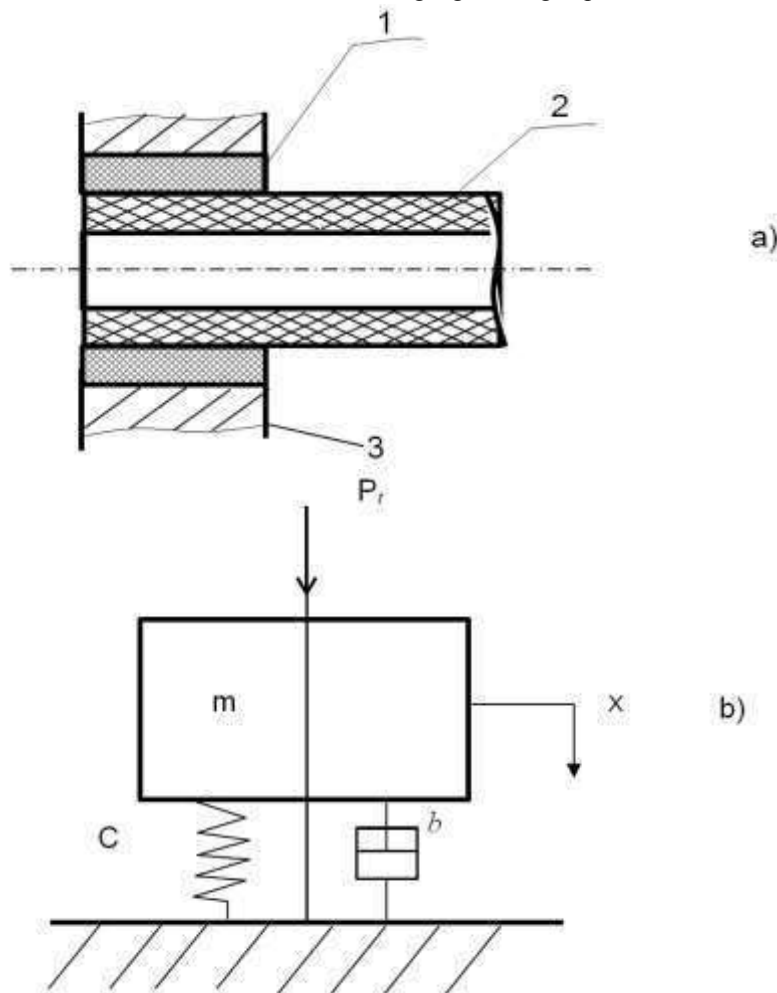


Figure 1. Diagram of a plastic one on elastic supports (a) and a dynamic model of an oscillatory system (b): 1 - rubber support, 2 - grate, 3 - cleaner body



The differential equation of vibrations of plastic polyethylene on rubber bushings of a raw cotton cleaner from coarse litter has the form [6]:

$$m\ddot{x} + b\dot{x} + kx = P_t, \quad P_t = M(P_t) \pm \delta(P_t) \quad (1)$$

The analytical solution of this nonlinear differential equation is practically difficult; therefore, its solution was made on a computer using standard programs. To determine the best parameters of plastic

grates and plot graphical dependencies, variation studies were carried out with the following initial values:

$$m = 1.85 \text{ N s}^2 / \text{m}, \quad k = 8600 \text{ N / m}, \quad b = 65 \text{ N s / m}$$

$$M(P_t) = 22 \pm 3.02 \cos 30x - 1.97 \sin x + 0.51 \cos 60x + 0.37 \sin 60x \quad (2)$$

Where, $\delta(P_t)$ – The random component of the technological load of cotton

The variation in the stiffness values of the elastic rubber sleeve is due to the fact that its value affects the dynamic process in the system, determines the occurrence of forced vibrations with a certain amplitude and frequency, which ensures the efficiency of the technological process of cleaning raw cotton from large trash impurities.

Based on the solution of problem (1), the dependences of the change in the displacement of the mass of the system X are obtained in the technological mode of operation with varying the stiffness coefficient of the rubber sleeve. On the basis of the research results, a fairly rapid damping of the natural vibrations of one mass system (about 0.1 s) and the correspondence of the forced vibrations of the grate mass to the nature of the approximated technological load from the cotton being pulled through were established. With an increase in the stiffness coefficient of the elastic support, a noticeable decrease in the amplitude of low-frequency vibrations occurs according to a nonlinear pattern.

RESULTS AND DISCUSSION

The results of the experiments showed that a plastic grate on an elastic base experiences from the raw cotton pulled by the saw cylinder 2.4 - 2.7 times less than the relative load on the grate with a rigid support. The importance of taking into account the technological loads from cotton on the plastic grate is explained by the fact that their value varies widely depending on the supply of cotton (machine productivity) and has a random nature of the impact. Figure 2 Graphs of the dependence of the change in the displacement of the grate on elastic supports on the function of the grate mass and technological

resistance from raw cotton are presented.

The determining component of the load fluctuation is a low frequency, which corresponds to the rotational speed of the saw cylinder of the cleaner. The high-frequency component is due to the uneven supply of raw cotton. At the design load in the system, the grates oscillate with small amplitude (0.8 ÷ 1.0 mm). With an increase in the load (up to 24 N), the vibration amplitude of the grate increases to (1.8 ÷ 3.0 mm). With a further increase in the load, in practice, the slaughter of raw cotton usually occurs between the grate and the saw cylinder. Thus, with an increase in the stiffness coefficient of an elastic rubber support from 3.0 to 12.6 N / mm, the vibration amplitude of a plastic grate decreases in a nonlinear manner from $4.5 \cdot 10^{-3}$ to $2.91 \cdot 10^{-3}$ m with a grate mass 1.6 kg, and with a grate weight of 2.0 kg, it decreases from $3.52 \cdot 10^{-3}$ to $0.78 \cdot 10^{-3}$ m (see Fig.2a, curves 1, 2, 3)

Considering that significant changes in the grate vibration amplitude lead to exceeding the limits of the gap between the serrated cylinder and grate. The best values of the stiffness coefficient of the elastic support, providing the required gap size are $(0.8 \div 1.2) \cdot 10^4 \text{ N / m}$.

The range of variation of the values of the dissipation coefficient, which characterizes the elastic support, was established according to the results of the experiment for rubber grade 1338. Allowance for dissipation is due to the ability to absorb free vibrations and a part of forced vibrations. The recommended values of the dissipation coefficient are 80 - 100 N s / m.

In fig. 2.b shows the graphical dependences of the change in the amplitude of the oscillations of the movement of the plastic grate with the change in the load from the cleaned raw cotton.

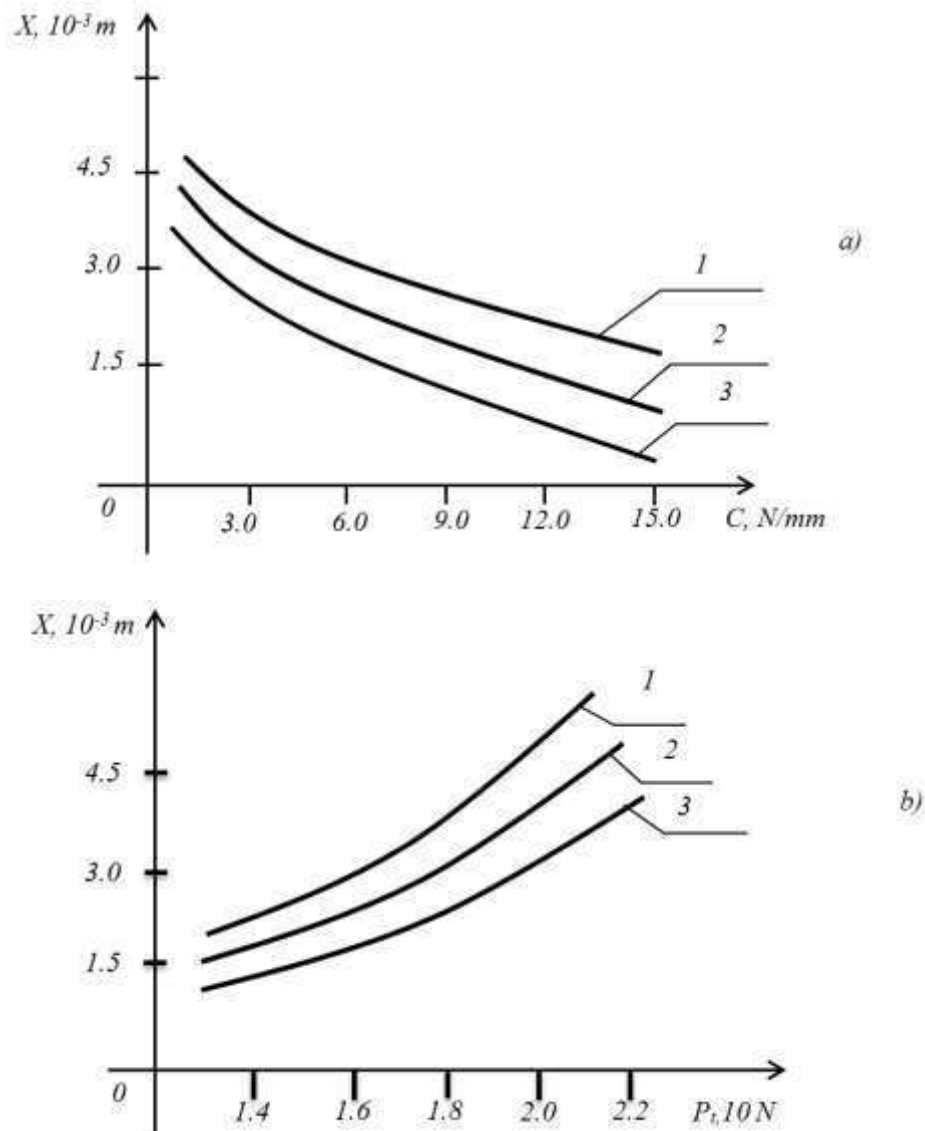


Figure 2. Graphical dependences of the stiffness coefficient of an elastic rubber support at different mass: a - at different mass of a plastic grate from a cotton cleaner; b - change in the amplitude of vibrations of the movement of the plastic grate: 1-at $m = 1.6$ kg; 2- $m = 1.8$ kg; 3- $m = 2.0$ kg, Deviation $\Delta X = (5.0 \dots 7.0)$

With an increase in the load of the grate from raw cotton during its cleaning from 15.5 N to 24.0 N, the vibration amplitude of the grate increases from $1.58 \cdot 10^3$ to $4.54 \cdot 10^3$ m for normal preservation

of the gap between the surface of the saw cylinder and the grate, $X = (2.0 \dots 2.3) \cdot 10^3$ m the load should not exceed (18.0 ... 22.5) N.

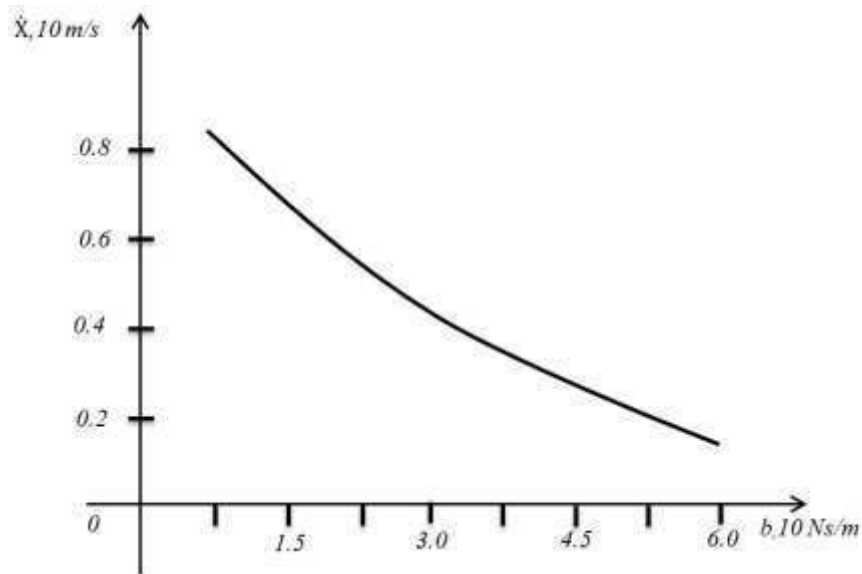


Figure: 3. Graphical dependence of the change in the vibration speed of the plastic grate on the increase in the dissipation coefficient of the elastic support

It is known [7,8] that the coefficient of dissipation affects the amplitude of vibrations and allows the necessary damping of natural vibrations of a plastic grate. In this case, it is important to select the values of the dissipation coefficient of the elastic rubber support of the grate of the cotton cleaner from coarse litter.

CONCLUSIONS

In fig. 3 shows the graphical dependences of the change in the grate vibration speed on the variation of the dissipation coefficient of the rubber sleeve. It can be seen from the figure that the oscillation rate decreases with an increase in the dissipation coefficient according to a nonlinear pattern. The recommended values of the dissipation coefficient are (48 ... 55) Ns / m.

REFERENCES

1. D.S Tashpulatov, A.Juraev, O.J Murodov, J.K Gafurov, S.Vassiliadis *Aegean International Textile and Advanced Engineering Conference (AITAE 2018) IOP Conf. Series: Materials Science and Engineering*459 (2019) 012068.
2. Murodov O 2019 *Perfection of designs and rationale of parameters of plastic Koloski cleaning cleaners International Journal of Innovative Technology and Exploring Engineering* 8(12) 2640-46
3. Khojiev M. T., Juraev A. D., Murodov O. Dj. and Rakhimov A. K. *Development of design and substantiation of the parameters of the separator for fibrous materials. International Journal of Recent Technology and Engineering, 2019, 8(2) 5806-11*
4. Rajabov O. and Shodiyev Z. *Analysis of Small Fluctuations of a Multifaceted Mesh under the Influence of Technological Load from the Cleaned Cotton – Raw. International Journal of*

Advanced Research in Science, Engineering and Technology, 2019, 6(10) 11396-99

5. Anvar J. and Ozod R. *Analysis of the Interaction of Fibrous Material with a Multifaceted Grid of the Cleaner. International Journal of Recent Technology and Engineering, 2019, 8(1) 2661-66*
6. M.T. Khodjiev, O.J. Murodov, D.Eshmurodov. *Creation of Scientific-Based Construction of the Separator with Insulation Camera. International Journal of Innovative Technology and Exploring Engineering, 2020, 9(4)*
7. O. I. Rajabov, A. S. Abrorov, N. I. Mirzaqulova, G. B. Zaripov, Kh. S. Ziyodullaev, "An experimental study of the location of the grid bars cells installed under spiked cylinders in a cotton cleaner from small waste", *IOP Conference Series: Materials Science and Engineering, (2020), 734(1) 012073.*
8. Rajabov O, Fazliddin K, and Salimov Sh., "Substantiation of Parameters of the Fibrous Material Cleaning Zone", *International Journal of Engineering and Advanced Technology, vol. 9, No 3, (2020), pp. 1052-1057.*



TOPICAL ISSUES OF INNOVATIVE AND COMMUNICATIVE METHODS IN TEACHING ENGLISH LANGUAGE TO NON-LANGUAGE UNIVERSITY STUDENTS

Nuritdinova Saida Sabirovna
Senior Teacher¹

Eshankulova Lola Sayfullaevna
Teacher²

Integrated English Language Teaching course
department -2, English Faculty- 2,
Uzbekistan State University
World Languages.

ANNOTATION

This article discusses the issues of teaching English in a non-linguistic university

KEY WORDS: *professional sphere, communicative competence, methodology, training, innovation, communicative approach.*

АКТУАЛЬНЫЕ ВОПРОСЫ ИННОВАЦИОННО- КОММУНИКАТИВНЫХ МЕТОДОВ В ОБУЧЕНИИ АНГЛИЙСКОМУ ЯЗЫКУ СТУДЕНТОВ НЕЯЗЫКОВЫХ ВУЗОВ

**Нуритдинова Саида Сабировна¹,
Эшанкулова Лола Сайфуллаевна²**
*Старший преподаватель¹, преподаватель² кафедры
Комплексный курс обучения английскому языку
кафедра 2, английского факультета 2
Узбекистанский государственный университет
мировых языков.*

Аннотация

В данной статье рассматриваются вопросы методики преподавания английского языка в неязыковом вузе

Ключевые слова: *профессиональная сфера, коммуникативная компетенция, методика, обучение, инновация, коммуникативный подход.*

DISCUSSION

Proficiency in English at a level sufficient for professional communication in the professional sphere is one of the requirements of modern society for young professionals and is an obligatory component of their professional training. Therefore,

the goal of teaching professionally-oriented English is to develop students' communicative competencies in using the knowledge gained in relation to their profession. It is assumed that a specialist will be able to read newspaper articles from professional magazines in a foreign language, take part in



international conferences, make reports, answer questions, and conduct professional discussions.

Professionally oriented English language teachers are called upon to fulfill the social order of society - to prepare in a short time a specialist who speaks English well within a given professional profile. It is possible to achieve the set task - to teach a student to speak, understand, and extract information of a different nature from original sources within a limited educational framework - by combining traditional and innovative teaching methods, based on the principles of communicative communication.

The conducted research of pedagogical work showed that teaching English today is impossible without an innovative component. In the light of modern requirements for the goals of teaching English, the status of both the learner and the teacher is changing, who are moving from the "teacher-student" scheme to innovative technologies.

Recall that traditional vocational English teaching is focused on reading, understanding and translating special texts, including the study of the grammatical features of the scientific style. Currently, the emphasis has decisively shifted to the development of skills and abilities of oral communication. Oral speech includes listening or reading, understanding and reproductive reproduction of the listened or read, both orally (dialogical or monologue) and in writing. The reorientation of the direction of teaching English in the process of vocational education from teaching to read as a priority goal to teaching communication [1] led to the need to take into account the model of a specialist and formed professional skills, as well as teaching foreign language communication in a specific professional-thematic context.

Thus, innovative technologies for teaching the English language in a non-linguistic university consist in a combination of traditional and intensive teaching methods based on a functional-communicative linguodidactic model of the language and the development of an integral system of teaching speech communication on professional topics [2: 23]. At the same time, the main task of the modern stage of teaching professionally oriented English is the creation of methods that integrate interactive approaches to teaching and accumulate their advantages to solve the main problem of teaching professionally oriented English - teaching not language, but speech, in a broader context. sense - foreign language communication in professional situations.

It seems that the key method in teaching professionally oriented English in modern higher education is the communicative method, which is based on the idea that the language serves for communication, therefore, the goal of teaching a foreign language is communicative competence. We

believe it is important to note that the emergence of the communicative method and the term "communicative competence" itself was influenced by N. Chomsky's concept of linguistic competence, which is understood as the ability of a speaker to generate grammatically correct structures [3].

However, according to supporters of the communicative approach, effective knowledge of a language is more than just knowledge of the rules of grammar, pronunciation and vocabulary. Students need to learn how to use a foreign language in an appropriate social and professional environment.

To do this, teaching foreign language communication should take place in adequate conditions, among which it is necessary to highlight the following: taking into account the individuality of each student, speech orientation of the learning process, learning functionality, situational communication, novelty of the learning process [4].

In addition, as noted by D. Noonan [5], the communicative method is a flexible method, while it has certain characteristics that fundamentally distinguish it from other widely known methods of teaching foreign languages. These characteristics include:

- Emphasis on learning to communicate through interaction in the target language;
- Inclusion of authentic texts in the learning situation;
- Providing trainees with the opportunity to concentrate not only on the language, but also on the learning process itself;
- Inclusion of the trainee's personal experience as an important component of training in the classroom;
- An attempt to link the teaching of English in the classroom with the independent language activity of students.

In this regard, we believe that the main methodological principles of organizing the process of teaching vocationally-oriented English are the following integrative principles: the principle of practice-oriented contextual learning, student-centered learning, learning activity, problematization, communicative-situational learning, interactive orientation of training, the balance of conscious and unconscious in training, the complexity of the approach, the principle of collective interaction, reflection in training.

This implies the use in the learning process of such strategies that will stimulate the cognitive and communicative activities of students, using a variety of communication technologies for teaching English: communication learning technology, information and communication technology, collaborative learning technology, project technology, game technology [6]. An important role is also assigned to the case method, since its use leads to the development,



renewal, increase in the intensity and variety of communications between the subjects of the educational process, since its essential characteristic is the orientation towards interpersonal interaction, the impact on the mental and social structure personality [7].

Innovative communicative techniques are also techniques based on various forms of communication with the involvement of interactive teaching aids, which includes:

- Self-study methods - edu.pglu, print, audio and video materials;
- Pedagogical methods based on one-to-one communication - e-mail, use of social networks;
- Teaching based on one-to-many communication - audio and video lectures, electronic lectures (an electronic lecture may not be a traditional lecture text, but a selection of articles or excerpts from them, as well as educational materials that prepare students for the future discussions);
- Learning based on many-to-many communication - synchronous and asynchronous audiographic, video, audio and computer conferences - for example, forums at edu.pglu, work in social networks, for example, Facebook.

Based on the foregoing, we believe that the use of the proposed teaching methods based on the communicative linguo-didactic model of the language, as well as the development of an integral system of teaching speech communication on professional topics will contribute to the formation of a whole complex of communicative and professionally oriented students in students. competencies.

LITERATURE

1. **Begisheva L.E.** Optimization of the process of teaching foreign language professionally oriented communication of students of the Faculty of International Relations. SPb.: SPbSU, 2002.
2. **Salomatina L.V.** Innovative methods of teaching a foreign language in a non-linguistic university // *Modern trends in teaching foreign languages and intercultural communication. Materials of the International Correspondence Scientific and Practical Conference, March 24, 2011 Electrostal: New Humanitarian Institute, 2011.*
3. **Poroshenko H.L.** Review of innovative methods of teaching foreign languages in the XX-XXI century. URL: http://www.nbuv.gov.ua/Portal/soc_gum/Pipo/2011_32-33/11zgimtc.pdf.
4. **Medyankin I.I.** Communicative method of teaching a foreign language // *Business language and methods of teaching it: Collection of scientific papers. Issue 11. Pyatigorsk: PSLU, 2012. S. 51-55.*
5. **Trumen D.** *Learner-Centered English Language Education.* N.Y.: Routledge, 2012. PP. 51-52.
6. **Dovnar T.A.** *A complex of communicative kuli-*

study-oriented exercises for teaching oral foreign language communication in the context of a dialogue of cultures // Bulletin of MSLU 2012. № 1 (21), Series 2: Pedagogy, psychology, methods of teaching foreign languages. Minsk: MGLU, 2012.S. 135-142.

7. **Ribkina M.V.** *Methodology for analyzing situations in teaching students foreign language professionally oriented communication (based on the specialties "Management", "Management"): author. dis. ... Cand. ped. sciences. M., 2005.*



TOPICAL ISSUES OF TEACHING THE RUSSIAN LANGUAGE AT THE PHARMACEUTICAL UNIVERSITY

Shukurjanova Samiahon Alimovna¹
Senior Teacher¹

**Matyusupova Shakarzhon
Begmamatovna²**
Senior Teacher²

Makhmudbekova Gulnora Ubaidullaevna³
Teacher³ Departments
Uzbek Language and Literature
of the Tashkent Pharmaceutical Institute

ANNOTATION

The article examines the specifics of teaching Russian biomedical terminology to national students, identifies effective means of optimizing the process of teaching professional vocabulary in Russian language classes. The main tasks in organizing work with professional texts are presented.

KEY WORDS: terminology, term, terminological element, professional language, eponym.

АКТУАЛЬНЫЕ ВОПРОСЫ ПРЕПОДАВАНИЯ РУССКОГО ЯЗЫКА В ФАРМАЦЕВТИЧЕСКОМ ВУЗЕ

*Шукурджанова Самиахон Алимовна¹,
Матюсупова Шакаржон Бегмаматовна²,
Махмудбекова Гулнора Убайдуллаевна³ -
Преподаватели¹⁻², преподаватель³ кафедры*

Узбекского языка и литературы Ташкентского фармацевтического института

Аннотация

В статье рассмотрена специфика обучения национальных студентов русской медико-биологической терминологии, определены эффективные средства оптимизации процесса обучения профессиональной лексике на занятиях по русскому языку. Представлены основные задачи при организации работы с текстами профессиональной направленности.

Ключевые слова: терминология, термин, терминологический элемент, язык специальности, эпоним.



Специфике обучения национальных студентов в вузах медицинской отрасли посвящено немало работ, в которых ставятся и решаются актуальные задачи достижения лучших результатов в профессиональном речевом развитии [4;5;6]. Обучение иностранных студентов научному стилю речи является одним из перспективных направлений в преподавании русского языка как иностранного (РКИ) и направлено на развитие профессиональной компетентности будущих специалистов.

В Ташкентском фармацевтическом институте обучается более 2000 студентов. Дисциплина «Русский язык» на 1 курсе преподаётся и рассчитана на 2 семестров. Преподаватели-русисты работают над формированием общих коммуникативных компетенций, которые на 1 курсе у национальных студентов не всегда присутствуют в должном объёме, что затрудняет восприятие профессиональной речи преподавателей специальных дисциплин (химия, биология, анатомия и др.). При первоначальном анализе состояния речевых навыков и умений национальных студентов на 1 курсе отмечается недостаточно свободное владение ими устной и письменной русской речью, хотя русский язык является языком получаемой специальности.

Известно, что примерно 4000 наиболее частотных слов покрывают 95% текстов неспециального содержания. Однако результаты тестирования, ежегодно проводимого в нашем вузе, показывают, что лексический запас у национальных студентов в начале учебного года составляет примерно 2000 слов. По нашим наблюдениям, меньше всего оказывается усвоенной научная лексика. Поэтому повышение эффективности обучения русскому языку было и остаётся актуальной проблемой, которую активно решают преподаватели нашей кафедры.

Научно-технический прогресс в современном обществе приводит к повышению значения терминологии как средства получения и организации научных знаний. Вопросы информационного обеспечения и научно-технического обмена, которые затрагивают полноценное функционирование языков, особенно важны. Терминология разных наук претерпевает процесс интернационализации и развивается путём заимствования из разных мёртвых и живых языков.

Лексическая составляющая научного стиля речи определяется тремя основными лексическими группами: 1) общая лексика, составляющая основу любых текстов; 2) общенаучная лексика; 3) термины, которые составляют метаязык определённой науки.

Как известно, медико-биологическая терминология имеет свою специфику и

различную этимологию. Усвоение медико-биологической терминологии сопряжено с большими трудностями из-за её значительного объёма и разнообразия. Термины медицины бывают различными по структуре: корневые, производные, образованные путём словосложения и словосочетания, метонимического или метафорического переноса (дельтовидная мышца, палочка Коха, солнечное сплетение и др.).

Исследование медико-фармацевтической терминологии обусловлено потребностью её презентации как строго упорядоченной системы, соответствующей современному уровню развития фармацевтической науки и запросам практической деятельности студентов фармацевтического вуза и совершенствованием переводческой деятельности.

По происхождению медико-биологические термины могут быть заимствованными из других языков (абдоминальный, рецептурный, терапевт, фармацевт) и исконно русскими (желудочек, предсердие, детский врач). Особенностью русской научной медико-биологической лексики является так называемый «медицинский билингвизм» [2]: формы терминов латинского или греческого происхождения и эквивалентная терминология на русской основе (апофиз - отросток, вырост, склера - белочная оболочка, антидот - противоядие, абдоминальный - брюшной, латентный - скрытый, паротит - свинка, систола - сокращение, венечный - коронарный). Это является одним из затруднений в усвоении русской научной терминологии, так как такие синонимы иностранные студенты воспринимают как абсолютно разные слова. Особенно это характерно для студентов, которые не владеют европейскими языками [10].

В то же время греко-латинские термины полностью освоены и служат базой создания новых слов уже на русской почве. Они достаточно кратки, удобны в употреблении, преимущественно моносемичны и используются в регулярных словообразовательных моделях. В настоящее время они являются основными при образовании медицинской и фармацевтической терминологии.

Исследуя словообразовательный механизм медико-биологической терминологии, исследователи пришли к выводу, что образования на основе греко-латинских терминов составляют подавляющее число (свыше 1000 наименований) [2]. Практические задания по изучению структуры мотивированных слов должны быть направлены на то, чтобы студент мог не только предсказать значение слова, но и правильно образовать необходимое мотивированное слово для выражения



определённого значения. Эти задачи связаны с двумя важными проблемами словообразовательной семантики: компонентными значениями мотивированного слова, семантическими закономерностями образования слов и их лексической реализацией.

Термины принадлежат не только к отдельным отраслям науки, но прежде всего они являются единицами языка. Значит, им не могут быть чужды такие лексико-семантические процессы как синонимия, омонимия и полисемия. Эти процессы усложняют процесс профессиональной коммуникации будущих медиков и фармацевтов. Развитию асимметрии термина в немалой степени способствуют термины-эпонимы, то есть термины, в состав которых входят фамилии учёных, врачей или больных («островки Лангерганса», «болезнь Паркинсона», «синдром Ван Гога»). Часто эпонимы служат причиной путаницы в медицинской терминологии. Например, «симптомом Бехтерева» называют 8 различных симптомов [3]. И, наоборот, Базедова болезнь в научной литературе называется ещё диффузный токсический зоб или болезнь Грейвса и т.п. Следует учитывать и тот факт, что некоторые медицинские явления в разных странах имеют свои эпонимы. Например, гигантоклеточный (темпоральный) артериит во франкоязычных странах известен как болезнь Хортон, а в англоязычных странах под этим названием данное заболевание практически неизвестно. Подобные явления зачастую препятствуют эффективной научной и профессиональной коммуникации. Точность терминологии - обязательное условие взаимного общения специалистов любой области. Но ещё большее значение играет точность терминологии в обучении иностранных студентов. Терминологическая лексика научного стиля речи в обучении русскому языку как иностранному служит средством для формирования предметной (профессиональной) компетенции. Когда студенты хорошо понимают слова, которыми преподаватель излагает научные положения, они хорошо усваивают материал. Если текстовый и лексический материал занятий по русскому языку соответствует главным темам изучаемых дисциплин, а система упражнений организована таким образом, что студенты всё время находятся в предметной сфере своей основной деятельности, то процесс обучения приобретает целевую направленность и повышает мотивацию обучения. Также студенты должны получить от преподавателя чёткую целевую установку на самостоятельную работу с терминологией по специальности, подробный инструктаж по её содержанию, приёмам и способам осуществления. Очень важно переориентировать

студентов от репродуктивных методов работы к творческой деятельности. В качестве основной формы внеаудиторной и аудиторной работы с лексикой по специальности студентам нашего вуза предлагается на занятиях по русскому языку работать по специально подготовленным пособиям, учебникам или материалам [1;7;8;9 и др.]. Практическое использование этой учебно-методической литературы позволяет обеспечить презентацию учебного материала на ситуативно-тематической основе, осуществлять функциональный подход к решению языковых задач и выработке профессионально-ориентированных речевых навыков, а также рассмотреть структурно-грамматические особенности образования терминов, показать взаимодействие интернациональных и национальных элементов внутри номинативных единиц.

Формирование терминологической компетенции студентов в фармацевтическом вузе является одной из важнейших задач. Для её реализации необходима система заданий и упражнений, цель которых - всестороннее знакомство с законами словообразования, сочетаемости и взаимозависимости лексических единиц, выработка навыков практического владения терминологией. Словообразование является своеобразным соединительным звеном между лексическими и грамматическими структурами в русском языке. Поэтому целенаправленный словообразовательный анализ позволяет студентам ощутить специфику изучаемого языка.

Интенсификация работы по обучению терминологической лексике должна способствовать усилению активности иностранных студентов в изучении учебного материала и формированию умения самостоятельно, систематически и методически правильно расширять полученные знания, формированию потребности в чтении литературы по специальности, специальных терминологических и толковых словарей. Студенты медицинских и фармацевтических вузов должны не просто владеть русским языком и приёмами работы со специальной и справочной литературой, а уметь правильно использовать терминологию на занятиях по профилирующим предметам.

Безусловно, работа над терминологической лексикой должна проводиться в тесном контакте русистов с преподавателями специальных кафедр. Особенно это касается вопросов отбора лексики и организации её в систему заданий. Удачным примером такого сотрудничества является, например, пособие по изучающему чтению на материале текстов по неорганической химии,



созданное авторским коллективом кафедры гуманитарных наук и кафедры неорганической химии нашего вуза. [1].

Обучение языку специальности студентов в фармацевтическом вузе является ключевой задачей, поскольку подязык фармации имеет достаточно разветвленную структуру и связан с освоением разных лексико-тематических терминологических групп: анатомическая терминология, химическая терминология, фармацевтическая терминология и клиническая терминология. Исследование словарного состава данных групп имеет весьма актуальное значение для методики преподавания научного стиля русского языка национальным студентам с учётом специальности. Перед преподавателем-русистом стоит чисто практическая цель - подготовить студента к восприятию и пониманию лекций по специальности, то есть помочь студенту, обучающемуся на русском языке, выработать языковую компетенцию при использовании языка специальности.

Литература

1. Аргунова Г.В. *Русский язык: пособие для иностр. студентов 1 курса (изучающее чтение на материале текстов по неорганической химии)* / Г. В. Аргунова, Л. А. Су-бота, Е. Я. Левитин, И. Д. Рой. Харьков: Изд-во НФаУ: Золотые страницы, 2006. 232 с.
2. Бесекирска Л. *Стилистические особенности медицинской терминологии в общелитературном языке* // Терминоведение. Вып. 1-3. Москва, 1997. С. 102.
3. Грошева А.А. *К вопросу об асимметрии терминологического знака в медицинской терминологии* // Известия Самарского научного центра Российской академии наук. Социальные, гуманитарные, медико-биологические науки. Самара: Самарский научный центр РАН. Т.17. №2 (2). 2015. С.449-452.
4. Крысенко Т.В., Суханова Т.Е. *Некоторые особенности словообразовательной работы со специальной лексикой на занятиях по русскому языку как иностранному (на материале медико-биологической терминологии)* // Русская филология. Украинский вестник. Харьков, 2008. №2 (36). С. 73-76.
5. Митрофанова О.Д. *Взаимодействие языковой и предметной компетенции в процессе обучения студентов-нефилологов* // Современный учебник русского языка для иностранцев: теоретические проблемы и прикладные аспекты: Сб. тезисов. М.: Изд-во МГУ им. М.В. Ломоносова, 2002. С. 109-110.
6. Морковкин В.В. *О лексикографическом обеспечении профессионально ориентированного обучения русскому языку*

нерусских студентов // Теория и практика научно-технической лексикографии: сб. статей. М.: Рус. яз., 1988. С. 180-185.

7. *Русский язык: учеб. пособие / Т.В. Крысенко, Н.Н. Филянина, Е.А. Долгая и др. Харьков: НФаУ: Золотые страницы, 2016. 240 с.*
8. *Субота Л.А. Русский язык. Учебник для иностранных студентов высших учебных заведений Украины. В двух частях. Часть 1. Х.: Майдан, 2007. 408 с.*
9. *Субота Л.А. Русский язык. Учебник для иностранных студентов высших учебных заведений Украины. Часть 2. Х.: Майдан, 2009. 405 с.*
10. *Шарапа А.А. Особенности презентации медицинской лексики на уроках РКИ // Карповские научные чтения: сб. науч. ст. Вып.8: в 2 ч. Ч. 1. Минск: «Белорусский дом печати», 2014. С. 217-220.*



AT THE CONFLUENCE OF SCARCITY AND MANAGEMENT: CONTEXTUALIZING INTER-STATE WATER DISPUTES IN INDIA

Zulafqar Ahmed

Research Scholar in the Department of Political Science,
Aligarh Muslim University.

ABSTRACT

Water resources management has often been described as a “wicked problem” defying easy solutions. It is wicked because there is a problem in the sharing of water resources. Water disputes in India are complex because most of the rivers in India are inter-state flowing. As major sources of freshwater resources in India are already over-exploited giving rise to concern about water scarcity and diminished economic activities. Numerous inter-state river water disputes have erupted since independence. These disputes burden the courts, distract politicians, formant popular discontent, and stimulate inter-state conflicts. There are many reasons for the emergence of inter-state water disputes in India. To a large extent, lack of proper institutional mechanism and ego on the part of water sharing states make these disputes complex. In addition to this, these disputes are frequently used by states and political actors to appeal vote banks and appease political constituencies. Due to inefficient institutional mechanisms, these inter-state water disputes are still unresolved. Against this backdrop, this paper throws light on why do inter-state water disputes occur and reoccur. Furthermore, the paper examines that how is the water dispute management system of India. In this paper, all facts and figures will be presented based on secondary data.

KEYWORDS: *Water, Disputes, Resource, Complex, Diminished*

INTRODUCTION

Since the dawn of human civilization, rivers are considered as lifelines for human progress and development. There have always been conflicts among the people regarding the sharing of rivers water, though; the magnitude and intensity of those conflicts were not as stronger as they have today. Water dispute is not a new phenomenon; they have been rising since time immemorial across the globe in general and developing countries in particular. South Asia is not an exception to this case, here; in this part of the world disputes over water have been more complex and intractable in comparison to other parts.¹ Though nature has bestowed South Asia with an abundant quantity of water but still due to increasing population, water pollution, industrialization, and water-intensified farming, the crisis of water are prevailing in this part of

the world so are the water disputes. Since decades, India has been facing similar problems which resulted in the emergence of terrible inter-state water disputes. Though, earlier water disputes were not as much complex and dreadful as they are today.

Rivers in India since ages have been flowing between two or more states by making natural boundaries. But after the emergence of British colonial rule, numbers of geopolitical and regional units came into being in the form of provinces and princely states which make rivers inter-state. With the rise of issues like constant droughts, and famines scarcity of water arose which consequently raised the problem of inter-state water disputes across the countries. This is also argued that over time, irrigation expansion work has got increased which enabled maximum utilization of water. However, the British government by its logic focused on the accumulation of wealth through the cooperation of all the political units irrespective of political boundaries. The British government used to decide the case if a dispute would emerge between the different political units; cooperation would be sought

¹ William A. Jury and Henry J. Vaux Jr. “The Emerging Global Water Crisis: Managing Scarcity and Conflict between Water Users” *Advances in Agronomy Elsevier* Vol. 95, (2007). p.3



for the resolution of disputes. During the British time for the construction of any canal separate project was taken. In several princely states and provinces when disputes would emerge, attempts were made for the settlement of disputes but there was as such no reliable master plan for the development of river basin.²

The contemporary inter-state water disputes had historical roots in colonial India which had emerged because of the unequal distribution of water. The key factors of contestation and antagonism between the centre and princely states were the political economy of colonial India. The present economic and political relationships that are at the core of inter-state water or water resource sharing are deep-rooted in the British colonial rule. Princely states were indirectly subservient to the British colonial rule. This unequal power-sharing and power structure generated a sense of inequality and injustice among the princely states. These inequalities and injustice of power and resource sharing have been incorporated in the present federal setup which governs the relations between the Centre and the states.³ Most of the present states in India have

been carved out from the British colonial provinces such as Tamil Nadu from the madras province, Karnataka from Mysore Province Kerala from the province of Cochin and Travancore. Majority of the present states of India have been formed on linguistic basis and after the State Reorganization Act, 1956. The relationship between states started getting complicated by ethnicized linguistic cleavages. The linguistic and ethnic identities of the people are highly volatile which have been politicized in different ways for their vested interests. Consequently, these ethnic and linguistic identities have become the catalyst for making inter-state water disputes more complex and perennial.

RIVERS IN INDIA

1. Himalayan Rivers
2. Deccan Rivers
3. Coastal rivers

² Acharya Paresh Kumar. *Problems of Inter-State Water Dispute: A legal Study Under Indian Perspective*. (West Bengal: University of Burdwan, 2000), p.226

³ Leela Fernandes. "Inter-State Water Disputes in South India." *Oxford Research Encyclopedia of Asian History*, (April 2018): p-4



1. The Himalayan Rivers

Himalayan Rivers	Catchment area	States in which the catchment areas falls
Ganga	861,404	Uttar Pradesh, Himachal Pradesh, Punjab, Haryana, Rajasthan, Madhya Pradesh, Bihar, West Bengal and Delhi
Brahmaputra	287,113	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West-Bengal.
Indus	321,289	Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana and Rajasthan

Source: (Rao 1998)⁴

2. Deccan Rivers

Deccan Rivers	Source	Length	Catchment area	States involve
Krishna	Mahabaleshwar	1,400	258948	Maharashtra, Karnataka, Telangana, and Andhra Pradesh
Cauvery	Western Ghats	802	87,900	Kerala, Karnataka, and Tamil Nadu
Godavari	Maharashtra	1,465	312812	Andhra Pradesh, Madhya Pradesh, Karnataka, Orissa, and Maharashtra
Pennar	Karnataka	597	55213	Karnataka and Andhra Pradesh

3. Coastal Rivers

Coastal Rivers	Source	Length (km)	Catchment area(sq.kms)	States Involve
Narmada	Madhya Pradesh	1312	98796	Madhya Pradesh, Maharashtra, and Gujarat
Sabarmati	Aravali	300	21674	Rajasthan and Gujarat
Tapi	Madhya Pradesh	724	65145	Madhya Pradesh, Maharashtra, and Gujarat
Mahanadi	Madhya Pradesh	857	141589	Madhya Pradesh, Orissa, Bihar, and Maharashtra
Brahmani	Ranchi	800	39033	Bihar, Madhya Pradesh and Orissa
Subernarekha	Bihar	395	19296	Orissa and West Bengal
Mahi	Vindhya	533	34842	Madhya Pradesh, Rajasthan, and Gujarat

Source: (Chaturvedi 2011)⁵

⁴ D. S. Rao. *Inter State Water Disputes in India: Constitutional and Statutory Provisions and Settlement*. (New Delhi: Deep & Deep Publication, 1998). P.9

⁵ M. C. Chaturvedi. *India's Waters: Advances in Development and Management* (USA: CEC Press, 2011). pp.9 10

**INTER-STATE RIVERS IN INDIA**

The major inter-state flowing rivers of India are given in the following table

Name of the River Basin	Catchment area (Sq.kms)	States in which the catchment area falls
Indus	468,068	Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana and Rajasthan
Ganga	10,50,000	Uttar Pradesh, Himachal Pradesh, Punjab, Haryana, Rajasthan, Madhya Pradesh, Bihar, West Bengal and Delhi.
Brahmaputra	580,000	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal.
Sabarmati	21,674	Gujarat, Rajasthan
Mahi	34,842	Gujarat, Rajasthan, and Madhya Pradesh
Narmada	98,796	Gujarat, Maharashtra, Madhya Pradesh, and Rajasthan,
Tapi	65,145	Gujarat, Madhya Pradesh, and Maharashtra
Subarnarekha	19,296	Bihar, Orissa and West Bengal
Brahmani	39,033	Bihar, Madhya Pradesh, Orissa
Mahanadi	141,589	Bihar, Madhya Pradesh, Maharashtra, and Orissa
Godavari	312,812	Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa
Krishna	258,948	Andhra Pradesh, Karnataka, Maharashtra
Pennar	55,213	Andhra Pradesh, Karnataka.
Cauvery	87,900	Karnataka, Kerala, Tamil Nadu.
Ravi-Beas	14,442	Punjab, Haryana, Rajasthan

(Shetty 2000)⁶

⁶ Suresh Shetty. *River Water Disputes In India With Special Reference To Cauvery*. (Mangalore: Mangalore University, 2000). p-10



SCARCITY OF WATER

*Water use has been increasing worldwide by about 1% per year since the 1980s, driven by a combination of population growth, socio-economic development and changing consumption patterns. Global water demand is expected to continue increasing at a similar rate until 2050, accounting for an increase of 20 to 30% above the current level of water use, mainly due to rising demand in the industrial and domestic sectors. Over 2 billion people live in countries experiencing high water stress, and about 4 billion people experience severe water scarcity during at least one month of the year. Stress levels will continue to increase as water demand grows and the effects of climate change intensify.*⁷

It can be analysed from the above UN Water Development Programme Report that this planet is suffering from the water crisis and it is going to be catastrophic in coming days. Three out of ten people don't have access to safe drinking water. This problem is getting worsen day by day because of the rapid increase in population, industrialization, contamination of water. There is huge pressure on the water bodies due to increasing population and mounting water demands which lead to water disputes across the globe and India is no exception to this case. According to Census, 2011 India's 61.5% of the population is still dependent on agriculture. Agriculture in India is largely dependent on annual monsoon but monsoon in India is highly unpredictable, uncertain, and erratic. Nearly 80% of its occurring during the months of (June to September) the rest of the year country remains particularly dry. Only a few places in the country receive rainfall during the winter season from the months (November to February). In the certain unpredictable rainfall areas, when the annual rainfall decreases up to 80% or below, chances of crops' failures gets increased because of famines, droughts. Roughly, one-third of areas in India come under this category. Water demand also arose across the country because of intensive irrigation activities, industrialization, and growing population. Due to the growing population and industrialization issues like quality of water and pollution also emerged. Earlier on these issues, much attention was not paid, generally, they were ignored. But over time and with the active engagement of masses issues like pollution and quality of water came into limelight. Pollution which is created by the upper riparian states has decreased availability

⁷ United Nations, Educational, Scientific and Cultural Organization, World Water Development Report, *Leaving No One Behind* (Place de Fontenoy: UNESCO, 2019), p.1

of fresh and quality water for the lower riparian states. Furthermore, several other problems also have raise like social distress, ill health, economic loss, at the end the whole ecosystem gets affected.⁸

MANAGEMENT OF WATER DISPUTES IN INDIA

In colonial India, it was easy to manage inter-state water disputes because all laws related to water were made at the provincial level. Provincial governments used to have more power than the princely states; in fact, provincial governments had the authority to take a final decision concerning water rights. In British India, governments used to exercise the powers of suzerainty and were able to make the influence over agreements which were signed between the provinces and princely states about water sharing. In brief, provinces had more powers and political influence than princely states on water rights. After the independence of India, the federal setup has been adopted as a political scheme in which each federal unit has been given equal power. Even issues related to water and inter-state rivers were incorporated in the State List. States had been empowered to make laws on inter-state rivers. Though, this created a gross confusion between the Centre and States that who would have the final authority in the resolution of these disputes.⁹

The present major inter-state water disputes of India have arisen not only because of growing population and industrialization but also due to institutional failures and governmental negligence since the colonial period. This colonial legacy of resolving inter-state water disputes remains to continue even after independence. The laws and enactment which were made even after the independence of India remained ineffective in the peaceful resolution of inter-state water disputes. Legal ambiguities and flawed policies of governments kept these inter-state water disputes alive over the years. The jurisdiction of the Supreme Court has been barred over the inter-state water disputes and the Central government was vested with exclusive powers to constitute the Tribunals. There is no such constitutional or non-constitutional body except the Inter-State Councils which could ensure co-ordination among the disputed states regarding the resolution of water disputes. Resolution of inter-state

⁸ Biksham Gujja et al. "Million Revolts' in the Making", *EPW*, (2006): p.353

⁹ Srinivas Chokkaku. Disputes, (de)Politicization and Democracy: Interstate Water Disputes in India, *RULNR*, (2012): pp.9-12



water disputes was to some extent easy before the rise of multi-party system in India. But after the rise of assertive regional forces, it became very tough to ensure coordination and cooperation among the disputed states. Party interests have always been dominant over the dispute resolution process. No political party wants to sacrifice their interests for the sake of peaceful resolution of inter-state water disputes. The mismanagement, legal ambiguities, policies flaws, lack of coordination on the part of disputed states, prolonged delays on the part of Tribunals in declaring Final Awards, and unnecessary interference from the Central governments has made inter-state water disputes more intractable in India.

The resolution of inter-state water disputes in India has not always been an easy process. On several occasions, they have turned into violent conflicts and have caused both material and human loss due to party politics. Sometimes they also lead to a constitutional crisis and created tussle between the Centre and states which ultimately affect the Centre-States relations. Unfortunately, even after the decades, Central governments have been incapable in the settlement of inter-state water disputes; in fact, they have made this problem even more complex with undue interference. The Federalism ensures equal legislative and financial powers to all political units which gives leverage to states not to show conformity with the awards of the Tribunals and directives of the Apex Court. Same has happened in Cauvery and Narmada case, the blames and counter-blames of disputed states have made inter-state water disputes the gravest problem for India. It has been realized from the recent inter-state water disputes that the existing provisions and legal mechanism are not sufficed to resolve this problem peacefully. India's current dispute resolution mechanism is not so effective to tackle this problem. These disputes have been ignored both by the State and Central governments, as a result, they got stretched first from village to state and then from state to the whole country.

CONCLUSION

Being one of the most significant and fundamental sources of human life privatization has reduced this precious common resource merely up to a commodity. The politics of water is further complicated by the fact that it carries many social meanings. The water is not only a life-sustaining resource but it is a lynchpin and symbol of culture and civilizations across the world. The availability of a large quantity of water is also a symbol of national progress and prosperity. The politics over water is

central to its sharing, controlling, managing, and utilization.

As it is argued that, water is an emotive issue. It is driven by passions and emotions because in every culture and religion water renders high regards. In a multi-diverse country like India, water disputes are difficult to resolve because here these disputes are politicized and manipulated by different political parties for their vested interests. These identities are invoked by the political parties and leaders for the fulfillment of their vested interests. This has happened in Cauvery case which was earlier only a normal water dispute but it turned into violent conflict when people started targeting people of other culture and identities. Therefore, for any federal democratic country, it necessary to avert the politicization of inter-state water disputes because if the inter-state water dispute arises then it would become difficult for the Union government to persuade concerned states for any peaceful resolution.

BIBLIOGRAPHY

1. Chaturvedi, Mahesh Chandra. *India's Waters: Advances in Development and Management*. USA: CEC Press, 2011.
2. Chokkakula, Srinivas. *Disputes, (de)Politicization and Democracy: Interstate Water Disputes in India*, RULNR, (2012).
3. Fernandes, Leela. "Inter-State Water Disputes in South India." *Oxford Research Encyclopedia of Asian History*, (April 2018)
4. Gujja, Biksham, K J Joy, Shruti Vispute, Suhas Paranjape, and Vinod Goud. "Million Revolts' in the Making", EPW, (2006).
5. Jury, William A and Henry J. Vaux Jr. "The Emerging Global Water Crisis: Managing Scarcity and Conflict between Water Users" *Advances in Agronomy Elsevier Vol. 95*, (2007).
6. Kumar, Acharya Paresh. *Problems of Inter-State Water Dispute: A Legal Study Under Indian Perspective*. West Bengal: University of Burdwan, 2000
7. Rao, D.S. *Inter State Water Disputes in India: Constitutional and Statutory Provisions and Settlement*. New Delhi: Deep & Deep Publication, 1998.
8. Suresh Shetty. *River Water Disputes in India with Special Reference to Cauvery*. Mangalore: Mangalore University, 2000.
9. *United Nations, Educational, Scientific and Cultural Organization, World Water Development Report. Leaving No One Behind*. Place de Fontenoy: UNESCO, 2019,



NATIONALISM AMONG INDIAN WOMEN IN MALAYA, 1941 – 1948

Dr.Syamala Nair Gopal¹, PhD
Senior Teacher,
Haji Zainul Abidin Form Six College,
Penang,
Malaysia

Dr.Ganesan Shanmugavelu², PhD
Senior Lecturer,
Institute of Teacher Education Ipoh Campus,
Malaysia

Article DOI: <https://doi.org/10.36713/epra6063>

ABSTRACT

This study is aimed to evaluate the spirit of nationalism among Indian women in Malaya during and after the Japanese occupation between 1941 to 1948. Malaya's sustainable economic growth required improvement in terms of labour productivity. The economic growth that occurred in Malaya during the British occupation has led to an influx of immigrants from India and China in droves. Indian labour contribution in increasing Malayan economy can't be ignored. The presence of Indian women workers, although not as many as Indian male workers, can still be regarded as something significant in Malaya's economic growth. From the aspect of tradition in India, Indian women were not allowed to go out to earn a living, especially out to a foreign country. However, this situation changed due to unavoidable circumstances. The presence of Indian women in Malaya has put them in an oppressed situation and various parties have taken the opportunity to exploit their position. This had led them to be involved in movements that could take them out of the oppressed situation and the exploitation that they had to endure. Their participation in Rani of Jhansi movement had given them the courage to be involved in estate strikes soon after. The experiences gained during the Japanese occupation and involvement in the Rani of Jhansi regiment also awaken some prominent figures to actively participate in self-help organizations and politics to further enhance the status of Indian women in Malaya.

KEYWORDS : Indian, Women, Nationalism, Regiment, Labour, Estate, Strike

INTRODUCTION

The Indian migration to Malaya as a result of economic growth resulted from the British colonization has left an impact on the ethnic composition of workers in Malaya. Although the number was lower than Indian men, the recruitment of Indian women workers can still be regarded as relevant and a vital source of energy at that time.

To attract the entry of South Indians into Malaya the British government highlighted the peninsula's great wealth with the promise of benefits like accommodation and route fees. The extensive wage differences between South India and Malaya had attracted massive numbers of workers to the latter with the hope of getting better best of life for themselves and their families. Due to financial pressure faced by the Indians, the colonial government used this possibility to seek reasonably-priced labour and maintain labourers in poor working conditions. As the Malayan economy multiplied the recruitment of Indian labour became more essential.

In the beginning, male labour were favoured be it within the plantation, creation or mining sectors. Between 1844 and 1910 almost 250,000 Indian labourers were introduced into Malaya via a settlement system. As per tradition, Indian women were not allowed to go out and earn money for a living, more so working in a foreign country. Both faith and cultural practices restrained their freedom due to the fact as wives their principal roles have been to serve their husbands and their husbands' families.¹

In the 1890s, estate employers began to realize that they were too dependent on male labourers who worked on a temporary basis which resulted in a significant increase in production costs. With deteriorating political relations between the British government in India and in Malaya following their administrative separation in 1867, there was a decline of Indian migration to the latter. This necessitate estate employers to encourage Indian workers who came to Malaya to bring their wives



and families. The aim was to ensure labour retention. Indian women who came in at that time were regarded as “*servicing agents*” and “*labour reproducers*” to the estate community. They were also considered as low-skilled workers. This is proven by the very low wages earned by Indian female labourers at that time. They were also ineligible for any bonuses or separate meals as they were regarded as “secondary wage earner”.ⁱⁱ

This paper will examine the struggle that Indian women had to endure during the Japanese occupation, and their participation in radical movements in Malaya especially in the Rani of Jhansi Regiment in Malaya. Soon after the fall of the Japanese occupation in Malaya and the failure of the regiment, estate labourers got involved in labour movements. Hence, the involvement of Indian women in strikes and labour protest will be given due preferences.

THE EMERGENCE OF NATIONALISM AMONG INDIAN WOMEN IN MALAYA

In the 1930s, the emergence of radical nationalism in India had given some exposure to the Indian estate labourers in Malaya. The dissemination of the nationalism idea among Indian estate labourers in Malaya was done by the Central Indian Association of Malaya (CIAM). This had led to several visits of Indian nationalist leaders to Malaya such as Pandit Jawaharlal Nehru and AK Gunalan. Their visits had strengthened their relationships and encouraged the trade union spirit among the estate labourers.ⁱⁱⁱ

However, CIAM leaders and fighters mainly consisted of middle-class male leaders and no Indian women were involved in CIAM top leadership. Besides, it has been proven from interviews with several country leaders who actively involved in the independence movement, that the Indian women’s involvement in radical movements only began to emerge during the Japanese occupation era.^{iv}

The Japanese occupation period gave a sense of awareness among women in Malaya. This particular era has brought many hardships to women’s life in general. The horrifying war experiences recorded in their memories and biographies show women’s struggles in their daily lives. In addition, parents were worried about their daughters’ safety. They even had to hide their girls or send them to live with their relatives in order to protect them from being raped, tortured or sexually exploited by the Japanese military at that time.^v Although the Japanese occupation had a profound effect on the Chinese community in Malaya, the Indians who became labourers in the estate also experienced such hardships. By the end of 1942, 18 Japanese rubber companies merged and set up

Syonan Rubber Syndicate which took over the rubber industry in Singapore and Malaya. This syndicate only allows labourers to work for only 10 to 15 days in a month. Moreover, the labourers were given a very low daily wages of almost 30% to 40% less than wages received from British colonisers. The Japanese army used a forced labour system in which Indian male labourers were forced to leave their families and were sent to work in the death railway construction from Bangkok to Rangoon. As a result, many Indian female labourers had to live alone in the estates. The Japanese army took the opportunity to harass and rape them.^{vi}

Although the Indians had to endure a series of problems during the Japanese occupation era, a positive thing that can be gained from the Japanese was fighting and striving desperately to liberate the homeland from colonisation. Addressing the slogan “Greater East Asia Co-Prosperty Sphere” and “Asia for the Asians”, Japan had instilled a very deep nationalism spirit among Indians in Malaya to fight for liberation of India from the British colonisation.

Accordingly, the Indian Independent League (IIL) was established where IIL was a political organization set up by Indian nationalists around Southeast Asia in 1928. The main purpose of IIL was to oppose the British administration in India. IIL was led by Ras Behari Bose. After IIL organization began to gain attention, a military movement of the Indian National Army (INA) was established and led by Colonel Mohan Singh. By February 1942, IIL branches were located in Kedah, Perak, Selangor, Negeri Sembilan, Penang and Singapore and the membership was estimated at 84,700. By September 1942, the IIL membership increased to 120,000 while the INA army recruits were 16,000 by the end of 1942.^{vii}

Unfortunately, due to their leadership issues and relatively weak goals, IIL and INA were getting less attention from the Indian community after 1942. After Japan appointed a highly charismatic nationalist, Subhas Chandra Bose as IIL leader, then the support from the Indians began to emerge. Subhas Chandra Bose was a radical nationalist leader and was once a Congress party leader in India. In July 1943, he became the President of IIL and Commander-In-Chief of INA. Meanwhile in October 1943, he set up an Indian provisional government known as Azad Hind. The Azad Hind government declared war on Britain and the United States and received recognition from Japan, Germany and Italy.^{viii} The IIL organization began to receive very encouraging support from both male and female Indians in Malaya because of its noble movement regardless of caste, social class, gender, and political ideology. Interestingly, the women involvement in IIL movement can be clearly seen. Subhas Chandra Bose introduced 12 departments under IIL and 12 ministries in his provisional government. Out of



them, a department with one ministry was dedicated for women and Lt. Col. Lakshmi Swaminathan, a 30-year-old female doctor was appointed as a leader.^{ix}

Subhas Chandra Bose's action was supported by Indian women and this led to the establishment of the Rani of Jhansi Regiment, a women's military force under INA. Indian women considered the establishment of this regiment as a form of respect for women. At the same time, he once said that the role of women was crucial in realising the country's liberation movement from the colonial grip as said during the inauguration of this regiment in 1943 in Singapore;

'if women are given a chance to play their part, they will prove the equal of their brothers in fighting for their country' (Shonan Shimbun, 1943).

The call was received by Indian women in Malaya and Singapore, but it was estimated that more than 2,000 Indian women had declared to join the unit after hearing his speech. One of the former female warriors in Rani Jhansi, Janaki Nahappan estimated that 1,000 women have joined this unit and mostly comprised educated women. Nevertheless, there were Indian female labourers who joined Rani of Jhansi's unit and fought alongside elite female fighters consisting of doctors, teachers, and nurses. The participation of women shows that there was an awareness of emancipation and the spirit of nationalism among Indian women in Malaya. The awareness of nationalism among Indian women was proved through voluntary participation of elite and grassroots women to liberate India from British colonisation.^x

However, many historians were uncertain of what was the real cause that led to the action of Subhas Chandra Bose. Some said it was set up to get the support from the men, some even said it was a propaganda move. Although Bose was said to be a person who cares about gender equality in engaging women to achieve Indian independence, his actions were often linked to a political agenda. There is an opinion that women's emancipation is not the primary goal of Subhas Chandra Bose, but his real aim was Indian independence. From the perspective of K.R Menon, former IIL senior officer;

'It [the RJR] was a mere puppet show. And not a single women knew how to wield a knife properly. They knew how to wield the kitchen knife, but not the knife for the battle. And they had no other source because every day this propaganda going on and asking Indian women to come and join. They are not going to fight, you know, but they are going to do other service for the army – the regular army...' (Datta, 2016)

In addition, an Indian lady pointed out that the establishment of the Rani of Jhansi regiment was a propaganda and unnecessary act. She argued that during the period, women should be helpful in matters such as nursing rather than holding weapons.^{xi} Another opinion pointed out that Subhas Chandra Bose's skills had attracted many women towards him and some were willing to donate their jewellery, *"if the women were wearing jewellery, she took off all their jewellery and gave it to him"*.^{xii}

However, this opinion had been disputed by some of the parties including women whom regarded as elites and held high positions in the regiment namely Rasammah Bhupalan. She stressed that the establishment of this regiment was to show that women should also play an important role in the homeland liberation and work together with men for that purpose. Besides, she also pointed out that when Indian men who joined the British troop saw Indian women willing to leave their families and join the battlefield for the country's future, they will be feeling guilty.^{xiii}

According to Dr. Sahgal, the Indian community in Southeast Asia at that time was consisted of people living in disadvantages whom did not hold high positions such as labourers in rubber estates, workers in Public Works Department, clerks, and office assistants. Based on their confidence in Bose's intentions, nearly 1000 women joined this regiment to bring Indian independence. In Bose's speech, Dr. Sahgal mentioned the part when Bose stressed that women's participation in homeland freedom movement as very important. The freedom that they want to achieve is not merely the freedom of the land, but also freedom for themselves, *"...now this is their chance not only to get freedom of the country but to get their own emancipation"*.^{xiv}

However, all archival materials and oral history sources were only focused on only one group, namely elite women. Meanwhile, the subaltern women voices such as the Indian female labourers in the estate which covered almost 80% of the Rani of Jhansi regiment were not being given enough attention and appreciation. What was the real purpose of their participation, was it because they wanted to oppose the British occupation? As noted earlier, these subaltern Indian women consist of uneducated and unexposed people from the outside world. In this kind of situation, the nationalist ideas such as the highly educated Subhas Chandra Bose were not easily understood by these people. The real purpose of Indian women in the estate joining the regiment was to escape from the hardships faced by them in the estate. Other than that, they joined this regiment to protect themselves from several problems such as food and cloth shortages, sexual harassment, and domestic violence. The following statement is Datta's opinion (2015) on this matter;



“that women from estates were drawn to the RJR in part to secure benefits that were beyond the reach of other women. This indicates that the estate women used the dominant nationalist to alter their own lives”.

The establishment of the regiment was also to meet the needs of nurses and cooks in providing food for the independence fighters. Although initially, the regiments were given military training but they did not participate in any activity on the battlefield. According to Andaya (2017), although basically this regiment was established as the movement support, such as cooking, giving treatment, and other side works, the regiment also received military training and was involved in Burmese war. However, he also agreed with the opinion that Indian women join this regiment to escape poverty and different caste or social class discrimination when they became members of the regiment;

“The uneducated young Tamil women who left the plantations to join the INA knew little about nationalism in India, and within the regiment they still experienced the discrimination of caste and class. Nevertheless, they embraced the opportunity to escape lives of poverty and drudgery, and their example was often invoked by Bose to inspire male recruits”.^{xv}

The general opinion of this regiment stated that the Indian women had been given recognition by involving in the regiment. Furthermore, it gave an opportunity to the Indian women to re-evaluate their existence in the society. The Indian woman who returned after the failure of the regiment became braver, have new thinking skills, more respected, and always crave for freedom. However, all these opinions were only suitable for Indian elite women who returned with sensational stories that can be shared to the world. On the other hand, nobody knows about what happened to Indian women in the estate. Their stories were not recorded in any historical documents on the women’s struggle against colonisation. This proves that socioeconomic position also plays an important role in being recognised and rewarded.

ESTATE STRIKES

After the Second World War period, there have been some changes on the mind set of Indians in Malaya towards British authority and power. This is due to the Britain’s defeat to Japan as well as INA movement activities which had slightly changed the perception of Indians in Malaya against Britain. From 1946 to 1948, Indian workers joined Chinese workers in a series of militant and organized strikes. This is because of the economic problems faced by the

Indian and Chinese labourers. In May 1947, the rubber price began to fall and decreased by 25 cents per pound. This had resulted in a 20 percent wage deduction.

Several series of strikes have taken place in rubber fields consisted of many Indian workers. There were many incidents that have proven the involvement of women in these strikes. The strike events that took place in the rubber estates in Malaya from 1946 to 1948 involved issues related to wages and socio-economic problems, such as the shortage of basic necessities provisions to the Indian labourers. Indian women had been involved in a series of strikes together with men by fighting towards higher wages as occurred in the Dublin, Kedah estate. In the estate, 800 women along with 1000 men demanded a wage increase of \$1.50 a day along with more rice supplies. The strike was also held at Sungai Tawar estate, Bedong estate, and Sungai Toh Pawang estate in Kedah^{xvi}.

Other than the wage problems, Indian women were also involved in strikes related to sexual harassment. For example, on October 28, 1946, 45 men and 28 women launched a strike at the Sussex estate, Teluk Anson, Perak. The aim of the strike was to protest against the behaviour of an estate clerk who disrupted female workers and they asked the worker to be fired. The same incident occurred in the Gapis estate, where female labourers protested against the estate conductor who disturbed women in the estate.^{xvii}. Interestingly, female labourers started to act aggressively and courageously during their opposition. In other incident which occurred in Bukit Sembilan estate, Kedah on February 17, 1947, about 66 workers were arrested and 21 were wounded, including women. During the battle, Kedah police chief, A .C Maxwell suffered head injuries due to being hit with a stick by a woman. The incident occurred when the police entered the estate to arrest a labourer named Balaiah who allegedly seized a lorry owned by the estate management. In the arresting process, other labourers including women and children armed with logs, sticks, and hot water to prevent the action of the polices. Besides, there were a group of women who have been prepared with pepper powder in their hands and waited for the police arrival at the front position.^{xviii}.

The series of protests that have taken place in some of these estates has led to the emergence of a relatively well-known movement among Indian community during late 1940s. The movement was called the Thondar Padai movement, also known as the Youth Corps, an established militant group to protect the interests of Indian labourers.^{xix}. Thondar Padai’s members consisted of INA former soldiers. There was evidence showing women who had been Rani of Jhansi regiment members during the Japanese occupation whom joined this movement. The women’s ‘wing’ in Thondar Padai was assigned



to protect the interests of women workers. The Thondar Padai movement attracted labourers in the estates, particularly aged between 15 and 30 years old. The aim of the movement was to solve the economic and social problems experienced by Indian labourers at that time. They were involved in social reformations such as stopping drinking habits, improving health status, and solving domestic problems. There was also an incident that shows Thondar Padai's members used violence in achieving their goals. For instance, they punished labourers who were unwilling to stop drinking toddy by tying them to the trees.

"the present troubles arose through the activities of the Youth Corps which had been going around beating up conductors, tying workers up for drinking toddy and trespassing of estates against the wishes and often without the knowledge of managers".
(The Straits Times, 7 Mac, 1947)

In one of incidents where they tied the labourers for four hours, five labourers were arrested by the police and two of them were women named Ananthayn and Manidammal.^{xx} The violent action taken by this movement has led the British to worry and they began to link this movement to the Communist Party of Malaya. As a result, the British took decisive action especially in resolving the strike events that was allegedly initiated by the Thondar Padai movement. For example on February 28, 1947, British security forces dispersed a group of women and children who were picketing in front of a toddy shop in the Bedong estate, Kedah.^{xxi} In this rally, women labour was only armed with hot water, wood, stone and pepper powder when dealing with polices armed with pistols, bayonets, rifles and batons. In the incident, a labourer died due to being beaten by a baton and nine other people were injured.^{xxii} Similarly, a strike occurred in Bukit Sembilan on March 3, 1947 and Dublin's estate on April 28, 1947, all linked to the violent Thondar Padai movement. In an investigation conducted by Indian Government Agency, SK Chettur, following an incident in Bukit Sembilan, British had taken an unjust action where many women were hit by security forces and two women were raped by British security forces while in custody. Nevertheless, the colonial government stressed that violence has to be taken in order to ease the uncontrolled situation.^{xxiii} Many followers of this movement had been arrested and sent back to India meanwhile Thondar Padai movement was banned in 1948.

The involvement of Indian women in trade unions was less active than women of other races. This is because of the conservative view of Indian society that discourages women from engaging in social activities. Furthermore, major issues of Indian women such as sexual harassment, workplace

discrimination as well as childcare issues had not gained the attention of the trade unions at the time.^{xxiv} The trade unions set up in small estates usually belong to Tamil people in the estate. At the same time, they functioned as a *panchayat* (court of justice) to solve problems in the estate including problems involving women. In 1946, a rape incident of a 16-year-old young woman by an estate foreman was discussed by a union like this in one Kedah estate. The foreman was only fined \$50 (reduced to \$25 after appeal) to be donated to a temple in the estate.^{xxv} It is clear here that serious cases such as rape which should be reported to the police have been underestimated by the unions in the estate.

Hence, it is arguable that labour struggles among Indians became stronger due to the escalating nationalist spirit after the increasing issue of workers' exploitation in Malaya. Their affiliation with Chinese labourers was a combination that gives confidence to Indian female labourers to participate and voice their needs. Besides, political awareness among them also began to emerge and raise their desire to fight for their rights in Malaya.

CONCLUSION

Conservative views are often thrown over the women role among the Indian society in Malaysia. Although they actively participated in gaining income and supporting their family needs, they were still considered as a dependent group towards men. They were always protected and separated from the outside world. A Tamil proverb related to this context is '*aanai potri vala, pennai adithu vala*' which means '*love the son, hit the daughter*'.

Exposure and influence of the nationalism movement from other countries such as India and the involvement of Malay and Chinese women in social activism, labour struggles and political consciousness inherent in them have been profoundly inspiring to Indian women. This has made them aware of the importance of education and the equality rights between men and women in the society. The injustice, labour exploitation and awful experience during the Japanese occupation have opened their minds and thoughts to be together with women of other races in voicing their rights and interests.

The personal experience and awareness of nationalism among women has led them to make decisions in politics as has been done by Indian female figures such as Janaki Athi Nahappan and Devaki Krishnan. In addition, the experiences gained during the Japanese occupation and involvement in the Rani of Jhansi regiment also awaken some prominent figures such as Rasammah Bhupalan to actively participate in self-help organizations to further enhance the status of Indian women in Malaysia. Finally, the socio-economic situation and political consciousness of Indian women in Malaysia received more attention after the 1960s period.



REFERENCES

- ⁱ Dancz, Virginia H. *Women and party politics in Peninsular Malaysia*. Oxford University Press, 1987.; pg 57-61. Until 1920 the number of Indian male labourers who came to Malaya through the kangani system was more than their female counterparts. Even after 1920, Indian male labourers still accounted for almost 70 percent of the number of the workforce who came to Malaya. Most women who were brought in from South India comprised of Tamils, Telugus, and Malayalis but a small number comprising Sikhs, Punjabi Hindus, Bengalis, and Gujeratis originated from north India. Almost 80% of these women were Tamils. See Sandhu, Kernial Singh. *Indians in Malaya: Some aspects of their immigration and settlement (1786-1957)*. Cambridge University Press, 2010. Cambridge: Cambridge University Press; pg 71.
- ⁱⁱ Datta, Arunima. "'Immortality', Nationalism and the Colonial State in British Malaya: Indian 'coolie' women's intimate lives as ideological battleground." *Women's History Review* 25, no. 4 (2016): 584-601.
- ⁱⁱⁱ Stenson, Michael. *Class, race, and colonialism in West Malaysia*. UBC Press, 2011. The issues that had been raised by CIAM involve toddy drinking habits among Indian estate workers, land and health problems, as well as education and childcare issues in the estate. In addition, CIAM also highlighted the issue of equal wages among the estate Indian workers. *The Straits Times*, February 2, 1940.
- ^{iv} Sandhu, Kernial Singh. *Indians in Malaya*; p.92
- ^v Musa, Mahani. "Malayan Women during the Japanese Occupation." *Journal of the Malaysian Branch of the Royal Asiatic Society* 89, no. 2 (2016): 101-124.
- ^{vi} Datta, Arunima. "'Immortality', Nationalism and the Colonial State in British Malaya; 584-601. According to Jain (1970), newly married couples were separated, the husbands were sent to work at the railway construction while the wives were made mistress. Some of the women were being locked in the room, undressed, tied to the chair and beaten by them. See Jain, Ravindra Kumar. *South Indians on the plantation frontier in Malaya*. Kuala Lumpur: University of Malaya Press, 1970
- ^{vii} Dancz, Virginia H. *Women and party politics*; p.66 & Datta, Arunima. "'Immortality', Nationalism and the Colonial State in British Malaya; 584-601
- ^{viii} Hills, Carol, and Daniel C. Silverman. "Nationalism and feminism in late colonial India: The Rani of Jhansi Regiment, 1943-1945." *Modern Asian Studies* 27, no. 4 (1993): 741-760.
- ^{ix} For further detail please see Ramachandran, S. and Shanmugam, B., 1995. *Plight of plantation workers in Malaysia: defeated by definitions*. *Asian Survey*, 35(4), pp.394-407. Lebra, Joyce. *Women Against the Raj: The Rani of Jhansi Regiment*. Institute of Southeast Asian Studies, 2008., Datta, Arunima. "Social Memory and Indian Women from Malaya and Singapore in the Rani of Jhansi Regiment." *Journal of the Malaysian Branch of the Royal Asiatic Society* 88, no. 2 (2015): 77-103 & Dancz, Virginia H. *Women and party politics*; p.90
- ^x Ruhana, Padzil. "Perjuangan wanita dalam aktivisme sosial dan nasionalisme di Tanah Melayu, 1929-1957/Ruhana Padzil." PhD diss., University of Malaya, 2017.
- ^{xi} Interview with Mrs Vilasini Perumbulavil, *Oral History Interviews, National Archives of Singapore, Accession No 002437*
- ^{xii} Interview with Seva Singh, *Oral History Interviews, National Archives of Singapore, Accession No 000418*.
- ^{xiii} Gopinath, Aruna. *Footprints on the Sands of Time: Rasammah Bhupalan: A Life of Purpose*. Arkib Negara Malaysia, 2007.
- ^{xiv} Interview with Lakshmi, S (Dr), *Oral History Interviews, National Archives of Singapore, Accession No 001182*
- ^{xv} Andaya, Barbara Watson, and Leonard Y. Andaya. *A history of Malaysia*. Macmillan International Higher Education, 2016.
- ^{xvi} *The Straits Times*, February 27, 1947
- ^{xvii} *Indian Daily Mail*, September 14, 1946
- ^{xviii} *The Straits Times*, March 4, 1947
- ^{xix} CO 537/3752: *Malayan Security Service, Political Intelligence Journal*.
- ^{xx} *The Straits Times*, April 21, 1947.
- ^{xxi} *Indian Daily Mail*, March 6, 1947.
- ^{xxii} CO537 / 2173: *Labour Situation Unrest among Estate Labour*.
- ^{xxiii} *Malaya Tribune*, March 20, 1947.
- ^{xxiv} Todd, Trish, and K. S. Jomo. *Trade unions and the state in Peninsular Malaysia*. Oxford University Press, 1994.
- ^{xxv} *Malayan Union: Annual Report of Labour Department, 1946*



PROSPECTIVE COOPERATION OF UZBEKISTAN WITH THE EUROPEAN UNION

Ismatullayev Farhodjon Odiljonovich

Doctoral student of Tashkent State Pedagogical University,
specialty 07.00.01 - History of Uzbekistan.

Candidate of Historical Sciences,
Associate Professor

Article DOI: <https://doi.org/10.36713/epra6026>

ABSTRACT

The article analyzes some aspects of the development of trade, economic, cultural and humanitarian relations of the Republic of Uzbekistan with European countries. The author has demonstrated on the basis of evidence that these relations take place, especially in the framework of the Days of Economics, Investment, Literature, Science and Culture.

KEY WORDS: *Republic of Uzbekistan, European Union, cultural and humanitarian cooperation, literature, trade and investment relations, art exhibitions, friendship society, research, cultural heritage.*

INTRODUCTION

At the beginning of the XXI century, radical political and socio-economic changes have taken place in the world. As a result, relations between the countries of the world have changed radically, and a wide range of opportunities has opened up for the formation of a new system of international relations based on democratic principles.

The Republic of Uzbekistan, as an integral part of the world community, occupies a special place with its active participation in the formation of a new system of international relations. In this regard, first of all, in the first years of independence, work is being done on the basis of clearly defined strategies, principles and priorities of Uzbekistan's foreign policy.

From the first years of independence, Uzbekistan has identified cooperation with the European Union and its member states as one of its foreign policy priorities. Relations between Uzbekistan and European countries are developing within the framework of the Partnership and Cooperation Agreement between the Republic of Uzbekistan and the European Union and its member states, which entered into force on 1 July 1999.

RESEARCH METHODS

The research was conducted using objectivity, analysis, synthesis, comparative analysis, generalization, historical analysis, chronological methods.

RESULTS

Cooperation between Uzbekistan and the United Kingdom "On Trade and Economic Cooperation" signed on November 22-25, 1993 during the visit of the first President of Uzbekistan IA Karimov to the United Kingdom It is based on the agreements on "strengthening and mutual protection" and "on the avoidance of double taxation" [1].

Consistent cooperation can be seen in the official visit of the British Foreign Secretary Alan Donkan to Uzbekistan in December 2016. Foreign Minister Alan Duncan met with President of the Republic of Uzbekistan Sh. Mirziyoyev to analyze the current state of bilateral relations and agree on future plans. Alan Duncan stressed that London is also interested in developing mutually beneficial cooperation with Uzbekistan, the largest country in Central Asia.

As of 2017, 22 legal agreements serve as a basis for the development of bilateral trade, economic and cultural ties. Economic relations, in particular, have been growing year by year. In 2009, the



bilateral trade turnover amounted to 37.3 million US dollars. USD [2]. This means that the United Kingdom ranks second in terms of Uzbekistan's trade turnover with the European Union [3].

The UK is one of the world's leading countries in the development and implementation of the digital economy and artificial intelligence. A workshop on "Digital Government Transformation in Uzbekistan: The UK Experience" was held on 29-31 October 2019 to learn about the UK's achievements in this area. The seminar was attended by the British Ambassador Timothy Torlot and experts in the field of digital economy V. Pak and K. Muhammadkhanova, who shared the latest research and achievements in this area. Many countries around the world, including South Korea, Japan, France, and the United States, are making great strides in the digital economy and artificial intelligence.

Uzbekistan has also paid great attention to the development of this area and raised it to the level of state policy. This is evidenced by the fact that the Republic of Uzbekistan has declared 2020 the Year of Science, Education and Digital Economy.

Uzbekistan exports cotton fiber, precious stones, ferrous metals, tungsten and their products to the UK, while the UK exports mechanical and electrical equipment, sugar and confectionery, plastic and plastic products, mineral fuels and pharmaceuticals, including pharmaceuticals, paper and cardboard, furniture, optical instruments and apparatus, tobacco, dairy products, chemical compounds, inorganic chemical products [4].

Bilateral relations with Germany have traditionally been wide-ranging and multi-faceted. A solid legal framework for cooperation has been created.

Diplomatic relations between the two countries were established in 1992 and have made great strides over the past quarter century. During the years of independence of Uzbekistan, stable cooperation has been established with Germany in political, economic, cultural, humanitarian and other spheres. Today, the two countries have a solid legal framework of more than 130 documents and a reliable mechanism for relations at all levels [5].

In the development of bilateral relations, President of Uzbekistan Sh.M. Mirziyoyev's visit to Berlin on January 20, 2019, opened a new era in the history of relations. During the visit, the achievements of the last quarter of a century were analyzed and it was noted that in the future it is necessary to consistently develop socio-economic and cultural-humanitarian ties. In bilateral relations, specific areas for expanding cooperation in the fields of culture and arts, tourism, science and technology, education, trade and economic, investment and technology, human rights have been identified [6].

There are 132 firms and companies with German investors in Uzbekistan. 33 of them are based on 100% German capital, 31 of them have

opened their representative offices in our country. The National Bank of Uzbekistan TIF has established contacts with 57 German banks [7].

Germany is one of Uzbekistan's main trade and economic partners in Europe. Germany is one of Uzbekistan's key partners in technology and investment. Germany plays a special role in the country's economic and cultural cooperation with the European Union [8]. The two countries have introduced the most trade facilitation system. In 2017, the Uzbek-German trade turnover amounted to 613.2 million US dollars, in January-November 2018 - 712.1 million US dollars. USD. In 2019, this figure is expected to reach 1 billion euros. The total volume of financial and technical cooperation between the two countries exceeded 329.9 million euros [9].

There is a great interest in studying German culture and language in Uzbekistan. German is the second most widely spoken foreign language in the country. Currently, partnerships are established with more than 30 German universities in the field of higher education, with the exchange of students, professionals and teachers. Tashkent and Berlin in the development of bilateral cultural and humanitarian relations, Cooperation between Samarkand and Bremen, Bukhara and Bonn plays an important role.

Uzbekistan's relations with Spain, one of its most promising and promising partners in Europe and internationally, are developing rapidly.

At the invitation of the Minister of Foreign Affairs of Spain H.M. Garcia Margalio, a delegation led by the Minister of Foreign Affairs of the Republic of Uzbekistan visited Spain on November 4-7, 2013. During the visit, political consultations of the Foreign Ministries were held. Spanish Foreign Minister HM Garcia Margalio visited Uzbekistan on April 20-22, 2014. On November 12-15, 2017, the Minister of Foreign Affairs of the Republic of Uzbekistan paid a return visit to Spain.

The Uzbek State University of World Languages has a Spanish language faculty. The university's cooperation with the universities of Madrid, Granada, Alcala de Enares and Malaga is developing rapidly.

Uzbekistan sees Austria as a long-term and promising partner in Europe.

In a short period of time, Uzbek-Austrian cooperation has developed in economic, scientific, technical and cultural spheres [10]. Economic and trade relations between Uzbekistan and Austria are developing year by year. If we look at the trade turnover between the two countries, we can see that compared to 1997, its volume amounted to 75 million. More than USD. The list of exports from Uzbekistan to Austria includes food products, cotton, oil and oil products, chemical products and other similar goods.

In turn, new types of machines, equipment and vehicles are being imported from Austria to Uzbekistan.



Relations between the two countries are also developing in the field of music culture. In particular, Austrian masters of music are actively participating in the annual International Music Festival "Sharq Tarona" in Uzbekistan [11].

The Ministry of Culture of the Republic of Uzbekistan, the Academy of Arts of Uzbekistan, the Research and Production Center for Arts, Crafts and Applied Arts "Musavvir" jointly with the Secretary General of the Austrian Society "Hammer-Purgstal" Z. Negotiations with Haas resulted in the establishment of the Days of Uzbekistan in Austria in April 2004[12]. As part of the Days of Culture, concerts of Uzbek music and dance groups, works of folk art and exhibitions of Uzbek artists were presented to the Austrian public.

Head of the Department of Culture of the Austrian Vienna Masters X. In accordance with the agreement reached with the Ministry of Culture and Sports of the Republic of Uzbekistan in 2003, in late September-early October 2005, 6 classical singers performed on tour. In turn, in early September 2005, the Vienna magistrate expressed his readiness to host a group of 15 Uzbek folklore artists in Austria. It is planned to be held in Austria as part of the Days of Culture of Uzbekistan, enriched with additional cultural events[13].

France is one of Uzbekistan's important partners in Europe. The sphere of culture plays a special role in the development of bilateral relations.

There have been several official visits between the two countries over the past period. During the visits, various cultural and educational expressions were presented. In particular, on the occasion of the visit of French statesman François Mitterrand in April 1994, works by French artists kept in the fund of the Museum of Art in Uzbekistan were exhibited. The State Museum of Art houses 45 paintings, including those by the famous French painter Renoir, Claude Monet, Manet, Cézanne, Degas, Tisserand, Gogh, Matisse, Van Gogh, Leje Braca [14].

A similar cultural dialogue continued at the Louvre during the visit of President of Uzbekistan Sh.M.Mirziyoev to France. The museum exhibits are divided into 6 collections. The Oriental collection alone occupied 24 halls. There are thousands of artifacts related to the history of our country. In particular, the letter of Amir Timur to Charles VI, the candlestick made by Sahibkiran for the mausoleum of Ahmad Yassavi, ancient weapons, inscriptions and other artifacts testify to the great past. President of Uzbekistan Sh.M.Mirziyoev, who got acquainted with the sources directly related to the history of Uzbekistan in the museum, noted the need to organize regular exhibitions in cooperation with Uzbek-French museums, expand scientific cooperation between archaeologists and historians [15].

It is well known from history that the peoples of Europe, including the French, are very interested in the history and cultural heritage of Uzbekistan and its study. With this in mind, in 2021 the Louvre Museum plans to hold an exhibition dedicated to the history of Uzbekistan. This event will be the first exhibition dedicated to one of the countries of the Commonwealth of Independent States at the world-famous museum[16].

Cooperation is developing in the field of theater, as in all areas. The play "Iskandar" was staged at the A. Hidoyatov Theater in French-Uzbek collaboration. The role of Alisher Navoi was played by French actor François Shatto. The theater was staged in two languages - Uzbek and French. It was noted that it was well received by the general public and played an important role in the spiritual rapprochement of the two peoples, allowing them to get acquainted with their mutual cultures[17].

By the decree of the First President of the Republic of Uzbekistan, 1996 was declared the Year of Amir Timur. Since then, UNESCO, based in Paris, has paid great attention to this important historical event and celebrated its 660th anniversary internationally[18]. Representatives of embassies operating in Uzbekistan also took part in the event, which was held in Uzbekistan. Many major events in the field of Uzbek culture and history are now being held in cooperation with this prestigious organization[19].

Today, the signing of an intergovernmental agreement on cultural, scientific and technological cooperation between France and the Republic of Uzbekistan has allowed the development of long-standing ties in this area. The festival of French films, an exhibition dedicated to the present day of the French press and many other events are regularly held in our country.

In September 1996, the France-Uzbekistan Society and the Institute for the Study of Central Asia held a colloquium on "Timur's Legacy and Its Spread to the World" from Delhi to Istanbul and other topics. The last colloquium was attended by scientists from more than 10 countries. In assessing the activities of Timur, he noted his role not only in the development of world Islamic culture, but also in the creation of the culture of Timur's time. An association for the scientific study of the art and history of the Timurid period has been operating in France since 1988. [20].

In addition, the Avicenna-France Association, which studies and promotes the scientific heritage of the Uzbek scientist Abu Ali ibn Sino, who has made a worthy contribution to world medicine since 2004, is active. All this is a testament to the enormity of France's interest in Central Asian history.

As of 2018, French language is taught to more than 300,000 students in 1260 schools, colleges and lyceums, as well as 8 universities in the country.



At the same time, Tashkent has a French Alliance, which has a rich library of more than 8,000 titles of French literature. It is obvious that in Uzbekistan, too, attention to French history and culture has long been formed and developed from year to year[21].

CONCLUSION

In conclusion, it should be noted that the cooperation of Uzbekistan with the developed countries of Europe during the years of independence has achieved great success in all areas, including trade, economic, cultural and humanitarian spheres. There is no doubt that such ties will contribute to the strengthening of interstate relations, the scientific and cultural rapprochement of our peoples and our development.

REFERENCES

1. Gulomov X.G. Xolliev A.G. *International relations of the Republic of Uzbekistan with Great Britain and the USA (1991-2001gg)*. Tashkent, "Universitet", 2002. - p. 23.
2. *Current archive of the Ministry of Foreign Economic Relations, Investments and Trade of the Republic of Uzbekistan. Information on trade, economic and investment status with the European Union*. - p. 3;
3. *According to the results of 2009, Germany took the 1st place among the countries of the European Union in terms of trade turnover with the Republic of Uzbekistan*.
4. *States and international organizations. (Responsible editor f.f.d. Q.N. Nazarov)*. Tashkent, "Academy", 2005. - p. 164.
5. *Reception at the Oqsaroy // People's speech*. - 2016. - 31 March.
6. *Uzbekistan - Germany: on the way to strengthening cooperation with a new content // People's speech*. 2019. 20 January.
7. *In the same place*.
8. *Ministry of Foreign Affairs of the Republic of Uzbekistan // Sotrudnichestvo Respubliki Uzbekistan so stranami Evropy*. <http://www.mfa.uz>. - p. 2.
9. *Uzbekistan-Germany: on the way to strengthening cooperation with a new content // People's speech*. 2019. 20 January.
10. Matxoliqov K. *History of cultural relations between the Republic of Uzbekistan and France / Interethnic relations and historical processes in Uzbekistan*. Tashkent, 2000. p. 134.
11. *The word of the people*. 2002. 23 March.
12. *Ministry of Foreign Affairs of the Republic of Uzbekistan // Ministry of Culture and Sports of the Republic of Uzbekistan // Fund m -38, list - 1, volume - 343. page - 65*.
13. *In the same place*. Sheet 62.
14. *Ministry of Foreign Affairs of the Republic of Uzbekistan // Fund - m -2, list - 1, volume - 48. sheet - 32*.
15. *Uzbekistan-France: on the way to further expansion and strengthening of long-term cooperation // People's speech*. 2018. 10 October.
16. *Uzbekistan-France: on the way to further expansion and strengthening of long-term cooperation // People's speech*. 2018. 10 October.
17. *17. Ministry of Foreign Affairs of the Republic of Uzbekistan // Fund - m -2, list - 1, volume - 48. sheet - 31*.
18. *Ministry of Foreign Affairs of the Republic of Uzbekistan // Minutes of the meeting of the Board of Directors of "Uzbekistan-France" // F-m-2, list - №1, compilation - 164, page - 68*.
19. *Ministry of Foreign Affairs of the Republic of Uzbekistan // Natsionalnoy Assotsiatsii mezhdunarodnyx kulturno-prosvetitel'skix svyazey Respubliki Uzbekistan*.
20. *Uzbekistan - France: Strategic prospects of cooperation // People's speech*. 2018. 11 October.
21. *Uzbekistan - France: Strategic prospects of cooperation // People's speech*. 2018. 11 October.



AGRICULTURAL PRODUCTIVITY IN INDIA: ISSUES AND CONCERNS

Dr. Mrs. Manisha Vinay Aole

Associate Professor in Economics
S.P.College of Law,
Chandrapur

ABSTRACT

"I Believe in the future of agriculture, with a faith born not of words but of deeds."

E.M.Tiffany

Agriculture in India is not only a source of earning for its million of population but it is a way of life for millions of masses. Being the largest private sector 'agriculture' enjoys a very important position in Indian economy It is a sector linked with various sector like production, processing and marketing; agriculture continuously dominate to change in India. The paper aims to study the causes for low agricultural productivity in India by using the secondary data. Agriculture is the main occupation in India as large population is living in the rural areas and having agriculture as their livelihood. A change in the agricultural productivity is always a cause of concern for agricultural sector. Agriculture holds a special place in the heart of Indian farmers not only because it is the source of their bread and butter but it is the lifeline of Indian farmers.

KEYWORDS: - Rural, Agriculture, Crop Production, Productivity, Infrastructure, Land, Yields

INTRODUCTION

Agricultural productivity relates to land productivity, i.e., yield per hectare. It is expressed in physical production rather than on value concept. Generally the quantity of the produce is taken into account and not its value. Agricultural productivity though low is slowly and steadily rising during 1950-51 and 2010-11 for most of the crops. During the first decade of the millennium the rate of growth of agricultural output was lower than the planned output. The Planning Commission fixed a largest growth rate of 4% per annum for 11th plan. The largest 4% growth in GDP from agriculture and allied sectors was felt necessary to achieve overall GDP growth target of 9% per annum. The annual rate of growth of crop output during 2000-01 to 2004-05 was only 1% and during 2004-05 to 2009-10 it was 1.7%. These growth rates were close to overall population growth rate during the decade.

The share of agriculture and allied activities in gross domestic product at factor cost fell from 55.1 percent in 1950-51 to 14.6 percent in 2009-10. This declining share of agriculture sector is a cause of Indian economy as majority of its population are engaged in this sector. It is an admitted fact that agricultural

productivity in India continues to be considerably lower than in other Countries. The causes for low productivity of agriculture sector in India can be viewed in two ways, i.e., General causes, Institutional factors and Technological factors.

OBJECTIVES OF THE STUDY

- To analyze the extent of productivity in the agricultural sector in India.
- To evaluate the causes for low agricultural productivity in India.
- To analyze that how and to what extent productivity of agriculture is affecting the role agriculture sector in India.

HYPOTHESIS OF THE STUDY

- Agricultural Productivity in India is low due its high dependency of vagaries of nature.
- An uncertainty in the utilization of resources is always a challenge for Agriculture productivity in India.



LOW AGRICULTURAL PRODUCTIVITY

The rapid increase in population and slow shift of labour from agriculture to non-agriculture is evident in the dominance of marginal farms in India. In 2002-03 nearly 70 percent of the operational holdings were marginal holdings with size less than one hectare; another 16 percent were small holdings with size between 1-2 hectares. The small sizes prevent farmers from adopting improved agricultural technologies and create barriers for accessing credit and adopting improved agricultural practices.

General Causes

India is facing serious environmental stress in her natural resource stocks. Land desertification and land degradation affect the quality of land, which is the major capital input in farming.

- Overcrowding in agriculture- Indian agriculture is an overcrowded by the people. This has led to decline in the per capita land area, sub-division and fragmentation of land holdings, disguised unemployment and negative marginal productivity. Even the sub-marginal lands of inferior quality are being brought under cultivation on account of the severe pressure of population on land. This land being inferior always resulted in less yields.
- Water Resources- The challenges of water resources management faced by India and the likelihood has been intensified due to rising population. The available water resources were falling short with regard to expected agricultural and industrial demand, the danger of pollution of water bodies and, over the longer term, the effect of climate stress on water availability in many parts of the country are the major causes of low agricultural productivity. During 1995-96 to 2006-07, on an average, the contributions of surface and groundwater to net irrigated area were 32 percent and 60 percent respectively. There has been a fall in ground water table due to rapid expansion of tube wells. There is deterioration in water quality which has affected agricultural productivity adversely.
- Fertilizers- The assessment of the 11th plan notes that the association between fertilizer consumption and food grains production has weakened during the recent years due to imbalanced use of nutrients and deficiency of micro-nutrient deficiencies in Indian soils, which demands a careful examination and policy action in this matter. The imbalance in

use of plant of nutrients and neglect of micro nutrient deficiencies in Indian soils has led to declining fertilizer response resulted in low agricultural productivity.

- Soil- A healthy soil is necessary to ensure proper retention and release of water and nutrients, promote root growth maintain soil biotic habitat and resist degradation. Decline in soil health causes low fertilizer and other nutrients responses resulting in low productivity. There is an urgent need for soil testing at farm level for determining an optimum use of fertilizers and following of sound crop management practices.
- Unfavourable rural Environment- Environment in villages is unfavourable and uncondusive to the development of agriculture. Farmers are ignorant and uneducated. They are influenced and guided by the customs and social institutions like caste and joint family system. This type of atmosphere has been discouraging our farmers to make any improvement on their lands.
- Finance, Storage and marketing facilities- Agricultural productivity in India has suffered in the initial stages due to the non-availability of finance, storage and marketing facilities. These kind of inadequate resources affects the agricultural productivity and the interest of farmers at large.
- Weaknesses in Policy Perception- The Indian strategy for agricultural growth remained preoccupied. The lacking of constructive policy measures had affected the productivity of agriculture negatively.

Institutional Factors

- Uneconomical size of holdings- Indian agriculture is dominated by small farmers. Every farmer owns a land. More than 70 percent of the total land holding are small in size. They are scattered too. The applications of modern science and technology to agriculture become a difficult task. The small size of holdings has contributed to the low productivity of agriculture.
- Faulty Land Tenure system- Due to defective land system there are two classes namely- the class of landlords and the tenants. The class of landlords always exploited the tenants. Under this tenancy system land belong not to the tiller but to the landlord. The tenant has no security and cannot invest on his own terms. Under these difficult conditions, it is impossible to expect the tiller to increase



agricultural productivity. Though many tenancy law reforms has been done in India but positive result is negligible.

Technological factors

- Poor Techniques of production- Primitive and poor techniques of production, inadequate and obsolete nature of implements and failure to apply modern science and technology to our agriculture have been the contributory factors for the low productivity of agriculture in India.
- Lack of Research- Low level of research is also one of the factor responsible for the low productivity of agriculture in India. The rural farmers far away from the newly developed techniques in order to raise agricultural productivity.
- Rural Indebtedness- Rural indebtedness is another contributory factor to the low productivity of agriculture in India. It is well established fact about farmer that he take birth in debt, lives in debt and die indebt.

4. *Economic Survey various years.*
5. www.mahaagri.com
6. *Momoria CB and TRipathi BB., 'Agricultural Problems of India' New Delhi, Kitab Mahal.*
7. *Rama Jaj B, "Indian Economy: Prospects and Problems", Madras, Vishal Publications.*
8. <http://www.ukessays.com>
9. *Sankar U., "Growth Or Development: Sustainable Development of Agriculture", The India Economy Review., May, 2011.*

CONCLUSION

India's agriculture has the potential to feed not only its 125 corers of masses but to feed the many more. Though the causes for low agricultural productivity are many fold a constructive policy initiative and farmer friendly approach to it can definitely bring positive change in this direction. We need policies for increasing crop productivity, crop diversification, generation of non-farm opportunities in rural areas and development of agro based industries. Implementation of nutrition based subsidy scheme, fertilizer prices linked with minimum support price, easy availability of institutional credit facility, targeting agricultural subsidies and concessional agricultural credit only to small and marginal farmers are some of the steps which can contribute in sustainable agricultural development in India.

"It's not about how bad you want it....."

. It's about how hard you are willing to work for it."

One can't just sit in the house and wish you had the perfect field or the perfect yield, one has to go out into the field and work with it productively.

REFERENCES

1. *Agrawal, S.H. "Indian Economy" 1985*
2. *Alak Ghosh, ' Indian Economy: Its nature and Problems', Calcutta, The World press Pvt.Ltd.*
3. *Bagachi, k.k., "Agrarian Crisis, Farmers' Suicides, and Livelihood Security of Rural Labour in India" Abhijeet Publications, Delhi, 2008.*



AN ANALYTICAL OVERVIEW OF DOCTRINE OF FINALITY AND JUDICIAL RESPONSE IN INDIA

Dr Vikrant Sopan Yadav

Associate Professor (Law),
National Institute of Construction Management and Research,
Hyderabad

Article DOI: <https://doi.org/10.36713/epra6078>

ABSTRACT

Supreme Court of India, being the highest court of the country, has always had the air of finality to its pronouncements. The doctrine of finality has played a great role in giving judiciary the upper hand and finality to its judgements. It has helped the judiciary in keeping other pillars of democracy i.e. executive and legislature from transgressing their powers laid in the constitution.

This research paper contains an analysis of concept of finality/res judicata and judicial response to the doctrine of finality in India.

KEY WORDS: *Finality, res judicata, judgement, litigation*

INTRODUCTION

Finality of judgments puts an end to the judicial process, prohibiting subsequent appeals, new proceedings and disputing clearly established facts. Finality to judicial decision, popularly known as doctrine of res judicata in Indian parlance, has been recognised by u/s 11 of the Code of Civil Procedure. Section 11 of the code states that no court shall attempt any suit or issue in which the matter directly or substantially in issue is the same in the previous or former suit between the same parties or between under whom they or any of them claim litigation under the same title of the former suit already decided before any competent court to attempt such subsequent suit.

The issues which are litigated or maybe litigated in an action can be finally adjudicated only by final judgment on the merits. Discontinuance or abatement of the action before final judgment leaves the issues open to contest in other litigation, even though they had been decided provisionally by order entered upon a motion made in the action or by interlocutory judgment. "The test then is not the form of the decision but the nature of the proceedings in which the adjudication is made."¹

¹ *Bannon v. Bannon*, 270 X. Y. 484 (1936).

HISTORY OF DOCTRINE OF FINALITY

Roots of the doctrine of Res Judicata can be found in the various ancient legal systems. Starting from the issue preclusion in the Germanic estoppel to the latter on the Roman res judicata which was instigating the truth by looking into the judgmental effect.² The doctrine of Res Judicata is based on three Roman Maxims³:

Nemo debet lis vexari pro eadem causa (no man should be vexed twice for the same cause);

Interest reipublicae ut sit finis litium (it is in the interest of the state that there should be an end to a litigation);⁴ and

Res judicata pro veritate accipitur (a judicial decision must be accepted as correct).

² Clermont K.M., *Res Judicata as Requisite for Justice*, 68 Rutgers University Law Review (2016) <https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=2599&context=facpub>

³ Takwani C.K., *Civil Procedure with Limitation Act*, 1963, EBC Explorer, pg. 70-71, 8th ed. 2017.

⁴ *Chanchal Kumar Chatterjee v. State of West Bengal*, 12 W. P. 4398 (W) of 2018



The logical reasoning behind principle of res judicata is that, 'where a fair opportunity has been afforded to the parties to litigate a claim before a court which has jurisdiction over the parties and the cause of action, and the court has finally decided the controversy, the interests of the state and of the parties require that the validity of the claim and any issue actually litigated in the action, shall not be again litigated by them.'⁵

CONCEPT OF RES JUDICATA/FINALITY OF JUDGEMENT

Res judicata may comprise a degree of either *claim preclusion* or *issue preclusion*. *Claim preclusion* subdivides into three subparts:

- (1) If the judgment in the initial action was in the defendant's favor, the plaintiff's claim is said to be barred by the judgment. Bar says that the plaintiff generally cannot bring a second action on the claim in the hope of winning this time.
- (2) If the judgment in the initial action was in the plaintiff's favor, the plaintiff's claim is said to merge in the judgment. Merger says that the plaintiff generally cannot bring a second action on the claim in the hope of winning a more favorable judgment.
- (3) However, the plaintiff can seek to enforce the favorable judgment, and the defendant cannot then raise defenses that were or could have been interposed in that initial action.⁶

Issue preclusion is the part of res judicata that says, outside the context of the initial action, regardless of who won the judgment, a party generally may not relitigate any issue of fact or law if its determination was essential to a valid and final judgment, subject to exceptions.⁷

DOCTRINE OF FINALITY AND JUDICIAL RESPONSE

Justice Dalveer Bhandari and Justice H.L. Dattu of the Supreme Court of India have examined the concept of finality of judgment in *Indian Council for Enviro-Legal Action v. Union of India & Ors.*⁸ In the instant case, even after final judgment of this court, the review petition was also dismissed. Thereafter, even the curative petition has also been dismissed in this case. Court held that,

'The controversy between the parties must come to an end at some stage and the judgment of this court must be permitted to acquire finality. It would hardly

be proper to permit the parties to file application after application endlessly. 'In a country governed by the rule of law, finality of the judgment is absolutely imperative and great sanctity is attached to the finality of the judgment. *Permitting the parties to reopen the concluded judgments of this court by filing repeated interlocutory applications is clearly an abuse of the process of law and would have far reaching adverse impact on the administration of justice.*'

Court also held that,

The maxim '*interest Republicae ut sit finis litium*' says that it is for the public good that there be an end of litigation after a long hierarchy of appeals. At some stage, it is necessary to put a quietus. *It is rare that in an adversarial system, despite the judges of the highest court doing their best, one or more parties may remain unsatisfied with the most correct decision. Opening door for a further appeal could be opening a flood gate which will cause more wrongs in the society at large at the cost of rights.*

Sanjib Banerjee, J. had examined the issue with regard to the Doctrine of Finality and pronounced the principles thereto in *Indu Bhusan Jana v. Union of India and Ors.*⁹ The Principles of Doctrine of Finality have been succinctly captured in the paragraphs delineated below:

"11. Upon an order attaining finality, it matters little as to whether it was erroneous. A party aggrieved by an order has to work out his remedies within the legal framework. If an issue or the entire *lis* is concluded upon a finding being rendered and such finding remains unchallenged, it is no longer open to the party to undo the effect thereof at any subsequent stage or collaterally unless it is demonstrated that the finding was obtained by fraud or the Court lacked jurisdiction to pass the order. The hierarchy in the judiciary exists to afford litigants to climb up the ladder in pursuit of justice and to right a wrong committed at a lower level. But if a litigant accepts an order, he does it to his prejudice and binds himself thereby.

Court further observed that,

12. The principle of finality or *res judicata* is a matter of public policy and is one of the pillars on which a judicial system is founded. Once a judgement becomes conclusive, the matters in issue covered thereby cannot be reopened unless fraud or mistake or lack of jurisdiction is cited to challenge it directly at a later stage. The

⁵ Restatement, Judgments (Tent. Draft No. 1, 1941) §301.

⁶ Supra note, 2 pg. 1070

⁷ See Restatement (Second) of Judgments § 27-28 (AM. LAW INST. 1982).

⁸ 1996 AIR 1446, 1996 SCC (3) 212

⁹ AIR 2009 Cal 24; (2009) 1 CHN 27



principle is rooted to the rationale that the issues decided may not be reopened, and has little to do with the merit of the decision. If it were to be otherwise, no dispute can be resolved or concluded. The principles of *res judicata* and constructive *res judicata* apply equally to proceedings under Article 226 of the Constitution.

Similarly, in *M. Nagabhushana v. State of Karnataka*¹⁰ this Court held that the doctrine of *res judicata* is not a technical doctrine but a fundamental principle which sustains the rule of law in ensuring finality in litigation. The main object of the doctrine is to promote a fair administration of justice and to prevent abuse of process of the court on the issues which have become final between the parties.

In the case of *Satyadhyan Ghosal v. Deorjin Debi*,¹¹ Das Gupta, J explained the doctrine in following words;

“The principle of *res judicata* is based on the need of giving finality to judicial decisions. What it says is that once a *res* is *judicata*, it shall not be adjudged again. Primarily, it applies as between past litigation and future litigation. When a matter whether on a question of fact or a question of a decision is final, either because no appeal was taken on higher court or because the appeal was dismissed, or no appeals lies, neither party will lie, neither part will be allowed in future suit bar proceeding between the same parties to canvass the matter again”¹²

Giving a liberal interpretation in application of the doctrine in, *Forward Construction Co. v. Prabhat Mandal*,¹³ the SC held that, “an adjudication is conclusive and final not only as to the actual matter determined but as to every other matter which the party might and ought to have litigated and have had decided as incidental to or essentially connected with subject matter of the litigation an every matter coming into the legitimate purview of an original action but in respect of the matter of claim and defence.”

In *Sulochana Amma v. Narayanan Nair*,¹⁴ SC has been observed that,

"Sec. 11 (of CPC) embodies the rule of conclusiveness as evidence or bars as a plea an issue tried in an earlier suit founded on a plaint in which the matter is directly and substantially in issue and became final. In a later suit between the same parties or their privies in a court competent to try such subsequent suit in which the issue has been directly and substantially raised and decided in the judgment

and decree in the former suit would operate as *res judicata*. Sec. 11 does not create any right or interest in the property, but merely operates as a bar to try the same issue once over. In other words, it aims to prevent multiplicity of the proceedings and accords finality to an issue, which directly and substantially had arisen in the former suit between the same parties or their privies, been decided and became final, so that parties are not vexed twice over, vexatious litigation would be put to an end and the valuable time of the court is saved. It is based on public policy, as well as private justice. They would apply, therefore, to all judicial proceedings whether civil or otherwise. It equally applies to quasi-judicial proceedings of the tribunals other than the civil courts".

The object of finality of judgement/*res judicata* is to prevent multiplicity of judicial decision making on same subject matter/ having same cause of action. The doctrine helps in preventing addition to already pending and mounting number of cases.

Constructive *res judicata*

A sub-set of the doctrine of *res judicata*, emanating from Section 11 of the Code of Civil Procedure, the doctrine of constructive *res judicata* sets to naught any claims being raised in a subsequent proceeding where in an earlier proceeding such claim should/ought to have been raised and decided. A rule of prudence, thus, the doctrine seeks to bar determination and enforcement of claims which have not been raised at an appropriate juncture in judicial proceedings.

Workmen v. Board of Trustees, Cochin Port Trust,¹⁵ Supreme Court explained the Principle of *Constructive Res Judicata* in following words;

“If by any judgement or order any matter in issue has been directly and explicitly decided, the decision operates as *res judicata* and bars the trial of an identical issue in a subsequent proceeding between the same parties. The principle of *res judicata* also comes into play when by the judgement and order a decision of a particular issue is implicit in it, that is, it must be deemed to have been necessarily decided by implication; then also the principle of *res judicata* on that issue is directly applicable. When any matter which might and ought to have been made a ground of defence or attack in a former proceeding but was not so made, then such a matter in the eye of law, to avoid multiplicity of litigation and to bring about finality in it is deemed to have been constructively in issue and, therefore, is taken as decided.

EXCEPTIONS TO APPLICATION OF FINALITY/RES JUDICATA

In the case of *Rural Litigation And Entitlement Kendra v. State of Uttar Pradesh*,¹⁶ it was

¹⁰ (2011) 3 SCC 408, para 80

¹¹ A.I.R. 1960 S.C.94

¹² A.I.R. 1960 S.C. 941 at pg. 943

¹³ 1986)1SCC 100; AIR 1986 SC 391

¹⁴ AIR 1994 SC 152

¹⁵ (1978) 3 S.C.C. 119: A.I.R. 1978 S.C. 1283



held that the writ petitions filed in the Supreme Court are not inter-party disputes and have been raised by way of public interest litigation and the controversy before the court is as to whether for social safety and for creating a hazardless environment for the people to live in, mining in the area must be permitted or stopped. Even if it is said that there was a final order, in a dispute of this type it would be difficult to entertain the plea of Res Judicata.

The decision of SC in this case is very important as it has left the public interest litigation petitions out from the purview of Res judicata. Since the interest of public at large is involved in PIL, application of *res judicata* may deny remedy in case of recurring cause of action like environmental pollution. Hence, exclusion of PIL from application of doctrine of res judicata is necessary.

*Sunil Dutt v. Union of India*¹⁷ dealing with writ petition filed, SC held that habeas corpus, filed under fresh grounds and changed circumstances will not be barred by a previous such petition.

per incuriam

'*Incuria*' means literally 'carelessness' which apparently is considered less uncomplimentary than ignorantia; but in practice '*per incuriam*' applies to mean '*per ignorantiam*'. It would almost seem that '*ignorantia juris neminem excusat*' – except a Court of law, ignorance of what? Ignorance of a statute, or of a rule having statutory effect which would have affected the decision if the court had been aware of it.¹⁸

Judgments pronounced even by the Supreme Court in ignorance of statute law or a binding precedent are known as judgments *per incuriam*. Such judgments do not have THE authority of a precedent and need not be followed.¹⁹

The Hon'ble Supreme Court explained the concept of "*per incuriam*" as following:

"In *Young v. Bristol Aeroplane Company Limited* (1994) All ER 293 the House of Lords observed that '*Incuria*' literally means 'carelessness'. In practice *per incuriam* appears to mean *per ignorantiam*. English courts have developed this principle in relaxation of the rule of stare decisis. The 'quotable in law' is avoided and ignored if it is rendered, 'in *ignoratum* of a statute or other binding authority. The same has been accepted, approved and adopted by this court while interpreting Article 141

of the Constitution which embodies the doctrine of precedents as a matter of law."²⁰

Tax Disputes

Res judicata is not applicable to tax disputes as the liability under tax laws is dynamic and keeps on changing in every financial year.

CONCLUSION

In country like India where more than three crore cases are pending and the judiciary, with limited resources, is struggling to reduce the pendency of cases, finality of judgement/res judicata plays a vital role. The principle of finality of litigation is based on a sound firm principle of public policy. The doctrine of finality/res judicata is evolved with an object of preventing unnecessary litigation under the colour and pretence of law. Doctrine of finality/*res judicata* ensures end to litigation in public interest.

¹⁶ 1985 AIR 652, 1985 SCR (3) 169

¹⁷ AIR 1982 SC 53, 1982 CriLJ 193, (1982) 3 SCC 405

¹⁸ Allen C.K., *Law in the Making*, 7th Ed. Oxford University Press, 1964, at pg. 246

¹⁹ *A Perspective on Precedents*,
<http://jaassam.gov.in/pdf/article/Article-5.pdf>

²⁰ *Siddharam Satlingappa Mhetre v. State of Maharashtra*, (2011) 1 SCC 694 At Para 139



THE EFFECT OF COMPETITIVE STRATEGIC ON ORGANIZATIONAL PERFORMANCE IN TELECOMMUNICATION COMPANIES IN MOGADISHU SOMALIA

Daahir Farah Elmi
Graduate Student,
University of Somalia (UNISO)

ABSTRACT

This study aimed to figure of competitive strategy on organizational performance of telecommunication companies in Mogadishu-Somalia. The first objective was the impact of cost leadership strategy on organizational performance of telecommunication companies in Mogadishu-Somalia. The second objective was the impact of differentiation strategy on organizational performance of telecommunication companies in Mogadishu-Somalia. The third objective was the impact of focus on strategy on organizational performance of telecommunication companies in Mogadishu-Somalia. The target population was 100 and the sample size was 60 respondents. The study used descriptive method and 20 questionnaires were distributed. Descriptive and correlation analysis was used. The study found that cost leadership strategy, differentiation strategy and focus on strategy have significant positive relationships on organizational performance of telecommunication companies in Mogadishu-Somalia. Finally, the researcher found that the competitive strategy has significant positive relationships on organizational performance of telecommunication companies in Mogadishu-Somalia.

INTRODUCTION

In today's competitive business environment, organizations must map out their plans on how to sustain their business performance, their competitive advantage and increase their probability (Thompson, Strickland, & J.E., 2007) that the main objective of any strategy in an organization is to improve its financial performance, strengthen its competitive position and to outdo its rivals. To obtain effective firm performance within the scope of sustainable competitive advantage, decisions on shaping firms' competitive strategies was be one of the main issues for organizations. This is because the formulation and implementation of competitive business strategies that will improve performance are one of the competent methods to achieve firm's sustainable competitive advantage, therefore the effect of competitive strategies on firm performance is a major issue to policy makers and has been playing important role to refine firm performance for a long time (Porter, M. , 2008)

The telecommunication industry is growing and is becoming intensely competitive. As such, every organization needs to adopt strategies which will

enable it to have a competitive edge over the other players in the market. As competition intensifies, many businesses continue to seek profitable ways in which to differentiate themselves from competitors (Porter, M. , 2008). Strategies concern the purpose and objectives of the organization. They are the things that organizations do, the paths they follow and the decisions they take in order to reach certain points or level of success. Influences such as economic restructuring, intensified competition, government regulations, and technological advances have resulted in heightened environmental turbulence and uncertainty for small business firms (Covin, J., D.P; Slevin. , 2010).

A competitive strategy, from a business level perspective, is the achievement of competitive advantage by a business unit in its particular market. According to (Ansoff, H.I.; McDonnell, E., 1990) competitive strategy is a distinctive approach which a firm uses or intends to use to succeed in the market. Competitive strategies as more skill-based and involving strategic thinking, innovation, execution, critical thinking, positioning and the art of warfare. Competitive strategy specifies the distinctive approach



which the firm intends to use in order to succeed in each of the strategic business units. Competitive strategy gives a company an advantage over its rivals in attracting customers and defending against competitive forces. Competitive strategy consequently aims to establish a profitable and sustainable position against the forces that determine industry competition (Porter, M., 2008).

Competitive strategy refers to deliberately choosing different set of activities that form the basis of competitive advantage to deliver a unique mix of value. It is a long-term action plan that is defused to help a company gain a competitive advantage over its rivals. Competitive strategy is about being different from others in the industry which means deliberately choosing a different set of activities to deliver a unique mix of value. A company has competitive advantage whenever it has an edge over its rivals in securing customers and defending against competitive forces (Thompson A; Strickland A.J., 2007).

In Somalia Six main companies provide telecommunication services in the country. These include Hormuud Telecom, Telecom Somalia, Telesom, and Golis Telecom. They provides a range of products and services which include Land-line, GSM, roaming services, top-up services, data messaging, MMT, voice services, and security services, 4.-5G, GPRS and much more. These services are all geared towards growth and competition. They uses a lot of strategies to gain sustained competitive advantage (Jama. A. M., 2018)

The telecommunication industry is growing and is becoming intensely competitive. As such, every organization needs to adopt strategies which will enable it to have a competitive edge over the other players in the market. As competition intensifies, many businesses continue to seek profitable ways in which to differentiate themselves from competitors (Porter, 2008). Strategies concern the purpose and objectives of the organization. They are the things that organizations do, the paths they follow and the decisions they take in order to reach certain points or level of success. Influences such as economic restructuring, intensified competition, government regulations, and technological advances have resulted in heightened environmental turbulence and uncertainty for small business firms (Covin & Slevin, 2010).

A competitive strategy, from a business level perspective, is the achievement of competitive advantage by a business unit in its particular market. According to Ansoff and McDonnell (1990) competitive strategy is a distinctive approach which a firm uses or intends to use to succeed in the market. Sidorowicz (2007) views competitive strategies as

more skill-based and involving strategic thinking, innovation, execution, critical thinking, positioning and the art of warfare. Competitive strategy specifies the distinctive approach which the firm intends to use in order to succeed in each of the strategic business units. Competitive strategy gives a company an advantage over its rivals in attracting customers and defending against competitive forces. Competitive strategy consequently aims to establish a profitable and sustainable position against the forces that determine industry competition (Porter, 2008).

The telecommunications business in Somalia, as many other countries in the world (Daniel, 2007) has in the recent past been among the most competitive industry of the economy. . The telecommunication company offers a variety of services which include Mobile service (GSM), landlines and mobile linked internet services.

Studies done on competitive strategies are noted to have given attention to contexts other than Somalia and in particular the mobile telecommunications business. For example, a study by Murage (2011) focused on the competitive strategies in the petroleum industry, a study by Gathoga (2001) focused on competitive strategies by commercial banks in Kenya and Karanja (2002) studied competitive strategies within the real estate firms in the perspective of Porter's generic model, but there is no previous competitive strategies study conducted in telecommunication industry in Somalia. This paper examines the relationship between competitive strategies and organizational performance among firms in the mobile telecommunications industry in Somalia. Specifically the study set out to identify the competitive strategies adopted by firms in the mobile telecommunication industry in Somalia and thereafter examine the relationship between these strategies and firm performance in this industry

LITERATURE REVIEW

Cost Leadership Strategy on organizational performance Cost Leadership Strategy is defined as the capacity of an entity to produce products that will be at a lower cost compared to different competitors. Organizations can produce great quality products and offer them at a lower cost consequently give them an upper hand over their competitors. Lower expenses will pull in clients consequently result in higher benefits. As per this is ascribed to ease work, material and give the firm a low manufacturing cost (Porter, M. E., 1985).

Cost Leadership Strategy-In cost leadership, a company sets out to become the low cost producer in its industry. The sources of cost advantage are varied and depend on the structure of the industry. They may



include the pursuit of economies of scale, proprietary technology, preferential access to raw materials and other factors. A low cost producer must find and exploit all sources of cost advantage. If a company can achieve and sustain overall cost leadership, then it will be an above average performer in its industry, provided it can command prices at or near the industry average. Simply being the lowest-cost producers is not good enough, as company leave itself wide open to attack by other low-cost producers who may undercut its prices and therefore block its attempts to increase market share. Therefore, companies need to be confident that they can achieve and maintain the number one position before choosing the cost leadership route. Companies that are successful in achieving cost leadership usually have (Porter, M. E., 1985):

In cost leadership strategy, a firm targets to become the low cost producer in the industry in order to gain competitive advantage (Davidson, S., 2008). A firm is considered to be a low-cost producer if it sells its products at average industry prices but earns a profit higher than its competitors, or may sell at a price below average to gain significant market share (Porter, M., 2008). The sources of cost advantage rest on the structure of the industry. These can be achieved economies of scale, advanced technology, preferential access to raw materials among others. In order to achieve a low-cost advantage, an organization must have a low-cost leadership strategy, low cost manufacturing, and the core competencies (Malburg, C., 2007).

Differentiation Strategy on organizational performance Differentiation strategy requires the development of goods or unique services from unmatched by relying on customer loyalty to the brand. A company can be offered higher quality, performance or unique features that each of them can justify the higher prices. The value added by the uniqueness of the product may allow the firm to charge a premium price for it (Kiechel, W., 2010).

Differentiation involves making products or services different from and more attractive those of competitors. How company does this depends on the exact nature of industry and of the products and services themselves, but will typically involve features, functionality, durability, support and also brand image that customers value. To make a success of a differentiation strategy, organizations need (Porter, M. E., 1985):

focus on Strategy on organizational performance Organizational performance is defined as outcome of the combination of the strategies and capabilities and their deployment to achieve specific goals. Deployment and implement of the firms'

strategy and capability and measuring their outcome depends on the industry where a firms operates. Typically, firms gauge organizational performance using financial and non- financial outcomes related to certain aspects of the quality and operations they employ (Lee, D., Rho, B. H., & Yoon, S. N., 2015).

The focuser's basis for competitive advantage is either lower costs than competitors serving that market segment or an ability to offer niche members something different from competitors. Focusing is based on selecting a market niche where buyers have distinctive preferences. The niche is defined by geographical uniqueness, specialized requirements in using the product or by special attributes that appeal to members, (Stone, 1995). A firm using a focus strategy often enjoys a high degree of customer loyalty, and this entrenched loyalty discourages other firms from competing directly. Because of their narrow market focus, firms pursuing a focus strategy have lower volumes and therefore less bargaining power with their suppliers. However, firms pursuing a differentiation-focus strategy may be able to pass higher costs on to customers since close substitute products do not exist. Firms that succeed in a focus strategy are able to tailor abroad range of product development strength to relatively narrow market segment that they know very well (Grant, 2012). The study finding of Odunayo, 2018 corroborates with the views that a firm is able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly. As a result the firm achieves either differentiation from better meeting the needs of the particular target market or lower costs in serving this market or even both (Porter, M., 2008).

The focuser's basis for competitive advantage is either lower costs than competitors serving that market segment or an ability to offer niche members something different from competitors. Focusing is based on selecting a market niche where buyers have distinctive preferences. The niche is defined by geographical uniqueness, specialized requirements in using the product or by special attributes that appeal to members, (Stone, 1995).

A firm using a focus strategy often enjoys a high degree of customer loyalty, and this entrenched loyalty discourages other firms from competing directly. Because of their narrow market focus, firms pursuing a focus strategy have lower volumes and therefore less bargaining power with their suppliers. However, firms pursuing a differentiation-focus strategy may be able to pass higher costs on to customers since close substitute products do not exist. Firms that succeed in a focus strategy are able to tailor abroad range of product



development strength to relatively narrow market segment that they know very well (Grant, 2012).

The study finding of (Oduwayo, O.A., 2018) corroborates with the views that a firm is able to serve its narrow strategic target more effectively or efficiently than competitors who are competing more broadly. As a result the firm achieves either differentiation from better meeting the needs of the particular target market or lower costs in serving this market or even both (Porter, M. E., 1985).

Companies that use focus strategies concentrate on particular niche markets and, by understanding the dynamics of that market and the unique needs of customers within it, develop uniquely low-cost or well-specified products for the market. Because they serve customers in their market uniquely well, they tend to build strong brand loyalty amongst their customers. This makes their particular market segment less attractive to competitors. As with broad market strategies, it is still essential to decide whether company will pursue cost leadership or differentiation once company has selected a focus strategy as its main approach: Focus is not normally enough on its own. But whether company use cost focus or differentiation focus, the key to making a success of a generic focus strategy is to ensure that company is adding something extra as a result of serving only that market niche. It's simply not enough to focus on only one market segment because company is too small to serve a broader market (Porter, M. E., 1985).

Organizational Performance is the end result of the organization's activities; it includes the actual outcomes of the strategic management process. The practice of strategic management is justified in terms of its ability to improve the organization's performance Wheelen (2010). Organizational performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives) Hunger (2010). According to Bae (2012) profitability is the ability of a business to earn a profit. It is the primary goal of all business ventures and increases organizational performance. Without profitability the business will not survive in the long run. So measuring current and past profitability and projecting future profitability is very important. Sales are an important factor in determining profitability.

According to Dominici (2010) customer satisfaction is a psychological concept that involves the feelings of well-being and pleasure resulting from gaining what a person hopes for and expects from a product and /or service. It is the customer's fulfillment response to consumption experience, a highly personal assessment that is greatly affected by customer

expectations and experience and is linked to both the personal interaction with the service provider and the outcome experienced by the service users. According to Cheng (2013) operational efficiency is the capability of an organization to deliver products or services to its customers in the most cost-effective manner possible while still ensuring the high quality of its products, service and support. It is often achieved by streamlining a company's core processes in order to more effectively respond to continually changing market forces in a cost-effective manner and increases organizational performance.

EMPIRICAL LITERATURE REVIEW

(Abdullah, H. H., Mohamed, Z. A., Othman, R., & Uli, J., 2009) did an investigation about the effect of sourcing techniques on the organization between focused strategy and organizational performance where they inspected vital types that were related with particular sourcing procedures. The result of the examination demonstrated that organisation action plan is intervened by improving technique to yield higher performance compared to other companies. Also, the connection between differentiation technique and Organisational performance which is interceded by purchase procedure, have superior performance than different types of entities. (Oyedijo, A., 2012), also did a study on strategic agility and focused on performance in the Nigerian Telecommunication Industry.

The study revealed that it impacts the focused performance of media transmission firms in Nigeria and that there is a big connection between strategic agility and competitive performance. (Akingbade, W. A., 2014), completed a study on focused methodologies and enhanced performance in Nigeria media transmission organizations which uncovered a connection between competitive strategies and consumer loyalty, maintenance and dependability. Moreover there is an association between competitive strategy, its constituents and performance of media transmission organizations. (Ndhiwa, G. O. , 2010)while looking at the relationship of competitive approaches in Safaricom Kenya, he found that strategies used by Safaricom included cost diminishments, excellent client service, operational productivity, creating brand or name among numerous techniques. The investigation moreover showed a noteworthy connection between the strategies adopted by Safaricom Kenya and its performance.

(Mutindi, U. J., Namusonge, G., & Obwogi, J., 2013)carried out a research on the influence of strategic management drivers on performance of the hotel industry in Kenya. The study used a mixed research method which was both quantitative and qualitative



using descriptive survey. The study acknowledged strategic management drivers as some of the tools that drive performance in the hotel industry. It recommended to hotels that they ought to embrace the adoption of strategic management drivers.

(Kamau, A. W. , 2015) also completed an examination on competitive strategies embraced to drive industrial performance in the telecommunications industry in Kenya. The information was gathered from the nine firms in Kenya; Safaricom Ltd, Airtel Kenya, Telkom Kenya, Jamii Telkom, Access Kenya, Liquid Telkom, Internet Solution, MTN Business and Wananchi Group. The study revealed that companies in the telecommunication industry embrace different techniques including: differentiation, cost initiative and market focus in order to obtain and maintain competitive advantage. The study further concluded that the cost strategy was visible in the organizations and they modify it from time to time when it was not successful anymore.

METHODOLOGY

This study will adopt a descriptive design and case study design. Descriptive study relates to characteristics related with the subject population. asserts that a descriptive research portrays an accurate profile of persons, events or situations. However this study will use quantitative approach; Quantitative is any data collection technique (such as questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data (Saunders, M., Lewis, P. & Thronhill, A. , 2012). The data was then code and check for any errors and omissions (Cooper, D. R., & Schindler, P. S., 2003). The target population comprised of 200 Somtel Telecommunication staff. In Mogadishu Somalia. A sample is the segment of the population that is selected for investigation (Bryman & Bell, 2003). The sample size of this study was 60, because these respondents have a long experience on their job and worked many years in this company. This study was conduct through questionnaire as the main tool for collecting data. Questionnaire is a the is mostly used in a quantitative research method

FINDING OF THE STUDY

The findings of the study obtained from the target respondents that were involved in this study. This chapter highlights general information of the respondents, followed by the findings on the effect of competitive strategy on organizational performance of telecommunication companies in Mogadishu-Somalia, the effect of cost leadership strategy, differentiation strategy, focus on strategy on Organizational performance.

Gender in majority of the respondents of this study which 52 respondents (86.7%) were male while the remaining 8 respondents (13.3%) were female. In Age of the respondents of this study were aged 18-30 years were 32 respondents (53.3%), the respondents were aged 31-40 years were 21 respondents (35.0%), were aged 41-51 years were 6 respondents (10.0%), and were aged 51-60 years were 1 respondents (1.7%)

In Marital Status The majority of the respondents of this study were single 16 (26.7% while married were 44 (73.3%). Educational Level of the respondents were Bachelor Degree which was 34 respondents that equivalent (56.7%), were Master's degree which was 16 respondents that equivalent (26.7%), were Diploma level, while the remaining 9 respondents which equivalent (15.0%) and were PHD degree was 1 respondent which equivalent (.1.7%).

Work Experience Of the respondents of work experience were 0-2 years 4 (6.7%), while others 3-5 years 14 (23.3%) while others). 6-8 years - 12 (20.0%). while others). 9-11 years - 19 (31.7%). While others 11-up all years 11 (18.3%).

The main objective of this study was to competitive strategy on organizational Performance of telecommunication companies in Mogadishu- Somalia. The study had three objectives, the objective one of the study, which is "To find out cost leadership strategy which is dimension one of the competitive strategy of telecommunication companies in Mogadishu- Somalia "the mean index of the questions was **4.05** which indicates strongly Agree level so this table indicates that the answer shows that there is good level. The second objective, about "the competitive strategy which is differentiation strategy" the mean index of objective two was 4.06

The third objective of this study to find out focus on strategy that is dimension three of competitive strategy of telecommunication companies in Mogadishu- Somalia "the mean index of the questions was **4.40** which indicates strongly agree level. The study also found that there is positive significant relationship between competitive strategy on organizational performance of telecommunication companies in Mogadishu- Somalia.

CONCLUSION & RECOMMENDATION

The study also found that there is positive significant relationship between competitive strategies on organizational performance of telecommunication companies in Mogadishu- Somalia.

Focuses on summarizing of the research findings, major challenges met during the study and as well as the corrections of what have been found during of the research gathering data. The study aims to



explore competitive strategy on organizational performance of telecommunication companies in Mogadishu-Somalia.

1. The existing cost leadership practices should be maintained and developed
2. Annually in order to gain competitive advantage from other competitors in Somalia since it significantly affects the organizational performance.
3. The existing differentiation strategy practices should be maintained and developed annually in order to gain competitive advantage from other competitors in Somalia since it significantly affects the organizational performance.
4. The existing focus strategy practices should be modified towards modern focus strategy practices in order to improve organizational performance in different levels of the telecommunication companies in Somalia.

BIBLIOGRAPHY

1. Abdullah, H. H., Mohamed, Z. A., Othman, R., & Uli, J. (2009). (2009). *The effect of sourcing strategies on the relationship between competitive strategy and firm performance. International Review of Business Research Papers*, 5(3)(346-361.).
2. Abdullah, H. H., Mohamed, Z. A., Othman, R., & Uli, J. (2009). *The effect of sourcing strategies on the relationship between competitive strategy and firm performance. International Review of Business Research Papers*, 5(3)(346- 361.).
3. Akingbade, W. A. (2014). *Competitive strategies and improved performance of selected Nigeria telecommunication companies. Journal of Entrepreneurship, Management and Innovation*, 10(4)(143-167.).
4. Ali, M. S. (2018). *ALI MOHAMUD SIGANE EFFECT OF STRATEGIC MANAGEMENT PRACTICES ON ORGANIZATIOAL PERFORMANCE IN TELECOM COMPANIES IN SOMALIA*.
5. Amin, S. . (2013). *The Sample procedure New York, NY: . Monthly Review Press*.
6. Ansoff, H.I.; McDonnell, E. (1990). *Implanting Strategic Management*,. Prentice-Hall.
7. Baker, W.E., Sinkula, J.M. (2002). Baker, W.E., Sinkula, J.M. (2002), *Market orientation, learning orientation and product innovation: Delving into the organization's black box*.
8. Barney, J. (1991). *Firm resources and sustained competitive advantage. Journal of Management*, 17, (99-120.).
9. Barney, J. B. (1991). *Firm resources and sustained competitive advantage. of Managemt., Journal of Management*, 17(99–120.).
10. Barney, J.B. . (2002). *Gaining and Sustaining Competitive Advantage*.
11. Beard, D. W., & Dess, G. G. (1981). *Corporate-level strategy, business-level strategy, and firm performance. Academy of management Journal*, 24(4)(663-688.).
12. Berman, S., Down, J., Hill, C. (2002). *Tacit knowledge as a source of competitive advantage in the national basketball association. Academy of Management Journal*, 45(13-31).
13. Bisungo, M.; Chege, K.; Musiega, D. . (2014). (2014), *Effects of competitive strategies adopted by farmers cooperatives on performance in butere sub-country, Kenya. International Journal of Business and Management Invention*.
14. Burns, N. a. (2013). *Burns and Grove's Understanding Nursing Research: Building an Evidence-Based Practice. Philippine Edition by Teresitia*.
15. Cooper, D. R., & Schindler, P. S. (2003). . *Business Research Methods (8th edition). USA: ISA McGraw-Hill*.
16. Covin, J., D.P; Slevin. . (2010). *Top management decision sharing and adherence to plans. . Journal of Business Research*.
17. Davidson, S. (2008). *Seizing the competitive advantage. Community Banker*, 10(8), 32-34., 10(8)(32-34.).
18. Denzin, N. K., & Lincoln, Y. S. (2011). *The SAGE Handbook of Qualitative Research (5th. Thousand Oaks, CA: SAGE Publications*.
19. Hooley, G.J; Greenley, G; Cadogan, J.W; Fahy J. (2005). *The performance impact of marketing resources. . Journal of Business Research*.
20. <https://www.somtelnetwork.net/about-us.php>. (2009). *somtei telcommuncation. www.somtelnetwork*.
21. Hyatt, L. (2008). *A simple guide to strategy. Nursing Homes*, 50(1), (12-13.).
22. Jama. A. M. (2018). *EFFECTS OF COMPETITIVE STRATEGIES ON ORGANIZATIONAL PERFORMANCE. IJRDO-Journal of Applied Management Science*.
23. Jermias, J. (2008). *The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. The British Accounting Review*, 40(1)(1-10).
24. John, M; Tanya, S. B. (2018). *Competative Strategy. See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/280248208*.
25. Kamau, A. W. . (2015). *Competitive strategies adopted to drive performance by firms in the telecommunications industry in Kenya*



- (Unpublished Master of Business Administration Research Project). University of Nairobi.
26. Kanupriya, C. (2012). Sampling methods. Retrieved from <http://www.pitt.edu/~super7/43011-44001/43911.ppt>.
27. Kiechel, W. (2010). *The Lords of Strategy*. United States: Harvard.
28. Kihoro, M; Ombui, K. (2012). Effects of Competitive Strategies on Customer in security service. *International Journal of Science and Research*.
29. Kyengo, J. W., Ombui, K., & Iravo, M. A. (2016). Influence of competitive strategies on the performance of telecommunication companies in Kenya. *International Academic Journal of Human Resource and Business Administration*, 2(1),(1-16.).
30. Langseth P. (1996). The civil service reform programme. In P. Langseth & J.Mugaju (eds.). *Post conflict Uganda towards an effective civil service*. (pp.54-82). Kampala: Fountain Publishers., 54-82.
31. Lawal, F. M; Elizabeth, O. O; Oludayo, O. (2012). EFFECT OF STRATEGIC ISSUE MANAGEMENT ON ORGANISATIONAL PERFORMANCE. *Transnational Journal of Science and Technology* November 2012 edition vol.2, No.10. 11., 2(10-11).
32. Lawal, F. M; Elizabeth, O. O; Oludayo, O. (2012). EFFECT OF STRATEGIC ISSUE MANAGEMENT ON ORGANISATIONAL PERFORMANCE. *Transnational Journal of Science and Technology* November 2012 edition., 2(10-11).
33. Lee, D., Rho, B. H., & Yoon, S. N. (2015). Effect of investments in manufacturing practices on process efficiency and organizational performance. *International Journal of Production Economics*, 162(45-54.).
34. Malburg, C. (2007). *Competing on costs*. *Industry Week*, 249(17),(31-34).
35. Mutindi, U. J., Namusonge, G., & Obwogi, J. (2013). Effects of strategic management drivers on the performance of hotel industry in Kenyan coast. *European Journal of Business and Innovation Research*, 2(1)(63-92.).
36. Ndihiwa, G. O. . (2010). *The relationship of competitive strategies and firm performance in the mobile telecommunication service industry: A case of Safaricom Kenya limited*.(Unpublished Master of Business Administration Research Project). . University of Nairo.
37. Odunayo, O.A. (2018). Market focus strategy and organizational performance of telecommunication companies in Port Harcourt. *International Journal of Innovative Research and Advanced Studies*, 5(259-261.).
38. Ogula, P. A. (2005). *Research methods*. Nairobi: Catholic University of Eastern Africa Publications .
39. Oso, W. Y., & Onen, D. (2011). *Writing Research Proposal and Report: A Handbook for Beginning Researchers*, Rsvd edn. Nairobi-Kenya:. The Jomo Kenyatta Foundation.
40. Oyedijo, A. (2012). *Strategic agility and competitive performance in the Nigerian telecommunication industry:.. An empirical investigation*, 2(3)(227-237).
41. Porter, M. . (2008). *Competitive Strategy:techniques for analyzing industries and competitors*. New York: The Free Press.
42. Porter, M. (2008). *Competitive Strategy*. New York: . The Free Press.
43. Porter, M. E. (1980). *Competitive Strategy*. . New York: Free Press.
44. Porter, M. E. (1985). *Competitive Advantage*. . New York: Free Press.
45. Porter, M.E. (1985). *Competitive advantage*. New York: The Free Press. 11-15.
46. Porter, M.E. (2004). *Competitive strategy: Techniques for analyzing industries and competitors*. New York, Free Press .
47. Porter,M.E. (1990). *The Competitive advantage of Nations*. The Macmillan Press Ltd. The Macmillan Press Ltd.
48. Saunders, M., Lewis, P. & Thronhill, A. . (2012). *Research Methods for Busdiness Students (4th ed.)*. . Harlow: Pearson Education Ltd.
49. Schendel, D. (1994). *Strategy: Search for new paradigms*. *Strategic Management Journal*, 15, 1-4. (n.d.).
50. Schendel, D. (1994). *Strategy: Search for new paradigms*. 15, 1-4. *Strategic Management Journal*, 15(1-4.).
51. Sekaran.. (2013). (2013). *Research Methods for Business*. (6th ed.). West Sussex: John.
52. Spanos, Y.E.; Zaralis, G.; Lioukas, S. (2004). *Strategy and industry effects on profitability evidence from Greece*. *Strategic Management Journal*.
53. Teng, B.S., Cummings, J.L. (2002). *Trade-offs in managing resources and capabilities*. Teng, B.S., Cummings, J.L. (2002), *Trade-of* . *Academic Management Executive*, 18(2)(81-91).
54. Thompson A; Strickland A.J. (2007). *Crafting and Executing Strategy: Text and Reading*. New York: McGraw Hill Companies.
55. Thompson, A. J., Strickland, A., & J.E., G. (2007). Thompson, A.A. Jr., Stricklan *Crafting and Executing Strategy. Texts and Readings*.Intermediate Edition. New York, McGraw Hill.
56. Thompson; A., Strickland, A.J. (2007). *Crafting and Executing Strategy, Text and Readings*. New York: McGraw Hill Companies.
57. Tiwana. (2002). *The knowledge management toolkit: Orchestrating IT, strategy and knowledge platforms*. New Jersey: Prentice Hall.
58. Todorov, A. . (2009). *Organizational Innovation: The Challenge of Measuring Non-Technical Innovation in Large-Scale Surveys*. . *Technovation*, 28, 644 657.
59. Vlachvei, O; Notta; Demiri. (2010). *Competitive Strategies and Business Perform for Greek*



Industry. International Conference On Applied Economics.

60. Waidi, A. A. (2014). *Competitive Strategies and Improved Performance of Selected Nigeria Telecommunication Companies. Journal of Entrepreneurship Management and Innovation (JEMI).*, 10(143-167).
61. Wanjohi, P. W. (2008). *Competitive strategies and positioning within a changing business environment adopted by MFI's in Kenya: A case of Kenya Women Finance Trust (Unpublished master's thesis). University of Nairobi, Kenya.*
62. Wernerfelt, B. (1995). *The resource-based view of the firm: Ten years after. Strategic Management Journal*, 16(3), 171-174., 16(3)(171-174.).
63. White, R.E. (1996). White, R.E. (1986), *Generic business strategies, organizational context, and performance an empirical investigation. Strategic Management Journal*, 7(2), 217-231., 7(2)(217-231.).



REFLECTIVE TEACHING: AS AN INNOVATIVE APPROACH IN TEACHERS' PROFESSIONAL DEVELOPMENT

Indrani Ruidas

Former Fulltime Contractual Teacher,
Vidyasagar Teachers' Training College

ABSTRACT

Various innovative ideas have been initiated from time to time to bring professional development in teachers. Reflective teaching is such an innovative idea among them introduced in 21st century. The present study tries to elucidate the concept of the terminologies like reflective teaching, teachers' professional development and the innovation in teacher education. Difference between professional and professionalism is also elucidated here. And most of all it mainly focuses on the role of reflective teaching in teachers' professional development and how the teachers become professionally developed through the reflective practice.

KEYWORDS: *Reflective Teaching, Teachers' Professional Development, Innovation in Teacher Education and professional*

INTRODUCTION

Teaching is a novel profession among all the professions in the world. Teacher is like a devotee who can devote all his/her life through teaching the students. It is also an honorable profession in the society. Each and every person in the society respect teacher, as teacher is the backbone of the society. Teachers make the students to a human capital. From ancient to modern period of time teachers had been serving the society unconditionally. The situation under which the students are taught may be the same but the teaching strategies of the teacher have been changed gradually. In previous time teacher or guru teach their learner or shishya according to their own teaching method. Then the whole education system was teacher centered. It means that teacher headed the whole education system along with curriculum, teaching strategy, evaluation process, class management and student's behavior etc.. Nobody can restrain them in their activities. They were all in all in education system. But according to the changing perspective of the society, the approaches of education have been changed and modified gradually. Education system has got rid of the boundary of gurukul. Now, the only position of the teacher is not the guru rather he is more than that and the students are not the shishya. Teachers are, in recent time, regarded as the friend philosopher and guide in the lives of the students. There is not a strict boundary in the relationships between teacher and

student. And this changing perspective in the education system could not come suddenly. It is a consequence of long time of changing condition of society and changing attitude of the people including several changing strategy in teaching process. To maintain the changing perspective of education, teachers have to educate or trained before the beginning of his/her teaching career. Several committees, commissions, institutions have been made to enrich and to develop the teachers professionally. Because of like other professions, teaching is now regarded as profession in the educational system. That's why the teacher needs professional development in their novel profession. As the training is mandatory in teaching profession, so several training courses like DI.Ed B.Ed M.Ed and other educational programs refresher course, orientation, workshop, symposium, conference, summer camp have been introduced for the professional development for the teachers. Besides those, there are many assessment, self-assessment and evaluation process to enrich the professional development of the teachers. Teacher education means teaching skills, pedagogical theory, and professional skills. For achieving teaching skills teacher needs training and practice in different techniques, approaches and strategies that would help the teacher to plan and impart instruction, provide appropriate reinforcement and conduct effective assessment. Research and innovation have played



important roles in exploring the qualities of teachers training for all levels of teaching. There have been introduced several innovative ideas in the teachers training and education program. Among them reflective teaching which is a self-assessment strategy, is considered as the prominent and the innovative idea which is expected to fulfill the learning outcomes in the education system and to enrich the professional development of the teachers.

OBJECTIVE OF THE STUDY

To find out the role of reflective teaching in teachers professional development.

DIFFERENCE BETWEEN PROFESSIONAL AND PROFESSIONALISM

There is a difference between professional and professionalism, though the term professionalism has been derived from the word professional. The term professional is personified here to a living being. Professional is a person who belongs to a profession abiding by some rules, regulations, ethics, morality and he must be expert in a specialized field of his job. Professional earns by selling his service. Professional is subjective and a single entity. But the term professionalism is objectified in the teaching profession. Professionalism includes gradation, skills, maturity, standard, devotion which are expected of a professional. So in conclusion, it can be said that professional is a personal and professionalism is the skills, competencies and proficiencies of the person in doing the teaching related activities. It is the working qualities of a person. In other words professionalism is prioritizing your duties against all other aspects, hindrance or emotions thereafter.

TEACHERS' PROFESSIONAL DEVELOPMENT

In teacher education, the phrase 'professional development' can be used in the field of magnificent diversity. Professional development includes professional skills strategy, better plan, executive quality, preparation, eloquent presentation. Evaluation maturity of the personal management skills, administrative skills and more focused on learner than that of paper work and to be more specific and advanced in subject matter. If teacher education is professionalised, it would produce teachers with professional outlook and professional work ethics. Effective professional development practice promotes collegiality and collaboration; it encourages risk taking and experimentation. It also involves teacher educators in decision making on the basis of their experiences and it helps them to reflect on as well as put into practice what they learn. Professionally powerful teaching is very important and is increasing in our contemporary society. Due to

the developments in this field, quality of teacher's education is better in 21st century than in 20th century. Now a day's teacher's professional development is regarded as an important and necessary quality in teaching profession in all over the world including India.

INNOVATION IN TEACHER EDUCATION

In the area of professional development research and innovation in teacher education has personated a constitutive induction in the enhancement of quality of teachers training for all levels of teaching. 'Innovation' is a Latin term which has been evolved from the word 'Innovare'. The verbatim meaning of the 'Innovare' is "to change something into new something". In modern time of teacher education, innovation can be considered as a refresh conception and practice in the upliftment strategy in professional development. Innovation should be done in each and every aspects of teacher education, like methodology, curriculum, research and evaluation. Many countries are using different kinds of innovative approaches, such as school cluster, field based training, school self-review and development, distance learning method and visiting advisors.

CONCEPT OF REFLECTIVE TEACHING

Reflective teaching is a self-assessment strategy in teacher's professional development. The word 'reflection' meant for shadow or image. It is like that one can see one's own image in the mirror as reflected as the same. Reflection is explained as self-image or self-shadow. Similarly, reflective is such like a strategy where a teacher can see the reflection of his or her own teaching related activities which he has performed in the classroom. By using this process a teacher can get a detailed description about the whole performance of the teacher than just a summary. Teachers are benefited to rectify their mistakes whether it happened in the classroom. And naturally they do not depend on the other person for their rectification. It is also considers as metacognition process because teachers think over their teaching practice. They think critically upon their teaching related activities. They are able to take decision of how the practice might be improved or changed for better learning outcome. Teacher is more capable to evaluate their performance and to think accurately upon their experience, action and decisions during their teaching practice and also able to purify their professional career. The teachers should question their professional performance and search for answers to the questions that will rise during their professional career.



THE IMPORTANCE OF REFLECTIVE TEACHING

- Reflective practice in teaching is arguably one of the most important sources of personal professional development and improvement. Effective teachers are first to admit that no matter how good a lesson is, their practice can always be improved.
- Reflective teaching practice is an imperative device for professional development both the pre-service and in-service teacher training programs.
- It develops critical thinking and promotes experiential learning.
- It implies a systematic method of collecting, recording and analysing the thoughts and observation.
- Reflective is an important self-assessment strategy where teacher can rectify own mistakes what happened in the classroom and they must not to be dependent on others.
- Teacher can use reflective teaching practice as a vital device to see the reflection of their performance to ensure the better learning outcomes.

ROLE OF REFLECTIVE TEACHING IN PROFESSIONAL DEVELOPMENT

Reflective teaching acts as a better means of professional development of teachers. It is an organic or methodical cogitation on teaching practice which teacher performs in the classroom. They can record all the activities during ongoing class about their teaching and solve the problems arising out of the teaching. It is a practice of classroom boundary. Reflexing enhances personal development by leading to self-awareness. If the focus of reflection is improvement in students care it helps to develop and expand experience, knowledge, ability and skill. They spent time reflecting on things that both went well and things when wrong. When reflecting something, they search for specific strategies, approaches, materials, or people that can support them positive adjustment.

1. Teachers Prosperity

Professional development is necessary to enrich the quality and skill within teachers. For this reason teacher can use reflective practice as a prime technique to improve themselves professionally. Teacher cannot improve themselves unless they critically think about the analysis and evaluation of their professional practice.

2. Innovation and Up gradation

Effective teachers must be innovative and up to date in accordance with changing demand of the society. When the teachers have delivered his lesson using same method, same gesture posture, same style of presentation, and most of all limited knowledge of

subject matter then the whole teaching learning process may be monotonous, boring, uninteresting and above all the students also would not be able to up to date going beyond their boundary knowledge. The whole teaching learning process may be in a traditional cycle.

3. Learners' Knowledge

Teachers' professional development not only emphasis on up-to-date and innovation but also on teachers knowledge about their students. It means that effective teachers must be like a psychiatrist. As the psychiatrist have all the information, about their clients in the same way, an effective teachers must be rich of knowledge about their learners' ability, attitude, aptitude, interest, motivation, need, and even liking, disliking. By using reflective practice teachers are susceptible to better realise their students including the abilities and needs of the learner.

4. Developing Reflective Learners

As learners can enrich themselves and improve their performance in the teaching profession, similarly, they can create the same energy in the learners so that the learner would be more eager to contemplate on their exploration evaluation and also enhance their own learning. By effective usage of the reflective practice a student can be an independent learner to improve learning related skills.

5. Make a Good Performer

Every effective teacher requires good interpersonal skills along with effective speaking and strong presentation skills. Teachers should be well prepared for their lectures ensuring that they carry all the material that aids in teaching to the class. Motivational skill also include that will keep the fire burning in the bellies of students, and effective teacher should rank high empathy and rapport building strategies. Reflective teaching is the most significant tools and techniques which reveals to a teacher what and how a teacher has perform in the classroom. It shows how good or bad performance a teacher has given in the classroom. Reflective teaching is the only way to rectify your performance from bad to good and make you a better performer.

6. Make an Organized Teacher

Teachers must be good organizers being organized plays an essential role in being a good teacher, and is a very important quality of a good teacher. Without organizational skills, a teacher could really lose grasp of deadlines expectations and task. Poor organization could potentially lead to educational waste, and a waste of time. A teacher whitens the lack of organization skill he/she must be a reflective practitioner. Because reflective practice is such an important weapon of continuous professional development which clearly shows the merrier of lacking the competence the organization of a teacher which he wants meet and cure.



7. Develop Commutation Skill

Effective communication is a critical asset to acquire in both professional and intimate environment. It is the root of successful and memorable relationship. It is the case of teaching, which has strong communication skill as a teacher is an important for building teachers student rapport, and for really creating a trusting environment for students. Strong communication skills are essential for the objective of teaching itself. Through the continuous reflective practice, a teacher can easily acquire the skills of communication in which he/ she are less competent.

8. Develop Listening Skill

Being a good teacher means having your students listen to you, but also making sure that you listen and give your students the attention that they need by answering all of their questions. The reflection of a class in which a teacher has perform shows that if the teacher communicated or not, if he/ she does not do it they can easily understand the importance of listening and prepared themselves for next time of listening their students.

9. Mastery in Classroom Management

Good classroom management skills start with setting certain ground rules to stress the importance of classroom dignity. Teacher should exercise patience along with a deep sense of care and kindness to words their words. To be an effective teacher you should also be able to help students develop study and work habits. Reflective teaching is the only away of professional development which helps teachers to meet their skills of classroom management. Teachers find out the limitations of his/her personality which cannot manage the classroom and also invent all these that related to management skills.

10. Mastery in Subject Area

Every teacher comes with a specific specialization. When teacher demonstrate a high level of subject matter expertise, students will be encouraged to pose questions with a belief that they will be clarified then and there. This overall knowledge about the subject you have chosen to teach will thus pave the way for interesting classroom session. Through reflective practice a teacher could realize that he/she has a clear concept of a subject matter or not. If he/she has not deep understanding of the subject he/she will not be able to perform confidently. Using continuous reflective practice a teacher can improve his/her understanding or subject matter clearly because reflective practice shows the actual place where he/she has the lack.

STRATEGIES

The main objective of reflective teaching is to give concentration on one's own teaching. Teachers are arbitrary to select the preferable strategies of reflective teaching and nobody can mandate them for selecting the strategies. Several educational institutions put forward reflective strategies. These

are specially estimated for student teachers. They would be more proficient about how and when they have to teach. They would be aware about the better teaching strategy which they could achieve future. It is a valuable tool for both teacher and student teacher to improve their professional development.

These are the strategy's which a teacher can use:

- **Teaching journal or diary:** teachers can record their classroom performance in written forms. They also take notes of their own teaching.
- **Collaborative journals:** in a prescribed period a group of teachers conform diary and divide the activities.
- Teachers can make and take advantages of self-assessment form.
- They can use the video tape to record what happened in the classroom.
- A report can be created on classroom experience in a written form.
- Peers are to be engaged to review the activities of the teachers.
- Teachers would more beneficial to work with mentors.
- Teachers also make engage their students to evaluate teacher's activities and must consider students assessment.
- Teachers can use their autobiography which is a part of reflective teaching strategy

BENEFITS OF REFLECTIVE TEACHING IN TEACHER EDUCATION

- Reflective enables teacher as well as learners creatively mediate externally developed from works for teaching and learning, creative mediation and involves the interpretation of external requirements in the light of individuals understanding of a particular context, bearing in mind his/her values and educational principles.
- Reflective teaching develops the quality of teaching through continuous improvements.
- It gives educators new opportunities to reflect on and assess their teaching.
- It enables teachers to explore and test new ideas, methods, approaches, and materials.
- Teachers share feedback with fellow teachers
- The act of reflection is a great way to increase confidence and become a more proactive and qualified professional.

CONCLUDING REMARK

It can be concluded that the innovation of reflective strategy in teacher education programme put forward a milestone of teachers' professional



development. Reflective teaching is a metacognitive idea of thinking beyond thinking about the teachers own teaching which happened in the classroom. According to the researchers, reflective teaching practice provides critical thinking which gives more emphasis on teacher's professional development. It is like a mirror that reflects teachers own activities performed in the classroom situation. Teachers become proficient to mark the mistakes doing in the teaching period. Teacher are able to emend the defects of their plan, presentation, executive skills, teaching strategy, teaching behaviour, evaluation process, voice modulation, gesture, posture, body language, interaction skills and other teaching related proficiencies. Through the effective exercise of reflective teaching, a teacher makes himself a better professional including excellent quality of professionalism. Reflective teaching is a changing perspective in teacher education programme bringing a landmark in teacher professionalism.

REFERENCES

Books:

1. Allwright. D .(1996). *Focus on the Language Classroom: An Introduction to Classroom Research for Language Teachers*. Cambridge: CUP.
2. Bartlett. L.(1990).*Teacher Development through Reflective Practice*. In Richards.J.and Nunan (eds).*Second Language Teacher Education*.(2002-2014).New Jork: Cambridge University Press.
3. Bell.B&Gilbert,J.(1996).*Teacher Development: A model from Science Education*. London: longman.
4. Biggs.J.(2003).*Teaching for Quality Learning in University*. Milton Keynes: Open University Press.
5. Brookfield.S.(1995). *Becoming a Critically Reflective Teacher*. SanFrancisco: Jossey-Bass.
6. Brown.D.H.(1970). *Teaching by Principles: An Introductive Approach to Language Pedagogy*. San Francisco: Longman.
7. Bortons.T.(1970). *Reach, Teach and Touch*. London: MCGraw Hill.
8. Bartels.N.(ed).(2005).*Applied Linguistics and Language Teacher Education: What we Know*. In *Applied Linguistics and Language Teacher Education*. Boston: Springer Science and Business Media.405-424.
9. Christopher.B.Et al,(2009).*Innovative Practices in Pre-service Teacher Education*..Netherland: Sense Publisher.
10. Coonen.H.A.(1987).*Methodology of In-service Training: An Introduction*. Den Bosh. K:PC.

WEBSITES

1. <https://study.com/academy/lesson/what-is-reflective-teaching-definition-methods-quiz.html>
2. <https://www.richmondshare.com.br/what-is-reflective-teaching-and-why-is-it-important/>
3. <https://blog.irisconnect.com/uk/blog/5-benefits-of-encouraging-teacher-self-reflection>

4. https://apiar.org.au/wp-content/uploads/2017/02/13_APJCECT_Feb_BR R798_EDU-126-131.pdf
5. <https://www.edglossary.org/professional-development/>
6. <https://www.myenglishpages.com/blog/reflective-teaching-and-action-research/>
7. <https://www.brighthubeducation.com/teaching-methods-tips/92097-reflective-teaching-strategies/>
8. Angela O'Keefe and Fiona.O.(2010).*Reflective Teaching portfolios*. Retrieved from http://Angela O'keefe.Fiona Riordan.icep.ie/wpcontent/uploads/2010,102/09=4_0_Riordanokeefe.pdf.(2014)
9. Ariel.L.Chleo.D. Kathryn .J.(2008).*What is Critical Reflection*. Retrieved from: ehlt.Flinders.edu.au/whatisit.html.



ANALYSIS OF THE VOLUME AND COST OF IMPORT OF METOCLOPRAMIDE TABLETS IN THE REPUBLIC OF UZBEKISTAN

Yunusova Kholida Mannanovna¹

¹ Professor,
Department of Industrial Technology of
Medicines,
Tashkent Pharmaceutical Institute,
Tashkent, Uzbekistan

Samedinova Dilnoza Nuriddin qizi²

² PhD Student,
Department of Industrial Technology of
Medicines,
Tashkent Pharmaceutical Institute,
Tashkent, Uzbekistan,

Article DOI: <https://doi.org/10.36713/epra6105>

ABSTRACT

We conducted an analysis of the volume and cost of the import of Metoclopramid tablets in the Republic of Uzbekistan with the assistance of the State Register of Medicines, Medical Supplies and Medical Equipment authorized for Medical Practice in the Republic of Uzbekistan in 2016-2020 and with the program «Drug Audit» including database information from 2016 to 2020. The results will serve as the basis for our further research on the development of production in the Republic of Uzbekistan of the tablet form of Metoclopramide.

KEY WORDS: *prokinetics, Functional gastrointestinal disorders (FGDs), metoclopramide, antiemetic drugs.*

INTRODUCTION

According to the decree of the President of the Republic of Uzbekistan «On additional measures to deepen reforms in the pharmaceutical industry of the Republic of Uzbekistan», in recent years, comprehensive measures have been implemented to improve the system of drug circulation, favorable conditions have been created for the development of the domestic pharmaceutical industry. At the same time, the domestic pharmaceutical industry does not sufficiently meet the needs of the population and medical institutions with pharmaceutical products [1, 3-5].

In order to further improve the provision of the population with high-quality, efficient and safe pharmaceutical products, expand production volumes, increase the scientific, technical and export potential of domestic manufacturers, as well as attract foreign direct investment, a five-year analysis was performed with further plans to improve the identified situation [7-9].

The concept for the development of the pharmaceutical industry of the Republic of Uzbekistan in 2020 - 2024 provides for: expanding

the range of pharmaceutical products produced taking into account advanced scientific experience and modern technologies, as well as the development of the pharmaceutical industry by stimulating the development and production of innovative pharmaceutical products, commissioning modern production facilities, and also modernization and strengthening of the material and technical base of existing industries; development of the domestic pharmaceutical industry by ensuring that organizations and enterprises comply with the requirements of standards harmonized with international requirements for the development and production of pharmaceutical products; attraction of investments and advanced technologies, including foreign pharmaceutical companies, to the creation of modern competitive production facilities for the production of pharmaceutical products; reducing imports of pharmaceutical products through modernization, increasing existing production capacities and mastering new types of pharmaceutical products, as well as by attracting investments; creation of modern educational, laboratory and research centers focused on the development of



original drugs, as well as generic drugs (generics) based on the original drugs in demand [1, 12-13].

Functional disorders of the gastrointestinal tract (GIT) can be attributed to diseases of the 21st century. Over the past decade, there has been a progressive increase in the number of patients with gastrointestinal symptoms that are not associated with organic lesions of the gastrointestinal tract [2, 15-17].

In recent years, a new group of medications has appeared - prokinetics, capable of correcting disorders of the motility of the digestive tract. These include a group of pharmacological drugs that, at different levels and with the help of various mechanisms, enhance the motor, primarily propulsive activity of the gastrointestinal tract [10].

Prokinetics are pharmacological drugs that, at different levels and using various mechanisms, change the propulsive activity of the gastrointestinal tract and accelerate the transit of a food bolus through it. Their potentiating effect on the motility of the stomach, duodenum, and, in some cases, the entire small and even colon is widely known. However, the usefulness of prescribing drugs of this group in gastroesophageal reflux disease is disputed by many leading gastroenterologists in the world [6].

An important indication for the use of prokinetics is vomiting of pregnant women or vomiting associated with chemotherapy of malignant diseases [11].

In the daily arsenal of a gastroenterologist, metoclopramide (cerucal) and domperidone (motilium, motoricum, perilium) are used. To answer the question of which group of drugs to give preference to for certain diseases, you need to know which parts of the digestive tract and how prokinetics act, and this depends on their mechanism of action [14-17].

Currently, only ondansetron (Osetron, Ontic, Onset) and metoclopramide (Metoclopramide, Metoclopramide-Darnitsa, Tomid) are available and used in clinical practice in Uzbekistan. The most widely used is Metoclopramide [7].

MATERIALS AND METHODS

In our research, we used the «DRUG AUDIT» program, data period 2016-2020, to determine the number of packages and costs associated with the supply of enterprises importing metoclopramide tablets, the volume of imports and the cost [7].

RESULTS AND DISCUSSION

When conducting marketing analysis, according to the «DRUG AUDIT» program, the import of Metoclopramide tablets in 2016, 2017, 2018, 2019 and 2020 was carried out mainly from the CIS countries (Belarus, Ukraine) enterprises such as BORISOVSKIY and DARNITSA, as well as from domestic enterprises in the Republic of Uzbekistan (GUFIK) (Table 1.2) [7].

Table 1
Information on the number of metoclopramide tablets in the Republic of Uzbekistan from the CIS countries for 2016-2020

Name of the drug and manufacturer / year	Metoclopramide 10mg tab. No. 50 (BORISOVSKIY, Belarus)	Metoclopramide 250mg tab. No.10 (BORISOVSKIY, Belarus)	Metoclopramide-Darnitsa 0,01g tab. No. 50 (DARNITSA, Ukraine)	Number of packages, pcs
2016	76211	0	0	76211
2017	202358	0	0	202358
2018	182350	0	0	182350
2019	171620	20700	0	192320
2020	132071	0	0	132071

Tablets of metoclopramide imported produced by enterprises of the CIS countries (Belarus and Ukraine) for five years amounted to 76211, 202358, 182350, 192320 and 132071, respectively. The analysis also provides data on the supply of metoclopramide tablets from foreign countries.

During the study period, the volume of imports of metoclopramide tablets from the CIS countries increased 2.6 times.

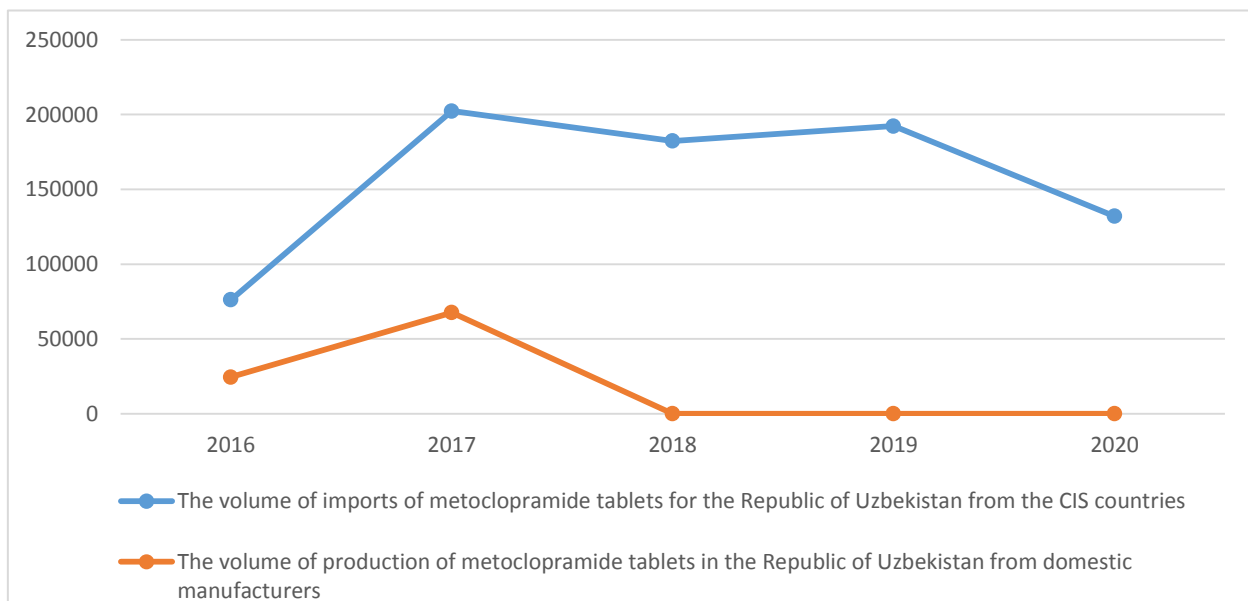
Table 2
Information on the number of Metoclopramide tablet preparations in the Republic of Uzbekistan from domestic manufacturers for 2016-2020

Name of the drug and manufacturer / year	Tomid 10mg tab. No. 50 (GUFIK, Uzbekistan)	Number of packages, pcs
2016	24 500	24 500
2017	67 689	67 689
2018	0	0
2019	0	0
2020	0	0

The data show that from 2016-2020, locally produced metoclopramide tablets were 24500, 67689, 0, 0 and 0 packs, respectively. In general, we see that

the production of metoclopramide tablets by local enterprises did not increase during the study period.

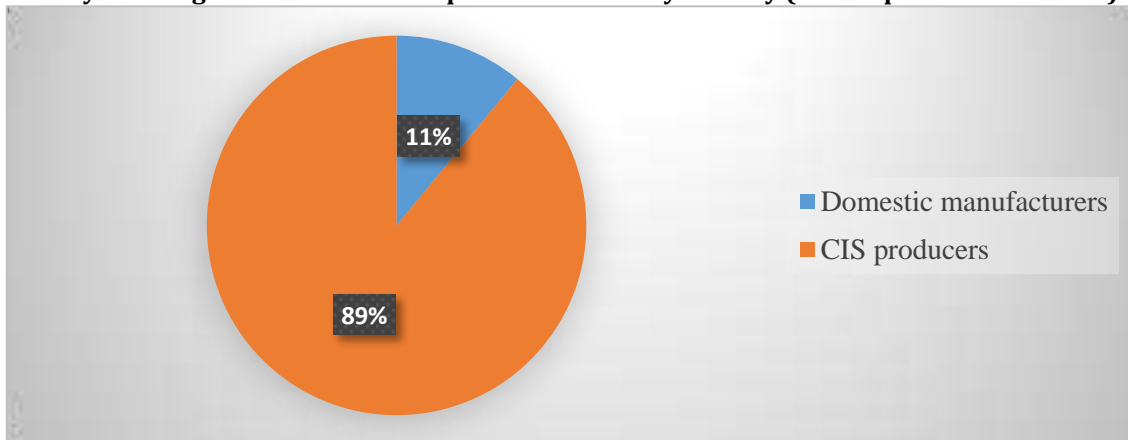
Figure 1
The volume of imports of Metoclopramide from the CIS countries and the production of Metoclopramide in the Republic of Uzbekistan from domestic countries



The results show that metoclopramide tablets produced by local factories for five years averaged 11% of the total, with the remaining 89% of

drugs imported into the country for consumption through foreign exchange (Figure 1.2).

Figure 2
Analysis of registration of metoclopramide tablets by country (for the period 2016-2020)



The determination of the costs associated with the supply of the antiemetic drug Metoclopramide for one package to the

pharmaceutical market of the Republic of Uzbekistan can be found in Table 3.

Table 3
The cost of metoclopramide tablets per package (\$) from the CIS and domestic enterprises in the Republic of Uzbekistan (2016-2020)

Name of the drug and manufacturer / year	Metoclopramide 10mg tab. No. 50 (BORISOVSKIY, Belarus)	Metoclopramide 250mg tab. No.10 (BORISOVSKIY, Belarus)	Metoclopramide-Darnitsa 0,01g tab. No. 50 (DARNITSA, Ukraine)	Tomid 10mg tab. No. 50 (GUFIK, Uzbekistan)
Price for 2016 (for 1 package, \$)	1.13	0	0	0.83
Price for 2017 (for 1 package, \$)	0.66	0	0	0.87
Price for 2018 (for 1 package, \$)	0.31	0	0	0
Price for 2019 (for 1 package, \$)	0.33	0.07	0	0
Price for 2020 (for 1 package, \$)	0.32	0	0	0

The results of a marketing analysis of imports of produced Metoclopramide tablets from the CIS enterprises in 2016 86118 foreign currencies, in 2017 133556 foreign currencies, in 2018 56529 foreign currencies, in 2019 58084 foreign currencies and 40627 foreign currencies in 2020. This shows that during the study period the price of

metoclopramide tablets increased by 3.2 times (Table 4).

The prices of the metoclopramide tablets produced from domestic enterprises in 2016 amounted to 20335 foreign currencies, in 2017 58889 foreign currencies, in 2018-2020 the production of metoclopramide tablets was not carried out. As a



result of the analysis, from 2016 to 2017, prices increased by 3 times (Table 5).

Table 4
Import prices of manufactured Metoclopramide tablets from CIS enterprises

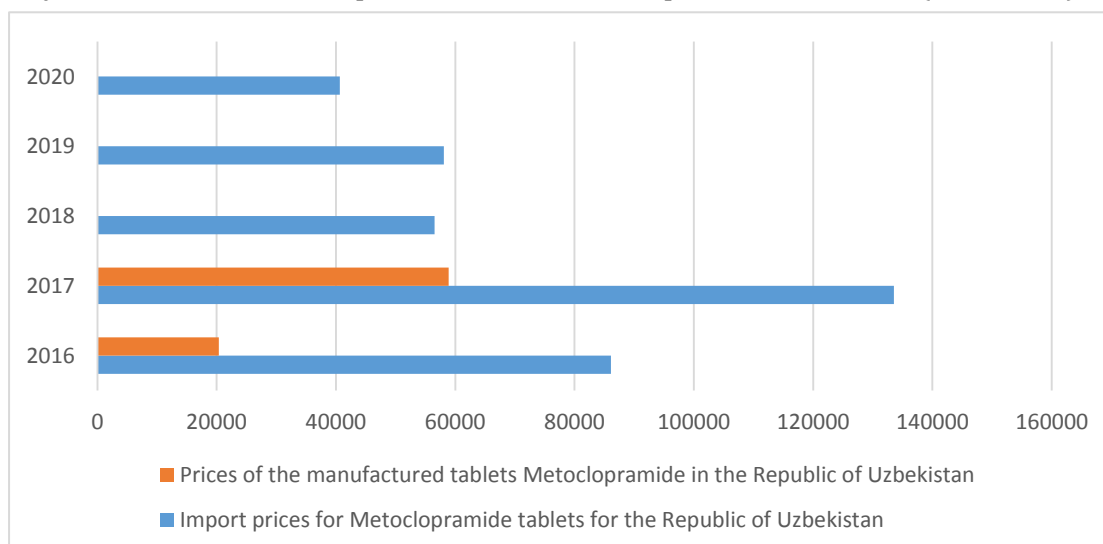
Name of the drug and manufacturer / year	Metoclopramide 10mg tab. No. 50 (BORISOVSKIY, Belarus)	Metoclopramide 250mg tab. N10 (BORISOVSKIY, Belarus)	Metoclopramide-Darnitsa 0,01g tab. No. 50 (DARNITSYA, Ukraine)	Total cost (\$)
2016	86118	0	0	86118
2017	133556	0	0	133556
2018	56529	0	0	56529
2019	56635	1449	0	58084
2020	40627	0	0	40627

Table 5
Prices of produced Metoclopramide tablets from domestic enterprises

Name of the drug and manufacturer / year	Tomid 10mg tab. No. 50 (GUFIK, Uzbekistan)	Total cost (\$)
2016	24500	20335
2017	67689	58889
2018	0	0
2019	0	0
2020	0	0

A comparison of prices for 2016-2020 of metoclopramide tablets in the Republic of Uzbekistan supplies from the CIS countries and from domestic manufacturers can be seen in Figure 3.

Figure 3
Analysis of the cost of metoclopramide tablets in the Republic of Uzbekistan (2016-2020)





CONCLUSION

Thus, we have studied the supply of Metoclopramide tablets in the Republic of Uzbekistan. The result of the analysis of the above data shows that from the domestic manufacturers of the tablets metoclopramide is gradually increasing, but still, the percentage shows that the metoclopramide tablets are supplied mainly through imports, which is much higher in comparison with the volume of domestic manufacturers in the Republic of Uzbekistan. This indicates that in the future it is necessary to develop the technology for the production of metoclopramide tablets produced by domestic manufacturers. Given the fact that the population's demand for this drug remains high, this area today remains relevant for further research.

REFERENCES

1. Resolution of the President «On additional measures to deepen reforms in the pharmaceutical industry of the Republic of Uzbekistan». December 30, 2019. No. PP-4554.
2. Tkach, S. M. Prokinetics in the treatment of patients with functional disorders of the gastrointestinal tract. *Health of Ukraine. Gastroenterology. Hepatology. Coloproctology: thematic issue.* 2019. No. 4: 11.
3. S.E. Ravshanova, Yunusova Kh.M. Marketing analysis of non-narcotic analgesics in the pharmaceutical market of Uzbekistan. *Materials of the XIV International Scientific and Practical Conference of Young Scientists and Students, dedicated to "Years of Rural Development, Tourism and Folk Crafts (2019-2021)".* – 2019: 379.
4. S.E. Ravshanova, Yunusova Kh.M. Study of the range of combined non-narcotic analgesics. *Materials of the XIV International Scientific and Practical Conference of Young Scientists and Students, dedicated to "Years of Rural Development, Tourism and Folk Crafts (2019-2021)".* – 20019: 378.
5. Kh Yunusova, S Ravshanova Analysis of combined products on the basis of metamizola natriy in the pharmaceutical market of the Republic of Uzbekistan. *Pharmaceutical Bulletin of Uzbekistan.*– 2019. No. 2: 25-30.
6. Klyaritskaya I. L., Moshko Yu. A. Prokinetics and modern approaches to the treatment of GERD. *The Crimean Therapeutic Journal.* 2011. No. 2: 45-49.
7. State register of medicines and medical devices registered in the Republic of Uzbekistan. 2016-2020.
8. S.E. Ravshanova, Kh.M. Yunusova Analysis of assortment positions of the local pharmaceutical market of non-narcotic analgesics. *Materials scientific and practical conference with international participation "Creation of competitive medicines - a priority direction of development of pharmaceutical science".* – 2018. No. 22: 201-203.
9. S.E. Ravshanova, Z.Kh. Zufarova Study of the local market for non-narcotic analgesic drugs. *Materials of the republican, scientific and practical conference (with international participation) "Pharmacy: science, education, innovation and production".* – 2017: 121-122.
10. Klyaritskaya I. L., Viltsanyuk I. A., Chernukha S. N. Experience of motorix monotherapy in patients with postprandial distress syndrome. *The Crimean Therapeutic Journal.* 2008. No. 2: 54–58.
11. Grinevich V. B., Sablin O. A. Prokinetics in clinical practice. *M: Medicine.* 1998; 5-7.
12. S.E. Ravshanova, Kh.M. Yunusova Marketing analysis of range non-narcotic analgesics in Uzbekistan. *Pharmacy, scientific and practical journal.* – 2016: 828-831.
13. S.E. Ravshanova, Kh.M. Yunusova, Sh.Z. Ziyaev, Z.Kh. Zufarova Assessment of the conjunction of capsulated medicinal preparations of the pharmaceutical market of the Republic of Uzbekistan. *Science of the XXI century: problems and prospects.* – 2015. No. 1: 77-80.
14. Chernyavsky V.V. Possibilities of modern prokinetics in the correction of the motility of the digestive tract. *Internal medicine.* – 2008. No. 1(7): 42–45.
15. Ravshanova S E, Yunusova Kh M. Research research tablet dissolution "Analfenon". *Journal "Internauka".* 2019; 11 (93):29-31.
16. Ravshanova S E, Yunusova Kh M. Some features of selection of composition and technology of tablets "Anafenon". *Medical science of the XXI century - looking towards the future. Materials of the international scientific-practical conference (67th annual), dedicated to the 80th anniversary of TSMU named after Abuali ibni Sino and "Years of development of the village, tourism and folk crafts.* 2019;3:48-49.
17. Ravshanova SE and Yunusova KhM. Effect of various binding agents on the quality of hard gelatin capsules "Analfenon". *International Journal of All Research Writings.* 2020; 1(10): 81-85.



THE ROLE OF GOVERNMENT IN THE PROVISION OF INFORMATION AND COMMUNICATION TECHNOLOGY: A FIELD STUDY ON BURDWAN DISTRICT

Swarup Biswas

M.Phil Scholar,
Department of Political Science,
Kazi Nazrul University,
India

ABSTRACT

The only major objective in the introduction of this information and communication technology system in India is the overall development of the country. With the introduction of computerized digitalized governance system in every sector of the country, the people will be able to enjoy great opportunities. The introduction of this system will reflect the overall development of the people. As a result, there will be a people-to-people relationship with the state. The state will be more accountable to the people. All the work of the state will be more transparent to the people and the people will be able to participate directly.

KEYWORDS: *Communication, technology, computerization, digitalization, e governance.*

1. INTRODUCTION

After the collapse of the socialist system in the whole of Eastern Europe, including the Soviet Union in the 1990s, economic, political, and social changes took place all over the world. As the technology system continues to grow, so does the globalization and technology system. As a result, the idea of a fancy state was created out of the idea of a traditional state. One of the topics that is gaining importance in the study of public administration recently is governance. But before you know e-governance, you need to know what is governance? The word governance literally means the act of administration or the Act of Governing. Governance and government are not synonymous. Government means representative legitimate power and authority. On the other hand, governance refers to the purpose of achieving goals. So the idea of e-governance was born with the improvement of information-and-communication-technology system. E-Governance is electronic government. An unprecedented change can be observed in the introduction of this concept into the system of governance. This system is a distinctly decentralized system. The task of e-government is to provide speedy service to the people, to give transparency to the system of governance and above all to the direct participation of the people in the system. As a result, the public can monitor all the work of the government sitting at

home and enjoy all their work at home and the public can easily exchange all the information of the government. After the nineties, almost all over the world, the concept of e-government or the system of information and communication technology entered, but in India, the system entered much later. In India, the resolution was passed in Parliament in December 1999 and passed in May 2000. From then on, the journey of information and communication technology system started. With the introduction of this system, the transparency, accountability and prompt delivery of government services have greatly increased and the public has been able to exchange government information.

2. METHODOLOGY

This study is an observational study. To do this research I used two types of an information, one is a primary information and a secondary information. As a secondary information I have taken the help of published books, journals, periodicals, newspapers, and websites. I have selected the District Magistrate's Office of East Burdwan District for the collection of a preliminary information. From this field of research, I have first collected the necessary information in an interview with the staff of this office through a random supplementation. Necessary research data have also been collected from official documents.



3. HYPOTHESIS

It is true that the people of the country are benefiting from the introduction of an ICT in India, but it is not possible to say exactly how many people are receiving it, as it is gaining the ground in all parts of the country or in some parts of the country.

It is said that this system is costly enough to create this structure, and it may not be possible to get the required speed of the Internet to set up this information communication technology system. As a result, the system is facing many problems. Because, in order to establish this system very well, it is necessary to have a high-quality internet system which has not yet been developed in India.

4. THE ROLE OF GOVERNMENT IN THE DEVELOPMENT OF THE STATE

With the introduction of information and communication technology in India, the overall development of the country has greatly increased. People are benefiting a lot as a result. Through this information and communication technology system, a connection has been established with every corner of the country. As a result, people are benefiting a lot more. All the projects of the government are being delivered to the people very fast and their equality and demands are easily coming to the house of the government. The implementation of various government projects are not a difficult task for the government to see through the information and communication technology system, and the people, and the government are getting information very easily, which has created a close relationship between the people, and the state. The law department of the government, the administration department, and the judiciary department has formed an alliance with these three departments. Which will be very acceptable to the common people. As a result, the place of centralized power of the state has been greatly reduced, and the power of the state has become largely decentralized. Not only that, after the enactment of the Right to Information Act of the state, people can know information about any state. At the same time, the private sector has become much more aware and the private sector has become much more sympathetic and responsible to the people. As a result, a relationship has been formed between the state or the government and the private sector.

With the creation of the information-and-a communication and technology system, computerized systems have entered every level up to the grassroots level of an administration. As a result, the people living in a village has been able to easily assist in various tasks of the administration. Now all the work is done under the internet online system in the hope that now people can do all the government work from the home. An inclusion of the online

system for any type of the tax, the various job application forms for minorities, scheduled caste, OBCs etc. Also, a lot of the work is now done through the internet online system. As a result, the various information such as the government is much more secure and the amount of damage to those documents is very low.

5. FIELD SURVEY

Talking to the staff of the e-Governance Department of the DM Office in Burdwan to implement the aforementioned concept or its assumptions shows how different the reality is from the theoretical concept.

The people working here are interviewed and asked some questions and some information is available which is very different from the theoretical concept.

Q: How does your e-governance work?

A: Everything is done here and almost everything is done online. All of our technology is provided on the website such as voter card related minority inclusion complaints, scheduled caste related, various panchayat related exchanges are paid for various projects and so on.

Q: Are the people getting all the benefits through this?

A: Yes, but not all.

Q: Why not everyone?

A: There are many people who say that they do not know about these things, that is, they are not proficient in computer or internet. They like to do practically. They are scared. Again, many people come and say that there is no computer or internet system in your place.

Q: What is the percentage of people who get the opportunity of this system?

A: About 60 percent of the people actually come here and do all the work. And this system is used by the people here who live in the city of Burdwan. Not everyone said that.

Q: Are you able to fully exchange and connect with the panchayats through information and communication technology system?

A: No, it is not happening at all. Because there are many panchayats where computers have not yet been created and where they have entered, there will not be educated and skilled people.

6. OBSERVATION

Based on the hypothesis and a survey by the DM's office, it is seen that this information and communication technology system has been hampered in many ways. One of the important reasons for this is illiteracy. Because there are many people among whom the light of education has not penetrated much, especially the people of the village. Despite the rapid nature of the day-to-day nature of information and communication technology, the



development of this system seems to be an infinite obstacle, so the need for a primary teacher training and education progress in the use of computers and the Internet.

7. CONCLUSION

The information-and-communication-technology system in our country has brought huge changes in the state system. All over the world, the information and communication technology system has made the work of the state much easier. As a result, the state has become much more transparent and free from corruption.

8. REFERENCE

1. *IT and e-governance in India-* kamalesh n.Agarwal,Murli D.Tiwari
2. *E- Governance in India & Issue-* R.P.sinha, center of public policy & Governance (institute of applied manpower research in India)
3. *Information Technology and E Governance-* N. Gopalswamy
4. *The Governance Discourse-* Bidyut chakrabarty.



THE EFFECT OF TAX INFORMATION SOCIALIZATION AND TAX KNOWLEDGE ON TAXPAYER COMPLIANCE WITH TAXPAYER AWARENESS AS MEDIATION VARIABLES

(Case Study on Personal Taxpayers at KPP Pratama Jakarta Kramatjati)

Hasian Purba

Accounting Study Program,
 Faculty of Economics and Business,
 Universitas Mercu Buana,
 Jakarta, Indonesia

Article DOI: <https://doi.org/10.36713/epra5087>

ABSTRACT

The purpose of this study are as follows: 1) Finding empirical evidence regarding the effect of Tax Socialization on Taxpayer Awareness; 2) Finding empirical evidence regarding the effect of Tax Knowledge on Taxpayer Awareness; 3) Finding empirical evidence regarding the effect of Tax Socialization on Taxpayer compliance; 4) Finding empirical evidence regarding the effect of Taxation Knowledge on Taxpayer compliance; and 5) Finding empirical evidence regarding the influence of Taxpayer Awareness on Taxpayer compliance. This type of research used in this study is causal which will test the hypothesis about the effect of one or several independent variables on the dependent variable. The population in this study are all individual taxpayers who are registered in Jakarta Kramatjati Tax Office. Sample selection with convenience sampling method. The analytical method used to test hypotheses is the path analysis test and multiple test. The results showed that: 1) Tax socialization has a direct effect on the awareness of taxpayers; 2) Tax knowledge directly affects the awareness of taxpayers; 3) Tax socialization directly affects the compliance of taxpayers; 4) Tax knowledge directly affects the compliance of taxpayers; and 5) Taxpayer awareness directly influences taxpayer compliance.

KEYWORDS : *Taxation Socialization, Taxation Knowledge, Taxpayer Awareness, Taxpayer Compliance*

INTRODUCTION

Tax is a state levy that does not provide direct remuneration, is binding and enforceable, which is used for the prosperity of the people (Wulandari et al, 2014). Tax has two main functions, namely the budget function that is used to finance all routine expenditure and state development and the regular

function used to regulate government policies in the social and economic fields (Wulandari et al, 2014). According to Suyanto et al (2016) taxes have a very important role in the Indonesian economy because taxes are the main source for the Indonesian State to fund the State Budget (APBN).

**Table 1.1 Percentage of Tax Revenues in the 2014-2019 State Budget
 (In billions of Rupiah)**

Tahun	Pendapatan Pajak	PBNP	Hibah	Total	% Pajak
2014	1.280.389	385.392	1.360	1.667.141	76,80%
2015	1.489.256	269.075	3.312	1.761.643	84,54%
2016	1.546.665	273.849	2.032	1.822.546	84,86%
2017	1.472.710	260.242	3.108	1.736.060	84,83%
2018	1.618.096	275.428	1.197	1.894.720	85,40%
2019	1.786.379	378.298	4.353	2.169.030	82,36%

Source: www.kemenkeu.go.id (2019)



Table 1.1 shows that the main source of Indonesian state revenue lies in the tax sector. Every year, nominal tax revenue always increases. Judging from the percentage value, tax revenue always occupies a percentage above 75%. With such a high number, tax revenues play a very important role in the wheels of the Indonesian economy.

One of the basis for receiving tax according to the target is taxpayer compliance. Taxpayer compliance is a condition where taxpayers fulfill tax obligations and implement tax rights (Rohmawati et

al, 2012). Compliance with good taxpayers can be seen from the regularity to deposit taxes (Fatimah and Wardani, 2017). Widyowati (2015) states that with the compliance of taxpayers, it is expected that taxpayers will try to fulfill the applicable tax laws, either fulfilling obligations or carrying out their taxation rights. Advantages of taxpayer compliance include compliance in registering, timely submitting tax returns for all types of taxes, calculating and paying tax payable and paying tax arrears (Winerungan, 2013).

Table 1.2 Personal Taxpayer Data at KPP Pratama Jakarta Kramatjati

Tahun	Jumlah Wajib Pajak	WP SPT Tahunan	Laporan SPT Tahunan	% Ketidakpatuhan
2014	90.226	49.516	41.124	17%
2015	93.586	39.670	33.760	15%
2016	96.804	45.021	31.214	31%
2017	100.589	59.260	43.029	27%
2018	104.126	67.559	43.529	36%

Source: KPP Pratama Jakarta Kramatjati (2018)

In table 1.2 we can see that from 2014-2018 the number of individual taxpayers in the Jakarta Kramatjati Tax Office has increased, but with the increase in registered individual taxpayers, it has not been followed by the compliance of individual taxpayers who submit Annual Tax Returns and the percentage of non-compliance taxpayer compliance continues to increase. The increase in the percentage of non-compliance of individual taxpayers in Jakarta Kramatjati is due to non-compliance of taxpayers.

Non-compliance of taxpayers can be influenced by two types of factors, namely internal factors and external factors (Fuadi & Mangoting, 2013). Internal factors are factors that originate from the Taxpayer himself and are related to individual characteristics that are the triggers in carrying out their tax obligations. In contrast to internal factors, external factors are factors that originate from outside the taxpayer themselves, such as the situation and the environment around taxpayers. Many innovations have been made by the Directorate General of Taxes to facilitate taxpayers in participating in developing the country. If the taxpayer compliance increases, tax revenue will also increase so that the state treasury also increases.

Awareness of taxpayers on the function of taxation as state financing is needed to improve taxpayer compliance. The public must be aware of their existence as citizens and must always uphold the 1945 Constitution as the legal basis for administering the state (Puri, 2014). This is important because in reporting and paying tax obligations in Indonesia with a self assessment system, where taxpayers are given the trust to register, calculate, calculate, pay and report their tax obligations making

taxpayer awareness the key to successful tax collection (Mahfud et al. , 2017).

According to Sudrajat (2015) taxation socialization means an attempt is made to provide information about taxation. Tax information dissemination is used to raise public awareness and compliance with their obligations in paying taxes so that tax collection can be effective and the growth of tax revenue also increases (Rohmawati et.al, 2013). With tax socialization, the public will understand more about tax regulations and procedures so that taxpayer taxpayer knowledge will increase.

Knowledge taxation is the process of changing attitudes and behavior of taxpayers or taxpayer groups in an effort to mature humans through training efforts (Anwar, 2015). Having good tax knowledge can help improve taxpayer compliance with the importance of paying taxes and taxpayers can do it according to tax legislation. If taxpayers do not have knowledge of the regulations and taxation processes, then taxpayers cannot determine their behavior correctly (Tabun, 2016).

The phenomenon of the problem that occurs at the tax service office at KPP Pratama Jakarta Kramatjati, where the authors take 100 samples of taxpayers. The facts show that there are still many people who lack compliance and awareness in fulfilling tax obligations. This is reflected in the situation as follows: taxpayers do not understand enough and do not try to understand all the provisions of tax legislation, taxpayers fill in tax forms with incomplete and unclear data, taxpayers have not calculated the amount of tax owed correctly, and the taxpayer has not paid the tax due on time. Therefore, awareness of taxpayers on the function of



taxation as state financing is needed to improve taxpayer compliance.

In addition it can be seen that there are differences in research results including: First, research by Wulandari (2015) and Wardani (2018) found that intensive tax socialization can improve taxpayer compliance. In contrast to research Winerungan (2013) that with less intensive socialization provided will have an impact on the low knowledge and understanding of taxpayers so that it affects the tax compliance. Second, Tambun's research (2016) which states that taxpayer knowledge has a significant effect on taxpayer compliance. In contrast to research Hardiningsih et al (2011) and Susanto (2013) which states the knowledge of tax regulations does not affect the willingness to pay taxes.

Based on the background description above, the authors are interested in conducting a study entitled: "The Effect of Tax Information Socialization and Tax Knowledge on Taxpayer Compliance with Taxpayer Awareness as Mediation Variables (Case Study on Personal Taxpayers at KPP Pratama Jakarta Kramatjati)".

LITERATURE REVIEW

Compliance Theory

Compliance theory according to the science of sociology and psychology is a theory that emphasizes a process of socialization in influencing one's compliance behavior (Saleh, 2004 in Rusmadi, 2017). In the field of taxation, compliance tends to be due to a necessity to pay taxes because the notion of taxation itself is a contribution to the forced state. The legitimacy commitment has not yet been fully implemented because the current tax regulations are still many gaps that become gray areas. Taxpayers realize they have to pay taxes, but through tax management striving to pay taxes to a minimum by utilizing the loopholes in tax law leeway. Compliance with taxes can be interpreted that taxpayers are obliged to obey tax laws. According to Priantara (2016), with the promulgation of all tax laws in the State Gazette and Provisions on Taxation Regulations in the State Gazette means that the public (Taxpayers) must be aware and active to find out the contents and purpose of the provisions of the taxation laws.

According to Nasucha (2004 in Rusmadi, 2017), compliance of taxpayers can be identified from the compliance of taxpayers in registering themselves, compliance to remit returns (SPT), compliance in calculating and paying tax payable, and compliance in arrears payments.

Social Learning Theory

Social learning theory states that a person can learn through direct observation and experience (Bandura, 1977 in Ishti, 2013). According to Bandura

(1977) in Ishti (2013), processes in social learning include: a) Attentional processes; b) The process of detention (retention); c) The process of motor reproduction; and d) the reinforcement process

This social learning theory is relevant to explain the behavior of taxpayers in fulfilling their tax obligations. Someone will be obedient to pay taxes on time if through observation and direct experience, the tax money they pay has made a real contribution to the development in their area.

Tax Socialization

Socialization is a general concept that is interpreted as a process of learning through interaction with others, about how to think, feel and act where all of them are very important in generating effective social participation (Wurianti et al, 2015). Understanding socialization according to Mustofa (2007) explains that: "Socialization is a general concept that is interpreted as a process where we learn through interaction with others, about ways of thinking, feeling and acting where all of them are very important things in generating social participation effective".

In conducting socialization there needs to be an appropriate strategy and method that can be applied properly and become indicators and components in taxation socialization Widodo, et al (2010), namely:

- a. Counseling
 - 1) The method used
 - 2) Place, facilities and media used
 - 3) Material presented
- b. How to socialize
 - 1) Seminar (direct outreach)
 - 2) Advertising (indirect socialization)
- c. Information media used

Sources of information on taxes are mostly sourced from the mass media but outdoor media are also a source of concern to the public including:

- 1) Print media
- 2) Electronic media

Taxation Knowledge

Knowledge is the result of human knowing about something, or all human actions to understand a certain object that can be either tangible goods through reason, can also be understood as an ideal object of human form, or concerned with psychological problems. Taxes are people's contributions to the state treasury based on the law (which can be forced) by not getting lead services that can be directly shown and which are used to pay public expenses (Mardiasmo, 2016). So in conclusion, tax knowledge is the ability of taxpayers to know tax regulations both about tax rates based on the laws they will pay and tax benefits that will be useful for their lives (Utomo, 2011).



Knowledge of tax regulations is very important to foster compliance. Because how can taxpayers comply if they do not know how the tax regulations. With the knowledge of taxpayers about good tax will be able to minimize the existence of tax evasion (Witono, 2008 in Nurulita, 2017). With the knowledge of taxation will help taxpayer compliance in paying taxes, so the level of compliance will increase. Taxpayers who are knowledgeable about taxes, will self-consciously be obedient to pay taxes. They already know how the tax revenue flow will work, until finally the benefits of paying the tax are felt. A taxpayer will obey pay taxes if the taxpayer has knowledge of taxation well. If the taxpayer knows the tax regulations, then the taxpayer will obey his tax obligations and will increase taxpayer compliance.

Taxpayer Compliance

According to the Big Indonesian Dictionary, the term obedience means obedience, obedience. Compliance is the motivation of a person, group or organization to act according to established rules (Fajriyan, 2015). In tax, the rule that applies is taxation law. Tax compliance is a person's compliance, in this case is a taxpayer, to tax regulations or laws (Tiraada, 2013).

Based on the Regulation of the Minister of Finance of the Republic of Indonesia No. 74 / PMK.03 / 2012 concerning the procedure for determining taxpayers with certain criteria in the framework of returning the overpayment of tax overpayments Chapter II article 2, compliant taxpayers are those who meet four criteria, namely: (1) timely submitting a notice for all types of taxes, (2) have no tax arrears, except tax arrears that have obtained permission to pay in installments or postpone tax payments, (3) financial statements audited by a public accountant or government financial oversight body with a reasonable opinion without exception for 3 (three) years and (4) has never been convicted of a criminal act in the field of taxation based on a court decision which has had permanent legal force in the last 5 (five) years.

The issue of compliance becomes important because simultaneous non-compliance will lead to efforts to avoid taxes which results in a reduction in depositing tax funds to the state treasury. So the higher the truth count and calculate. the accuracy of depositing, and filling and submitting taxpayers' notification, it is expected that the higher level of taxpayer compliance in implementing and fulfilling their tax obligations.

Taxpayer Awareness

Awareness of paying taxes means the circumstances in which someone knows, understands, and understands how to pay taxes. Awareness of paying taxes at a macro level will give

birth to the morality of taxation (tax morality) society. People who have high morality will feel paying taxes is a state obligation that must be fulfilled as a member of a state organization that has provided protection and facilities to him. They will feel that the tax is really needed by the state in carrying out its duties and functions, and as a member of the community it is obliged to support every government activity (Siahaan, 2010). Nurmantu (2010) states that taxpayer awareness states that the positive assessment of taxpayers on the implementation of state functions by the government will move the public to comply with their obligations to pay taxes.

According to (Suryadi, 2006) there are four important indicators in raising awareness of taxpayers:

- a. create a positive perception of taxpayers about tax obligations,
- b. learn the characteristics of taxpayers,
- c. increase taxpayer tax knowledge, and
- d. tax counseling to taxpayers

Previous Research Review

Previous research that can support this research is as follows: Novrita & Rio (2018) in his research entitled *The Effect of Tax Service Modernization, Tax Sanctions, Quality of Tax Servants, Taxation Knowledge of Taxpayer Compliance Moderated by Taxation Socialization (Case Study in Primary Tax Office Jakarta Sunter)*. The results of this study indicate that the relationship of taxation service modernization has a significant effect on taxpayer compliance, taxation socialization has a significant effect on taxpayer compliance, taxation socialization as a moderating variable is able to strengthen the modernization of taxation services to taxpayer compliance. While tax sanctions, the quality of taxation services, and tax knowledge do not have a significant effect on taxpayer compliance.

Beny, et al (2018) in their study entitled *"The Effect of Tax Amnesty and Tax Amnesty Knowledge on Tax Compliance Post-Tax Individual Amnesty"*. Based on the results of research that has been done, it explains that tax knowledge has a significant effect on tax compliance of individual taxpayers after tax amnesty. Tax amnesty significantly influences tax compliance of individual taxpayers after tax amnesty.

Wardani & Wati (2018) in their research entitled *"The Effect of Tax Socialization on Taxpayer Compliance with Taxation Knowledge as Intervening Variables (Study on Individual Taxpayers in Kebumen KPP)"*. Based on the results of research that has been done explain that (1) Tax socialization has a positive effect on tax knowledge; (2) Tax knowledge has a positive effect on taxpayer compliance; (3) Tax socialization has a positive effect on tax compliance.

Suharyono (2019) conducted a study on the influence of Taxpayer Awareness and Tax Knowledge on Taxpayer Compliance in Paying Land and Building Taxes in Bengkalis Regency. This study found that: 1) Awareness of taxpayers does not affect the compliance of taxpayers in paying the Land and Building Tax in Bengkalis Regency; 2) Knowledge of taxation does not affect the compliance of taxpayers in paying Land and Building Tax in Bengkalis Regency; 3) Simultaneously awareness of

taxpayers and tax knowledge also does not have a positive effect on taxpayer compliance in paying Land and Building Taxes in Bengkalis Regency.

Theoretical Framework

Based on the theoretical basis and some previous research, the framework in this study can be shown by the following picture:

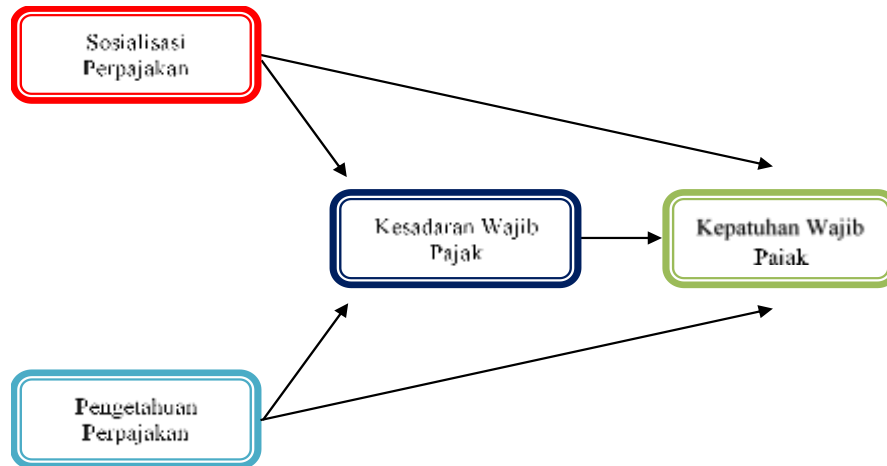


Figure 1.1 Research Model

Research Hypothesis

From the above thought framework, the researcher draws a hypothesis as follows:

- Ha1 = Tax information dissemination has a direct effect on the awareness of taxpayers
- Ha2 = Knowledge of taxation directly affects the awareness of taxpayers
- Ha3 = Tax information dissemination has a direct effect on taxpayer compliance
- Ha4 = Knowledge of taxation directly affects the compliance of taxpayers
- Ha5 = Taxpayer Awareness directly affects the compliance of taxpayers

RESEARCH METHODOLOGY

Types of research

This research is causal which will test the hypothesis about the effect of one or several independent variables on the dependent variable. According to Sarwono and Suhayati (2010) causal research is research conducted to identify causal relationships between variables. Causal research is aimed at knowing which variables function as causes (independent variables) and which variables function as results (dependent variables).

Operational Definition and Variable Measurement

The variables used in this study consisted of the dependent variable and the independent variable. Operational research variables can be summarized in table 1.3.



Table 1.3 Operationalization of Variables

Variable type	Dimensions	Indicator	Scale
Independent			
Tax Socialization	A program implemented by the Directorate General of Taxes to increase public understanding and knowledge about taxes	1) Counseling; 2) How to socialize; 3) Information media used; (Widodo, dkk. 2010)	Likert
Taxation Knowledge	The process by which taxpayers know about taxation and apply that knowledge to pay taxes	<ul style="list-style-type: none"> • Taxpayer knowledge of the tax function • Taxpayer Knowledge of tax regulations • Taxpayer knowledge of registration as a taxpayer • Taxpayer Knowledge of Tax Payment Procedures • Taxpayer knowledge of tax rates 	Likert
Dependent			
Taxpayer Compliance (Suryadi, 2006)	- Tax audits	- With the changes made by the Directorate General of Taxes, registration of taxpayers to obtain NPWP can now be done easily, making it easier for taxpayers to carry out their obligations.	Likert
	- Law enforcement	- The application of strict sanctions for violations by taxpayers increases the compliance of taxpayers to substantively meet all material tax provisions.	
	- Tax compensation	<ul style="list-style-type: none"> - Administrative reforms undertaken by the Directorate General of Taxes with the use of information technology facilitate reporting of tax returns, thus encouraging taxpayers to report before the deadline ends - Tax obligations that can be paid easily, increase taxpayer compliance to carry out obligations before the deadline expires. - Increasing the quality and integrity of the tax apparatus, encourages taxpayers to fill SPT honestly. 	
Intervening			
Taxpayer Awareness	Circumstances where someone knows, understands, and understands about how to pay taxes. (Nugroho & Zulaikha, 2012).	1) create a positive perception of taxpayers about tax obligations, 2) learn the characteristics of taxpayers, 3) increase taxpayer tax knowledge, and 4) tax counseling to taxpayers	Likert

Variable Measurement

The research instrument was in the form of a questionnaire compiled based on the research indicators of each variable so that there were 4 (four) questionnaires in this study, namely the tax dissemination questionnaire, tax knowledge knowledge questionnaire, Taxpayer awareness questionnaire and taxpayer compliance questionnaire.

The questionnaire was compiled using an interval scale using five answer choices as follows:

- Strongly Agree (SS) = given a score of 5
- Agree (S) = given a score of 4
- Hesitation (R) = given a score of 3
- Disagree (TS) = given a score of 2
- Strongly Disagree (STS) = given a score of 1

Population and Research Samples

The population of this study were all individual taxpayers registered at KPP Pratama Jakarta

Kramatjati. The reason is that the research location is very easy to reach and close to the researcher's workplace, thus providing convenience in obtaining data.

Sampling was carried out by convenience sampling method, in which sample members were selected or taken based on the ease of obtaining the required data, or the sample units that were drawn were easy to measure and cooperative in nature (Hamid, 2010). This sample selection technique was chosen because of the consideration of a location that is easy to reach so that it can make it easier for researchers to collect samples that will be used in this study. Determination of sample size using the Slovin formula (Umar, 2005 in Singgih and Bawono, 2010). The data that researchers got from KPP Pratama Jakarta Kramatjati, the researchers obtained the number of individual taxpayers as many as 104,126 taxpayers. From the well-known population, the sampling calculation using the Slovin formula is as follows:

$$n = \frac{N}{1 + N e^2}$$

$$n = \frac{104.126}{1 + 104.126(10\%)^2}$$

$$n = \frac{104.126}{1.042,26}$$

$$n = 99,90, \text{rounded to } 100$$

Based on these calculations the number of samples in this study were 100 Individual Taxpayers who were registered at the KPamat Pratama Jakarta Kramatjati.

Data Types and Sources

The type of data in this study is primary data obtained from respondents' responses to the questionnaire sent, while the source of the data comes from individual taxpayer answers that are registered at the KPP Pratama Jakarta Kramatjati.

Data collection technique

The method of data collection in this study was carried out by the sampling method, which is a method of investigation conducted to obtain facts or symptoms that exist and look for information

factually. Data collection is done through a questionnaire given to individual taxpayers who are registered at the KPP Pratama Jakarta Kramatjati. The questionnaire contains questions that represent each variable in this study.

Analysis Method
Descriptive statistics

Descriptive statistics in this study are used to provide a description of the character of the research variable using a frequency distribution table that shows the mode number, the range of scores and the standard deviation.

Data Quality Test

According to Hair et. al (1996, in Sandjojo, 2011), the quality of data generated from the use of research instruments can be evaluated through reliability and validity tests. The tests are each to determine the consistency and accuracy of data collected from the use of the instrument.

Test Prerequisite Analysis

To be able to use path analysis in hypothesis testing, it is necessary to first test statistical prerequisites for the data. The analysis prerequisite tests include tests of normality, homogeneity, and significance and linearity.

Hypothesis testing

The design of hypothesis testing used in this study is to use path analysis and Sobel Test. According to Imam Ghozali (2013) to calculate the path coefficient through the following work steps: 1). Draw a path diagram that explains the relationship between variables that reflect the proposed conceptual hypothesis, 2). Calculate the amount of influence (structural parameters) between a cause variable and an effect variable.

The path analysis method used in this study is explained in the figure as follows:

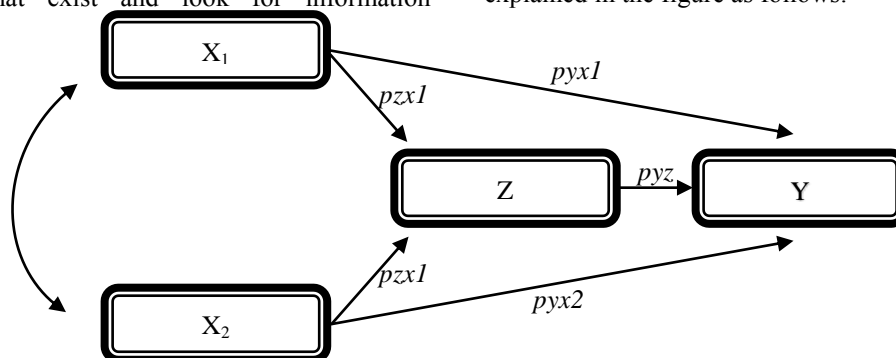


Figure 1.2 Path Diagram structure

Regression models in the study are:

Z = α + ρ_{zx1}X₁ + ρ_{zx2}X₂ + ε₁ (Substruktural 1)

Y = α + ρ_{yx1}X₁ + ρ_{yx2}X₂ + ρ_{yz}Z + ε₂ (Substruktural 2)

Where:

- Y = Taxpayer Compliance
- X₁ = Socialization of Taxation



- X_2 = Knowledge of Taxation
- Z = Taxpayer Awareness
- ρ = line coefficient
- R = Correlation value
- \mathcal{E} = Error

In this study the significance level (α) of 0.05 or 5% was used. This multiple regression analysis was carried out with the help of the SPSS (Statistical Package For Social Sciences) Release 25.0 for Windows program so that the coefficient of determination, the statistical value of F and the statistical value of t were used in hypothesis testing.

Sobel test and Bootstrapping test.

Sobel test is done by testing the strength of the indirect effect of the independent variable (X) to the dependent variable (Y) through the intervening variable (Z).

An alternative approach to test the significance of mediation using bootstrapping techniques. Bootstrapping is a non-parametric approach that does not assume the shape of the variable distribution and can be applied to a small sample size. Heyes and Preacher (2004) in Ghozali (2013) have developed a sobel and bootstrapping test in the form of SPSS script 25. The hypothesis is that exogenous variables

individually influence indirectly on endogenous variables. Basis of Decision Making:

- 1) If the probability is $t > t_{table}$ then the hypothesis is accepted.
- 2) If the probability is $t_{count} < t_{table}$, the hypothesis is rejected. (Ghozali, 2013)

RESEARCH RESULTS AND DISCUSSION

Research Data Description

Descriptive analysis is calculated based on the percentage of respondents' answers to research questions using the mean value of each indicator proposed to describe the perceptions of all respondents. Based on the mean (mean), then the respondents' perceptions are interpreted using the three-box method criteria (Ferdinand, 2006), which are: 10.00 - 40 = low, 40.01 - 70 = moderate, and 70.01 - 100 = high.

Table 1.4 descriptive statistical results

Variable	Index Value	Minimum	Maksimum	Mean	Std. Deviation
Socialization of Taxation	73,33	11	25	18,33	3,418
Knowledge of Taxation	77,33	12	25	19,33	3,362
Taxpayer Awareness	73,89	14	30	22,17	3,950
Taxpayer Compliance	73,02	11	25	18,26	3,290

Source: Processed Primary Data

The following are descriptive statistical results about the research variables as follows: The taxation socialisation variable has a minimum value of 11 and a maximum value of 25. The average tax socialisation variable is 18.33 with a standard deviation of 3.418. While the frequency index value is 73.33. With a frequency index value of 73.33, it can be concluded that the perception of respondents' answers on taxation socialisasai variables is in the high category, because it is in the range of values between 70.01 - 100.

The tax knowledge variable has a minimum value of 12 and a maximum value of 25. The average tax knowledge variable is 19.33 with a standard deviation of 3.362. While the frequency index value of 77.33. With a frequency index value of 77.33, it can be concluded that the perception of respondents' answers to the tax knowledge variable is in the high category, because it is in the range of values between 70.01 - 100.

The variable taxpayer awareness has a minimum value of 14 and a maximum value of 30. The average

taxpayer awareness variable is 22.17 with a standard deviation of 3,950. While the frequency index value is 73.89. With a frequency index value of 73.89, it can be concluded that the perception of respondents' answers on the taxpayer awareness variable is in the high category, because it is in the range of values between 70.01 - 100.

The taxpayer compliance variable has a minimum value of 11 and a maximum value of 25. The average taxpayer compliance variable is 18.26 with a standard deviation of 3.290. While the frequency index value of 73.02. With a frequency index value of 73.02, it can be concluded that the perception of respondents' answers to the tax compliance variable in the high category, because it is in the range of values between 70.01 - 100.

Data Quality Test Validity test

This test is intended to measure the validity of a questionnaire in measuring a contract. And at the same time strengthen the results of previous



calculations that all variables measured using the Likert scale can be used for further data processing.

Validation Test Results for each variable can be seen in the following table:

Table 1.5 Validity test Results

Variable	No. Item	Correlation value	Status
Socialization of Taxation	Q1	0,851	Valid
	Q2	0,780	Valid
	Q3	0,862	Valid
	Q4	0,758	Valid
	Q5	0,302	Valid
Knowledge of Taxation	Q6	0,784	Valid
	Q7	0,726	Valid
	Q8	0,838	Valid
	Q9	0,760	Valid
	Q10	0,607	Valid
Taxpayer Awareness	Q11	0,835	Valid
	Q12	0,781	Valid
	Q13	0,843	Valid
	Q14	0,712	Valid
	Q15	0,702	Valid
	Q16	0,309	Valid
Taxpayer Compliance	Q17	0,432	Valid
	Q18	0,786	Valid
	Q19	0,837	Valid
	Q20	0,696	Valid
	Q21	0,707	Valid

Source: Processed Primary Data

Reliability Test

The reliability test is carried out with reference to Cronbach Alpha 0.60. Table 1.6 shows that all instruments of the tested variables have Cronbach alpha above 0.60, so the test results are quite

satisfactory because all instruments have a high level of reliability, so they can be used for further data processing. The Reliability Test Results of each variable can be seen in the following table:

Table 1.6 Reliability Testing Results

No	Variable	Cronbach Alpha coefficient	Number of instruments
1	Socialization of Taxation	0,778	5
2	Knowledge of Taxation	0,797	5
3	Taxpayer Awareness	0,836	6
4	Taxpayer Compliance	0,627	5

Source: Processed Primary Data

Test Prerequisite Analysis Normality test

Testing for normality using the Lilliefors test. Provisions in the error test are if the statistic L count <L table ($\alpha = 0.05$), then the error data is normally

distributed. But if L count > L table ($\alpha = 0.05$), then the data is not normally distributed.

Thus the overall results of the normality test calculation using the Lilliefors test can be seen in the summary in table 1.7.

Table 1.7 Test summary normality

No	Error estimated	n	L Count	L Table		Decision
				$\alpha = 0.05$	$\alpha = 0.01$	
1	Z atas X1	90	-0,0935	0,0934	0,1087	Normal
2	Z atas X2	90	-0,1053	0,0934	0,1087	Normal
3	Y atas X1	90	-0,0950	0,0934	0,1087	Normal
4	Y atas X2	90	-0,1044	0,0934	0,1087	Normal
5	Y atas Z	90	-0,0837	0,0934	0,1087	Normal

Source: Processed Primary Data



Homogeneity Test

Another requirement for using path analysis is that the verifiable variance bound to the independent variable must be homogeneous. Homogeneity variance testing is done through SPSS and Excel

using the Barlett test. A homogeneous variance if produced when χ^2 arithmetic $< \chi^2$ tables. Thus overall the homogeneity test calculation results can be seen in the summary in the following table:

Table 1.8 test summaries of homogeneity

No	Error estimated	X ² _h	df	X ² _t	Decision
1	Z atas X1	15,449	75	96,217	Homogeneous
2	Z atas X2	15,949	76	97,351	Homogeneous
3	Y atas X1	21,714	75	96,217	Homogeneous
4	Y atas X2	20,661	76	97,351	Homogeneous
5	Y atas Z	16,783	74	95,081	Homogeneous

Source: Processed Primary Data

Test Path Analysis

Path analysis is used to analyze the pattern of relationships between variables with the aim of finding out the direct and indirect effects of a set of

independent (exogenous) variables on the dependent variable (endogenous). From the data processing through the SPSS program the following results are obtained:

Table 1.9 pathway analysis Results

Description	ρ	T _{Count}	Sig	T _{tabel}	R ²	F _{Count}	Sig
Sub-Struktur 1				1,663	0,673	89,613	0,000
Socialization of Taxation	0,496	7,102	0,000				
Knowledge of Taxation	0,459	6,572	0,000				
Sub-Struktur 2				1,663	0,858	173,25 5	0,000
Socialization of Taxation	0,491	8,450	0,000				
Knowledge of Taxation	0,122	2,149	0,034				
Taxpayer Awareness	0,421	5,928	0,000				

Source: Processed Primary Data

Based on the results of the path analysis in Sub-Structure 1, path coefficients X1 and X2 to Z are obtained by $\rho_{zx1} = 0.496$ and $\rho_{zx2} = 0.459$. While the coefficient reflected or the contribution of X1 and X2 to Z is (Rsquare) = 0.673 as in table 1.9, which means that 67.3% of taxpayer awareness can be explained by variations in tax socialization variables and tax knowledge. The amount of residual coefficient ($\rho_{z\epsilon 1}$) = $\sqrt{1 - 0.673} = 0.572$ is the influence of other variables outside of taxation socialization and tax knowledge. While the results of the path analysis in Sub-Structure 2 obtained path coefficients X1, X2 and Z to Y of $\rho_{yx1} = 0.491$, $\rho_{yx2} = 0.122$ and $\rho_{yz} = 0.421$. While the coefficient reflected or the contribution of X1, X2 and Z to Y is (Rsquare) = 0.858 as in table 1.9, which means that 85.8% of taxpayer compliance can be explained by taxation socialization, tax knowledge, and taxpayer awareness. The amount of residual coefficient ($\rho_{y\epsilon 2}$) = $\sqrt{1 - 0.858} = 0.377$ is the influence of other variables outside of taxation socialization, tax knowledge, and awareness of taxpayers. The results of the path coefficients in sub-structure 1 and sub-structure 2 produce structural equations, as follows:

$$Z = 0,496X_1 + 0,459X_2 + 0,572\epsilon_1 \text{ dan } R^2_{zx2x1} = 0,673$$

$$Y = 0,491X_1 + 0,122X_2 + 0,421Z + 0,377\epsilon_2 \text{ dan } R^2_{yzx2x1} = 0,858$$

Hypothesis test

After testing the model, then testing the hypothesis to determine the direct and indirect effects between variables. The hypothesis proposed will be concluded through the calculation of the path coefficient value and the significance of each path studied. The results of the decision on the proposed hypothesis are explained as follows:

1. Tax information dissemination has a direct effect on taxpayer awareness

Based on the calculation results it can be seen that the value of the path coefficient (ρ_{zx1}) of 0.496 with $t_{count} = 7.102$, at $\alpha = 0.05$ obtained $t_{table} = 1.663$. Because the value of $t = 7.102$ is greater than $t_{table} = 1.663$, the path coefficient is significant. The results showed that tax information dissemination directly affected the awareness of taxpayers ($0.496 \times 0.496 \times 100\%$) = 24.60%. Thus H_{a1} received.

2. Knowledge of taxation directly affects taxpayer awareness

Based on the calculation results it can be seen that the value of the path coefficient (ρ_{zx2}) of 0.459 with $t_{count} = 6.572$, at $\alpha = 0.05$, obtained



ttable = 1.663. Because tcount = 6.572 is greater than t table = 1.663, the path coefficient is significant. The results showed that tax knowledge has a direct effect on taxpayer awareness of $(0.459 \times 0.459 \times 100\%) = 21.07\%$. Thus Ha2 received.

3. Tax information dissemination has a direct effect on taxpayer compliance

Based on the calculation results it can be seen that the value of the path coefficient (pyx1) of 0.491 with $t = 8.450$, at $\alpha = 0.05$, obtained ttable = 1.663. Because the value of $t = 8.450$ is greater than t table = 1.663, the path coefficient is significant. The results showed that taxation socialization directly affected the compliance of taxpayers $(0.491 \times 0.491 \times 100\%) = 24.11\%$. Thus Ha3 received.

4. Knowledge of taxation directly affects taxpayer compliance

Based on the calculation results it can be seen that the value of the path coefficient (pyx2) of 0.122 with tcount = 2.149, at $\alpha = 0.05$ obtained ttable = 1.663. Because the value of $t = 2.149$ is greater than t table = 1.663, the path coefficient is significant. The results showed that tax knowledge

1. The effect of taxpayer awareness in mediating the relationship between tax information dissemination and taxpayer compliance

has a direct effect on taxpayer compliance by $(0.122 \times 0.122 \times 100\%) = 1.49\%$. Thus Ha4 received.

5. Awareness of taxpayers directly affects the compliance of taxpayers

Based on the calculation results it can be seen that the value of the path coefficient (pyx3) of 0.421 with tcount = 5.928, at $\alpha = 0.05$ obtained ttable = 1.663. Because the value of $t = 5.928$ is greater than t table = 1.663, the path coefficient is significant. The results showed that taxpayer awareness had a direct effect on taxpayer compliance by $(0.421 \times 0.421 \times 100\%) = 17.72\%$. Thus Ha5 was accepted.

Mediation Factor Testing

To test the significance of the indirect effect, it can be done by comparing the Z value of the calculated ab coefficient with the Ztable value of 1.96. If the value of Zhitung is greater than the value of Ztable, it can be concluded that there is a mediating effect (Ghozali, 2013). The calculation of mediation factor testing will be explained as follows:

Table 1.10 results of mediation test with Sobel test

DIRECT AND TOTAL EFFECTS				
	Coeff	se	t	Sig (two)
b(YX)	0,8186	0,0539	15,1774	0,0000
b(MX)	0,8260	0,0861	9,5892	0,0000
b(YM.X)	0,4242	0,0494	8,5886	0,0000
b(YX.M)	0,4683	0,0571	8,2059	0,0000
INDIRECT EFFECT And SIGNIFICANCE USING NORMAL DISTRIBUTION				
	Value	se	z	Sig (two)
Effect	0,3503	0,0549	6,3784	0,0000

Source: Processed Primary Data

Testing the significance of indirect effects with the Sobel test obtained $z = 6.3784$ and $p = 0.0000$. Because z-value in absolute price > 1.96 and the level of statistical significance z (p-value) < 0.05, it

means that there is a mediating influence of Taxpayer's awareness of the relationship between taxation socialization and taxpayer compliance.

2. The effect of taxpayer awareness in mediating the relationship between tax knowledge and taxpayer compliance

Table 1.11 results of mediation test with Sobel test

DIRECT AND TOTAL EFFECTS				
	Coeff	se	t	Sig (two)
b(YX)	0,6355	0,0793	8,0134	0,0000
b(MX)	0,8171	0,0900	9,0803	0,0000
b(YM.X)	0,6539	0,0633	10,3229	0,0000
b(YX.M)	0,1012	0,0744	1,3597	0,1774
INDIRECT EFFECT And SIGNIFICANCE USING NORMAL DISTRIBUTION				
	Value	se	z	Sig (two)
Effect	0,5343	0,0786	6,8000	0,0000

Source: Processed Primary Data

Testing the significance of indirect effects with the Sobel test obtained values of $z = 6.8000$ and $p = 0.0000$. Because z-value in the absolute

price > 1.96 and the level of statistical significance z (p-value) < 0.05, it means that there is a mediating influence of taxpayer awareness of the



relationship between tax knowledge and taxpayer compliance.

DISCUSSION

1. Tax information dissemination has a direct effect on taxpayer awareness

Hypothesis testing 1 proves that taxation socialization has a direct effect on taxpayer awareness. The test results prove that the awareness of taxpayers will be formed if each taxpayer has followed taxation socialization, and understood the contents of the socialization conducted by the Tax Office (KPP) Pratama Jakarta Kramatjati. Counseling or outreach can be applied in practical activities on the ground that are carried out on an ongoing basis, to be able to increase the knowledge of taxpayers and foster awareness of taxpayers about their tax obligations. This is in line with research conducted by Ulfa (2015) if tax socialization is increased, awareness of taxpayers will be higher.

2. Knowledge of taxation directly affects taxpayer awareness

Hypothesis testing 2 proves that tax knowledge has a direct effect on the awareness of taxpayers. This means that taxpayer awareness will be formed if taxpayers have high knowledge about taxation so that they will be more aware of fulfilling their obligations as a good citizen, namely paying taxes. Increased knowledge of taxation both formal and non formal will have a positive impact on taxpayer awareness in paying taxes (Suryadi, 2006). Knowledge and understanding of tax regulations is a process in which taxpayers know about taxation and apply that knowledge to fulfill their tax obligations.

The results of this study support research conducted by Rahman (2012), Ulfa (2015) and Defranis et.al, (2016) states that tax knowledge has an effect on taxpayer awareness.

3. Tax information dissemination has a direct effect on taxpayer compliance

Hypothesis testing 3 proves that taxation socialization has a direct effect on taxpayer compliance. This shows that taxation socialization is an important thing that must always be improved by KPamat Pratama Jakarta Kramatjati, because taxation socialization is able to convey information about taxation to taxpayers so that it can affect taxpayer compliance in fulfilling tax obligations so that it will increase taxpayer compliance. In accordance with the theory put forward by Puspita (2016), the socialization of tax is expected to make Taxpayers know, understand, and realize the importance of tax for development. Thus, the taxpayer responds to the holding of taxation socialization. The presence of taxpayers in following the taxation socialization, causes taxpayers to know, understand, and realize the

importance of taxes for development, so that taxpayers are more obedient in carrying out tax obligations. This causes the taxation socialization affect taxpayer compliance.

This is supported by research by Wulandari (2015), Purba (2016), Wardani & Wati (2018), and Novrita & Rio (2018) which states that socialization has a positive effect on taxpayer compliance. In contrast to research Winerungan (2013) and Lianty, et al., (2017) which states taxation socialization has no effect on taxpayer compliance.

4. Knowledge of taxation directly affects taxpayer compliance

Testing hypothesis 4 proves that tax knowledge directly influences taxpayer compliance. This is in accordance with the taxation system in Indonesia which adopts a self assessment system that requires taxpayers to have knowledge related to taxation regulations. Because how is it possible that taxpayers can carry out their obligations if they do not have knowledge about the regulations, how to calculate, calculate up to report taxes. By having adequate tax knowledge, taxpayers can know and easily carry out the obligations that must be done in terms of taxation. The higher level of knowledge possessed by taxpayers will increase taxpayer compliance because taxpayers already know the function of taxes and the importance of taxes in state development. Lack of tax knowledge possessed is the cause of the low compliance of taxpayers. Tax counseling and information dissemination can be done by tax officials to provide updated information regarding changes in tax regulations.

The results of this study support the research conducted by Viega & Fidiana (2017); Siti, et al (2017); and Beny, et al (2018), showed that there is a positive effect of tax knowledge on taxpayer compliance.

5. Awareness of taxpayers directly affects the compliance of taxpayers

Hypothesis testing 5 proves that the awareness of taxpayers directly affects the compliance of taxpayers. The results of this study are in line with the Theory of Planned Behavior, where taxpayers who have realized the importance of taxes for the State will be motivated to pay taxes according to tax rules. The motivation and intentions possessed by this Taxpayer come from the conscience of the Taxpayer himself. For taxpayers who realize that the function of paying the tax itself can support the State Revenue and Expenditure Budget, the Taxpayer will pay taxes on time. In addition, according to Pasaribu and Christine (2016), the awareness of taxpayers is growing because of the tax collection system that adopts the Self Assesmet System. This system provides freedom



for taxpayers to calculate, pay and report taxes. The freedom given by the government to this taxpayer will have a good impact. Because taxpayers assume in fulfilling tax obligations there is no intervention from the government how much tax should be paid. This is what raises awareness for taxpayers. High awareness of taxpayers in fulfilling these tax obligations will have an impact on the fulfillment of tax obligations in accordance with tax regulations. In other words, taxpayers who are aware that tax is an obligation, taxpayers will immediately pay taxes on time.

The results of this study are in line with research conducted by Nanik & Zaenal (2018) showing that the higher the level of awareness possessed by taxpayers, the higher the level of compliance possessed by taxpayers. But different from the research conducted by Tahar & Rachman (2014), Nugroho, et al (2016), and Suharyono (2019), which shows that the awareness of taxpayers can not affect the compliance of taxpayers because taxpayers pay taxes only because they are afraid to get a penalty fine not because of the awareness of the taxpayer.

CONCLUSION

Based on the results of the analysis conclusions can be drawn as follows: 1) Tax socialization directly affects the awareness of taxpayers; 2) Tax knowledge directly affects the awareness of taxpayers; 3) Tax socialization directly affects the compliance of taxpayers; 4) Tax knowledge directly affects the compliance of taxpayers; and 5) Taxpayer awareness directly influences taxpayer compliance.

Limitation

This research cannot be separated from limitations and is expected to be a source of ideas for further research. Some limitations in this study include: First, the results of this study are only based on the answers of respondents to the questionnaire distributed, and are not supported by interviews. Second, in filling out the questionnaire it is possible that the answer does not match the actual situation. This can happen when the respondent is not focused when answering the questionnaire, because there are several respondents when filling out the questionnaire while doing other activities simultaneously and some are in a hurry when filling out the questionnaire. Third, this study only uses three variables, namely, tax socialization, tax knowledge and taxpayer compliance.

Suggestions

By considering the existing limitations, it is expected that future research will improve the following factors: 1) For KPP Pratama Jakarta Kramatjati, based on the results of tests conducted on each variable there are results indicated by

respondents that the taxation socialization has an effect on taxpayer compliance. Actions that can be taken by KPP Pratama Jakarta Kramatjati to further increase taxpayer compliance are by expanding taxation socialization to taxpayers so that taxpayers are more aware of their tax rights and obligations; 2) For Further Research, based on the conclusions and limitations of the results of this study, the suggestion that can be given to future researchers is that future research can replace this research model by changing the intervening variable to another variable. This research model can also be developed by adding other variables outside this study that can affect taxpayer compliance such as tax sanction assertiveness and tax service quality. And can add other methods, such as using the interview model.

DAFTAR PUSTAKA

1. Andhika Utama dan Dudi Wahyudi. 2012. Pengaruh Religiusitas terhadap Perilaku Kepatuhan Wajib Pajak Orang Pribadi di Provinsi DKI Jakarta. *Jurnal Lingkar Widya Swara*, Edisi 3 No. 2, Apr – Jun 2016, p.01 – 13
2. Axel dan Mulyani. 2019. Pengaruh Tax Amnesty Terhadap Kepatuhan Wajib Pajak Dengan Pengetahuan Perpajakan sebagai Pemoderasi. *Jurnal Akuntansi*, Vol. 8, No. 1 Februari
3. Benk Serkan, Tamer Budak, Bahadýr Yüzba, and Raihana Mohdali. 2016. The Impact Of Religiosity On Tax Compliance Among Turkish Self-Employed Taxpayers. *Religions*. Vol. 7, No. 37
4. Beny Faturahman, Siti Nurlaela dan Endang Masitoh. 2018. Pengaruh Pengetahuan Perpajakan dan Tax Amnesty Terhadap Kepatuhan Perpajakan Wajib Pajak Orang Pribadi Pasca Tax Amnesty. *Seminar Nasional dan Call for Paper: Manajemen, Akuntansi dan Perbankan 2018*
5. Defantris Hari Kurniati; Mochammad Djudi M; dan Muhammad Saifi. 2016. Pengaruh Pengetahuan Perpajakan dan Kualitas Pelayanan Terhadap Kesadaran Wajib Pajak Dalam Menyampaikan Surat Pemberitahuan (SPT) Tahunan (Studi pada Wajib Pajak Orang Pribadi yang Terdaftar di KPP Pratama Blitar). *Jurnal Perpajakan (JEJAK)*. Vol. 9, No. 1
6. Dewi Fitriyani, Eko Prasetyo, Reni Yustien, Achmad Hizazi. 2014. Pengaruh Gender, Latar Belakang Pekerjaan, dan Tingkat Pendidikan Terhadap Kepatuhan Wajib Pajak. *Jurnal InFestasi*. Vol. 10, No. 2
7. Imam Ghozali. 2013. Aplikasi Analisis Multivariate Dengan Program IBM SPSS 22. Badan Penerbit Universitas Diponegoro, Semarang.
8. Isthi Wahyuning Tyas. 2013. Pengaruh Umur, Pendidikan, Penghasilan Bruto, dan Moral Terhadap Kepatuhan Pembayaran Pajak (Studi Empiris WPOP Usahawan pada Mall Ciputra). *Jurnal TEKUN*. Vol. IV, No. 02,
9. Istika Herliani Ulfa. 2015. Pengaruh Kesadaran, Pengetahuan Pajak dan Sikap Wajib Pajak



- Terhadap Kepatuhan Wajib Pajak Pekerjaan Bebas di KPP Pratama Semarang Timur. *E-Jurnal Akuntansi Universitas Dian Nuswantoro*. Vol. 4, No. 4.
10. Mardiasmo. 2016. *Perpajakan Edisi Terbaru 2016*. Yogyakarta: ANDI.
11. Wana Mayasari, Zaitul, Resti Yulistia Muslim. 2015. Pengaruh Ketaatan Beragama Terhadap Moral Pajak. *Ejurnal Universitas Bung Hatta*. Vol 6, No 1.
12. Nanik Ermawati dan Zaenal Afifi. 2018. "Pengaruh Religiusitas Terhadap Kepatuhan Wajib Pajak dengan Kesadaran Wajib Pajak sebagai Variabel Intervening. *Jurnal Akuntansi Indonesia*. Vol. 7, No. 2, Hal. 49 – 62
13. Nugroho Aditya, Rita Andini, dan Kharis Raharjo. 2016. Pengaruh Kesadaran Wajib Pajak Dan Pengetahuan Perpajakan Wajib Pajak Terhadap Kepatuhan Wajib Pajak Dalam Membayar Pajak Penghasilan (Studi Kasus Pada KPP Semarang Candi). *Journal Of Accounting*. Vol. 2 No. 2 Maret
14. Nurulita Rahayu. 2017. Pengaruh Pengetahuan Perpajakan, Ketegasan Sanksi Pajak, dan Tax Amnesty terhadap Kepatuhan Wajib Pajak. *Akuntansi Dewantata*. Vol. 1, No. 1.
15. Oktaviane Lidya Winerungan. 2013. Sosialisasi Perpajakan, Pelayanan Fiskus dan Sanksi Perpajakan Terhadap Kepatuhan WPOP di KPP Manado dan KPP Bitung. *Jurnal EMBA*, Vol.1, No.3, September
16. Riaty Handayani dan Syifa Nur Rahmawati. 2018. Pengaruh Penerapan Modernisasi Administrasi Perpajakan Dalam Struktur Organisasi Dan E-System Terhadap Tingkat Kepatuhan WPOP (Studi Kasus Pada Kantor Pelayanan Pajak Pratama Jakarta Kembangan). *Profita: Komunikasi Ilmiah Akuntansi dan Perpajakan*. Vol. 11, No. 3
17. Rohmawati, Lusia. Prasetyono dan Yuni Rimawati. 2012. Pengaruh Sosialisasi dan Pengetahuan Perpajakan Terhadap Tingkat Kesadaran dan Kepatuhan Wajib Pajak (Studi pada Wajib Pajak Orang Pribadi yang Melakukan Kegiatan Usaha dan Pekerjaan Bebas pada KPP Pratama Gresik Utara). *Proiding Simposium Nasional Perpajakan 4*.
18. Siti Fatimah dan Dewi Kusuma Wardani. 2017. Faktor-faktor Yang Mempengaruhi Penggelapan Pajak Di Kantor Pelayanan Pajak Pratama Temanggung. *Akuntansi Dewantara*. Vol. 1, No. 4.
19. Stella Rahmawaty. 2014. Pengaruh Pengetahuan Modernisasi Strategi Direktorat Jenderal Pajak, Sanksi Perpajakan dan Religiusitas yang Dipersepsikan Terhadap Kepatuhan Perpajakan. *Jurnal Ilmiah Mahasiswa Fakultas Ekonomi dan Bisnis Universitas Brawijaya*. Vol. 3, No 1.
20. Suharyono. 2019. Pengaruh Kesadaran Wajib Pajak dan Pengetahuan Perpajakan Terhadap Kepatuhan Wajib Pajak dalam Membayar Pajak Bumi dan Bangunan di Kabupaten Bengkalis. *Jurnal Inovasi Bisnis*. Vol. 7, No. 1
21. Suyanto, Pasca Putri Lopian Ayu Intansari dan Supeni Endahjati. 2016. "Tax Amnesti". *Jurnal Akuntansi*, Vol.4, No.2, Desember
22. Tahar Frizal, dan Arnain Kartika Rachman. 2014. Pengaruh Faktor Internal Dan Faktor Eksternal Terhadap Kepatuhan Wajib Pajak. *Jurnal Akuntansi & Investasi*. Vol. 15 No.1
23. Tika Wulandari dan Suyanto. 2014. "Pengaruh Pengetahuan Perpajakan, Tingkat Pendidikan, dan Sanksi Administrasi Terhadap Kepatuhan Wajib Pajak Dalam Melakukan Pembayaran Pajak Bumi Bangunan". *Jurnal Akuntansi*. Vol.2, No.2, Desember
24. Tuti Wulandari. 2015. Pengaruh Sosialisasi Perpajakan, Pengetahuan Perpajakan, dan Kualitas Pelayanan Terhadap Kepatuhan Wajib Pajak Dengan Kesadaran Wajib Pajak Sebagai Variabel Intervening (Studi Pada Kantor Pelayanan Pajak Pratama Pekanbaru Senapelan). *Jom FEKON*. Vol. 2, No. 2 Oktober
25. Undang-undang Nomor 28 Tahun 2007 tentang Ketentuan Umum Perpajakan.
26. Viega Ayu Permata Sari, dan Fidiana. 2017. Pengaruh Tax Amnesty, Pengetahuan Perpajakan, dan Pelayanan Fiskus Terhadap Kepatuhan Wajib Pajak. *Jurnal Ilmu dan Riset Akuntansi*. Vol. 6, No. 2
27. Waluyo, 2011. *Perpajakan Indonesia, Edisi 10 buku 1*. Jakarta: Salemba Empat



SOME ASPECTS OF THE METHODOLOGY FOR DEVELOPING THE NORMS OF CORRECT RUSSIAN PRONUNCIATION IN THE UZBEK AUDIENCE

Seydanova Gulnash Kaldibekovna

Senior Teacher of Russian
Department "Foreign Languages"
Tashkent Architectural
Construction Institute.
Uzbekistan.

ABSTRACT

This article examines the norms of correct pronunciation of difficult-to-pronounce sounds in comparison with the acoustic features of the Uzbek language, the difficult issues of pronunciation of the Russian language that students face when studying and ways to eliminate them.

KEY WORDS: *technique, sound, front - lingual, back - lingual, voiced, vowels, consonants, hardness, softness, pronunciation, articulation.*

Некоторые аспекты методики выработки норм правильного русского произношения в узбекской аудитории.

*Сейданова Гулнаш Калдыбековна
Старший преподаватель русского языка
кафедры «Иностранные языки»
Ташкентского архитектурно-
строительного института. Узбекистан.*

Аннотация

В данной статье рассматриваются нормы правильного произношения труднопроизносимых звуков в сравнении с акустическими особенностями узбекского языка, трудные вопросы произношения русского языка, с которыми сталкиваются студенты при изучении и способы их устранения.

Ключевые слова: *методика, звук, переднеязычные, заднеязычные, звонкие, гласные, согласные, твердость, мягкость, произношение, артикуляция.*

Каждый язык обладает особыми нормами произношения отдельных звуков и сочетаний звуков.

Звуки русского языка обладают рядом особенностей сравнительно с узбекскими звуками. Узбекский «И» занимает промежуточное положение между крайними положениями русских «И» и «Ы» в сочетании с заднеязычными

согласными. Поэтому для правильной постановки произношения «Ы» следует давать упражнения на «И» в соседстве с глубоко язычными согласными, например, киз-девушка, оғир-тяжесть, каттик-твердый, огиз-рот и ряд подобных упражнений на сочетание слов, предложений; на чтение и заучивание коротких связанных текстов или отдельных предложений, где узбекский «И» в



В узбекском языке звук Щ отсутствует, поэтому студенты при произношении Щ смешивают его со звуком Ш, например, вместо спешит произносят спешит, вещи- вешши. Согласный Щ-долгий, мягкий, глухой. Согласно нормам современного русского литературного произношения звук, обозначаемый буквой Щ, имеет два варианта произношения: а) как долгого мягкого ш; шьшука(щука), Шьшетка(щетка) шьшепка (щепка); б) как шьчь: шьчука (щука), шьчетка (щетка), шьчепка (щепка) и др.

В русском языке согласные (за исключением всегда твердых Ц, Ш, Ж перед гласными Э и И сильно смягчаются (ср. стол- на столе, дом - о доме, столик, домик). В узбекском языке согласные, например: (б), (п), (ф), (м), (в), (с), (з), (л), (р), могут в этих случаях заметно смягчиться (бил-знай, бел - поясница, пешана - лоб, пиез - лук, лекин - но и т.п.), однако зубные шумные согласные (т), (д) и сонорный (н) почти не смягчаются (терак - тополь, тиш - зуб, деб - сказав, дил-сердце, нега- почему, нима- что и т.д.). Ввиду отсутствия мягких согласных фонем в узбекском языке там такие сочетания согласных с гласными (а), (о), (у), (у) совершенно невозможны. Вот почему указанные выше сочетания представляют трудность для узбекской аудитории.

В русском языке вполне обычными являются сочетания нескольких согласных фонем в начале, конце и середине слов (встреча, агентство, царство и т.п.). В узбекском языке никогда не бывает сочетаний согласных в начале слов (как в узбекских словах, так и в словах, заимствованных). Сочетание двух или более согласных в середине слова вполне допустимы (асрлар-века, шартни-условие) и т.п., причем они встречаются главным образом на стыках между корнем (или основой) слова и суффиксом. Сочетание нескольких согласных в конце слова для узбекского языка редки и нехарактерны. Поэтому произнесение нескольких согласных подряд в начале или конце слова смогут серьезно затруднять студентов. Наиболее необычными и трудными являются произнесение в начале слова смычных сочетаний (бдительность, ткач, птица) или сонорных согласных (мрак, мгновение и т.п.)

При обучении произношению можно выделить три основных звена: выработку произношения отдельных звуков, слов, предложений. Освоение одного из звеньев недостаточно: правильное произношение отдельных звуков еще не дает правильного произношения слова, а последнее также не гарантирует верного интонирования предложения, характеризующегося своими ритмомелодическими особенностями. Поэтому

при выработке навыков правильного произношения необходимо тесное единство всех звеньев.

Сравнивая звуковую систему русского и родного языков, можно выделить: а) сходные звуки, которые обычно легко усваиваются; б) звуки, разница в произношении которых может быть настолько незначительна, что нет необходимости в специальных упражнениях по их изолированному произношению; в) звуки, характерные только для русского языка. Последние отличаются нередко настолько иной артикуляцией, что условие их произнесения требует кропотливой работы преподавателя и студента, обильной тренировки. Эти трудные произношения долго предстают в русской речи студентов «родном обличье», делая ее неправильной в произношении.

Произношение, нарушающее смысловую сторону речи, следует признать нетерпимым.

Принципиальными фонетическими категориями русского языка, с различением которых, как правило, связано содержание речи, являются твердость и мягкость согласных (вспомним мил и др), звонкость и глухость (дом-том, пыль-быль и др), разновидность русского ударения (замок- замок, мука- мука и пр.), типы интонации, выражающие смысловую сторону речи, и др. Соблюдение абсолютной правильности произношения в позициях, связанных с этими категориями, очевидно.

Литература

1. В.Г. Костомаров *Методическое руководство для преподавателей русского языка иностранцам. Москва «Русский язык» 1984 г.*
2. *Сопоставительная типология (см. сборник Методы изучения языков 1998г.)*
3. *Система обучения русскому произношению в малокомплектной национальной школе. Уразова Мария Батировна 1992г*
4. *Русский язык- Все для студента. Герасименко Н.А. 2017 г*



IMPROVEMENT OF AGROBIOLOGICAL STRUCTURES AND STRUCTURE-FORMING PROPERTIES OF SIEROZEM SOILS

Khodjibolaeva Nozima Mamurovna
Teacher of the Department of Ecology of
Fergana State University

Parpiev Doniyor Akmaljon ugli.
Master of Fergana State University

ANNOTATION

It was revealed that in the conditions of sierozem soils of the Fergana region, in order to increase the humus content, it is necessary to switch crops of lucerne or leguminous crops to crop rotation.

In the Fergana region of the Republic of Uzbekistan, 95% of the land during the cultivation of cotton, wheat, corn is irrigated during the growing season from 3 to 8 times during the growing season, which requires 3500 to 6500 m² / ha of water. As a result, the reserves of humus and basic nutrients have sharply decreased. For growing cotton and wheat applied by farms N; P₂O₅; K₂O became insufficient, since repeated irrigations gradually lead to a deterioration of humus reserves from year to year, decreased by 33-55% compared to 1950 (Imamaliyev, 1978) old-growing hectares when plowed at a depth of 28-35 cm for a long time led to a sub-arable layer in the so-called "plow sole" (Mukhammadzhanov, 1962) for the destruction of this layer, the author recommended deep tillage with the help of rippers (Mukhammadzhanov, 1978). Further, the author points out that under the arable layer of the soil is very poor in organic matter, therefore the number of soil microorganisms has sharply decreased, to accelerate them, manure and other organic matter (green manure) must be introduced. According to M. Mukhammadzhanov, I.S.Sulaimonov (1975), with prolonged sowing of cotton (monoculture), microbiological processes in all soil horizons decreased, the number of various groups of microorganisms sharply decreased due to lack of food reserves. With such a long monoculture, according to the data of Z. Tursunkhadzhaev (1975), the number of perennial and annual weeds increases several times, and the incidence of cotton wilt sharply increases. The opinion is expressed that the fungi *Penicillium*, *Aspergillus*, *Fusarium*, *Trichoderma* predominate in many soils, the reason for this is their large adaptation range. Some fungi from the lower soil horizons are more resistant to increased carbon dioxide concentrations.

Soil fungi are resistant to higher CO₂ and lower O₂ concentrations than aerobic bacteria and actinomycetes (Babich and Stetzky, 1974). Microorganisms form various gaseous substances in the soil such as CO₂, nitrogen oxides, ammonia, hydrogen sulfide, hydrogen, methane, ethane, butane, propane, ethylene, propylene, butene and hydrocarbon gas. These gases, which microorganisms are capable of forming, they can and change. The surface of the pores of capillaries and aggregates is saline with microorganisms, which are able to completely intercept diffusing gases (Zvyagintsev, 1973).

The microbiologist must solve the problems of studying the physiology of microorganisms and the biochemistry of soil zoocenoses from which one can expect a great deal of experimental material on the enrichment of the soil, albeit in part, with molecular nitrogen.

Our studies show that after plowing 3-year-old lucerne (after the second mowing), then sowing corn (lucerne -2.5 years + corn for silage) when these plants stayed in the soil, the humus content reached 1.46%, while at the beginning of the experiment, it was 1.01 % i.e. humus increased by 0.45%.

It should be noted that in the original soil before sowing lucerne there was a lower humus content on the subsoil (31-50 cm) of the soil, 0.60%. Consequently, in increasing humus, not only lucerne has a positive effect, but also sowing corn on silage at a plant density of 70 thousand / ha. In the zone of development of plant roots, an increased number of microorganisms is observed in comparison with the soil of the control variant, i.e. microorganisms do not mechanically touch the root system, but also penetrate the root tissue.

Consequently, when the microbial mass interacts, adhesives are formed, which were transformed during treatment with calcium salt in water-resistant complexes, i.e. in the experimental variants, the number of different groups of organisms increased sharply.

The number of microorganisms in the different levels of fertility thousand / ha.



Option name	Horizon sm	2017	2018	2019
		12 april	10 june	15 july
1-hop plant (control)	0-30	10,3	15,7	17,1
	31-50	7,4	13,2	7,6
2-lucerne + corn	0-30	23,6	30,2	19,6
	31-50	16,8	20,0	12,3
3 year old lucerne	0-30	29,3	40,2	22,5
	31-50	19,6	14,6	14,0

The content of carbon and nitrogen in the soil at a 3-year standing of lucerne increased by 0.39% compared with the control variant, while the combined sowing of lucerne with cereals increased by 0.59%, these indicators for the nitrogen content were more than 0.08 and 0.22 %. It is known that the root system of plants dramatically improves the water-physical and microbiological properties, in addition, they enrich the soil with mineral elements, as in the organs of plants and in the roots there are more than 22-32 chemical elements.

Agrochemical analyzes have shown that perennial forage grasses within 2-3 years increase the carbon content by 0.39-0.59%, and nitrogen substances by 0.018-0.022%. Within 2 years, lucerne accumulated 7901 kg / ha of nitrogen, lucerne + legumes 886 kg, the amount of nitrogen in the rhizosphere of lucerne root - 273.3 kg / ha, lucerne + cereal grain -265.0 kg / ha dry weight. Many years (since 2004) of stationary experience show that constant sowing on the same area of cotton - winter wheat without the introduction of NPK yielded 16.8 c / ha of cotton, while at a dose of NPK -160: 120: 60 kg / ha the yield of cotton of the variety C-6524 amounted to 42.8 centners / ha and with a two-year state of lucerne 43.9 centners / ha (without NPK).

Thus, the foregoing suggests that lucerne in the irrigated soils of the Fergana region of two and three years of standing give soil enrichment of 35-45 t / ha with organic matter or save 250 kg / ha of nitrogen fertilizers.

LITERATURE

1. Imamaliyev A. *Sukoriladigan tuproq unumdorligini oshirish muammolari. Ўzbekiston q / x jurnal. 1978*
2. Mukhammedzhanov M. V., Suleimanov S. S. *Cotton root system. Tashkent 1978.*
3. Mukhammedzhanov MV *Radical change in the fertility of serozem soils Tashkent 1962*
4. M. Mukhammedzhanova, I. S. Sulaimonova. *Scientific basis of plant placement. Tashkent 1975*
5. Rahimov Ilhomjon Azimjonovich "Establishment of the Ministry of community and family support is an important step in self- government" *Epra International Journal of Multidisciplinary Research (IJMR) Impact Faktor: 7.032.Indiya.2020 June. P. 161-163*
6. Rahimov Ilhomjon Azimjonovich, Ergashev Umidjon Obidjonovich "Mahalla institute-the foundation of civil society of Uzbekistan" *Epra International Journal of Multidisciplinary Research (IJMR) Impact Faktor: 7.032.Indiya.2020 May.P. 249-252*

Feedback

An article by the teacher N. Khodzhibolaeva On the topic "Improving the agrobiological structures and structure-forming properties of serozem soils" conducted in 2013-2016. in field stationary experiments it was revealed that in order to increase the humus in crop rotation plants of serozem soils, the sowing of lucerne of two and three years of standing should be passed. The best result was obtained from a three-year standing of lucerne, which left 0.29% of humus in the soil, sowing cotton after lucerne increased the yield by 12.9 c / ha.

We found that the number of microorganisms sharply increased when sowing lucerne on a three-year stand compared to the control increased almost three times. The reason for this is the improvement of the air nutritional regimen on these variants.

The carbon nitrogen content in the soil at three-year-old lucerne increases by 39% compared to the control. A similar picture was observed for total nitrogen.

Agrochemical indicators were observed in experiments with perennial forage grasses. For example, nitrogen has increased by 0.018-0.022%. As a result of field experiments, the yield of cotton variety C-6524 reaches 44 c / ha.



APPLICATION OF CYBORGS AND ENHANCEMENT TECHNOLOGY IN BIOMEDICAL ENGINEERING

Cebo Daniel¹

¹Independent Investigator, Germany

Robert G. Dunder²

²Institute for Advanced Study, USA

ABSTRACT

As we go deeper into the twenty-first century, there is a major trend to improve the body with "cyborg technology." In fact, due to medical necessity, millions of people around the world are now equipped with prosthetic devices to restore lost function, and the DIY movement is growing to improve the body to create new senses or to improve current senses "beyond normal". From prosthetic limbs, artificial cardiac pacemakers and defibrillators, brain-computer implants, cochlear implants, retinal prostheses, magnets as implants, exoskeletons and many other improvements, the human body becomes more mechanical and computational, and therefore less biological. This trend will continue to accelerate once the body is transformed into information processing technology, which ultimately calls one's sense of identity and what it means to be human. This article evaluates "cyborg enhancement technologies" with an emphasis on technological brain enhancements and the creation of new senses - the benefits of which can allow direct implantation of information into the brain, editing memories, wireless brain connection - brain communication and a wide range of sensory information to explore and experience. The paper concludes with reflections on the future direction of cyborgs and the meaning and consequences of becoming a cyborg and less so in an age of rapid progress in the design and use of computer technology. with an emphasis on technological improvements in the brain and the creation of new senses - the benefits of which can allow direct implantation of information into the brain, editing memories, wireless brain-brain communication, and a wide range of sensory information, which need to be explored and experienced.

KEYWORDS, : artificial intelligence, human enhancement, cyborgs, human-machine, augmentation

INTRODUCTION

For many years, science fiction looks to a future where robots are intelligent and cyborgs - human/machine mixtures - are commonplace: Terminator, The Matrix, Blade Runner and Ben, Robot are good examples of this. However, until the last decade, any assessment of what this might mean in the real world in the future was not necessary because it was all science fiction and not a scientific reality. But now, science has not only given a catch-up exercise but while also revealing some of the ideas put forward by science fiction, it has brought practicalities that the original stories did not extend.

What we are thinking about here are several different experiments that connect biology and technology in a cybernetic fashion, essentially combining humans and machines into a relatively permanent union. The key to this is that it is the overall ultimate system that matters. In the case of a brain, which it certainly is, it should not be seen as an independent entity, but rather as part of a general system that adapts to the needs of the system: the general unified cybernetic creature is an important system.

Each experiment is described in its section. While there is an obvious overlap between the

episodes, each suggests individual considerations. After the explanation of each research, some relevant topics are therefore discussed. In the near term, points were raised on a view of future technological advances and what these could mean in a practical scenario. There has been no attempt to present a fully packaged final document here; Rather, the aim was to open up the scope of the research conducted, to see what was involved, and to look at some of its results.

REASONS FOR EXPERIMENTING

The primary question is: why should we want to expand human capabilities? Despite the success of people on Earth, this is something we have always strived for in general. It could be considered an important part of what it means to be human. We have obvious physical limitations, and especially in the last few centuries, we have used technology to dig tunnels, lift heavy loads, communicate instantly around the world, repeat ground tasks accurately and quickly, and perhaps all sorts of things have allowed us to fly.

However, with their limited brain size, humans also show little range of mental abilities. However, such a claim may be difficult for some people to accept, mainly due to their limited brain



size. By comparing the human brain with the machine's brain, different modes of operation and, in some respects, the advantages of the machine in terms of its performance can be seen.

In recent years, some of the "mental" benefits of machines have been well exploited. For example, the brain of a computer can perform millions of mathematical calculations, accurately, and at the same time, it takes a person to perform one calculation inaccurately. Also, the memory capabilities of a computer on a network are phenomenal compared to human memory. Surfing the web for a lot of information that the human brain cannot keep has become commonplace. Such mathematical and memory abilities of machines have led to a considerable redefinition of what "intelligence" is about and have led to an ongoing controversy over what machine intelligence is and what it could be capable of.

Technology has also been used to improve the limited range of the human senses and to provide information about aspects of the world around us that are not apparent in everyday life. So, technology can now provide us with information about X-rays, what is happening in the infrared or ultraviolet spectrum, and even ultrasound images of the world around us. In most cases, such signals are converted into visual images that people understand.

Today, computers are also used to process data, to "think," in many dimensions. One reason is that human brains have evolved to think of no more than three dimensions, perhaps expanding to four if time is included as a dimension. Of course, the space around us is not three-dimensional, as people categorize it, but it can simply be perceived in as many dimensions as one wishes. Machines therefore can understand the world in a much more complex and multidimensional way compared to humans. This multidimensionality is an extremely powerful advantage of machine intelligence.

When one person communicates with either a machine or another person, the relatively complex electrochemical signals of the human brain are converted into mechanical signals, sound waves in speech, or movement using the keyboard. Realistically, it is a terribly slow, limited and error-prone means of communication compared to direct electronic signaling. As a result, human languages are the ultimate coding systems that fail to properly portray our thoughts, desires, feelings, and emotions. Problems arise mainly due to the wide range of different languages and cultures and the indirect relationships that exist between them. By comparison, machine communication is extremely strong, not least because it usually involves parallel transmission, while human communication is by nature serial.

When we compare the physical and mental capabilities of machines with those of humans, physically, humans can benefit from the

technological capabilities of machines through external implementation. In other words, we sit in cars or planes; we do not have to connect with them. When it comes to the mental field, people can benefit, as we do in many cases, through external cooperation. For example, the phone helps us communicate or the computer provides us with an external source of memory. But a much more direct connection could offer us much more. For example, by connecting human and computer brains, is it possible for us to understand the world in many dimensions in this cyborg form? Is it also possible to directly use the mathematical and memory capabilities of a machine network? Why should the human brain remember anything when a machine brain can do it much better? What are the possibilities of the direct delivery of other sensory information? What would the human brain make of it? And perhaps most important of all, by connecting the human brain to a computer, it is possible to communicate directly, a man on machine and man on man, by purely electronic signals - a phenomenon that can be considered thought communication?

All these issues, each of which is valid in its way, provide a strong driving force for scientific research, especially since technology is now available to enable these studies. It is a challenge that may be asking human scientists the final question. Can we technologically develop people into a posthuman, cyborg state?

BIOLOGICAL BRAINS IN A ROBOT BODY

We begin by looking at an area that may not be immediately familiar to our readers. When people initially think about linking the brain to technology, it might be about the brain already functioning and settled inside of its own body - could there be another way? Well, there can be! Here, we look at the possibility of a new fusion in which the brain is developed first and then introduced into its own body to function.

When people first think of a robot, it could be a memorable small wheel device or maybe a metalhead that looks almost like a human. Regardless of their physical appearance, our thoughts tend to suggest that the robot can be operated remotely by humans, as in the case of the bomb-handling robot, or it can be controlled by a program. Simple computer or can even learn with a microprocessor like its technology brain. In all of these cases, we consider the robot as simple as a machine. But what if robots had biological brains made up of brain cells, possibly even human neurons?

Nerve cells grown/grown under laboratory conditions on a series of non-invasive electrodes provide an attractive alternative to realizing a new type of robotic controller. An experimental control platform, essentially a robotic body, can move around in a defined area entirely under the control of



such a network/brain and be able to witness effects of the brain, controlling the body. Of course, this is extremely interesting from a robot perspective, but it also opens up a new approach to studying the development of the brain itself for the sensory-motor embodiment. In this way, investigations can be performed in memory-building and reward/punishment scenarios - factors that underlie basic brain function.

In vitro network of brain cells usually begins by separating nerve cells obtained from the foetal rodent cortex tissue. They are then grown in a dedicated chamber in which they can be supplied with the right environmental conditions and nutrients. An array of electrodes embedded in the base of the chamber acts as a two-way electrical interface to / from the culture medium. This allows electrical signals to be supplied to excite the culture and also to the logs to be taken as the output from the culture. Nerve cells in such cultures connect, communicate, and develop spontaneously within weeks, giving useful responses usually three months currently. It's like a brain in a jar!

The brain is housed in a glass sample chamber lined with a flat '88' MEA that can be used for real-time recording. In this way, it is possible to separate the rays of small groups of nerve cells by monitoring the output signals on the electrodes. Thereby, it is possible to form a picture of the global operation of the entire network. It is also possible to electrically stimulate culture through any of the electrodes to induce nerve activity. Therefore, MEA forms a two-way interface with the cultured nerve cells.

The brain can then be combined with its physical robotic body "robot to culture", which involves an input mapping process, from robot sensors to stimulation of culture.

The actual number of nerve cells in the brain depends on the natural density variations during the initial cultivation. The electrochemical activity of the culture is sampled, and it is used as the input to the robot's wheels. Meanwhile, the robot's sensor readings are converted into a stimulus signal received by the breeder, thereby closing the loop.

When the brain has developed for several days, involved in the formation of some basic nerve connections, an existing nerve cell pathway through the culture process is determined by looking for a tight affinity. close between pairs of electrodes. Such pairs are defined as electrode combinations in which nerve cells near one electrode react to stimuli from the other at which the stimulus is applied more than 60 percent of the time and react. No more than 20 percent of the time with excitation on any other electrode than the electrode.

Therefore, a raw input-output response map of the culture process can be produced by bypassing all electrodes in turn. In this way, a suitable input/output electrode pair can be selected to provide an initial decision-making pathway for the robot. This is then

used to control the robot's body - for example, if the ultrasonic sensor is working and we want the reaction that causes the robot to turn away from the object being positioned with ultrasonic waves to continue. move.

For simple experimental purposes at this point, the goal is for the robot to follow a path ahead until it reaches a wall, at which point the forward sonar value drops below the threshold, activating stimulating pulse. If the electrode responds / the output records activity, the robot will spin to avoid the wall. In the experiments, the robot automatically rotates whenever the activity is registered on the reaction electrode. The most relevant result is the occurrence of the sequence of events: wall detection - excitation - response. From a neural perspective, of course, it is also interesting to speculate why there is action on the reactive electrode when no stimulating pulses are applied.

As an overall control element for direction and wall avoidance, the brain is nurtured to act as a single decision-making entity in the overall feedback loop. An important aspect then involves a change in nerve pathways in the culture medium, which is time-related, between the stimulating electrode and the recording electrode.

In terms of research, the investigations of learning and memory, in general, are in the early stages. However, the robot can improve performance over time in terms of wall avoidance in the sense that the nerve pathways deliver a satisfactory action that tends to fully enhance through the routine performed habit: learning by habit.

However, the number of variables involved is significant and the plasticization process, which takes place over a fairly long time, depends on factors such as initial seeding and growth near electrodes as well as overgrowths. a process such as a temperature and humidity. Learning by reinforcement - rewarding good deeds and punishing bad behaviour - is investigative research at this point.

In many cases, culture meets expectations. In other cases, it does not, and in some cases, it delivers motor signals when it is not expected. But does it "intentionally" make a different decision than we expected? We cannot say but merely guess.

In terms of robots, this study has shown that a robot can have a biological brain to make its "decisions". Nerve cell sizes of 100 000–150 000 are merely due to the present limitations of the described experiments. Indeed, three-dimensional structures are being studied. Increasing complexity from two dimensions to three would produce approximately 30 million neurons for a three-dimensional case, not to reach 100 billion neurons for a perfect human brain, but suitable for the brain size of many other animals.

This field of research is expanding rapidly. Not only is the number of cultured neurons increasing, but the range of sensory inputs is being expanded to include both acoustic, infrared, and even



visual stimuli. Such a rich stimulus is sure to have a significant impact on cultural development. The potential of such systems, including the range of tasks they can deal with, also means that the physical body can take on different forms. For example, there is no reason the body cannot be a bipedal walking robot with a rotating head and the ability to walk in a building.

Certainly, the case of understanding nerve activity becomes more difficult as the culture size increases. With the three-dimensional structure, monitoring activity deep inside the central region, as well as with the human brain, becomes extremely complex, even with needle-like electrodes. The current 100 000–150 000 neuron cultures are too complex for us to have a holistic view. When they grew to the size of 30 million nerve cells and beyond, it became apparent that the problem was greatly exaggerated.

Looking ahead a few years, it seems quite realistic to assume that such cultures will become larger, potentially growing into the size of billions of nerve cells. On top of that, the nature of nerve cells can be diversified. Currently, mouse neurons are commonly used in studies. However, human neurons are also being cultured even now, thus creating a robot with a human brain. If this brain were then composed of billions of neurons, many social and ethical questions would need to be asked.

For example, if the robotic brain has almost the same number of neurons as the human brain, could they / should have the same rights as the human? Also, what if such organisms had far more human neurons than the human brain - for example, more than a million times - would they give it all? decisions in the future rather than ordinary people? Certainly, that means that as we look to the near future, we'll soon see robots whose brains are not too different from humans.

GENERAL PURPOSE BRAIN IMPLANTS

Many human brain-computer interfaces are used for therapeutic purposes to tackle a medical/neurological problem - an example is deep brain stimulation electrodes used to overcome the effects of Parkinson's Disease.

The therapy/strengthening situation is more complex with more general brain-computer interfaces. In some cases, those who have had an amputation or spinal injury due to an accident can regain control of the devices through nerve signals. Meanwhile, stroke patients, such as those with motor neuron disease, may be given limited control over their environment.

In these cases, the situation is not simple as each individual is given abilities that a normal person does not - for example, the ability to move a cursor on a computer screen using nothing but nerve signals. The same dilemma exists for blind individuals who

are allowed non-sensory input such as sonar. This does not repair their blindness, but rather allows them to use an alternative meaning.

Some of the most impressive human studies ever have been conducted using the microelectrode array as shown in Figure 3. The individual electrodes are 1.5 mm long and taper to a tip diameter of fewer than 90 microns. Human testing is currently limited to two study groups, although there have been several trials using non-humans as the subject of testing. In the second of these, the series was used to record a single role, most notably as part of what has recently been called the "Brain Gate" system.

Essentially, electrical activity from several neurons monitored by array electrodes was resolved into a signal to direct the cursor movement. This allowed a person to position a cursor on a computer screen using nerve signals for control along with visual feedback. The same technique was later used to allow the paralysed individual receiver to operate a robot arm. However, the first use of the microelectrode array has significantly wider implications that increase the capabilities of the human receiver.

Deriving a reliable command signal from a collection of monitored nerve signals is not necessarily a straightforward task, partly due to the complexity of the recorded signals and partly to real-time constraints when dealing with data. However, in some cases, it can be relatively easy to search for certainly expected nerve signals and obtain a system response to them, especially when a person is

Thoroughly trained with the system. The neural signal shape, magnitude, and waveform for time are significantly different from other visible signals, and this makes the problem a little easier.

The interface through which a user interacts with the technology provides a layer of separation between what the user wants the machine to do and what the machine does. This separation puts a cognitive load on the person concerned in proportion to the difficulties experienced. The main problem is to interface the human motor and sensory channels with technology in a reliable, durable, effective, and bi-directional way. One solution is to avoid this sensor-motor bottleneck altogether by interfacing directly with the human nervous system.

An individual connected in this way could potentially benefit from some of the advantages of machine / artificial intelligence, for example, fast and highly accurate mathematical skills, high speed, almost infinite, internet knowledge base, and accurate long-term memory. Additionally, while it is widely accepted that humans only have five senses we know of, machines offer a worldview that includes infrared, ultraviolet, and ultrasonic signals, to name just a few.

Humans are also limited in their ability to visualize and understand the world around them only in terms of three-dimensional perception, whereas computers can quite cope with hundreds of



dimensions. Perhaps most importantly, human communication tools, which transmit a complex electrochemical signal from one brain to another, often through a mechanically slow and error-prone medium, are extremely weak, especially in terms of speed, power, and precision. Connecting a human brain to a computer network using an implant can open up the obvious advantages of machine intelligence, communication, and perception capabilities to the implanted person in the long term.

As a step towards a broader concept of brain-computer interaction, the microelectrode array was implanted into the median nerve fibres of a healthy person during two hours of neurosurgery to test bidirectional functionality in a series of experiments. A stimulation current applied directly to the nervous system allowed information to be sent to the user, while control signals were decoded from neural activity in the area of the electrodes. In this way, several trials, in particular, have been successful:

- Feedback from robotic fingertips is sent back as neural stimulation to give a sense of force applied to an object, providing extended control of a robotic hand over the Internet.
- A primitive form of telegraphic communication was realized directly between the nervous systems of two people.
- A wheelchair has been successfully driven using neural signals.
- Like the behaviour of a small collection of robots, the colour of the gem has changed as a result of neural signals.

In most, if not all, of the above cases, the trial may be considered useful for purely therapeutic reasons, e.g., ultrasonic may be useful for a sensory blind individual; telegraphic communication can be very useful for certain types of motor neuron disease.

However, each experiment can also be viewed as a potential form of enhancement for an individual beyond the human norm. The author didn't need to have the implant for medical purposes to overcome a problem, instead, the experiment was done purely for scientific discovery. So, the question arises: how far should things go? Development using brain-computer interfaces opens up new technological and intellectual opportunities of all kinds; however, it also raises some different ethical considerations that need to be addressed directly.

When experiments of the type described above involve healthy individuals who do not need repair of a brain-computer interface, it is difficult to accept the operation for therapeutic purposes, rather when the primary goal of the implant is to improve the individual's abilities. Indeed, when conducting such experiments, the author specifically wanted to explore real, practical development possibilities.

From the experiments, it is clear that external input is a practical possibility that has been successfully tried, but improving memory, thinking in many dimensions, and communicating with

thought alone is another obvious potential - but realistic - benefits, and the latter has been explored to some extent. To be clear, all this seems possible for people in general.

As we currently have, ethical approval from the local authority governing the hospital where the procedure is performed is required in all cases to proceed with implantation, and also the consent of the trial, if appropriate for a research procedure. and the relevant institution's ethics committee. If a piece of equipment such as an implant is to be used on many people, this is quite different from Devices Agency's approval. Interestingly, there is no need for general ethical clarity from any social institution, but the problems are complex.

However, looking at future business impacts, coupled with societal aspirations to communicate more effectively and perceive the world more richly, it can trigger a market desire. Ultimately, direct brain-to-brain communication, possibly using implants of the type described, is a tremendously exciting proposition that ultimately results in the transfer of thoughts, feelings, emotions, colours, and basic ideas directly from the brain to the brain. While this raises many questions about how to work in practice, it would be foolish not to move forward to achieve it.

But then we come to the big questions. Since communication is an extremely important part of human intelligence, anyone with this type of implant will certainly increase their intelligence significantly. This will prolong intellectual performance in society, with the implanted section performing better than those who simply choose to remain human. Will this leave ordinary people far behind the evolutionary ladder, leading to a digital divide, a "us and them" situation? Well, we'll just have to see!

NON-INVASIVE BRAIN-COMPUTER INTERFACES

For some, the brain-computer interfaces of the kind described above are perhaps a very far step right now, especially if it means directly interfering with the brain. As a result, the most studied brain-computer interface to date is the interface that includes electroencephalography, and this is due to several factors. The first is non-invasive; therefore, there is no need for surgery due to the risk of infection and/or side effects. As a result, the ethical approval requirements are significantly less and the associated costs are significantly lower than for other methods, as the electrodes are readily available.

EEG is also a portable procedure involving electrodes that are simply glued to the outside of a person's head and can be installed in a laboratory with relatively little training, little knowledge, and very little time - then and there.

The number of electrodes used for experimental purposes can range from a small number to well over 100 for those trying to achieve



better resolution. As a result, individual electrodes can be attached to specific positions or a cap in which the electrodes are pre-positioned. The care and handling of the electrodes differ significantly between experiments in which the electrodes were positioned dry and outside the hair, and between experiments in which the hair was shaved and gels were used to improve contact.

Some studies are mostly in the medical field, for example, to examine the onset of epileptic seizures in patients; however, the application spectrum is common. A few of the most typical and/or interesting are included here to give you an idea of the possibilities and work in progress rather than providing a complete overview of the current state of the game.

Typical are topics where subjects learn to use a computer cursor in this way. However, it should be noted that even after significant training periods, the process is slow and usually requires several trials before achieving success. Along the same lines, several research groups have used EEG recordings to turn on lights, control a small robotic vehicle, and control other analogue signals. A similar method was used using a 64-electrode skullcap to enable a quadriplegic person to perform simple hand movement tasks through stimulation via embedded nerve controllers.

It is also possible to evaluate the uniqueness of specific EEG signals, particularly in response to associated stimuli, potentially as a means of identification. Meanwhile, interesting results were obtained using EEG in determining the intended finger touches with high accuracy. This is useful as a quick interface method and a possible prosthetic method.

While the EEG experiment is relatively inexpensive, portable, and easy to set up, it is still difficult to see its widespread use in the future. It certainly has a role to play in externalizing some aspects of brain function for medical purposes, and these practices will undoubtedly increase over time. However, it is considered unrealistic that normal people are likely to walk around without the need for a steering wheel while wearing an electrode cap; It is much more likely to have fully autonomous vehicles on the roads.

CONCLUSION

In this manuscript, we looked at several different cybernetic enhancements and the resulting types of artificial intelligence. Experimental cases have been reported to indicate how humans, and/or animals for that matter, can fuse with technology in this way, raising a plethora of social and ethical considerations as well as technical issues. In each case, reports of actual practical experimentation have been given, rather than just a theoretical concept.

In particular, when considering robots with biological brains, it could mean human brains

operating in a robot body. Therefore, should we give these robots rights in some way? If one were turned off, would that be considered cruelty to robots? More importantly at this time, should such research go ahead anyway? Before long, we may have robots whose brains are made up of human neurons that have the same kind of capabilities as the human brain.

In the section on a general-purpose invasive brain implant as well as the use of implants for therapy, a look was taken at the potential for human improvement. Extrasensory input has already been done scientifically, extending the nervous system to the internet and a basic form of thought communication. So, it is likely that many humans will modernize and become part of the machine themselves. It can mean that ordinary humans are being left behind as a result. If you could be improved, would there be a problem?

Next comes a section on more classic EEG electrodes which are positioned on the outside and are therefore encountered much more frequently. Unfortunately, the resolution of such electrodes is relatively poor and indeed they are only useful for monitoring and not for stimulation. Therefore, the issues around them are somewhat limited. We may be able to use them to learn a little more about how the brain works, but it's hard to see them ever being used for very sensitive control operations when several million electrodes feed the information transmitted by each electrode.

In addition to taking a look at the procedures involved, this article also aimed to look at some of the likely ethical and social issues. However, some technical issues were also considered to open a window on where developments are heading. In each case, however, a solid foundation has been planted on practical technology and realistic future scenarios rather than mere speculative ideas. In a sense, the general idea is to open up a sense of reflection so that the additional experimentation we are now going to witness can be guided by the resulting feedback.

REFERENCES

1. Bekey, G. 2005. *Autonomous Robots: From Biological Inspiration to Implementation and Control*. Cambridge, MA: MIT Press.
2. Brooks, R. A. 2002. *Robot: The Future of Flesh and Machines*. London: Penguin.
3. Cebo, D. 2020. "Scientific Relevance and Future of Digital Immortality and Virtual Humans". *International Journal of Research and Development* 5 (12): 289-294.
4. Cebo, D. 2021. "Our Posthuman Future: Redesigning Humans and Human Enhancement". *Sweek*
5. Chiappalone, M., et al. 2007. "Network dynamics and synchronous activity in cultured cortical neurons." *International Journal of Neural Systems* 17: 87-103.



6. Daly, I., S. Nasuto, and K. Warwick. 2011. "Single Tap Identification for Fast BCI Control." *Cognitive Neurodynamics* 5 (1): 21–30.
7. DeMarse, T., et al. 2001. "The Neurally Controlled Animate: Biological Brains Acting with Simulated Bodies." *Autonomous Robots* 11: 305–310.
8. Donoghue, J., et al. 2004. "Development of a Neuromotor Prosthesis for Humans." *Advances in Clinical Neurophysiology, Supplements to Clinical Neurophysiology* 57: 588–602.
9. Hochberg, L., et al. 2006. "Neuronal Ensemble Control of Prosthetic Devices by a Human with Tetraplegia." *Nature* 442: 164–171.
10. Kennedy, P., et al. 2004. "Using Human Extra-Cortical Local Field Potentials to Control a Switch." *Journal of Neural Engineering* 1 (2): 72–77.
11. Kumar, N. 2008. "Brain-Computer Interface." Cochin University of Science & Technology Report, August.
12. Millan, J., et al. 2004. "Non-Invasive Brain-Actuated Control of a Mobile Robot by Human EEG." *IEEE Transactions on Biomedical Engineering* 51 (6): 1026–1033.
13. Pan, S. et al. 2007. "Prediction of Parkinson's Disease Tremor Onset with Artificial Neural Networks." *IASTED conference papers, Artificial Intelligence and Applications*. Innsbruck, Austria: 341–345, 14–16 February.
14. Palaniappan, R. 2008. "Two-Stage Biometric Authentication Method using Thought Activity Brain Waves." *International Journal of Neural Systems* 18 (1): 59–66.
15. Pinter, M., et al. 1999. "Does Deep Brain Stimulation of the Nucleus Ventralis Intermedius Affect Postural Control and Locomotion in Parkinson's disease?" *Movement Disorders* 14 (6): 958–963.
16. Trejo, L., R. Rosipal, and B. Matthews. 2006. "Brain-computer interfaces for 1-D and 2-D cursor control: designs using volitional control of the EEG spectrum or steady-state visual evoked potentials." *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 14 (2): 225–229.
17. Tanaka, K., K. Matsunaga, and H. Wang. 2005. "Electroencephalogram-Based Control of an Electric Wheelchair." *IEEE Transactions on Robotics* 21 (4): 762–766.
18. Warwick, K. 2010. "Implications and Consequences of Robots with Biological Brains." *Ethics and Information Technology* 12 (3): 223–234.
19. Warwick, K., et al. 2003. "The Application of Implant Technology for Cybernetic Systems." *Archives of Neurology* 60 (10): 1369–1373.
20. Warwick, K., et al. 2004. "Thought Communication and Control: A First Step Using Radiotelegraphy." *IEEE Proceedings on Communications* 151 (3): 185–189.
21. Warwick, K., et al. 2011. "Experiments with an In-Vitro Robot Brain." In Yang Cai (ed.), *Computing with Instinct: Rediscovering Artificial Intelligence*. New York: Springer, 1–15.
22. Wu, D., et al. 2010. "Prediction of Parkinson's Disease Tremor Onset using Radial Basis Function Neural Networks." *Expert Systems with Applications* 37 (4): 2923–2928 (2010).



PURIFICATION OF GROUNDWATER IN ARYAD PANCHAYATH: IRON AND E.COLI

Soorya Narayan

Research Associate,

International Centre for Technological Innovations

ABSTRACT

In a study conducted by Narayan, S (2020) to check the quality of groundwater in Aryad panchayath located in the coastal belt of Alappuzha district which lies in the coastal lowland division of Kerala, it was found that iron content is significantly high which imparts a rust color to the sample collected and makes it unfit for drinking. Also, the test confirmed the presence of E.coli bacteria. Overexposure to iron could lead to diabetes, result in loss of sex drive and potentially even lead to impotence. E.coli O157:H7 are dangerous, they can erode the lining of the small intestine and cause bloody diarrhea. These two factors make the groundwater of Aryad panchayath unconsumable. The water must be treated sufficiently to eliminate pathogens and also to bring down iron content to an ideal amount which makes water consumable. After the review of some technologies to overcome this problem most efficient and economically feasible technology is recommended for purifying water in Aryad Panchayath

1.0 INTRODUCTION

Aryad panchayath lies in the Alappuzha district in the southern part of Kerala which covers almost 687 km² of the district. The place has a total population density of about 9000/sq.mi. in the previous study groundwater of this place was tested according to Indian Standards. The samples were collected during November which represents the post-monsoon season of Aryad panchayath. The samples collected from an open well were filled up to

the brim in a high-quality polyethylene bottle and was sealed and labeled systematically as per the standards recommended by the American Public Health Association (ADHA 1995). Various physicochemical and bacteriological parameters were tested by Water Care Laboratories located in Thrissur. The obtained results were compared with Indian Standards (IS) and with the World Health Organization (WHO).

Sl. No	Parameters	Unit	Acceptable Limit	Permissible Limit	Result
1	Ph	-	6.5-8.5	No relaxation	6.7
2	Turbidity	NTU	1	5	0.1
3	Total Dissolved Salts	mg/l	500	2000	170
4	Conductivity	µS/cm	400	-	304.6
5	Alkalinity	mg/l	200	600	68.4
6	Acidity	mg/l	-	-	7.3
7	Chloride (cl)	mg/l	250	1000	43.7
8	Total Hardness (CaCo ₃)	mg/l	200	600	40.5
9	Calcium (Ca)	mg/l	75	200	12.3
10	Magnesium (Mg)	mg/l	30	100	6.5
11	Iron (Fe)	mg/l	0.3	1.0	3.4
12	Sulphate (SO ₄)	mg/l	200	400	2.4
13	Coliforms	No.of coliforms in 100 ml	-	-	542
14	<i>E.coli</i>	No.of <i>E.coli</i> in 100 ml	-	-	present

Table 3.1 Test Results



The water collected from Aryad panchayath has the desired amount of chlorine, sulphate, pH, turbidity, Total Dissolved Solids, Electrical conductivity. The iron content of the water is significantly high which not only imparts a rusty color to the water and makes it unfit for drinking but

2.0 METHODOLOGIES

The groundwater sample collected to check the quality from an open well in Aryad Panchyath of Alappuzha depicted the presence of undesirable iron content and E.coli bacteria in it. Due to this the water available in Aryad panchayath is not fit for irrigation and consumption. The excessive iron content in the water imparts a rusty color to the water and promote bacterial growth in which some are harmful to humans. When the human skin is subjected to water that contains excessive iron content, it could potentially clog up pores which result in skin breakouts and damaged skin cells. Undesirable content of iron entered into the human body through water could damage delicate organs and can indicate symptoms of iron poisoning which includes fatigue, weaknesses, joint pain, and abdominal pain. Overexposure to iron could lead to diabetes, result in loss of sex drive and potentially even lead to impotence. E.coli bacteria present in water cause brief diarrhea but strains such as E.coli O157:H7 are really dangerous, they can erode the lining of the small intestine and cause bloody diarrhea. They also cause stomach cramping, pain, and tenderness. In another angle, the risk is imparted to the production of leafy vegetables that are eaten raw without cooking. Irrigating these crops with water containing E.coli bacteria makes the edible part of the crop contaminated. Various water purification techniques for making iron level optimum in drinking water and for eradicating E.coli bacteria from the water of Aryad panchayath for making it fit for consumption and irrigation are reviewed in this journal.

3.0 LITERATURE REVIEW

3.1 Various Technologies for Removing Excessive Iron Content form Water Oxidation-Precipitation-Filtration Process

Oxidizing soluble ferrous iron to insoluble ferric form results in precipitation of the iron percent in water. The precipitated iron is removed through a simple process of filtration. This process is the most conventional techniques used to remove excessive iron from drinking water. An oxidant is required to oxidize ferrous iron to ferric iron (E.A. Boyle and J.M. Edmond, 1997). Some of the generally used oxidants are hydrogen peroxide, chlorine, ozone, and chlorine dioxide. An optimal dose of the oxidants needed to be maintained during the treatment of

also promotes the growth of harmful microorganisms. As a result when tested the presence of E.coli bacterias was confirmed which makes water not fit for consumption and irrigation in Aryad panchayath. (Narayan, S., 2020)

water. Also, some studies have figured out that the iron removal efficiency of the process increase in pH and concentration of oxidant. (S. Vigneswaran and C. Visvanathan, 1995)

Zeolite Softening/ Ion Exchange

Iron exchange is the exchange of ions either cationic or anionic between two electrolyte solutions. In this procession exchangers such as zeolite play a major role. During the process of water treatment, the ion present on the exchanger is replaced with an unwanted ion present in the water. This is another widely used technique used to remove excess iron from water. Imino Diacetic Resin Purolite 3930 can be utilized for removing iron from water. At pH 5 the maximum amount of iron was removed from the water using this resin in a study(V. Shkolnikov and S.S. Bahga, 2012). Jordanian Natural Zeolite (JNZ) is also been used as an ion exchanger to remove excessive iron from water. This particular zeolite showed maximum iron removal efficiency at 303K, 40g/L dosage of the absorbent with a particle size of 45 mm. The contact time was in the range of 1-150 min and the sorption equilibrium was achieved between 1hr and 2.5hr. (L.D. Rollmann and E.W. Valyocsik, 1995)

Filter Media Separation

Generally, filter media is used to remove suspended particles such as clay, colloidal and precipitated natural organic substances, metal salt precipitates, and microorganisms. Sand, crushed anthracite coal, and granular activated carbon are also used as filter media(H.M. El-Naggar 2010). Aerated Anthracite which is used as a granular filter removed excessive iron from the water. But the iron removal efficiency of the filter decreased in the absence of aeration. Studies have shown that weakly acidic conditions (pH less than 7) favored the process. Iron being oxidized and precipitated on the filter media acts as catalysts during the oxidization of iron (Bong-Yeon Cho, 2005).

Vyredox Technology

Vyredox Technology involves the in situ removal of iron from groundwater. The process is the oxidation of the soluble form of iron into insoluble form before taking water from the well. Injection of aerated or oxygenated water into the aquifer(R.O. Hallberg and R. Martinell, 1976) Oruna et.al developed a mathematical model for the in situ



removal of iron from the groundwater. This oxygenated water with zero traces of iron was injected into the water coming from groundwater wells. After this process, iron bacteria started growing in this system and the bacteria converts soluble Fe^{2+} to insoluble Fe^{3+} form of iron. Later on, excessive iron is filtered through simple filtration techniques. (C.A.J. Appelo and B. Drijver, 1999)

Removal through a supercritical fluid.

A fluid turns into a supercritical fluid (SFC) when it is heated and compressed above critical pressure and temperature. Among various SFC's supercritical carbon dioxide has gained much popularity due to its non-toxicity, low cost, less critical pressure, and low critical temperature. Superfluid extractions extract the metal piece from a solid or liquid source (C. Erkey, 2000). The efficiency of the extraction process depends upon stability and solubility of ligand, pH of water, pressure, and temperature, and metal species in chemically active form. To overcome the problem of the low solubility of metal ions in CO_2 , chelating ions such as Thenoyl Trifluoroacetate and Fluroether Dithiocarbamate were used in the cell containing aqueous solution and chelating agents, CO_2 was injected into it at constant pressure for a time for 20h. The iron removal efficiency using chelate Thenoyl Trifluoroacetate was 98% and 85% using Fluroether Dithiocarbamate. (M.A. McHugh and V.J. Krukonis, 1994)

Electrocoagulation Technique

This method is used to destabilize dissolved pollutants present in water by applying an electric current in the contaminated water. The pollutant gets removed from water due to the neutralization of the electric charge. A key feature of this process is the zero involvement of chemicals and ease of operation (M.Y.A. Mollah and R. Schennach, 2001). This process is often combined with electro flotation and is known as the electrocoagulation/flotation process. The amorphous aluminum hydroxide formed from the electrode of aluminum has a high sorption capacity. Initially, the iron is oxidized to $Fe(iii)$ and this process is followed by adsorption and precipitation using Aluminum hydroxide. As an advanced technology flow column reactor (FCR) was used to remove iron from drinking water. This FCR based process reduced the concentration of iron from 20 mg/L to 0.3 mg/L at pH 6 in a time duration of 20 minutes. The combination of FCR along with the electrocoagulation process is more economical. (K. Rajeshwar and J. Ibanez 1997)

Membrane Technology-based Strategy

Some of the common techniques involving different types of membranes include Ultrafiltration(UF), microfiltration (MF), and reverse

osmosis. These techniques are used generally to remove metals from water. Considering the size of the pores in membranes used for ultrafiltration and microfiltration, their size is greater than metal ions. Therefore ions have to be pretreated with surfactants and hydrophilic polymers to increase their size (N.L. Le and S.P. Nunes, 2016) These microfiltration systems are used in combination with an oxidation agent, in this case, $NaOCl$ was used as an oxidizing agent to form iron oxide before passing the iron-rich groundwater through the MF system. They have an iron removal efficiency of more than 95%. Polymeric membranes modified with different pore generating agents have also been employed for iron removal from an aqueous system. Polyethersulfone based polymeric membranes modified with Polyvinylpyrrolidone (PVP) as pore generation agent was used for removal of iron from water. Future research works regarding iron removal are focused on membrane technology and nanotechnology integrated with conventional methods. (T.A. Kurniawan and G.Y. Chan 2006)

3.2 Various Technologies Available for Removing E.coli Bacteria from Water E.Coli Removal Thorough Membrane Technologies

Using low-pressure microfiltration membranes viruses are removed from both groundwater and wastewater. Various researches are still taking place concerning this section. In a study conducted by S.S Madanei and A.G Fane (1995) Millipore, hydrophobic multi filtration membranes with a pore size of $0.22\mu m$ and Amicon polysulfone PM 30 ultrafiltration membranes were used. The possibility of filtering E.coli bacteria was checked in a laboratory condition. E.coli bacteria is a straight rod $0.5\mu m$ in width, $2\mu m$ in length with an electrical conductivity of -4 to $-6(\mu m/s \ V/cm)$. these were prepared artificially by inoculating a cryopreservative bead culture into 20ml of tryptone soy broth McCartney bottles. After the filtration process membranes were immersed in a solution of 0.1M sodium cacodylate plus 2.5% glutaraldehyde for 30 min and then washed and stored in 0.1 M sodium cacodylate buffer. When viewed through an electron microscope high rejection of E.coli bacteria was observed due to the absorption of the virus within membranes.

E.coli Bacteria Filtration Using Mycofiltration

Alicia Ann Fiatt (2003) studied the possibility of removing E.coli bacteria from storm stormwater using microfiltration. Mycofilter was prepared by drilling a hole in the center bottom of a 5-gallon bucket, the diameter of the inner ring is 1 inch and the diameter of the outer ring is 2 inches, a wire mesh screen cut to a 4-inch diameter was placed over the



holes on the inside of the bucket and tackled at 4 edges with silicon glue. Mycofilter was submerged initially in 9L of dechlorinated tap water with no presence of E.coli bacteria to achieve saturation and was allowed to drain for 15 minutes before testing. After the submerging process, each mycofilter was loaded from an individual 30L batch of influent. For preparing influents a large plastic container was filled with 30L of tap water which was dechlorinated with 0.75g of sodium thiosulfate. The culture of E.coli (final influent volume of 30L with a concentration of around 700 CFU/ 100ml) was prepared and the dechlorinated tapwater containing -700cfu/100mL E.coli was percolated through mycofilter at a rate of 0.5L/min. The filter media used was Stropharia spp. on wood chips and shredded chips. After the entire process, the samples were checked separately by using the Coliscan C MF method and was tested negative for E.coli bacteria.

Removal of E.Coli Bacteria Using Carbon Nanotubes Interaction With Microwave Radiation

A study was conducted by Sameer M and Amjad B Khalid (2013) about the possibility of removing e.coli bacteria using carbon nanotubes along with microwave radiation. Multiwalled carbon nanotubes were selected for the process which gave an efficiency of about 95%. The outer and inner diameters of carbon nanotubes were 10-20nm and 5-10nm respectively. The carbon nanotubes were then esterified using the Fischer esterification method. 10g of 1-Octadecanol was melted on a hotplate at 350K and 1g of oxidatively modified carbon nanotubes were added. Few drops of sulphuric acid were added as a catalyst. The product thus formed is washed with deionized water and acetone a few times resulting in the formation of functionalized M-CNT material. Using this functionalized M-CNT and microwave radiation significantly reduced the E.coli bacteria from the sample water. When the time of radiation subjection is increased to 12 seconds a sharp reduction was observed, yielding a reduction of 4 logs (99.99% removal). This effect causes a polarization effect on the cell wall of E.coli bacteria.

4.0 CONCLUSION AND SUGGESTIONS

The review of various methods for removing E.coli bacteria and excessive iron content from the water was conducted to suggest the most economical and easiest method for Aryad panchayath in Alappuzha. The groundwater tested from the panchayath depicted large traces of iron and confirmed the presence of E.coli bacteria in it. Various technologies were reviewed to find the apt technology for water purification in Alappuzha. The per-capita income of the people in Aryad panchayath is low as most of the people are small scale farmers

engaged in agriculture, fishing, and coir industry, so the selection of the purification process is based on efficiency and economic feasibility. For the removal of excessive iron content, Vyredox Technology will be most suitable for Aryad panchayath. The efficiency of this process is calculated and found that a one-tenth reduction in the amount of iron from its initial concentration from groundwater. Also, this process is very economical and the efficiency of iron removal was found to be 3.12. For removing E.coli bacteria filtration of water with functionalized carbon nanotubes along with microwave radiation. When ordinary carbon nanotubes are treated with 10g of 1-Octadecanol and melted at a hotplate along with some drops of sulphuric acid functionalized M-CNT materials are formed. This material along with subjection of contaminated water to microwave radiation up to 12 seconds can kill 99.99% of E.coli bacteria.

REFERENCES

- 1) APHA (1995) *Standard methods for the examination of water and wastewater, 19th edn.* American Public Health Association, Washington, DC
- 2) Narayan, S., 2020, *Evaluation Of Groundwater Quality And Its Suitability For Drinking And Agricultural Use In Aryad Panchayath Of Alappuzha*
- 3) E.A. Boyle, J.M. Edmond, E.R. Sholkovitz, *The mechanism of iron removal in estuaries, Geochim. Cosmochim. Acta.* 41 (1977) 1313–1324.
- 4) S. Vigneswaran, C. Visvanathan, *Water Treatment Processes: Simple Options*, CRC Press, New York, NY, 1995.
- 5) V. Shkolnikov, S.S. Bahga, J.G. Santiago, *Desalination and hydrogen, chlorine, and sodium hydroxide production via electrophoretic ion exchange and precipitation*, 2012
- 6) L.D. Rollmann, E.W. Valyocsik, *Zeolite molecular sieves. Inorganic Syntheses, Inorg. Synth.* 30 (1995) 227–234.
- 7) H.M. El-Naggar, *Development of low-Cost technology for the removal of iron and manganese from ground water in Siwa oasis, J. Egypt Public Health Assoc.* 85 (2010).
- 8) Bong-Yeon Cho, *Iron removal using an aerated granular filter, Process Biochem.* 40 (2005) 3314–3320.
- 9) R.O. Hallberg, R. Martinell, *Vyredox In-situ purification of groundwater, Ground Water* 14 (2) (1976) 88–93.
- 10) C.A.J. Appelo, B. Drijver, R. Hekkenberg, M. de Jonge, *Modeling in situ iron removal from ground water, Ground Water* 37 (1999) 811–817.
- 11) C. Erkey, *Supercritical carbon dioxide extraction of metals from aqueous solutions: a review, J. Supercrit. Fluids* 17 (2000) 259–287.
- 12) M.A. McHugh, V.J. Krukoni, *Supercritical Fluid Extraction: Principles and Practice*, Butterworth-Heinemann, Boston, MA, 1994.



- 13) Y. Lin, N.G. Smart, C.M. Wai, *Supercritical fluid extraction of uranium and thorium from nitric acid solutions with organophosphorus reagents*, *Environ. Sci. Technol.* 29 (1995) 2706–2711.
- 14) M.Y.A. Mollah, R. Schennach, J.R. Parga, D.L. Cocke, *Electrocoagulation (EC)—science and applications*, *J. Hazard. Mater.* 84 (1) (2001) 29–41.
- 15) K. Rajeshwar, J. Ibanez, *Environmental electrochemistry: fundamentals and applications in pollution abatement*, in: Matthew A. Tarr (Ed.), *Chemical Degradation Methods for Wastes and Pollutants*, Academic USA Press, 1997, p. 720.
- 16) N.L. Le, S.P. Nunes, *Materials and membrane technologies for water and energy sustainability*, *Sustain. Mater. Technol.* 7 (2016) 1–28.
- 17) X. Chai, G. Chen, Y. Po-Lock, Y. Mi, *Pilot scale membrane separation of electroplating waste water by reverse osmosis*, *J. Membr. Sci.* 123 (1997) 235–242
- 18) T.A. Kurniawan, G.Y. Chan, W.H. Lo, S. Babel, *Physico-chemical treatment techniques for wastewater laden with heavy metals*, *Chem. Eng. J.* 118 (2006) 83–98.
- 19) S.S. Madaeni a, A.G. Fane a, G.S. Grohmann b, *Virus removal from water and wastewater using membranes*, 1995
- 20) Alicia ann flatt, *removal of escherichia coli from stormwater using mycofiltration*, 2003
- 21) Samer M. Al-Hakami, Amjad B. Khalil, Tahar Laoui, and Muataz Ali Atieh, *Fast Disinfection of Escherichia coli Bacteria Using Carbon Nanotubes Interaction with Microwave Radiation*, Volume 2013, Article ID 458943, 2013 <https://doi.org/10.1155/2013/458943>



ACTIVATED CARBON FROM WASTE BRANCHES OF ACACIA ASAK TREE: SINGLE, TWO AND THREE STEPS ACTIVATION PROCESSES

Dr. Muhammad Saleem

Associate Professor,
Department of Civil Engineering,
Jubail University College
Male Branch, Kingdom of Saudi Arabia

ABSTRACT

This paper depicts the work done for the production and characterization of activated carbon (AC) from locally available waste Acacia asak (Fabaceae) tree branches. Three types of AC; AAB-AC1, AAB-AC2 and AAB-AC3 produced utilizing; single, two and three step processes using K_2CO_3 as an activating agent. Characterization of Acacia asak tree branches activated carbon (AAB-AC) carried out by proximate and detailed analysis including ash and moisture content, elemental analysis, bulk density, volatile matter, hardness value, pH value, Iodine number, BET surface area and pore volume. Results show that AAB-AC having quality well comparable to the available commercial activated carbon (CAC). Highest BET surface area was found to be $814.3 \text{ m}^2/\text{g}$. Higher hardness and low ash content of produced ACs making it suitable for liquid phase continuous flow and batch type separation processes. A simple cost analysis shows that the cost of produced ACs ranges from \$0.35 to \$0.42/kg, which is quite cheaper than the commercially available AC in the market. Produced AC applied to treat synthetic wastewater containing methylene blue (MB) dye. At first the removal efficiency of AAB-AC less than the CAC however, after one hour the removal efficiency of AAB-AC became comparable (98.5% for CAC and 96.5% for AAB-AC3). Methylene blue (MB) dye uptake capacity also evaluated and found to be 237.5 mg MB/g AC and 240.7 mg MB/g AC for CAC and AAB-AC3 respectively. Therefore, increasing requirement of AC in the country can be handled by utilizing locally available waste branches of Acacia asak tree as precursor material and in turn improving the solid waste management strategy. The three steps carbonization and activation process will produce AC of well comparable qualities.

KEY WORDS: Activated Carbon, Production, Characterization, Three step process, Acacia asak, S_{BET} Surface area

1.0 INTRODUCTION

Activated carbon (AC) is a microcrystalline form of carbon with large surface area due to the presence of very high porosity existing in the form of macropores, micropores and mesopores. Its large surface area and physicochemical properties allows it to preferentially adsorb organic materials and other polar and non polar compounds from gas or liquid streams (Chen et al., 2007). AC is a well-known adsorbent used globally for the removal of several organic contaminants (even in trace amounts) from industrial, domestic and other wastewater effluents. However, high cost of commercial AC limits the use of this excellent adsorbent (Rao et al., 2006). Present day environmental legislations and environmental control strategies requires large quantities of AC with suitable characteristics for each particular application. In general, an AC which is used in any of the most

common applications must have adequate adsorptive capacity, purity, mechanical strength and regeneration capabilities. In addition to that, all these specifications should coexist with a low production cost. Virtually, AC can be produced with any carbonaceous material containing cellulosic carbon and researchers used wide range of material to get AC having high surface area utilizing low cost precursor material (Ramirez et al., 2017). However, production of AC required some physical and chemical activation along with some thermal treatment. AC production techniques are proprietary and commercial in nature.

Activated carbon is obtained from a carefully controlled process of dehydration, carbonization and oxidation of organic substances (Özsin et al., 2019). However, in order to manage the huge demand of AC, it should be produced by utilizing locally available low cost raw materials and production techniques. The use



of waste materials as low-cost adsorbents is a feasible option due to their contribution in reduction of waste disposal cost and pollution load on the environment (Ramirez et al., 2017; Zhou et al., 2018; Sartova et al., 2019).

Researchers utilized variety of materials for AC production including Moringa oleifera seeds (Warhurst et al., 1997), apricot (Erdogan et al., 2005), corn cobs (Cao et al., 2006), date stones (Haimour and Emeish, 2006), cherry stones (Olivares-Marín et al., 2006), waste tea (Amarasinghe and Williams, 2007), cotton stalk (El-Hendawy et al., 2008), olive stoves (Kula et al., 2008), olive cake (Baccar et al., 2009), bamboo (Liu et al., 2010), almond shells (Plaza et al., 2010), giant reeds (Yue et al., 2010), coconut shell (Cazetta et al., 2011), Acacia mangium (Danish et al., 2013), date palm fronds (Ahmad et al., 2015), Acacia etbaica (Gerbrekidan et al., 2015), olive stones (Yakout and El Deen, 2016), wood waste (Ramirez et al., 2017), waste tea (Zhou et al., 2018), winemaking wastes (Alcaraz et al., 2018), chickpea waste (Özsin et al., 2019), cotton processing wastes (Sartova et al., 2019), etc.

Although extensive research in the past addressing the production and characterization of AC from various carbonaceous materials however, there is limited information available about the use of Acacia asak tree branches (AAB) as a raw material. Production of activated carbon from AAB provides two fold benefits, acquiring a low cost AC from waste material generated during pruning of trees and reduction in the environmental pollution due to decay and disposal of this material (Shivayogimath et al., 2014).

1.1 Production of Activated Carbon

Production of AC could be done utilizing physical or chemical means. Conveniently, AC can be produced in one or two steps, in two step process first carbonization of precursor material performed in an inert atmosphere (Chowdhary et al., 2013). This step facilitates the formation of narrow or macropores. Carbonization process reduce the volatile components, produce char and increase the carbon content per unit mass of material. Generally, carbonization temperature used are 400°C to 800°C (Üner and Bayrak, 2018). In the second step activation of carbon done either by physical or chemical activation processes. This process enhances the pores significantly in the material. In the physical activation process the precursor material activated with steam, carbon dioxide or nitrogen to develop micro, meso and even nanopores (Lua and Yang, 2005; Alayan et al., 2018). Classically, activation temperature utilized is ranging from 800 to 1000 °C (Guo and Lua, 2000; Herawan et al., 2013).

However, activation can be done at low temperature if some activation agent is present (Alslaibi et al., 2013).

In the chemical activation process, a carbonaceous material is imbued with activating agents such as an acid) or a base. The porosity in the material developed due to degradation and dehydration (Nor et al., 2013). Chemical activation generally done at low temperatures and shorter activation time than physical activation. (Guo and Lua, 2000; Nor et al., 2013). Therefore, process provides cost effective method for AC production by utilizing less energy (Guo and Lua, 2000; Herawan et al., 2013). Generally, chemical activation provides higher surface area and better yield of carbon than a physical activation process (Danish and Ahmad, 2018). Researchers utilized variety of dehydrating agents, such as H_3PO_4 (Kalderis et al., 2008), $ZnCl_2$ (Moreno-Pirajan and Giraldo, 2010), KOH (Romanso et al., 2011), H_2SO_4 (Jawad et al., 2016) and Phytic acid, $C_6H_{18}O_{24}P_6$ (Cheng et al., 2016). However, it is reported that high surface area obtained while utilizing K_2CO_3 as an activating agent (Hayashi et al., 2005; Sun et al., 2010). In a single step process carbonization and activation done simultaneously in a single step heating with an activation agent (Kalderis et al., 2008).

In the recent past a three step process was utilized to prepare AC from Cassia fistula (Golden shower) in which hydrothermal carbonization process followed by pyrolysis process to form biochar. In the third step, obtained biochar was activated chemically utilizing potassium carbonate, K_2CO_3 to produce AC having better adsorption performance for cationic dye than AC produced by single or two step processes (Tran et al., 2017). Both carbonization and activation steps are critical in defining the final physical and chemical properties of AC (Katesa et al., 2013). Studies shows that three step synthesis is more effective approach for AC production (Wong et al., 2018). Therefore, in the present study a three step process along with single and two step process utilized to compare the AC produced by three methods. K_2CO_3 is utilized as an activating agent due to its favorable properties as a solvent, low degradation rates, low corrosivity and reported to be an effective agent giving high SBET surface area (Hayashi et al., 2000; Sun et al., 2010; Okman et al., 2014).

Saudi Arabia possess a huge industrial setup spread in Jubail, Yanbu, Dammam and some other regions. These industries ranging from refining petroleum products to manufacturing industrial to domestic products along with large number of support industrial sectors (JC, 2016). Until the end of the first quarter of 2018, industrial units exceed to 7630 units involve the total investment beyond SR1.1 trillion and



country enjoy the revenue of about SR 116,609 million in 2017 by exporting the products (SIDF, 2019). The variety of industries utilizing huge quantities of AC to meet their demand which is imported from outside the country. As reported by Essa and colleagues that more than 6.5 metric tonnes of AC was imported during 1995 to 2002 (Essa et al., 2004). The annual expenditure exceeds \$3.2 million for importing AC to meet the growing demand (Saleem et al., 2017).

The most appropriate raw material to produce AC is having least economical value and provide AC of comparable quality as the commercially available AC. Saudi Arabia is situated in a region possessing arid and dry climate. However, it has more than 97 types of trees among them more than 80% are available in eastern, western and southwestern regions (Aref et al., 2003). Acacia tree has highest population and having more than 10 species including *Acacia seyal*, *Acacia mellifera*, *Acacia etbaica*, *Acacia origoua*, *Acacia asak* etc. (Aref et al., 2003). Most of the Acacia trees are available in eastern region of Saudi Arabia and large number of Acacia asak trees present in Dammam, Jubail and surrounding areas grown naturally or planted for greenery enhancement. AC produced from Acacia tree found to be economically more feasible due to its availability as a low cost precursor material, AC obtained will have harder structure providing better resistant to attrition (Gratiso et al., 2008; Danish et al., 2013; Saleem et al., 2017). However, the Acacia asak tree has not been used in the past as per the knowledge of authors. Therefore, in the present work Acacia asak tree branches (AAB) are utilized to produce AC due to its abundant availability as a waste material during tree pruning, trimming and cutting services and possibility to have AC with good properties comparable to available commercial AC in the market.

2.0 MATERIAL AND METHODS

The main objective of present study is to produce AC utilizing abundantly available waste AAB. Other objectives are 1) producing AAB-AC utilizing potassium carbonate K_2CO_3 as activating agent while using three processes a) single step process b) two step process and c) three step process, 2) characterize the AAB-AC and 3) compare the adsorptive capacity of all three ACs with the commercially available AC (Filtrisorb®-400 and QAC-400) available with Calgon Carbon Corporation and Quantum Active Carbon Pvt. Limited respectively.

2.1 Preparation of AAB-AC

Branches of Acacia asak tree were collected from Jubal Industrial city. Branches excluding leaves were washed and cleaned thoroughly with hot distilled

water. Later branches were cut into small pieces and dried in Blast Air Drying Oven (DHG-9030A, China) at 110 ± 5 °C for 48 hours. Finally, dried pieces were cut into 0.4 to 0.5 mm size particles utilizing variable speed Universal Cutting Mill (PULVERISSETTE 19). Prepared granular material divided into three test samples and these samples undergone single, two and three steps processes to obtain three types of AC named; AAB-AC1, AAB-AC2 and AAB-AC3.

Single step process for AAB-AC1 production: In this part of study single step chemical activation process, utilizing K_2CO_3 as activated agent was used. Prepared granular material first impregnated with 40% V/V K_2CO_3 (purity 99.99%, Sigma-Aldrich) and obtained slurry was placed in Muffle Furnace (BEXCO, 251) for 12 hours at 600 ± 5 °C (Saleem et al., 2017). After cooling the product at room temperature washed with 0.2% HCl solution than with distilled water to obtain AC having pH near neutral value.

Two step process for AAB-AC2 production: In this part the precursor material is placed in the Muffle Furnace for 12 hours at 600 ± 5 °C for carbonization. Later the biochar formed was mixed with 40% V/V K_2CO_3 and slurry was left idle for 24 hours which hydrolyzed the glycosidic linkage present in polysaccharides of cellulose and hemicellulose material. Following that, produced AC is placed in the Muffle Furnace for 12 hours at 600 ± 5 °C. The final product was neutralized as mentioned before.

Three step process for AAB-AC3 production: In this part of study the prepared granular material mixed with 50% V/V distilled water and material undergone hydrothermal carbonization for 24 hours at 200 ± 5 °C in a sealed container which exerted an extra steam pressure, providing additional driving force for hydrochar production. Later produced hydrochar was mixed with 40% V/V K_2CO_3 and slurry was left idle for 12 hours. In the last step product was placed in Muffle Furnace for 12 hours at 600 ± 5 °C to produce AC followed by neutralization of the produced AC.

Once the AC is produced, characterization is required. Characterization is the measure of different properties or parameters on the basis of which, a comparison can be made to find the suitability of product. Therefore, a number of parameters have been developed to characterize activated carbon such as the iodine number, hardness number, surface area, moisture content, ash content, volatile matter content, pH value, iodine number etc. Following section discussed the characterization phase of the present study.



2.2 Characterization of Precursor Material and Produced ACs

Characterization of all produced ACs was done by performing the proximate and detailed analysis following the standard procedures (Schaeffer, 2002). The type of test and utilized ASTM standard and/or methods are summarized in table 1.

In order to determine the elemental composition of precursor material AAB, analysis done utilizing The PerkinElmer® 2400 Series II CHNS/O Elemental

Analyzer. The proximate analysis was performed by utilizing TGA 4000 System, with a compact ceramic furnace following the standard ASTM procedures. Hardness determined by utilizing Gilson SS-30 Ro-Tap Sieve Shaker. The fixed carbon calculated as residue of 100% after subtracting moisture content, volatile matter and ash content (Goswami, 2004).

$$\text{Fixed carbon (\%)} = 100 - [\text{moisture (\%)} + \text{ash (\%)} + \text{volatile matter (\%)}] \dots(1)$$

Table 1. Summary of the analysis and utilized standard ASTM procedures and methods.

Type of analysis	Method/ASTM standard procedure
Bulk density	ASTM D2395
Moisture content	ASTM D4933-99, 201
Fixed carbon	ASTM D3172; ISO 1350
Volatile matter	ASTM D5832-98
Hardness	ASTM D3802
Ash content	ASTM D2866-94, 2004
S _{BET} -Surface area	Brunauer–Emmett–Teller, BET surface area
Pore volume	ASTM D4641-17
Pore mean radius	Empirical calculations
Iodine number	ASTM D4607-94

The BET surface area (S_{BET}) and pore volume were determined by utilizing the amount of N₂ held at a relative pressure P/P₀ = 0.98 reaching equilibrium. The S_{BET} surface area determined by Quantachrome Nova-2200e series instrument. During determination and handling the equipment all safety precautions were adopted including use of protective clothing, mask, safety goggles and heat resistant gloves (Brunauer and Teller, 1938). The sample was degassed for 2 hours under vacuum at 330°C prior to analysis. The sample was then transferred to the analysis system where it was cooled in liquid nitrogen. The specific surface area (S_{BET}) was calculated by the Brunauer–Emmett–Teller (BET) equation. Pore mean radius (R) is calculated from values of pore volume (V_p) and BET surface area (S_{BET}) utilizing the empirical relationship (Haul, 1982)

$$R = 2V_p/S_{BET} \dots\dots\dots (2)$$

2.3 Removal Efficiency of AAB-AC

Among other color dyes textile industries utilizing Methylene Blue (MB) dye in various dyeing processes. Therefore, to comply with the environmental control and meet the effluent discharge limits removal of MB dye is a major issue in textile industry. In the present study synthetic wastewater containing MB dye used to test the produced ACs and determine their removal efficiency (Shah et al., 2015; Saleem et al., 2017).

A stock solution of 50 mg/l MB dye was prepared. Three sets of 100 ml borosilicate bottles containing 10 gm of ACs (produced three types of ACs) were filled with 100 ml of MB solution.

Prepared bottles were placed in a mechanical shaker and allowed to equilibrate for 48 hours (Saleem et al., 2010). Following the equilibration period, 20 ml samples were used from each bottle, filtered through 0.45 µm filter (Millipore), and analyzed for residual concentrations of MB dye using the UV-spectrophotometer Shimadzu UV-1301PC at 644 nm wavelength. A calibration curve between absorbance and MB concentration was prepared by using MB standard solutions having concentrations from 10 mg/l to 50 mg/l. Parallel experimental runs were performed while using commercial AC Filtrasorb®-400 for comparison purpose.

3. RESULTS AND DISCUSSION

In the present detailed experimental investigation preparation, characterization along with comparative analysis performed. Results obtained in the present study are discussed in the following sections

3.1 Production and characterization of activated carbon

Generally, a precursor material containing high carbon content and low Sulphur and ash content results



in good quality AC (Macías-Pérez et al., 2007). Results of elemental analysis of AAB along with the elemental composition of other species of Acacia tree branches are presented in table 2. Results reveal that AAB having higher carbon content along with lower ash content which is making AAB a candidate precursor material to yield AC having qualities comparable to commercially available AC in market. Composition of

other elements including potassium, nitrogen, hydrogen, phosphorus and oxygen are comparable with the reported values in the literature (Shivayogimath et al., 2014; Saleem et al., 2017). In addition to that, lower Sulphur content (0.02%) ranking it as an environment friendly material to produce AC (Shahid et al., 2011). Therefore, AAB seems to be a suitable precursor material for good quality AC production.

Table 2. Results of elemental analysis and comparison with the other Acacia species reported in the literature.

Constituent (%)	<i>Acacia asak</i>	¹ <i>Acacia seyal</i>	² <i>Acacia nilotica</i>
C	52.7	51.3	48
K	0.93	1.82	--
Al	ND	0.17	--
N	0.42	0.33	0.4
H	5.3	5.8	6
Zn	0.01	0.01	--
S	0.02	0.03	--
P	0.1	0.09	--
O	41.5	32.9	44
Ash	4.7	5.9	5.8

ND: Not Detected

¹ Saleem et al., (2017)

² Shivayogimath et al., (2014)

Gravimetric analysis of raw AAB was performed by TGA at temperature range from 0°C to 1000°C in an inert atmosphere. Results of weight loss versus temperature are presented in figure 1. It can be seen from figure 1 that curve represents three major stages of weight loss; first stage from 60°C to about 180°C which is mainly due to loss of moisture and volatile material. Weight loss of about 3.96% observed in this temperature range. In the second stage which ranges

from 180°C to 355°C maximum weight loss of about 57.62% observed which is mainly due to breakdown and conversion of lignocellulose material into gases form and tar which generally occurs in this temperature range (Kumar et al., 2008). In the third stage carbonization of AAB occurred which ranges from 355°C to 1000°C showing minimum weight loss of about 2.79%.

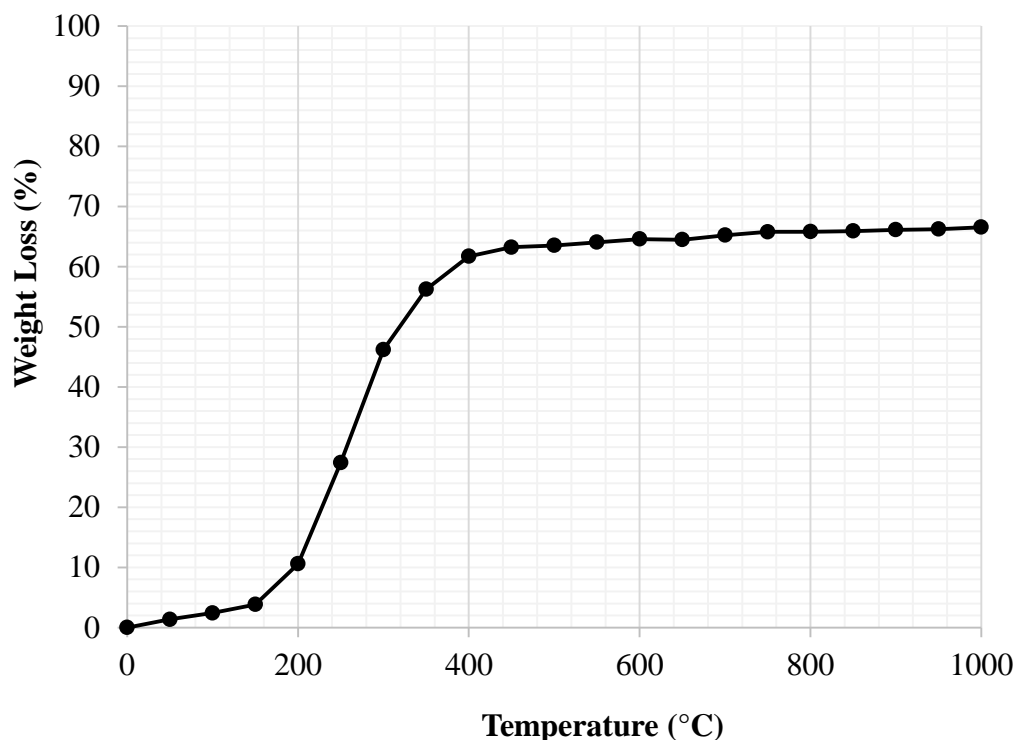


Figure 1. TGA analysis, weight loss versus temperature

Table 3 presents a comparison of results obtained after performing proximate and detailed analysis for all three types of produced ACs along with two commercially available ACs (Filtrisorb®-400 and QAC-400). Comparison also made between produced ACs and AC produced from other species of Acacia trees (*Acacia seyal* and *Acacia nilotica*) reported in the literature.

Results reveal that all ACs prepared in the present study by single, two and three step processes possess high BET surface area and quite comparable to the commercially available ACs. Among three produced ACs, obtained area is in the order of AAB-AC3 > AAB-AC2 > AAB-AC1. Therefore, AAB-AC3 achieved highest surface area (814.3 m²/g) while utilizing three step process which provides better carbonization and

activation with activating agent K₂CO₃. Similar results were reported elsewhere when comparing the AC produced by single, two and three steps chemical activation method (Tran et al., 2017). Lowest surface area obtained by AAB-AC1 (753.3 m²/g) which may be attributed to the fact that less time was available for carbonization which reduce the carbon content per unit mass and ultimately the available surface area. The three step process contributing in getting higher surface area which may be due to fact that hydrothermal treatment of precursor material produced hydrochar during carbonization in which better penetration of activating agent K₂CO₃ occurred in the pore space, which results in relatively higher surface area during activation.



Table 3. Comparison of characteristics of AAB-AC1, AAB-AC2 and AAB-AC3 with Commercial ACs and AC produced from other species of Acacia tree

Property	AAB-AC1	AAB-AC2	AAB-AC3	¹ Acacia seyal	² Acacia nilotica	*Filtrisorb® 400	#QAC-400
Ball-Pan Hardness	95	94	90	91	Low	High	95
Ash (%)	5.7	6.2	5.73	5.9	5.8	5-6	6
Bulk Density (g/cc)	0.41	0.39	0.35	0.3	--	0.44	0.55
Moisture Content (%)	4.7	4.2	4.6	4.2	4.1	--	5
Volatile matter	6.14	5.52	2.73	--	5.12	--	--
Fixed Carbon	83.46	84.08	86.94	--	--	--	--
pH	7.9	8.1	7.6	6.5	7.0	6.2	9-10
S _{BET} (m ² /g)	753.2	772.7	814.3	762	590	944	400
Pore Volume (m ³ /g)	4.38	4.79	5.1	4.92	4.4	0.6	--
Pore mean radius (mm)	11.63	12.39	12.52	12.91	14.91	1.27	--
Iodine Number (mg/g)	749	846	892	827	480	1000	400

* Calgon Carbon Corporation, Pennsylvania, 15205 USA.

Quantum Active Carbon Pvt Limited (2016)

¹ Saleem et al., (2017)

² Shivayogimath et al., (2014)

Results reported in table 3 also showing that the obtained BET surface area of produced ACs are well comparable to the area obtained by researchers utilizing other species of Acacia tree branches; Acacia seyal and Acacia nilotica. Once comparing with the BET surface area of Filtrasorb ®-400 (i.e 944 m²/g) the surface areas of AAB-AC1, AAB-AC2 and AAB-AC3 are 79.77%, 81.78% and 99.87% respectively. Results of Iodine number demonstrated similar behavior.

Results of pore volume and iodine number showing that the properties of AC strongly depends on the type of preparation method and adsorbent pore volume increase with the number of steps during activation. Thus, three step process seems to be more favorable method in the preparation of better AC. A similar conclusion has been drawn by other researchers (Tran et al., 2017; Wong et al., 2018). The Ball-Pan Hardness Test which reflects the resistance of an AC

against degradation, measured and results show that all the produced ACs possess very good hardness and well suitable for liquid phase batch and continuous flow separation processes.

Furthermore, a simple cost analysis performed by considering the cost of raw material, chemical used, energy consumption and cost related to manpower and laboratory analysis. It was found that the final cost of produced ACs ranging from \$0.35 to \$0.42 per Kg. Therefore, the AC produced by Acacia asak branches, which are available in abundance, obtained during tree pruning and considered, as solid waste will result in an economical means of producing AC and contribute in solid waste reduction and management.



3.2 Removal efficiency of AAB-ACs

Removal efficiency of AAB-ACs along with commercial AC Filtrasorb ®-400 was evaluated in laboratory batch experiments in which produced and commercial ACs were suspended in 50mg/l MB solution as mentioned before.

The temporal removal efficiency of AAB-ACs and Filtrasorb ®-400 is depicted in figure 2. It is evident from figure 2 that initially commercial AC removal is highest up to 20 minutes as compared to all AAB-ACs however, after that the removal efficiency of AAB-AC3 becomes comparable to it. After about 40 minutes

of experimental run the improvement in the removal efficiency became insignificant for all the ACs. The final removal efficiencies of ACs achieved were 98.5%, 96.3%, 91.1% and 85.6% for Filtrasorb ®-400, AAB-AC3, AAB-AC2 and AAB-AC1 respectively. The high removal efficiency of AAB-AC3 for MB dye may be attributed to the utilization of K_2CO_3 as an activating agent and three step process which aids in the yield of high BET surface area and well developed porosity.

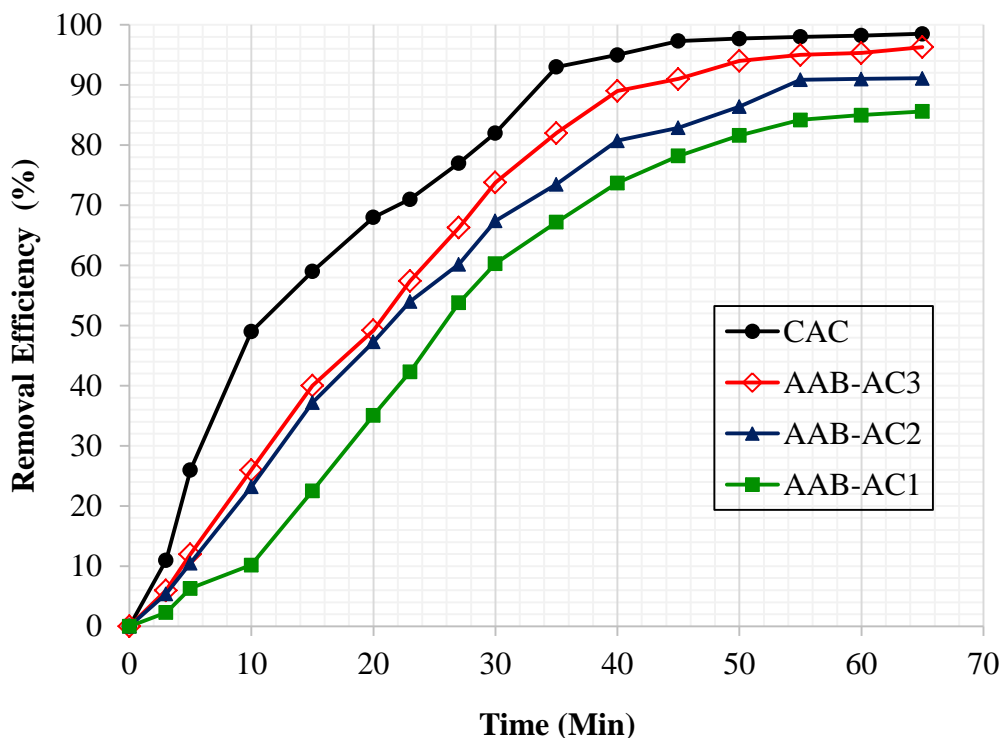


Figure 2. Comparison of MB Removal efficiency of ACs

3.3 MB dye uptake capacity of AAB-AC3

In this part of study the experimental runs were performed to compare the MB dye uptake capacity of AAB-AC3 and commercial AC Filtrasorb ®-400. The uptake capacity of Filtrasorb ®-400 and AAB-AC3 found to be 240.7 mg MB/g of AC and 237.5 mg MB/g of AC respectively, which shows that the adsorption capacity of AAB-AC3 is about 98.7% of commercial AC. It is noted that the MB uptake capacity of AAB-AC3 is comparable to the S_{BET} value found before (99.87% of Filtrasorb ®-400). It means that the produced AC has good relationship between BET-Surface area and the MB uptake capacity of produced AC. In addition to that, the pore volume of AAB-AC3

is $5.1 \text{ m}^3/\text{g}$ as compared to the pore volume of Filtrasorb ®-400 which is $0.6 \text{ m}^3/\text{g}$. It shows that the MB uptake capacity may not only depends on the pore volume and the controlling parameter could be the BET-Surface area. Current findings are not consistent with the finding of study conducted by Hussein et al., which showing the dependency of AC uptake capacity solely on the pore structure and volume (Hussein et al., 2015). Variance in the studies could be attributed to the use of different raw material (date palm tree biomass) which may produce pore volume due to different pore structure. However, further study is warranted to investigate effect of various precursor material on pore volume, SBET surface area and the uptake capacity.



4. CONCLUSIONS AND RECOMMENDATIONS

Results of the study revealed that the Acacia asak tree branches is a potential precursor material for AC production. Elemental analysis of precursor material shows high carbon content (52.7%) and very low ash content (4.7%) ranking it as an excellent material for AC preparation. Three types of AC production methods were utilized and found that three steps AC production method provides better carbonization and activation while using K_2CO_3 as activating agent and yield with an AC having S_{BET} surface area close to commercially available AC (99.87% of Filtrasorb®-400). Hydrothermal treatment of precursor material produced hydrochar in which better penetration of precursor material occurred. TGA analysis shows that carbonization occurred about 360C and showing minimum weight loss of about 2.79% which reflect the low volatile component in the produced AC.

Temporal removal efficiency shows that MB removal of AAB-AC3 is high as compared to AAB-AC2 and AAB-AC1 during initial 20 minutes (but less than Filtrasorb®-400). However, after 40 minutes of run both ACs achieved similar removal efficiency (96.3% and 98.5% for AAB-AC3 and Filtrasorb®-400 respectively). MB uptake capacity of AAB-AC3 find to be about 98.7% of commercial AC (237.5 mg/g of AC). Higher hardness and low ash content of produced ACs making it suitable for liquid phase continues flow and batch type separation processes. A simple cost analysis shows that the cost of produced ACs ranges from \$0.35 to \$0.42/ kg which is quite cheaper than the commercially available AC in the market.

Therefore, the results of the present study show that that AC produced by three steps carbonization and activation method is producing economical and well comparable AC (with commercially available ACs) if the availability of low cost raw material and low energy consumption are considered. However, more investigations are required to verify other parameters such as hydrolysis time and temperature, impregnation ratio of activating agent, types of activating agents, time of activation and utilization of other steps such as microwave heating etc.

Acknowledgments

Authors are grateful to the Jubail University College for providing working environment to complete this study. Authors did not receive any financial support from any funding body.

REFERENCES

1. Ahmad, A., Al-Swaidan, H. M., & Alghamdi, A. H., 2015. Production of Activated Carbon from Raw Date Palm Fronds by $ZnCl_2$ Activation. *Journal of the Chemical Society of Pakistan*, 37(6), 1081-1087.
2. Alayan, H.M.; Alsaadi, M.A.; AlOmar, M.K.; Hashim, M.A. Growth and optimization of carbon nanotubes in
3. Alcaraz, L., López Fernández, A., García-Díaz, I., & López, F. A. (2018). Preparation and characterization of activated carbons from winemaking wastes and their adsorption of methylene blue. *Adsorption Science & Technology*, 36(5-6), 1331-1351.
4. Alslaibi, T. M., Abustan, I., Ahmad, M. A., & Foul, A. A. (2013). A review: production of activated carbon from agricultural byproducts via conventional and microwave heating. *Journal of Chemical Technology & Biotechnology*, 88(7), 1183-1190.
5. Amarasinghe, B. M. W. P. K., & Williams, R. A. (2007). Tea waste as a low cost adsorbent for the removal of Cu and Pb from wastewater. *Chemical Engineering Journal*, 132(1-3), 299-309.
6. Aref, I. M., Elkhalfifa, K. F., & El-Juhany, L. I., 2003. A dendrological key for identification of Acacia species growing in Saudi Arabia and Northern Sudan. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.611.2817>. Accessed on July, 2016.
7. Baccar, R., Bouzid, J., Feki, M., & Montiel, A. (2009). Preparation of activated carbon from Tunisian olive-waste cakes and its application for adsorption of heavy metal ions. *Journal of Hazardous Materials*, 162(2-3), 1522-1529.
8. Brunauer, S., Emmett, P. H., & Teller, E. (1938). Adsorption of gases in multimolecular layers. *Journal of the American chemical society*, 60(2), 309-319. DOI: 10.1021/ja01269a023
9. Cao, Q., Xie, K. C., Lv, Y. K., & Bao, W. R. (2006). Process effects on activated carbon with large specific surface area from corn cob. *Bioresource Technology*, 97(1), 110-115.
10. Cazetta, A. L., Vargas, A. M., Nogami, E. M., Kunita, M. H., Guilherme, M. R., Martins, A. C., ... & Almeida, V. C. (2011). NaOH-activated carbon of high surface area produced from coconut shell: Kinetics and equilibrium studies from the methylene blue adsorption. *Chemical Engineering Journal*, 174(1), 117-125.
11. Chen, W., Duan, L., & Zhu, D. (2007). Adsorption of polar and nonpolar organic chemicals to carbon nanotubes. *Environmental science & technology*, 41(24), 8295-8300.
12. Cheng, C., Liu, H., Dai, P., Shen, X., Zhang, J., Zhao, T., & Zhu, Z. (2016). Microwave-assisted preparation and characterization of mesoporous



- activated carbon from mushroom roots by phytic acid (C₆H₁₈O₂₄P₆) activation. *Journal of the Taiwan Institute of Chemical Engineers*, 67, 532-537.
13. Chowdhury, Z.Z., Hamid, S.B.A., Das, R., Hasan, R., Mohd Zain, S., Khalid, K., Uddin, N., 2013. Preparation of carbonaceous adsorbents from lignocellulosic biomass and their use in removal of contaminants from aqueous solution. *BioResources* 8, 6523-6555.
 14. Danish, M., & Ahmad, T. (2018). A review on utilization of wood biomass as a sustainable precursor for activated carbon production and application. *Renewable and Sustainable Energy Reviews*, 87, 1-21.
 15. Danish, M., Hashim, R., Ibrahim, M. M., & Sulaiman, O. (2013). Effect of acidic activating agents on surface area and surface functional groups of activated carbons produced from *Acacia mangium* wood. *Journal of Analytical and Applied Pyrolysis*, 104, 418-425.
 16. El-Hendawy, A. N. A., Alexander, A. J., Andrews, R. J., & Forrest, G. (2008). Effects of activation schemes on porous, surface and thermal properties of activated carbons prepared from cotton stalks. *Journal of Analytical and Applied Pyrolysis*, 82(2), 272-278.
 17. Erdoğan, S., Önal, Y., Akmil-Başar, C., Bilmez-Erdemoğlu, S., Sarıcı-Özdemir, Ç., Köseoğlu, E., & Icduygu, G. (2005). Optimization of nickel adsorption from aqueous solution by using activated carbon prepared from waste apricot by chemical activation. *Applied Surface Science*, 252(5), 1324-1331.
 18. Essa, M. H., Al-Zahrani, M. A., & Nesaratnam, S., 2004. A step towards national reliance using locally produced activated carbon from dates. In *Third Saudi Technical Conference and Exhibition (STCEX-3)*, Riyadh, Saudi Arabia (pp. 291-297). https://www.researchgate.net/profile/Muhammad_A_I-Zahrani3/publication/268272667_A_Step_Towards_National_Reliance_Using_Locally_Produced_Activated_Carbon_from_Dates/links/54bcd01c0cf24e50e9409416.pdf. Accessed on January, 2019
 19. Gebrekidan, A., Teferi, M., Asmelash, T., Gebrehiwet, K., Hadera, A., Amare, K., ... & Van Der Bruggen, B. (2015). *Acacia etbaica* as a potential low-cost adsorbent for removal of organochlorine pesticides from water. *Journal of Water Resource and Protection*, 7(03), 278.
 20. Goswami, D. Y. (2004). *The CRC handbook of mechanical engineering*. CRC press..
 21. Gratuito, M. K. B., Panyathanmaporn, T., Chumnanklang, R. A., Sirinuntawittaya, N. B., & Dutta, A., 2008. Production of activated carbon from coconut shell: optimization using response surface methodology. *Bioresource Technology*, 99(11), 4887-4895. DOI: 10.1016/j.biortech.2007.09.042
 22. Guo, J., Lua, A.C., 2000. Effect of heating temperature on the properties of chars and activated carbons prepared from oil palm stones. *J. Therm. Anal. Calorim.* 60, 417-425.
 23. Haimour, N. M., & Emeish, S. (2006). Utilization of date stones for production of activated carbon using phosphoric acid. *Waste Management*, 26(6), 651-660.
 24. Haul, R. (1982). *SJ Gregg, KSW Sing: Adsorption, Surface Area and Porosity*. 2. Auflage, Academic Press, London 1982. 303 Seiten, Preis: \$49.50. *Berichte der Bunsengesellschaft für physikalische Chemie*, 86(10), 957-957.
 25. Hayashi, J. I., Kazehaya, A., Muroyama, K., & Watkinson, A. P. (2000). Preparation of activated carbon from lignin by chemical activation. *Carbon*, 38(13), 1873-1878.
 26. Hayashi, J., Yamamoto, N., Horikawa, T., Muroyama, K., & Gomes, V. G. (2005). Preparation and characterization of high-specific-surface-area activated carbons from K₂CO₃-treated waste polyurethane. *Journal of Colloid and Interface Science*, 281(2), 437-443.
 27. Herawan, S.G., Hadi, M.S., Ayob, R., Putra, A., 2013a. Characterization of activated carbons from oil-palm shell by CO₂ activation with no holding carbonization temperature. *Sci. World J.*
 28. Hussein, F. H., Halbus, A. F., Lafta, A. J., & Athab, Z. H., 2015. Preparation and Characterization of Activated Carbon from Iraqi Khestawy Date Palm. *Journal of Chemistry*, 2015. <http://dx.doi.org/10.1155/2015/295748>. Accessed on July, 2016.
 29. Jawad, A. H., Rashid, R. A., Ishak, M. A. M., & Wilson, L. D. (2016). Adsorption of methylene blue onto activated carbon developed from biomass waste by H₂SO₄ activation: kinetic, equilibrium and thermodynamic studies. *Desalination and Water Treatment*, 57(52), 25194-25206.
 30. JC (Jeddah Chamber). Saudi Arabia – Industrial Sector Overview August 2016. Saudi Arabia – Industrial Sector Overview Report, 2016. Accessed on June 30th, 2019 (<https://www.jeg.org.sa/sites/default/files/library/files/Industry-EN.pdf>).
 31. Kalderis, D., Bethanis, S., Paraskeva, P., & Diamadopoulos, E. (2008). Production of activated carbon from bagasse and rice husk by a single-stage chemical activation method at low retention times. *Bioresource technology*, 99(15), 6809-6816.
 32. Katesa, J., Jumphommand, S., Tangsathitkulchai, C., 2013. Carbonization temperature effect on activated carbon properties. *J.Sci.Techmol.* 20, 269-278.
 33. Kula, I., Uğurlu, M., Karaoğlu, H., & Celik, A. (2008). Adsorption of Cd (II) ions from aqueous solutions using activated carbon prepared from olive stone by ZnCl₂ activation. *Bioresource technology*, 99(3), 492-501.



34. Kumar, S., Gupta, A., & Yadav, J. P. (2008). Removal of fluoride by thermally activated carbon prepared from neem (*Azadirachta indica*) and kikar (*Acacia arabica*) leaves. *Journal of Environmental Biology*, 29(2), 227.
35. Liu, Q. S., Zheng, T., Wang, P., & Guo, L. (2010). Preparation and characterization of activated carbon from bamboo by microwave-induced phosphoric acid activation. *Industrial Crops and Products*, 31(2), 233-238.
36. Lua, A. C., & Yang, T. (2005). Characteristics of activated carbon prepared from pistachio-nut shell by zinc chloride activation under nitrogen and vacuum conditions. *Journal of colloid and interface science*, 290(2), 505-513.
37. Macías-Pérez, M. C., Bueno-López, A., Lillo-Rodenas, M. A., de Lecea, C. S. M., & Linares-Solano, A. (2007). SO₂ retention on CaO/activated carbon sorbents. Part I: Importance of calcium loading and dispersion. *Fuel*, 86(5-6), 677-683.
38. Moreno-Piraján, J. C., Gómez-Cruz, R., García-Cuello, V. S., & Giraldo, L. (2010). Binary system Cu (II)/Pb (II) adsorption on activated carbon obtained by pyrolysis of cow bone study. *Journal of Analytical and Applied Pyrolysis*, 89(1), 122-128.
39. Nor, N.M., Chung, L.L., Teong, L.K., A.R. M., 2013. Synthesis of activated carbon from lignocellulosic biomass and its applications in air pollution control—a review. *J. Environ.Chem.Eng.*, 1.
40. Okman, I., Karagöz, S., Tay, T., & Erdem, M. (2014). Activated carbons from grape seeds by chemical activation with potassium carbonate and potassium hydroxide. *Applied Surface Science*, 293, 138-142.
41. Olivares-Marín, M., Fernández-González, C., Macías-García, A., & Gómez-Serrano, V. (2006). Preparation of activated carbons from cherry stones by activation with potassium hydroxide. *Applied Surface Science*, 252(17), 5980-5983.
42. Özsın, G., Kılıç, M., Apaydın-Varol, E., & Pütün, A. E. (2019). Chemically activated carbon production from agricultural waste of chickpea and its application for heavy metal adsorption: equilibrium, kinetic, and thermodynamic studies. *Applied Water Science*, 9(3), 56.
43. Plaza, M. G., García, S., Rubiera, F., Pis, J. J., & Pevida, C. (2010). Post-combustion CO₂ capture with a commercial activated carbon: comparison of different regeneration strategies. *Chemical Engineering Journal*, 163(1-2), 41-47.
44. Ramirez, A. P., Giraldo, S., Ulloa, M., Flórez, E., & Acelas, N. Y. (2017, December). Production and characterization of activated carbon from wood wastes. In *Journal of Physics: Conference Series* (Vol. 935, No. 1, p. 012012). IOP Publishing.
45. Rao, M. M., Ramesh, A., Rao, G. P. C., & Seshaiiah, K. (2006). Removal of copper and cadmium from the aqueous solutions by activated carbon derived from *Ceiba pentandra* hulls. *Journal of hazardous materials*, 129(1-3), 123-129.
46. Romanos, J., Beckner, M., Rash, T., Firlej, L., Kuchta, B., Yu, P., ... & Pfeifer, P. (2011). Nanospace engineering of KOH activated carbon. *Nanotechnology*, 23(1), 015401.
47. Saleem, M., Ali, M., Siddiqi, Z., and Al Qahtani, A. S. (2017). Preparation of Activated Carbon from *Acacia (Vachellia seyal)* Tree Branches and Application to Treat Wastewater Containing Methylene Blue Dye. *Modern Applied Science*, 11(12), pp. 102-108.
48. Sartova, K., Omurzak, E., Kambarova, G., Dzhumaev, I., Borkoev, B., & Abdullaeva, Z. (2019). Activated carbon obtained from the cotton processing wastes. *Diamond and Related Materials*, 91, 90-97.
49. Schaeffer, K. E., 2002. "ASTM International Activated Carbon Standards, stock Number ACTCARBON". ASTM Committee on Activated Carbon, D-28. 2002. DOI: 10.1520/D6851-02R11.
50. Shah, I., Adnan, R., Ngah, W. S. W., & Mohamed, N. (2015). Iron impregnated activated carbon as an efficient adsorbent for the removal of methylene blue: regeneration and kinetics studies. *PLoS one*, 10(4), e0122603.
51. Shahid, M., Saleem, M., Ibrahim, F., 2011. Production and characterization of activated carbon using indigenous waste materials. *Pakistan Journal of Scientific & Industrial Research* 54(3), 152-154. [http://www.pjsir.org/documents/journals/21102011055632_PJSIR54A\(3\)-Abstract.pdf](http://www.pjsir.org/documents/journals/21102011055632_PJSIR54A(3)-Abstract.pdf). Accessed on January, 2017.
52. SIDF (Saudi Industrial Development Fund). *Industrial Development in the Saudi Arabia, Report*. Accessed on June 30th 2019 (<https://www.sidf.gov.sa/en/IndustryinSaudiArabia/Pages/IndustrialDevelopmentinSaudiArabia.aspx>).
53. Sun, Y., Wei, J., Wang, Y. S., Yang, G., & Zhang, J. P. (2010). Production of activated carbon by K₂CO₃ activation treatment of cornstalk lignin and its performance in removing phenol and subsequent bioregeneration. *Environmental technology*, 31(1), 53-61.
54. Tran, H. N., You, S. J., & Chao, H. P. (2017). Fast and efficient adsorption of methylene green 5 on activated carbon prepared from new chemical activation method. *Journal of environmental management*, 188, 322-336.
55. Üner, O., & Bayrak, Y. (2018). The effect of carbonization temperature, carbonization time and impregnation ratio on the properties of activated carbon produced from *arundo donax*. *Microporous and mesoporous Materials*, 268, 225-234.
56. Warhurst, A. M., McConnachie, G. L., & Pollard, S. J. (1997). Characterisation and applications of activated carbon produced from *Moringa oleifera* seed husks by single-step steam pyrolysis. *Water Research*, 31(4), 759-766.



57. Wong, S., Ngadi, N., Inuwa, I. M., & Hassan, O. (2018). *Recent advances in applications of activated carbon from biowaste for wastewater treatment: a short review*. *Journal of Cleaner Production*, 175, 361-375.
58. Yakout, S. M., & El-Deen, G. S. (2016). *Characterization of activated carbon prepared by phosphoric acid activation of olive stones*. *Arabian Journal of Chemistry*, 9, S1155-S1162.
59. Yue, Q. Y., Wang, W. Y., Gao, B. Y., Xu, X., Zhang, J., & Li, Q. (2010). *Phosphate removal from aqueous solution by adsorption on modified giant reed*. *Water Environment Research*, 82(4), 374-381.
60. Zhou, J., Luo, A., & Zhao, Y. (2018). *Preparation and characterisation of activated carbon from waste tea by physical activation using steam*. *Journal of the Air & Waste Management Association*, 68(12), 1269-1277.



THE EFFECT OF STRATEGIC MANAGEMENT PRACTICES ON ORGANIZATIONAL PERFORMANCE IN NGOS IN MOGADISHU SOMALIA

Abdullahi Omar Mohamed (Cagmadhige)
Graduating Master of Business Administration (MBA)
from University of Somalia

Said Abdi Mohamud (Shaani)

ABSTRACT

This paper examines the effect of strategic management practices on organizational performance in NGOs Mogadishu-Somalia. The first objective of this study was how strategy formulation effect on organizational performance. The second objective of this study was how strategy implementation effect on organizational performance. The third objective of this study was how strategy evaluation effect on organizational performance. The research design is descriptive. The sampling procedure of this study was used non-probability purposive sampling or judgmental sampling. The sample size of this study was 50 and was selected the target population 100. This research was employed quantitative data collection method whereby data was gathered by the use of closed ended questionnaires which were self-administered. The data collected was analyzed using the software called Statistical Package for the Social Sciences (SPSS) version 20 and results was shown in terms of frequency distribution and percentages. A regression model was applied to determine the relationship between strategy formulation, strategy implementation and strategy evaluation as the independent variables and organizational performance of NGOs as the dependent variable. Based on the findings of this study, the following conclusions were drawn. The results reveal that strategy formulation, strategy implementation and strategy evaluation have significant and positive effects on organizational performance in the selected telecom companies in Mogadishu Somalia. The study recommended that managers of NGOs should apply strategic management practices so as to increase their performance.

1.0 INTRODUCTION

Nowadays, the need for thinking strategically and the belief that practicing strategic management yields positive effects on the organizations' performance has been widely recognized (Joyce, P.; Woods, A., 2011). According to (Dess, G; Lumpkin, G; Eisner, A., 2007), strategic management in an organization must become a process and a single path guiding actions throughout the organization. It consists of organizational analysis, decisions and actions creating and sustaining competitive advantage. These authors define four key attributes for strategic management: directed towards the overall organization objectives, includes multiple stakeholders in decision-making, requires incorporating short and long term perspectives and, involves the recognition of trade-offs between effectiveness and efficiency. This concept explains the organization as a system in which economic resources were applied effectively with the company's functional activities coordinated around

generating profit. Strategic management brings considerable benefits not only to for-profit businesses and government, but also to NGOs (Allison, M; Kaye, J., 2005). Strategic management can have a fundamental effect on NGOs beyond the potential funding benefits (Crittenden, W. F; Crittenden, V. L., 2000). Strategic management can help NGOs build and enhance relationships with key stakeholders such as donors and partners and establish collaborations with external organizations (Abzug, R; Webb, N. J., 1999). Strategic management can be applied in different areas, such as: general management, projects management, marketing management, operations management, financial management, human resource management, information technology, management science, planning and resource allocation and, efficiency and effectiveness (Armstrong, 1993). According to, (Toma, J. D, 2010) claims strategic management as the formulation, implementation, and evaluation of counter-functional decisions which make it possible for



an organization to achieve its goals. According to, (Nag, R; Hambrick, D. C; Chen, M. J., 2007) identify seven key components of the concept of strategic management: performance, firms, strategic initiatives, environment, internal organization, managers/owners and resources. Over the last years economic and social changes and developments have increased the importance of strategic management practices a real revolution in the NGOs in the field of management (Kocel,T., 2007). . According to John M. Bryson, strategic management is “a management technique which shows what an organization does, the reason for its being and its future goals“Strategic Management for the Future”, which has come up in recent years, is a new management technique that examines the development, planning, implementation, monitoring and control of effective strategies for the organizations to reach their goals (Porter, L. W; McKibbin, L. E, 1988). . Strategic management is the set of decisions and actions that result in the formulation and implementation of plans designed to achieve a company’s performance objectives (Pearce II, J. A; Robinson Jr, R. B., 2011). Strategic management is a youthful discipline. Its origins date back to the 1960s, with its roots to be found mainly in the seminal publications by (Chandler, A., 1962).

Organizational performance is analysis of a company’s actual output or results as measured against its intended outputs or goals and objectives. Within corporate organizations, there are three primary outcomes analyzed: financial, market and shareholder value, and in some cases, production capacity performance may be analyzed. Another way of looking at performance could be the level of customer satisfaction, employee loyalty, levels and trends of revenue from operations, the profitability of the organization or its surpluses, effectiveness and efficiency in cost control, quality management and levels of wastages. (Ali, A; Abrar, M; Haider, J, 2012)

1.2 General objective

The general objective of the study was to determine the impact of Strategic Management Practices on Organizational Performance in Mogadishu, Somalia.

1.2.1 Specific objectives

- To describe the impact of Strategy Formulation on Organizational Performance in Mogadishu, Somalia.
- To identify the impact of Strategy Implementation on Organizational Performance in Mogadishu, Somalia.

- To investigate the impact of Strategy Evaluation on Organizational Performance in Mogadishu, Somalia.

2.0 LITERARUE REVIEW

2.1 The Resource Based Theory of Competitive Advantage

Resource-Based View (RBV), firms are modeled as a collection of resources and RBV is a strategic perspective that relates to the competitive advantage of a given firm to the tangible or intangible resources owned or controlled by the organization (Kamboj, S., 2015).

2.2 Strategic Management practice

Strategic management has been linked to several theories. For example, profit-maximizing and competition theory explain how organizations are based on profit-oriented activities. The ability of organizations to adapt with environmental changes in their strategies is manifested in survival-based theory, which some scholars have equated it to contingency theory. Meanwhile, resource-based theory (RBV) postulates strategic management as an important internal resource in gaining competitive advantage and achieving higher organization performance (Barney, J., and Clark, D. , 2007).

Strategic management has been defined differently by scholars due to their variety of backgrounds and context of studies. It is a process that generally encompasses three main aspects namely, formulation, implementation and evaluation (David, F. , 2012).

The concept of strategic management refers to the process of formulation, implementation and the evaluation of strategic actions which will enable a firm to achieve its objectives. The study of strategic management practices therefore emphasizes the monitoring and evaluation of environmental opportunities and the constraints in light of the company’s strengths and weaknesses (Garg, A; Goyal, P. , 2012). Taiwo and Idunnu (2010) examined the impact of strategic management practices on organizational performance and survival. The study evaluated the strategic management-performance relationship in organization and the extent to which s strategic management affected performance of First Bank of Nigeria.

2.2.1 The Effect of Strategy formulation on organizational Performance

Strategy formulation includes defining the corporate mission, specifying achievable objectives, developing strategies and setting policy guidelines. It is



achieved by reviewing key objectives and strategies of the organization, identifying available alternatives, evaluating the alternatives and deciding on the most appropriate alternative (Wheelen & Hunger, 2008).

Strategy formulation is long range planning and is concerned with developing a corporation's mission, vision and policies. A re-examination of an organization's mission and objectives must be done before alternative strategies can be generated and evaluated (Wheelen & Hunger, 2006).

2.2.2 The Effect of Strategy Implementation on organizational Performance

According to (Anyieni, A. G., 2013) strategy implementation refers to the process of allocating resources in order to support the chosen strategies. The process consists of various management activities that are necessary to put the strategy in motion, instate strategic controls that can monitor the progress and ultimately achieve organizational goals. According to (Parnell, J. A., 2010), strategy implementation refers to the action stage of the strategic management process. (Rinaldo, A. A; Solimun, F., 2017) define strategy implementation as a series of sub activities that re primarily administrative with the aim of determining how resources of the organization should be mobilized to accomplish its strategy in a cohesive manner. According to (Sushil, M., 2018), the implementation process of strategy covers the entire managerial activities such as the aspects of motivation, compensation, control process and managerial activities. Despite formulating consistent strategy being a difficult task for any management team, making the strategy a success and implementing it throughout the entire organization is even more difficult.

2.2.3 The Effect of Strategy evaluation on organizational Performance

Strategy evaluation done continuously enables a company to bench mark its progress more effectively. Successful strategies combine patience with willingness to promptly take corrective actions when necessary. Strategy evaluation should provide a true picture of what is happening and it should not dominate decisions instead it should foster mutual understanding, trust and common sense (David, 2009)

Strategy evaluation simply put is an appraisal of how well the organization has performed. Evaluation checks if the productivity has increased, profit margins, earnings per share and return on investment have gone up and if the firm's assets have increased (David, 2009).

2.3 Organizational Performance

In general, the concept of organizational performance is based upon the idea that an organization is the voluntary association of productive assets, including human, physical, and capital resources, for the purpose of achieving a shared purpose (Barney, J. B., 2002).

2.4 Empirical Literature Review

According to, (Willy, M., 2015) examined the influence of strategic management practices on the performance of Floriculture Firms in Kenya, the specific objectives were strategy formulation, implementation and evaluation on performance. A descriptive survey design was used with a target population of 21 floricultural firms, out of which 10 firms were selected by simple random sampling, and 5 respondents from each of the 10 firms purposively chosen. the researcher found that strategy formulation, implementation, evaluation and control had significant influence on the performance of flower firms to a moderate extent.

According to (Ibrahim, A. I., 2017) examined the effect of strategic management practices on performance of public health institutions in Mandera County. The specific objective of this study was to investigate the effect of to establish the effect of strategy formulation on performance of public health institutions, to determine the impact of strategy implementation on performance of public health institutions and to find out the effect of strategy evaluation on performance of public health institutions in Mandera County. Correlation analysis showed that environmental analysis, strategy formulation, strategy implementation and strategy evaluation are significantly and positively related to performance of public health institutions in Mandera County. Based on the findings the study concluded that environmental analysis, strategy formulation, strategy implementation, strategy evaluation affects performance of public health institutions

3.0 RESEARCH METHODOLOGY

The study was used a descriptive study, the purpose of descriptive research is to describe an accurate profile of persons, events or situations. In addition to, this study was used quantitative approach. Quantitative is any data collection technique (such as a questionnaire) or data

The study was conducted through a descriptive study; the purpose of descriptive research

is to describe an accurate profile of persons, events or situations. In addition to, this study was used quantitative approach. Quantitative is any data



collection technique (such as a questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data (Saunders, 2009). Was conducted through questionnaires.

The regression model indicated as shown as Follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:-

Y = represents the dependent variable, organizational performance

$\beta_0 \dots \beta_4$ are the Regression Coefficient

X1 = strategic resource management

X2 = organizational innovation

X3 = core competency

X4 = quality management practices

ϵ = Stochastic term

4.0 RESEARCH FINDINGS AND DISCUSSION

The gender distribution who participated in the study were male and female have equal opportunities in NGOs who comprised of 50% of the sample population were male while the female respondents represented 50% of the population. The information depicted below showed that male and female employees were same in NGOs.

To estimate the age of the respondents, there were three main age categories used in the study. An analysis of the data revealed that 72% which is majority of the respondents were between 18 to 25 years old, 20% of the respondents were between the ages of 26 to 33 years old. The last category revealed that 8.0% of the respondents were between the ages of 34-41 years old. The study shows that majority of the employees lie between 18 to 25 years of age while the least lie between 18 to 41 years in NGOs.

The marital status analysis indicated, 72% of the respondents were married, 28% of the respondents were single. This study shows that majority of the employees in NGOs are married.

The majority of the workforce have a graduate degree and they represent 6% of the sample respondents have Diploma. This follows 86% of the employees who have a bachelor's degree. 80% have master's degree. The table below shows that majority of the employees in NGOs hold a graduate degree.

According to the study about work experience, 50% of the employees have been with the organization for a period of 0 – 2 years, while 42% of the employees have been with the organization for a period of 3 – 5 years. and 8.0% of the employees have been with the organization for a period of 6 – 8 years. The table

implies that majority of the employees have been with NGOs organization 50% that the period is 0-2 years.

4.1 Study Variables Findings

The following presents the findings on the various study variables.

4.1.1 Strategy formulation

The research wanted to examine the influence of strategy formulation on organizational performance in NGOs in Mogadishu Somalia. Table 4.4.1 summarizes respondents' level of agreement on strategic resource management affects organizational performance. The respondents agreed that having strategy formulation on increase organizational performance. As shown by grand mean of 3.77.

4.1.2 Strategy implementation

The study sought to examine the influence of strategy implementation on organizational performance in NGOs in Mogadishu Somalia, table 4.4.2 summarizes respondents' level of agreement on strategy implementation affects organizational performance. The respondents agreed that having strategy implementation on increase organizational performance. As shown by grand mean of 3.33.

4.1.2 Strategy Evaluation

The research wanted to examine the influence of strategy evaluation on organizational performance in NGOs in Mogadishu Somalia. Table 4.4.1 summarizes respondents' level of agreement on strategic resource management affects organizational performance. The respondents agreed that having strategy formulation on increase organizational performance. As shown by grand mean of 4.08.

4.3 Organizational performance

A number of questions were asked to assess how strategic management practices affects organizational performance in NGOs in Mogadishu Somalia. Table 4.5.1 respondents agreed that Performance affects organizational performance, as shown grand mean of 3.91.

4.4 Regression Analysis

Regression analysis was carried out to determine the relationship of all the study variables when combined. The findings show an adjusted R square of (0.885), implying that about (88%) variability in organizational performance is attributed to strategic formulation, strategy implementation and strategy evaluation as shown in Table 4.7.1 The remaining (12%) variability on organizational performance was attributed to other factors that were not examined by this study.

**Table 4. 7. 1: Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941 ^a	.885	.878	.231

a. Predictors: (Constant), Strategy Evaluation, Strategy Formulation, Strategy Implementation

From the ANOVA table 4.7.2, (the model involving constant, strategy formulation, strategy implementation, strategy evaluation) is significant in predicting how strategy formulation, strategy implementation, strategy evaluation determine

organizational performance of NGOs in Mogadishu Somalia. The regression model achieves a degree of fit as reflected by an R² of 0.885 (F = 118.151; P = 0.000 < 0.05).

Table 4. 7. 2: Anova ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	18.955	3	6.318	118.151	.000 ^b
Residual	2.460	46	.053		
Total	21.415	49			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Strategy Evaluation, Strategy Formulation, Strategy Implementation

From the coefficient model results on how strategy formulation, strategy implementation, strategy evaluation determine organizational performance of NGOs in Mogadishu Somalia. The regression equation was that: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$ and the regression equation became: $Y = -2.286 + 0.774X_1 + 0.121X_2 + -0.46X_3$. This indicates that there was positive and significant effect of strategic management practices on organizational performance in NGOs in Mogadishu- Somalia.

There was positive and significant effect of strategy formulation and organizational performance (β

= 0.774; t = 2.441; p < 0.05). There was positive and significant effects strategy implementation and organizational performance ($\beta = 0.121$; t = 9.648; p < 0.05). There was no positive and significant effect of strategy evaluation and organizational performance ($\beta = -0.46$; t = -337; p > 0.05) as shown table 4.7.3.

The researcher concluded that strategic management practices have positive significant on organizational performance of NGOs in Mogadishu- Somalia

Table 4. 7. 3: Coefficient Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.286	.936		2.441	.019
Strategy Formulation	.774	.080	.900	9.648	.000
Strategy Implementation	.121	.125	.115	.967	.339
Strategy Evaluation	-.046	.136	-.051	-337	.738

a. Dependent Variable: Organizational Performance

5.0 RECOMMENDATION

The findings of this study which was the effect of financial incentives on employee performance in

commercial bank in Mogadishu Somalia., Therefore researcher recommended the following

- 1) To obtain and sustain strategic management practices, top managers of NGOs should try to



increase organizational performance by managing each dimension of its core competence i.e. shared vision; cooperation and empowerment .

- 2) Top managers should find out how strategy formulation generates strategic management practices to increase organizational performance of NGOs in Mogadishu.
- 3) Top managers should find out how strategy implementation generates strategic management practices to increase organizational performance of NGOs in Mogadishu.
- 4) Top managers should find out how strategy evaluation generates strategic management practices to increase organizational performance of NGOs in Mogadishu.

REFERENCES

1. Abzug, R; Webb, N. J. (1999). *Relationship between nonprofit and for-profit organizations: A stakeholder perspective. Nonprofit and Voluntary Sector Quarterly*, 4 (416-431).
2. Allison, M; Kaye, J. (2005). *Strategic Planning for non profit organizations: A practical guide and Workbook. Hoboken, NJ: Wiley*.
3. Ali, A; Abrar, M; Haider, J. (2012). *Impact of Motivation on the working performance of employees-a case study of Pakistan. Global Advance Research Journal of Management and Business Studies*, 4 (126-133).
4. Anyieni, A. G. (2013). *Effect of Strategic Planning on the Performance of Small and Medium Enterprises*
5. Armstrong. (1993). *USA: Nichols Publishing Company. A Hand Book of Management Technique*
6. Barney, J. B. (2002). *Gaining and sustaining competitive advantage (2nd ed.). Upper Saddle*.
7. Barney, J., and Clark, D. (2007). *Resource-based theory: Creating and sustaining competitive advantage. USA: Oxford University Press*. <http://library.wur.nl/WebQuery/clc/1882076>.
8. Crittenden, W. F; Crittenden, V. L. (2000). *Relationship between organizational characteristics and Strategic Planning Process in non Profit organizations. Journal of Managerial Issues*, 2 (150-169).
9. David, F. (2012). *Strategic management: Concepts and cases (13th ed.). New Jersey: Prentice Hall*.
10. David, A. k. (2009). *The strategic management intellectual capital. Resources for the knowledge based economy*.
11. Dess, G ; Lumpkin, G; Eisner, A. (2007). *New York: McGraw-Hall. Strategic Management*.
12. Garg, A; Goyal, P. (2012). *Striving towards strategic alignment in SMEs: an empirical analysis. Journal of Advances in Management Research*, 9(1), 12-49. , 1 (12-49).
13. Ibrahim, A. I. (2017). *Strategic Management Practices and Performance of Public Health Institutions in Mandera County, Kenya. international journal for Innovation education and research*.
14. Joyce, P.; Woods, A. (2011). *Strategic Management: A Fresh Approach to Developing Skills, Knowledge and Creatively*, . Kogan Page, London .
15. Kamboj, S. (2015). *A resource-based view on marketing capability, operations capability and financial performance: An empirical examination of mediating role. Procedia-Social and Behavioral Sciences*, 189 (189, 406-415).
16. Kocel, T. (2007). *İşletme Yöneticiliği (Business Management) (11th Edition). Istanbul: Arkan Publications*,
17. Nag, R.; Hambrick, D. C; Chen, M. J. (2007). *What is strategic management, really? Inductive derivation of a consensus definition of the field. Strategic Management Journal*, 28 (9), 935-955.
18. Parnell, J. A. (2010). *Strategic clarity, business strategy and performance. Journal of Strategy and Management*, 4 (45-61).
19. Porter, L. W; McKibbin, L. E. (1988). *Management Education And Development: Drift or Thrust Into The 21st Century? New York: McGraw-Hill, Inc*.
20. Pearce II, J. A; Robinson Jr, R. B. (2011). *Strategic Management: Strategy Formulation, Implementation, and Control*,. Chicago, IL: R. D. Irwin, Inc .
21. Sushil, M. (2018). *Strategic performance management system in uncertain business environment: An empirical study of the Indian oil industry. Business Process Management Journal*, 24(4), 1-13. , 4 (1-13).
22. Toma, J. D. (2010). *Building Organizational Capacity: Strategic Management in Higher Education (I.Baski). Baltimore: The Johns Hopkins University Press*.
23. Wheelen, T.L; Hunger, J. D. (2008). *Upper Saddle River, NJ: Pearson Prentice Hall. Strategic Management and Business Policy*.



SKILL GAP IN VARIOUS SECTORS-A REVIEW

Ms Sipra Karmakar

Research Scholar
Centurion University of Technology and
Management,
Odisha

Dr. Bibhunandini Das

Assistant Professor
Centurion University of Technology and
Management,
Odisha

ABSTRACT

Skill is interpreted as knowledge, competencies, capabilities, education and attributes to perform a task or job assigned to a particular person. It is often happens that lack of required knowledge can not fulfill the objective company or organisation. Assigned persons are unable to perform to complete the job and creates skill-gap. In this regard it is very essential to identify skill-gap in different sectors. Different sectors have different requirements of skills. It will not only help the companies to recruit the right persons, to provide appropriate training, to maximise profit, but also the new knowledge and added skills to the country's employment, self employment and entrepreneurship eco-system. A brief literature review has been studied to show the different requirements of skills and understanding of skill-gap. Different secondary sources like published journal, articles and Govt. reports have taken for the study. A brief summary has been written at the end of the paper on the understanding of the different literatures. This paper will help the readers to have a brief idea about skill and skill gap in different sectors.

KEY WORDS: Skill, Skill gap, Training, Sector skill

LITERATURE REVIEW

The term "skill" can refer to general cognitive and non cognitive abilities (e.g. information-processing skills, teamwork, and problem-solving) as well as to knowledge and abilities that are specific to a particular job, occupation or sector (Becker, 1962). According to Oliver and Turton, skills are considered as a combination of aptitudes and features possessed by an individual. It describes the person's ability to execute several activities with utmost prominence. Every work allotted to a person needs to have a favorable result in order to be efficient and match the company's standards. However, incongruity happens when the worker fails to balance the proficiencies that are needed by their organization. The labour market accommodates two different kinds of discrepancies in skills. The former is the issue of inadequate qualification that usually happens when the labour do not possess sufficient knowledge which is necessitated by the designation allotted to them in the organization. The latter happens when individuals have a different field of education while the job allotted to them has a different requirement. Chandra Shah and Gerald Burke defined the term Skill as it is associated with a particular task; a person who does not possess it, not able to perform in compare to a person who possesses it.

Skill disparity is a multifaceted occurrence. It is multifarious than educational variance. The basic possessions needed for employment are deemed as standard skills followed all around the world. In progressive nations like India, administrative schemes and strategies stresses on filling the hiatus between backward and developed countries in the monetary and communal aspects. The purpose of skill development policies aspires to conquer the problem of redundancy. Skill gap is directly associated with the employment of a person and the need for ground-breaking expertise and talents (McGrath-Champ, Rosewarne, and Rittau, 2011).

SKILL GAP IN FOOD PROCESSING INDUSTRIES

The food processing industry is the most omnipotent pillar that aids the Indian economy. A vivacious and rustic financial system needs advance connection in the structure of food processing industries. The two-third of the manpower in that industry is employed in unsynchronized sector that deals with conventional and labour concentrated operations. The food and processing industry accommodates employees of all qualifications but segregate their jobs on the basis of their educational level. In order to pace up with the industrial trends,



giant players have allowed technological intrusion and automation in its operation. The present scenario has led to copious unemployment in the organized sector; however, the remaining work population does not possess adequate skills to perform every task effectually. The industry is in urgent need of skilled manpower to manage operations related to manufacturing and processing sections. (Varshney and Ghosh, 2013). In Sea-food sectors there are a number of laboratories available to check for viral infection in shrimp seeds (this process is applicable for culture prawns/shrimps), the procedures needed to be standardized. The results in each laboratory comes different and farmers at a loss in the absence of authentic diagnostic results. (Swamy 2009). NSDC Report(2011) mentions inadequate technical knowledge about the new machines and the associated aspects of maintenance are the main causes of skill gap in Seafood processing sector.

Singh (2019) stated that in order to assure that the manpower is efficient, skilled and sufficient to execute the job; it is very important to recognize the skill gap. It assists the organization and its workers to locate the absent skills and strategise ways to gain them. The study investigates about the scarcity of talent among the human resources of Vasudhara Dairy (AMUL), Nagpur and makes them aware about it so that they can work on it for better performance. The outcome showed that majority of the employees in the area suffered from skill gap issue.

The manpower supervision is a critical determinant for the effective implementation and persistence of superiority and that the contribution is not solely a matter of choice but a mandatory addition. Therefore, there is a positive relationship between an effectual human resource and excellence in operations. The quality management can immensely change the method of human resource management whereas accomplishment and efficiency in the quality can boost the morale of employees thereby affecting the organizations' long term goals. Especially in a food industry, the quality highly depends on the conduct of the human resource. The swift progression in terms of technology, international trade and other factors has compelled the industry to alter the way of doing business. The transformations are seen through the diminishing of employees who fail to own specific set of skills. There are various specific and scientific based food processing industry requirements. The elevated the quality of the manpower, the better would be the outcome. Many researchers have promoted the function of a knowledgeable, tamed and well-instructed employee has immense contribution in yielding success to the organization. The practical rejoinder from the administrative wing was about supporting the labors' ability that can in turn help in the prosperity of the food processing industry. It is

equally vital to make an entrepreneurial ambience as the domination over skill set is foreseeable (Khan, Ahmad and Jamshed, 2019).

According to the report of **Integrated Coastal Management (Dec. 2003)**, the major problem with Indian Marine fisheries is that they don't have managerial knowledge of the sector

Murthy and Yogesh (2014) and Bharadwaj & Rajonwar(2017) have conducted a research in food industry to find out the reason of skill gap in this industry and mention that the optimistic enlargements in the food processing arena have led to trepidation in the impending scarcity of skills due to difference between the need for certain skills and its scarce supply. Since there has been a dearth of high skilled labours, low-skilled or unskilled labours have appeared as a significant feature boosting the competitiveness of the food industries of India. The deficiency of skill and awareness, unobtainable contemporary machines, inadequately skilled labour force and administrative assistance are few of the aspects that can hamper the food processing units, unfavorably. Therefore, it is needed to design a well-equipped framework for the overall advancement of the food processing industries by the governing body. Professionals should cater advice to the administration regarding the accessibility of different kinds of amenities to the organizations and its employees for the manufacturing process. The government should also help in managing all sectors including the training of the manpower in order to yield desired results. The various governments funded training agencies monitor the employees working in the food processing units from time to time to foster them with the latest skills. For an improved performance of this sector, a thorough scrutiny should be done by the administrative body.

Zia (2016) conducted a research on the framework and policy measurements on food processing sector and found out that in the supply management system in food processing requires skilled manpower so that adequate strategies can be framed to connect the agricultural farmers with the business conglomerates for contract farming without harming the interest of the farmers. The obstacles faced by the food processing segment are sundry and difficult and should be concentrating on various aspects to develop major market advantage. A set of irrepressible and convenient reasons has harmed the expansion of the sector and has also worked as an obstruction in attaining its prospective. With food processing sector being incorporated among the 25 chosen arenas that produce goods nationally, the industry protrudes plenty prospect and latent for development. A well-equipped food processing unit is anticipated to expand farm gate prices, minimize wastage, guarantee value addition, support crop



expansion, and create employment prospects and export revenues.

SKILL GAP IN THE BANKING SECTOR

The banking technology is continuously advancing and is leading to become the ultimate drivers of the business model. Full-scale digitalization of the branches has facilitated the banks to execute most of their operations in computers that in turn assists in work efficiency. This is known as the first stage of the acceptance of technology and is successfully adopted by banks, universally. The implementations of information technology to perform the front office activities are also successfully taken up by the bank employees. The particular stage has also witnessed the rejuvenation of human resources in terms of updated skills at a primary level. With the growing patron demand for swiftness, competence, and reduced cost through the utilization of technology that has multiplied its purpose. The second stage aimed at achieving network among different banks to assist easy flow of operation for the customers. The banks conduct successive training for their staffs to meet the recent technical needs. (Kamath, Kohli, Shenoy, Kumar, Nayak and Kuppaswamy, 2003)

The high officials working in the banking sector considers the ability to communicate interpersonally as the desired talent of an employee to prosper in this sector. In various banking institutions, the design of work is based on synchronized work to process a strict fiscal transaction. Moreover, communication with the common public, customers, employees and higher officials requires listening, interpersonal and communication ability for improved presentation in a demanding, multifaceted and dynamic atmosphere of banks. (Abbasi, Ali and Bibi, 2018)

Ramadi (2016) proves that a general discrepancy prevails between the talents that are desired by banking organizations and owned by aspirants. The research findings are similar to other sectors like engineering, real estate, tourism, accounting and business where employees seek for an employment in different industries. Empirical studies show that there has been a gap between the expectation and the performance among accounting and business employees in Pakistan. The reduced ability to perform is a crucial deficiency that restricts freshers to join any organization. Rais, Acharya and Sharma (2013) reflect that there is an extensive hiatus among the requisite and the accessible skills. If India needs the power to be prominent in the international market, there is an immediate need to fill up the gap. There has been an escalating demand for knowledgeable manpower especially in unorganized sectors than the organized sectors.

Organized industries do not need large labour forces because their mode of operations is limited unlike unorganized sector. The shortage of expert manpower and knowledge employees is an enormous crisis faced by the food processing industries. Various optimistic advancements in the particular sector have led to the trepidation regarding the upcoming dearth of proficiency because of the disparity between the demand and supply of certain dexterities. However, lack of experienced, semi-skilled and inexperienced workforce has grown as a severe aspect affecting the spirit of the Indian food industry. About 58% of the total employees in the industry are disgruntled with the technological abilities and expertise required for their sector. Around 72% of them protruded their dissatisfaction with workers' capability to utilize accurate and contemporary instruments, apparatus and other technicalities explicit to their designation.

Greensea, Krishnan, Saravanakumar, Prakash, Ananthan and Qureshi (2017) mentions that the fisheries technological instruction is usually given to the students who are powered by the aquaculture or processing sectors owing to the correspondence to the delivery and demand for skilled industrial human resources in fisheries. Opposing to the inclination of the organization to educate workers of the department in fields of fabrication, dispensation, price accumulation and promotion and export, the national learning classification seem to stress more on engendering fisheries alumnae in expectation of their assimilation by the sector. The research protrudes that this method is prone to produce graduates who are not fulfilling the necessities of the sector and the subsectors. Consequently, the exploration reflects the awful necessitate reorganizing of fisheries learning in India. The research offers few leads in the hiatus that prevails among the dexterity obligation in the industry and the fisheries edification presently caters to the pass outs. It is above the compass of the work to make any remark on the reformation in fisheries instructions that requires bridging the prevailing gap and segregates the need of the industry and abilities owned by the fisheries sector.

Makombe (2006) primarily states that a minute amount of the research is done on entrepreneurship related microenterprises and female upliftment in progressing nations. Secondly, a lot of research has been done on have been conducted on fortification of women in South-East Asia and also in few parts of Africa. The study has augmented the treatment on Africa in association to the enhancement of women. Thirdly, the recent research has established the effectiveness of free enterprise expansion schemes for the micro entrepreneurs dissimilar to what few of intellectuals have proposed. Fourthly, it has publicized which is analytically noteworthy relationship between private enterprise



enlargement and participation in trade relations and contribution in corporate dealings. Lastly, it has long-established the vision by several researchers that communal authority is infrequently a uncomplicated substance of material possessions.

Kandel and Parrado (2005) believe that the insinuations for the discussions on the consequences of migration on inhabitant manpower's tenure. Modern apprehensions that are beyond native employer's joblessness and its recuperation presently happening is aggravated by the reality that a lot of fresh job offers supplementary to the American financial system in the present years have been occupied by refugees. The progression has been traced by societal scientists and the normal people in macrocosm, powering crossness and antipathy for refugee employees. Such attitude is distantly established on the basis of information. The result adds to a huge empirical study that shows immigrants are not alternatives for inhabitant human resources. As a substitute, it emerges to be an unbalanced, disagreeable, and frequently low-paid work in dilapidated departments of the financial system that highly educated workforce find unappealing. More concentration to the kind of work that the American market is building, and how those jobs can manipulate the requirement for native workers, may show more enlightenment than the stress on the tradition and contemporary masterpiece of present jobs.

Mason, Ark, and Wagner (2014) states that the capabilities and skills needed for this work escalates rapidly as the amount and intricacy of merchandises made is augmented. Parallely, little sizes and the utilization of exclusive elements decrease the range for expanded 'trial runs' with single multiplicity prior to entire manufacturing commencement. In effect to the numerous German organizations dealing in small and medium lot construction of superior quality cookies that are made by highly experienced bakers. Contrarily, in the British organizations, the title of work appointed to them was known as 'semi-skilled' as it showed its basic direction towards enduring period of comparatively simple variety of products. In this kind of fabrication, the necessity for validation and ability owned by the workers is diminished. It is specifically the case in industries where labor-intensive screening and modification has been appendage or removed by the automated techniques. Even though, in some situations, there is a persistent requirement for some physical intrusion to uphold the reliable merchandise and expenditure may take place if workers are not wholly aware of their proceedings or functions. In the case of heavily technologically abled British industries concentrating in mass invention of quality biscuits, it was still regarded compulsory for procedure employees to do what they are assigned to do on specific manufacturing lines just to match with

potential troubles that is predicted to increase with the superficially unsophisticated goods.

SKILL GAP IN AGRICULTURAL SECTOR

Gollin, Lagakos, and Waugh (2013) believe that an oddly huge agricultural efficiency difference can still be traced in India. The salary of non-agricultural low-paid workers is twice of that is received by an agricultural labour in an archetypical nation and is even more in the progressing countries. The allusion is that there is a leap in the income structure of workers who make a shift from the agricultural sector seeking economic stability. The researchers discover enormous and unrelenting advantages accumulating to the treatment households and its involvement, incorporating substantiation that they are prone to send recurring refugees to developed areas for a longer period of time, right after the preliminary intercession. The immigrant workers along with their families face a bump in their household income than the ones who still continue to reside in the remote areas.

Augmented venture in the agriculture and rural enhancement along with the elevated endeavor to magnetize the younger generation towards the agricultural sector, it is important to create service opportunities for them and encourage enlargement in a dilapidated arena. The huge amount of youths are attracted in order to facilitate fiscal expansion through agriculture and paucity alleviation, still they are often disregarded and underestimated when development takes place in the sector. Modern techniques are required for attracting young population to utilize their skills and add to the fresh and ground-breaking solutions to glitches. The primary step is to encourage the youth and empower them to be an active element in ascertaining their career in agricultural upliftment. By amalgamating the results of the research in the syllabus followed by the university, it becomes an improved scenario of the well-being, understanding and ambitions of the younger population, making the agenda more enticing to impending aspirants. It also assists in building graduates who are well-equipped with the requirements of the organization, making them more efficient in this sector, aiming towards a better agricultural investigation to sustain growth (**Paisley, 2012**).

Yusuf, Lategan and Masika (2014) mentions that the home-grown poultry making has been an area that has remained unrefined as farmers do not own any professional understanding of technicalities and abilities needed for a good agricultural enhancement. There have been no cognizant attempts made by the conservatory services or educational institutions to expand the Indian poultry scenario. The awful expertise of the



governing body also failed to work for its development. The condition has made several confrontations that as an outcome, has built a restrained development scheme for manufacture as farmers are only abled with limited and traditional knowledge of production. The remaining disadvantages like the restricted hunting feed resource base, threats and deprived accommodation have obligated the farmers to stay inactive and cautious to spend and tremendously careful in extension. Due to the unfortunate monetary competence, the industry still remains under the control of the farmers who fear to take big risks. They are satisfied with the little conventional poultry production, thereby avoiding huge transformations. The current situation may make the poultry industry to stay unsophisticated. If the insufficient competence enlargement plan for farmers, additional helpers and the other active agents in the manufacturing, administration, and promotion are aligned properly, things will remain indifferent.

SKILL GAP IN HOSPITALITY SECTOR

Marchante, Ortega and Pagán (2005) aim to scrutinize the local aspects of vacancies that are difficult to fill and the lack of talent in the hospitality sector. The conclusion suggests that the hourly net wages is the key implementation done by organizations in order to decrease the ratio of vacancies that are hard to fill and scarcity of skills. But there are various facets harming the situation of local labour market that includes; redundancy rates, the altitude of trade movement, real estate value and the location of the organization in accordance to the major provincial sightseeing destinations can considerably have an advantageous impact on the positions that are difficult to fill and skill gaps.

Mehdi (2018) identifies the kind of skills that are needed in the hospitality sector in Assam. He also focuses on the skill gap that exists in this sector. There has also been an effort to bifurcate the district-wise necessity of labours in this sector. The upshot is proposed to advance the skill of labours thereby improving their in the specified area of operations. The study will further stress more on district-based manpower requirement in Assam for tenure of 10 years started from 2011–2021. The research will create a viaduct between the known skills and the necessary abilities needed the hospitality organizations in Assam.

Campos-Soria and Sánchez-Ollero (2015) in their paper focuses on two important phases. The former deals with the consequences of qualification disparity on the employee's professional mobility in the hospitality sector while the latter measures the involvement of educational divergence and workforce itinerancy on gender-based wage

dissimilarity. The results prove that there is an increased amount of outer mobility recorded in this sector more than inner mobility and is also denoted as the chief reason of gender-wise wage variation. The practice of women labour prejudice still prevails that is manifested to amend women labour development just like men. The lack of knowledge has little impact on the domestic and peripheral mobility of the employees. It is concluded that apart from having adequate skills to master the work, it is also needed to eliminate gender bias in order to facilitate organized horizontal separation of work and external movement of the employees.

Messum, Wilkes, Jackson, and Peters (2016) believes that concentrating on the perception of the fresh graduates who've entered the industry, can be highly effective to facilitate the enhancement of the course of study. It is considered that generic, academic knowledge is more important than the skills gathered in the workplace, failing to which significant skill gaps are traced. Institutional rating of the educational ability of students is needed in the healthcare management is usually more relevant than the individual rating of their personal skills, to explore potential gaps. The present differences may arouse educational arguments about prospectus improvement in the healthcare sector. The researchers can also focus on the educational necessity required by present workers and the factor that recent joiners consider to be relevant in an organization is the promotion of their involvement with knowledge tools. Additionally, if the course is well-versed by regulation based facts, it might aid to enlarge service results. The requirement for organization of institution with sector was established because effectual appointments were known to be the greatest characteristic for educational expansion. Nevertheless, resourcing, management and increased educational rendezvous might be required to provide genuine occurrence maintain by regular evaluation.

Stowe, Haefner and Behling (2010) stated that an integral feature of healthcare executive performance is the supervisor's aptitude. The exploration suggests that people meeting the job roles; do not usually own appropriate administrative qualifications or managerial experience in healthcare. This study focuses on expanding previous investigation to different part of the healthcare liberation process of managers, administrators and executives within a wider range of healthcare associations. The research also illuminates and extends the healthcare sectors through a broader range of superintendents, directors and managerial.

The study mainly gives light to the divergence of the health care skill gap. Usually, scarcity in talent can be equally proportional to the educational accomplishments. Few of the dissimilarities can be elucidated through lawful certifying necessities that tend to constraint the contribution by providing an



obstacle for the admission of certain professions. More widely, practitioner and technical work that usually requires more academic knowledge the healthcare assistance roles are more prone to skill deficiency and therefore caters more assuring employment chances. Employees with technological intervention like radiologic technicians, medical sonographers, laboratory technicians, paramedics, occupational and physical therapy technicians, and health information technicians, where an individual needs proper scientific idea before performing their duty are seen to be experiencing demands that surpasses limited supply. It is also relevant that certified nurses, the biggest healthcare occupation, is also facing crisis in producing efficient individuals as the educational proficiency has fallen from associates' degree level to the bachelor degree level. Providentially, several healthcare institutions provides lucid didactic corridor that is structured upon past assignments and permit shift of recognition, so employees can grow in their career with steady employment opportunities and increased revenues (Kimmell and Martin, 2015).

Safriet, B. J. (2002) states that a fissure has been developed in the American healthcare industry among the capabilities of non-physician care contributor and the tasks that are performed by them under restrained administrative guidance. Leading provider factions expansively lobby state representatives to curate scope-of-practice control, which bestow elite power on the sectors of curiosity and eliminate the remaining competent members from performing the job. Correspondingly, the abolished service providers' knowledge remains unused, impacting the universal disorganization. The study stresses on the enlargement of the present area of practice and conversing probable remedies along with an assessment of present modification in Colorado and Ontario, Canada.

Transversely, the universal healthcare institutions are practicing fundamental alteration in policies during the time of unparalleled economic confrontation. Contextually, more flight should be given to the structuring aptitude and competence for development as the important approach. International investigation portrays that the general feature of healthcare organizations is to cater exceptional performance in terms of price and excellence is a methodical tactic needed for competence building for progress. The exploration finds the adequate point in order to enhance skills in the healthcare sector and authorize vanguard employees to bring difference in the way of executing operations. A sustainable and effectual way of learning can bridge the skill gap and facilitate the complete healthcare personnel, create a collective association of revolutionizing agents, to uphold the liveliness for transformation in the long run and supply the successful cost-effective and

superior outcome that are needed for people (Bevan, 2010).

SKILL GAP IN THE INFORMATION AND TECHNOLOGY SECTOR

Paul (2018) considers shortage of skills to be a vital societal problem that should be evaluated precisely in all IT companies. The researcher aims to examine the issues related to the discrepancies of skills in workers and provide probable clarification in order to fight the hurdles concerning to shortage of skills in labours, in an effective manner. It will also assist the organizations in locating the assets of the organization and take necessary steps to keep them productive in order to diminish the exit of skilled manpower. The research commences with the significance of lack of talent in a theoretical aspect. The glitches are emphasized and evaluated. The determinants that form an essential part of the scarcity of skills are described. 'Tata Consultancy Services' and 'Infosys' have been taken as an area of study. Abundant explanation and approaches were illustrated to manage the troubles integrated with talent gap.

Anjum (2015) states that joining a job that is poles apart from the course of study of an individual in India, is a common phenomenon. Each passing year, a great amount of engineering graduates from different disciplines are seen to be a part of the IT workforce as the domain recruits people in mass. The condition is also a clear mark of the unavailability of appropriate jobs in core sectors. There are pools of candidates from mechanical, telecommunication, electrical and civil engineering branches who are witnessed to take up an IT job that doesn't suit their area of interest. Often disappointed with work, these individuals make a move for a better prospect after serving a year or two in this industry. Many of them fail to get a position in their desired field due to the non-recruitment in other sectors. There is also a huge obstacle associated with the switching of jobs from IT to other sectors, as recruiters will not value their qualification but will judge them on the basis of their previous work experience leading to no employment. Finally, unsatisfied workforce with restricted knowledge will be forced to work in the IT domain and will fall short to achieve the desired results thereby hampering the performance of the organization.

Alsafadi and Abunafesa, (2016) states that the scarcity of a huge collection of moderately cost-intensive IT manpower can reduce Saudi Arabia from being a spirited offshore IT resolution organizations that caters technical assistance to national and international markets. The research provides an inclusive breakdown of the ICT knowledge that is needed to work in needed in small companies and recognizes the breach among its necessity and the



ICT abilities provided by the pedagogical institutes in Saudi Arabia. The process undertaken categorizes the prime ICT know-how group, the skills that are provided by restricted instructive establishments and the capabilities that are needed by the present ICT market and assess the skill gap with the help of an economic-theory driven method. The final results show that organizations and educational foundations have an amalgamated effort to fill the lag through appropriate knowledge and training schemes.

Aasheim, Li, and Williams illustrates that at the individual dexterity level, staff and IT professionals' points out certain dissimilarities in the comparative significance of the capabilities required by fresh employees. Particularly IT officials stress more on the hardware concepts, operating systems, entrepreneurship capacity, crisis management ability which is not extensively taught by teachers. The companies also focus on the academic grades, software knowledge and tenure of work executed in a practical ambience. Though, when the brim level categories of technological skills, managerial skills, individual skills, intellectual skills and practice are taken into consideration, there is no major discrepancy between institutional staffs and IT professionals' awareness of average significance as both focuses on strengthening the skills of entry-level employees.

Littlejohn and Stefan (2016) state about the radical customary alteration happening in higher education in United Kingdom. The ingredient of the fresh transformation is the implementation of the fresh communication and information technologies (C&IT) like World Wide Web (WWW) that is required for instruction, education and evaluation. Various researchers have restrained knowledge of the web that is needed for training and erudition and recognize that the utilization of modern techniques that needs to reassign conventional instruction process into a digital arrangement, with no consideration for the fundamental educational proposition. The present exploration with instruction personnel has given approaching into indispensable talent and dexterities needed to strengthen the utilization of information and technology which is vital in original studies. The particular paper demonstrates an investigation of research carried out with the assistance of academic staffs to resolve the character of teacher and student's ability to perform C&IT in their learning process.

Patacsil, Lourrine, and Tablatin, (2017) in their research paper recommends a capability slit method that makes use of the people's experiences in the internship to evaluate the relevance of Information Technology (IT) employee experience gap as professed by the students in this sector. The participants of this research were students from the IT background who have registered themselves for internships and also the ones who've monitored the

IT interns in the industry. It was seen that students who've prior internship experience were selected by different organizations as they were well aware of the practical operation in this field. The companies failed to choose the students who weren't capable enough to meet the industry standards. The outcome suggested that cooperation and communication is an imperative soft skill that should be an integral part of the IT students as alleged by the participants. However, there has been no noteworthy disparity found in the insight of the respondents on the basis of the relevance of soft skills. However, there was an immense amount of discrepancy found in reflecting the importance of hard skills. According to the perception of IT students, hard skills were their topmost priority whereas industry people did not pay much attention to it. The research depicts that every institution should augment the soft skills and primary stage hard skills element in their syllabus.

Sengupta (2006) states several organizations are providing guidance to fresh faculty members, presenting courses modified as per the industry standards and enhancing college laboratories and libraries. They are hastening to get initial choice of budding engineers even before they have finished their course of study. They are getting influenced by small, distant institutions that have never been popular. The nation's most flourishing expertise apprehensions cannot purvey to employ only from renowned Indian education institutions. It is not expected out of fresh graduates to act professionally on work floor. Majority of the organizations has the provision for in-built training of two to six months in order to create a productive workforce. The beginners in this industry have been given an average hike of 10-15% in their salary. Whereas Nasscom, that assists companies to subcontract employees have faced a deficiency of 500,000 experts in the IT sector. The shortage of skilled labour in this arena has become a huge matter of concern.

Ayofe, Ajetola, and Oyewole (2009) mentions that skill development is an important element usually portrayed as an individual agenda or incorporated in other subjects. The inclusion of skills in Information and Technology is referred to as a strengthened, self-assessing, enduring erudition, explorative capability, time management skills and critical thinking skills etc. These rudiments are effectually structured in the set of courses instead of being an individual matter of discussion. While closing the difference and transforming the area of education, several nations focused on this matter by initiating a firm technical constituent in the course curriculum followed by different universities. It usually comes in various forms, expansively catering students for different course related to IT, approach towards work and ethics associated with it paired by a succeeding assignment in engineering and



marketable organizations, where there can be an immediate scope for practical work knowledge.

SKILL GAP IN MANUFACTURING SECTOR

Javdekar, Watson, Kapilow, Bograd, Boyer, Zeid and Duggan (2016) portrays that a successful manufacturing company raises the amount of steady, well-paid jobs owing to the enlargement of the US economy. The manufacturing sector is known to be the fifth biggest employer in Massachusetts and gains profit from the state's expanded economy. Nonetheless, many states in the US constantly reports a breach in skills that leads to the dearth in qualified labours mounting to innumerable vacant position in this segment.

Ranasinghe, Madurawala, Su and Senadeera argued that there is a huge shortage of unprofessional labours in the manufacturing unit of Sri Lanka. The paper is an effort taken to discover this proposition in a national scale. The research elaborates the condition of the deficiency of professional labours in three proportion, that are; existence of unoccupied vacancies, permanence of vacancies and number of available vacancies. The World Bank enterprise analysis for Sri Lanka proved that there has been reliable validation of the extreme lack of labours in the manufacturing arena.

Gupta & Agarwal (2018), conducted study in power sector in India and found that various modes of training like short term, long term and workshop, graduate and post-graduate programs. The industry traced out the future requirement and power sector skill council is working for imparting skills and increasing the employability ratio.

SKILL GAP IN THE TEXTILE INDUSTRY

Kukreja (2018) in his study mentions about the present trend of the nation that runs on modern skills. The country faces a contradiction in-between lifting up the loopholes in the proficiency of the employees and the joblessness or inappropriate employment among highly qualified workers. While the deficiency in their dexterity due to lack of education is certainly a matter of apprehension while highly educated individuals tends to utilize their skills less for jobs that are inferior to their capability and that also diminishes the scope for workers who are designed for that job.

Ascloy, Dent and Haan (2004) states about the urgency to escalate productivity level of labours in the textile industries. The aforementioned activity can be achieved by making arrangements for proper proficiency training and increasing the technical know-how of the workers thereby facilitating smooth operations for textile industries in nations that face frequent hindrances of loosing orders.

Morris and Reed (2008) focus on the paucity of creative employees who have been recognized by the miscellaneous sources as a significant and inadequate skill deficiency. Nonetheless, there is a severe issue with the initial training of artisans in the creative sector. It is not being sufficiently dealt with the present implementation of agenda followed in most of the organizations, by not addressing the issue. The deliberate trainee graduates are a key provider to the unceasing dearth of technological knowledge in the sector. A large number of organizations articulated great displeasure in the method in which many textile industries have emphasized on the importance of instruction given to shop floor workforce. When resources are limited, interferences should not be neglected. Considering the huge discrepancy of abilities faced by the sector, the significant consequence of increasing the rate of dexterity in the manufacturing process and the inadequate obtainable possessions to commence the activity, the accumulation of capital to train the shop stewards is predicted to be exceedingly challenging. There is a minute justification for signifying the distribution of the necessary funds to the union instead of the organizations single-handedly taking the responsibility to train their employees.

Kiruthiga and Pongiannan (2018) states that the textile industry in India has a prominent position in the world's textile market. Yet, technical backwardness is one of the key issues that obstruct their growth. Tirupur is known as the highest exporter of fabric, exporting more than one hundred cotton, semi-fashion, middle price segment of casual wear readymade garments which are usually categorized as T-shirts, men's shirts, ladies blouses, ladies dresses and skirts. The biggest benefit of this industry is its service prospective at cost-intensive methods. Skill gap prevails in areas where there is deficiency of sufficiently trained employees obtainable in the labour market. Employment complicatedness can be an indication for the dearth of skills but they can also be regarded by collegial functioning situations or ineffectual appointment activities. Researchers define directorial capabilities as dedicated technological comprehension in few job roles where administrators have to carry out their duties. Those skills are a collective behavior that adds to valuable job presentation and without its presence; the managers do not endure any effects.

Ali (2008) state that there is a presence of considerable prospective for development in the manufacture of personnel in the ginning industry. Fewer yields can be accredited to numerous aspects. Firstly, in the Seth custom, the prime most reason for death in production of more manpower in the ginning sector. Secondly, the deprived structure of instruction and expansion. Outcomes show that no individuals from the ginning industry have been a part of any



training programme previously. Therefore, there is a dire need for preparation of the workers and administrators of the industry are required, especially in areas associated with personnel supervision. Lastly, the unfortunate method of disseminating facts among the workers in the ginning factories. Assistance in the distribution of information can support enhanced understanding, improving skills and enlarging outlook towards work. Hence, this is another area of major skill gap that needs rectification.

SKILL GAP IN EDUCATION SECTOR

Skevi, Szigeti, Perini, Oliveira, Taisch, and Kiritsis. (2014) states that in the industries of the upcoming structure, competitive ICT enhancements that have been achieved by the sector, ignite the requirements of primary level learners that heads to a fresh and comprehensive learning, practice and revised functions principally related to extremely efficient manpower. The paper mainly discusses the analysis of the reasons that has escalated the need to locate skill gap in the European market worldwide production, ahead of assessing functional explanations. Absent responsibilities and correlated industrialized knowledge that is needed for the progress of industries in the future are then recognized, on the basis of surveys that reflect the opinion of industrial stakeholders discrete in the global scenario.

Oviawe, Uwameiye and Uddin (2017) states that technical vocational education and training (TVET) depicts purposeful interference to enhance the scope of learning which in turn would make people more pertinent and industrious in chosen arenas of financial and technical activities. To fulfill the demand of the modern epoch workforce, every organization should build effectual employees who possess profitable capabilities and can operate in self-reliance. This is a mandatory criteria followed by every industry, therefore TVET institutions should join forces with the organization and work towards reducing the difference. The exploration elaborates the notion of practical training in TVET, perception of workplace-school partnership in order to provide accurate knowledge to students in the institutional setting and prepare them for the corporate world.

The significance of pragmatic skills in creation and industrialization arenas is approved by decision of two forces; industrial operations and its enhancement. The industrial operations envelop obligatory information for indulgent and implementation of marketable activities. Advancement is associated with skills and is imperative for vocational development in definite sectors; moreover, it can be stated that abilities raise applies to any know-how concentrated organization that look for adaptability through structured expansions. It is not astonishing that business

operations and its advancements determine in the meta assemble directorial achievements in the field. At a higher administrative stage, managerial revolution and practicability is based on the industrial mechanisms discernment and the empirical erudition derivative from scheming commercialization trail for multifaceted technical novelty (**Pisano, 1994**).

SKILL GAP IN MISCELLANEOUS SECTORS

Oseghale, Abiola-Falemu and Oseghale (2015) focused at analyzing the present condition of a construction industry's talented manpower, the reason for the increasing incidence of scarcity in efficient workforce and its consequences faced by these industries. The study scrutinizes the highly important determinants that are accountable for the paucity of labours, they are; no apparent carrier course, soaring mobility rate of the human resources and minimum wages. The exploration added that construction industries do not take enough initiative to train their personnel and highly knowledgeable individuals refrain to choose this as a career. It was observed that these industries pay additional amount of money to the existing skilled labours in order to hold them back due to its shortage.

Shah, Hussain, Hussain (2017) depicts the issue of skill disparity in the ship breaking industries situated at Gaddani, Pakistan. After the initiation of China and Pakistan project in China Pakistan Economic Corridor (CPEC), there was a noticeable advancement in the pattern of all area of operations that are associated with it. However, ship breaking industries were still overlooked. The prime center of this research was to improve the security procedures, edification, fitness and requirements of the employees in this sector. If all the methods are properly addressed along with adequate training facilities provided to labours in order to keep them up-to-date with the company's policies, the sector will add more to the GDP in various ways in relation to employment of abled workers and will also create effectual results with less numbers of accidents and faster mode of operation.

McElwee (2015) states that the function of a farmer in Europe is transforming and he is getting exposed to advanced technologies in order give a tiff competition in the spirited market. The agricultural requirements are changing and people employed in this business are developing entrepreneurial skills. However, a farmer skill enormously differs from the skills expected from an employee working in a multinational. The present changes have eased the process of farming to a great extent. Still, there are certain practices that needs sheer technical interference for a better productivity, hence farmers with less productivity tends to lack behind in the competitive market.



Section Summary: Skill-gap is present in almost all sectors across the globe. A developing country like India is a promising country where opportunities are present to become fastest growing country. The literature review reveals that India needs to develop its strategies to overcome the gaps present in the skill development policies. India mainly suffering from execution of own policies which are adopted by Indian Govt. The different other developed countries are much flexible in terms of execution and get support from their Govt. Degree courses have no scope to teach skill development classes where it is applicable in other developed countries. Education policy is to be revived in such way that the gap between acquired knowledge and required knowledge must be minimized. Few factors can be considered as a reason of skill gap like Technological advancement, Competitive environment, Emergence of specialised skill needs, Inadequate training levels. The number of formal organizations are less and labour laws are not being followed properly. Skill gap is present in most of the manufacturing sectors and it is suffering from vicious circle. India does not have the proper skill gap measurement scale which is very much required to understand the condition of labour market. The country's low skill intensity, and low education attainment present a major challenge in preparing the workforce for India's future.

REFERENCES

1. Ramadi, E., Ramadi, S. and Nasr, K. (2016), "Engineering graduates' skill sets in the MENA region: a gap analysis of industry expectations and satisfaction", *European Journal of Engineering Education*, vol. 41(1), pp. 34-52.
2. Oseghale, B.O.; Abiola-Falemu, J.O.; Oseghale G.E. (2015). *An Evaluation of Skilled Labour shortage in selected construction firms in Edo state, Nigeria*. *American Journal of Engineering Research*, vol. no. 4(1), pp. 156-167
3. Shah, S. A., Hussain, H., and Hussain, M. (2017). *Skill Gap Analysis in the Ship Breaking Industry of Pakistan*. *American Journal of Industrial and Business Management*, vol. no. 7, pp. 1244-1254
4. Kukreja, P (2018). *Skill mismatch and returns to education in manufacturing: A case of India's textile and clothing industry*. *Indian Council for Research on International Economic Relations*, p. 364.
5. Ascloy, N., Dent, K. and Haan. E. (2004). *Critical issues for the garment industry*. *Stichting Onderzoek Multinationale Ondernemingen (SOMO) Centre for Research on Multinational Corporations*.
6. Javdekar, C., Watson, E., Kapilow, V., Bograd, M., Boyer, P., Zeid, I., and Duggan, C. (2016). *Closing the Advanced Manufacturing Talent Gap*. *Procedia Manufacturing*, vol. 5, pp. 1197-1207.
7. Ranasinghe, A., Madurawala, S., Su, J. J., Senadeera, T. *An Empirical Investigation of Labor Shortage in the Manufacturing Sector in Sri Lanka*. *Griffith Business School*.
8. Paul. S. (2018). *An Analysis of the Skill Shortage Problems in Indian IT Companies*. *Social sciences*, vol. no. 7, p. 159.
9. Anjum, L. (2015). *Bridging the Skill Gap*. *State Times*.
10. Khan, S. A., Ahmad, S., and Jamshed, M. (2019). *Role of Skill India Initiative in Indian Food Processing Industries*. *Economic Affairs*, Vol. 64, No. 1, pp. 77-84.
11. Varshney, H. K., and Ghosh. D. (2013). *Employment Intensity of Output: An Analysis of Non-Agriculture Sectors Food Processing Sector*. *Institute of Applied Manpower Research Planning Commission*.
12. Murthy, T. M. S., Yogesh, M. S. (2014). *An overview of Food Processing Industry in India – Challenges and Opportunities*. *Online International Interdisciplinary Research Journal*, vol. 4(5).
13. Bharadwaj, R., Rajkonwar, A. B. (2017). *Financing for Skill Development in Food Processing Units-With Special Reference to the Urban and Rural Sector of Dibrugarh District of Assam*. *Journal of Rural and Industrial Development*, vol. 5(2).
14. Zia, M. (2016) *Prospects and Problems of Food Processing Sector in India: In the Light of Make in India Initiative*. *Researchgate*
15. Kamath, K. V., Kohli, S. S., Shenoy, P. S. Kumar, R., Nayak, R. M., Kuppaswamy, PT, Ravichandran, N. (2003). *Indian Banking Sector: Challenges and Opportunities*. *Vikalpa*, vol. 28(3).
16. Abbasi, F. K., Ali, A., and Bibi. N. (2018). *Analysis of skill gap for business graduates: managerial perspective from banking industry*. *Education + Training*.
17. Marchante, A. J.; Ortega, B; Pagán, R. (2005). *Determinants of Skills Shortages and Hard-to-Fill Vacancies in the Hospitality Sector*. *European Regional Science Association*.
18. Mehdi, M. M. (2018). *Skill Gap Analysis: A Review of Hospitality Sector in Assam*. *Journal of Rural and Industrial Development*, vol. 6(1).
19. Campos-Soria, J. A., Sánchez-Ollero. (2015). *Gender wage inequality and labour mobility in the hospitality sector*. *International Journal of Hospitality Management*
20. Oliver, J. M., and Turton. J. R. *Is There A Shortage Of Skilled Labour?'. British Journal of Industrial Relations*.
21. Singh, R. (2019). *Skill gap assessment is a key to survive*. *International Journal of Advance Research, Ideas and Innovations in Technology*, vol. no. 5(3).
22. McGrath-Champ, S., Rosewarne, S., and Rittau, Y. (2011). *From one skill shortage to the next: The Australian construction industry and geographies of a global labour market*. *Journal of Industrial Relations*, vol. no. 53(4), pp. 467-485.



23. McElwee, G. (2006). *The enterprising farmer: a review of entrepreneurship in agriculture*. *Journal of the Royal Agricultural Society of England*.
24. Rais, M., Acharya, S., and Sharma, N. (2013). *Food Processing Industry in India: S&T Capability, Skills and Employment Opportunities*. *Food Processing & Technology*, vol. no. 4(9).
25. Greensea, K., Krishnan, M., Saravanakumar, V., Prakash, S., Ananthan, P. S. and Qureshi, N. (2017). *Assessment of skill gap and factors influencing career choice among fisheries graduates in India*. *Indian Journal of Fisheries*, vol. no. 64(2), pp. 112-116.
26. Makombe, I. A. M. (2006). *Women Entrepreneurship Development and Empowerment in Tanzania: The Case of Sido/Unido-Supported women micro entrepreneurs in the Food Processing Sector*. *University Of South Africa*.
27. Kandel, W. and Parrado, E. A. (2005). *Restructuring of the US Meat Processing Industry and New Hispanic Migrant Destinations*. *Population and Development Review*, vol. no. 31(3), pp. 447-471.
28. Mason, G., Ark, B. V., and Wagner, K. (2014). *Productivity, product quality and workforce skills: food processing in four European countries*. *National Institute Economic Review*.
29. Gollin, D., Lagakos, D., and Waugh, M. E. (2013). *The Agricultural Productivity Gap*. *National Bureau Of Economic Research*.
30. Paisley, C. (2012). *Skill gaps in formal higher agricultural education: A youth perspective*. *Future Agricultures Consortium and the Institute of Statistical Social and Economic Research*.
31. Yusuf, S. F. G., Lategan, F. S., and Masika, P. J. (2014). *Skill Gap Analyses of the Farmers and Agricultural Development Technicians on Indigenous Poultry Production in Nkonkobe Municipality Eastern Cape Province, South Africa*. *Journal of Agricultural Science*, vol. no. 5(1-2), pp. 19-29.
32. Messum, D. G., Wilkes, L. M., Jackson, D., and Peters, K. (2016). *Employability Skills in Health Services Management: perceptions of recent graduates*. *Asia Pacific Journal of Health Management*, vol. no. 11(1).
33. Stowe, M., Haefner, J., and Behling, R. J. (2010). *Required Knowledge, Skills and Abilities from Healthcare Clinical Managers' Perspectives*. *Academy of Health Care Management Journal*, vol. no. 6(2).
34. Kimmell, J., and Martin, S. A. (2015). *Sorting out the Skills Gap: Analyzing the Evidence for a Shortage of Middle-Skill Workers in the Manufacturing and Healthcare Industries in the Portland Region*. *Institute of Portland Metropolitan Studies Publications*, p. 123.
35. Safriet, B. J. (2002). *Closing the Gap between Can and May in Health-Care Providers' Scopes of Practice: A Primer for Policymakers*. *Yale Journal on Regulation*, vol. no. 19(301).
36. Bevan, H. (2010). *How can we build skills to transform the healthcare system?* *Journal of Research in Nursing*, vol. no. 15(2), pp. 139-148.
37. Morris, M., and Reed L. (2008). *A Sectoral Analysis of Skills Gaps and Shortages in the Clothing and Textile Industry in South Africa*. *Human Sciences Research Council*.
38. Kiruthiga, T., and Pongiannan, K. (2018). *Managerial Skill Gaps in Textile and Clothing Industry -A Review on Existing Studies*. *International Journal of Research and Analytical Reviews*, vol. no. 5(3).
39. Ali, G. (2008). *Cotton Value Chain: Skill Gap Analysis in Ginning Sub-sector*. *CABI South Asia*.
40. Skevi, A., Szigeti, H., Perini, S., Oliveira, m., Taisch, m., and Kiritsis, D. (2014). *Current Skills Gap in Manufacturing: Towards a New Skills Framework for Factories of the Future*. *International Federation for Information Processing*, pp. 175-183.
41. Oviawe, J. I., Uwameiye, R., Uddin. P. S. O. (2017). *Bridging Skill Gap to Meet Technical, Vocational Education and Training School-Workplace Collaboration in the 21st Century*. *International Journal of Vocational Education and Training Research*, vol. no. 3(1), pp. 7-14.
42. Pisano, G.P. (1994). *Knowledge, integration, and the locus of learning: An empirical analysis of process development*. *Strategic Management Journal*, vol. no. 15, Special Edition Winter pp. 85-100.
43. Alsafadi, L. and Abunafesa, R. (2016). *ICT Skills Gap Analysis of the Saudi Market*. *Proceedings of the World Congress on Engineering and Computer Science*, vol. no. 1.
44. Aasheim, C. L., Li, L., and Williams, S. *Knowledge and Skill Requirements for Entry-Level Information Technology Workers: A Comparison of Industry and Academia*. *Journal of Information Systems Education*, vol. no. 20(3).
45. Littlejohn, A. H. and Stefan, L. A. J. (2016). *Effective use of communication and information technology: Bridging the skills gap*. *Taylor & Francis*, vol. no. 7(2).
46. Patacsil, F. F., Lourrine, C., and Tablatin, S. (2017). *Exploring the Importance of Soft and Hard Skills as Perceived by IT Internship Students and Industry: A Gap Analysis*. *Journal of Technology and Science Education*, vol. no. 7(3), pp. 347-368.
47. Sengupta, S. (2006). *Skills Gap Hurts Technology Boom in India*. *The New York Times*.
48. Ayofe, A. N., Ajetola, A. R., and Oyewole, A. S. (2009). *Assessment of Existing Gap between Industrial IT Skill Requirements and Computer Science Curriculum in Tertiary Institutions*. *The Pacific Journal of Science and Technology*, vol. no. 10(2).



TOPISCHE FRAGEN, DEUTSCH ALS ZWEITE AUSLÄNDISCHE SPRACHE IN EINER NICHT SPRACHLICHEN UNIVERSITÄT ZU UNTERRICHTEN

Aimatova Gulchekhira Bozorovna

Lehrer der Abteilung für Deutsch Sprache
und Literatur von Karshi Staatliche
Universität, Usbekistan

Ashurova Shakhnoza Shavkatovna

Lehrer der Abteilung für Deutsch Sprache
und Literatur von Karshi Staatliche
Universität, Usbekistan

ABSTRACT

The article is devoted to the problems of optimization of the teaching German as a second foreign language for special purposes. It is necessary to use the comparative approach in the teaching of the German Grammar and to consider the negative and positive influence of the native language and the first foreign language in the educative process.

KEYWORDS: *teaching of the second foreign language, grammar skills, positive transfer, interference.*

АКТУАЛЬНЫЕ ВОПРОСЫ ПРЕПОДАВАНИЯ НЕМЕЦКОГО ЯЗЫКА КАК ВТОРОГО ИНОСТРАННОГО В НЕЯЗЫКОВОМ ВУЗЕ

**Айматова Гулчехра Бозоровна,
Ашурова Шахноза Шавкатовна-**
Преподаватели кафедры Немецкого
языка и литературы Каршинского
государственного университета. Узбекистан.

Аннотация

Статья посвящена вопросам оптимизации обучения грамматике немецкого языка как второго иностранного в неязыковом вузе, рассматриваются вопросы, связанные с интерференцией и положительным переносом при обучении второму иностранному языку, указывается необходимость использования сравнительного подхода в обучении.

Ключевые слова: *обучение второму иностранному языку, интерференция, положительный перенос, грамматические навыки и умения.*

Heutzutage steigen die Anforderungen an das Ausbildungsniveau von Fachkräften, einschließlich der Beherrschung einer zweiten Fremdsprache. Die begrenzte Anzahl von akademischen Stunden, die für das Studium einer zweiten Fremdsprache an einer nichtsprachlichen Universität vorgesehen sind, und

die traditionelle Lehrmethode verursachen jedoch Probleme für Studenten, die Fremdsprachenkommunikation in einer zweiten Fremdsprache beherrschen möchten.

Die Praxis, Deutsch als zweite Fremdsprache zu unterrichten, zeigt, dass die Schüler eine große



Anzahl von Fehlern bei der Verwendung vieler grammatikalischer Phänomene machen, was auf die wirklichen Schwierigkeiten bei der Beherrschung der grammatikalischen Formen der deutschen Sprache hinweist. Es ist der Mangel an Entwicklung grammatikalischer Fähigkeiten, der ein ernstes Hindernis für die Bildung von Kommunikationskompetenz darstellt.

Nach unserer Erfahrung ist die Intensivierung des Bildungsprozesses beim Studium von Deutsch als Zweitsprache im ersten Englisch in folgende Richtung möglich. Das Studium einer zweiten Fremdsprache an einer nichtsprachlichen Universität beginnt in der Regel im zweiten Jahr. Schüler im zweiten Jahr sprechen fließend Englisch und haben ein fundiertes Verständnis der grammatikalischen Struktur. Die beim Studium der Muttersprache und der ersten Fremdsprache gesammelten Erfahrungen beeinflussen das Studium der zweiten Fremdsprache maßgeblich.

Dies liegt vor allem daran, dass der Assimilationsprozess von einer Interaktion mit dem Sprachsystem der Muttersprache und der ersten Fremdsprache begleitet wird. Diese Interaktion kann den Prozess des Lernens einer zweiten Fremdsprache sowohl erleichtern als auch erschweren.

Es ist anzumerken, dass der traditionelle Ansatz zum Unterrichten der Grammatik einer zweiten Fremdsprache die sprachlichen Erfahrungen der Schüler, die beim Erlernen der ersten Fremdsprache gesammelt wurden, kaum nutzt. Darüber hinaus wird im traditionellen Grammatikunterricht die Hauptaufgabe der Assimilation der Form eines grammatikalischen Phänomens zugewiesen. Der funktionalen Seite der grammatikalischen Fähigkeit, die bei der Konstruktion einer Sprachäußerung führend ist, wird eine untergeordnete Bedeutung beigemessen. Infolgedessen kennen die Schüler bestenfalls die Struktur eines grammatikalischen Phänomens, die Regel seiner Entstehung, besitzen es aber nicht.

Wie Sie wissen, erzeugt die Beherrschung einer zweiten Fremdsprache, in unserem Fall Deutsch auf Russisch, unter den Kontaktbedingungen von drei Sprachen - Muttersprache (Usbekisch), Russisch und einer zweiten Fremdsprache - zwei Muster:

a) Es gibt Probleme mit Störungen nicht nur in der Muttersprache, sondern auch in der russischen Sprache. Die Interferenz, die sich aus den negativen Auswirkungen der Muttersprache und der russischen Sprache auf die studierte deutsche Sprache ergibt, deckt alle Sprachniveaus der Sprache ab (phonetisch, lexikalisch, grammatikalisch).

b) es gibt Möglichkeiten für eine positive Übertragung.

Der positive Einfluss der Muttersprache oder der russischen Sprache auf die deutsche Sprache wird

als positive Übertragung oder Übertragung bezeichnet. Übertragung ist "eine Übertragung, bei der die beeinflussende Sprache keine Verstöße gegen die Norm in der untersuchten Sprache verursacht, sondern die bereits darin vorhandenen Muster stimuliert" [1. von. 56].

Die Häufigkeit des Auftretens der Phänomene der Interferenz und der positiven Übertragung hängt wiederum von drei Faktoren ab:

1) den Grad der Sprachentwicklung in der Muttersprache und deren bewusste Kenntnis;

2) das Niveau der Russischkenntnisse. Je besser der Schüler fließend Russisch spricht, desto weniger Störungen treten auf und desto mehr Übertragungsmöglichkeiten ergeben sich. Dies bedeutet aber auch, dass ein geringer Kenntnisstand der russischen Sprache, dh der ersten Fremdsprache, die Beherrschung der zweiten deutschen Sprache hemmen kann;

3) die Größe des Zeitintervalls, das das Erlernen der deutschen Sprache vom Erlernen der russischen Sprache trennt: Je kleiner das Intervall ist, desto größer ist der Einfluss der ersten Fremdsprache, dh der russischen Sprache, auf die Beherrschung der zweiten, dh der deutschen Sprache.

Die meisten Forscher argumentieren, dass der Einfluss der russischen Sprache auf das Erlernen der deutschen Sprache stärker ist als der Einfluss der Muttersprache. Das mögliche Zusammenspiel einzelner sprachlicher Mittel von miteinander in Kontakt stehenden Sprachen lässt sich anhand folgender Modelle zusammenfassen:

1) Ein spezifisches sprachliches Phänomen hat Ähnlichkeiten sowohl mit der Muttersprache als auch mit IYA, daher die großen Übertragungsmöglichkeiten seitdem Es gibt Unterstützungen. Zum Beispiel ist die Änderung von Verben durch Personen und Zahlen in der Gegenwart in drei Sprachen verfügbar.

2) das sprachliche Phänomen der deutschen Sprache hat weder mit der Muttersprache noch mit der russischen Sprache Ähnlichkeit, daher gibt es keine Unterstützung, zum Beispiel für die Wortreihenfolge im deutschen Nebensatz;

3) Die sprachlichen Phänomene der deutschen Sprache haben Ähnlichkeiten in ihrer Muttersprache, aber keine Ähnlichkeiten in Russisch. In diesem Fall kann die Muttersprache als Unterstützung dienen, und die russische Sprache ist in größerem Maße eine Quelle für Störungen, beispielsweise die Deklination von Adjektiven (Adjektive werden auf Deutsch und Russisch und nicht auf Englisch eingebogen).

4) Das sprachliche Phänomen hat Ähnlichkeiten mit dem ähnlichen Phänomen der russischen Sprache, jedoch keine Ähnlichkeit mit der Muttersprache In diesem Fall kann die russische Sprache als Unterstützung dienen, beispielsweise für den Artikel und seine Verwendung.



In allen Fällen ist daher ein vergleichender Ansatz erforderlich, wenn die Schüler mit den Mitteln der deutschen Sprache vertraut gemacht werden sollen, um sowohl die Ähnlichkeiten zwischen den Sprachen (Muttersprache, Russisch, Deutsch) als auch deren Unterschiede zu ermitteln.

Für die Methode des Unterrichts einer zweiten Fremdsprache - Deutsch - bedeutet dies, dass die Schüler dazu ermutigt werden müssen, die Sprachmittel der Kontaktsprachen in allen Fällen zu vergleichen / gegenüberzustellen, wenn dies dazu beiträgt, Störungen zu vermeiden und einen positiven Transfer durchzuführen. Man sollte sich bemühen, den Schülern beizubringen, unabhängig Analogien zwischen den grammatikalischen Phänomenen der ersten und zweiten Fremdsprache und ihrer Muttersprache herzustellen, Entsprechungen zu finden, ähnliche und charakteristische Merkmale hervorzuheben.

"Die sozial nützliche Tätigkeit eines Absolventen einer Schule oder Universität, der nur seine eigene Sprache spricht, ist durch den Funktionsumfang dieser Sprache begrenzt." [2]

Das heißt, ein moderner Deutschlehrer muss in der Lage sein, Unterricht auf höchstem Niveau zu organisieren. Und so können Studierende einer nichtsprachlichen Universität die Fähigkeiten und Fertigkeiten der deutschen Sprache erwerben.

Literatur

1. **Баграмова Н. В.** *Лингво-методические основы обучения лексической стороне устной речи на немецком языке как втором иностранном в педагогическом вузе: Дисс. ... д.п.н./Н.В. Баграмова.- СПб., 1993.*
2. **Tursunov I.N.** *Reading Is One of Components of Teaching Foreign Language Educational Process// Eastern European Scientific Journal. www.auris-verlag.de.№5.2019.*



INDIAN CULTURE IN THE WORKS OF RUSSIAN POETS AND WRITERS

Milovanova Elena Valerievna¹

¹Senior Teacher,

Murodova Khurshida Bakhtiyorovna²

²Teacher

Department of Russian Language
And Literature Karshi State University,
Uzbekistan.

ANNOTATION

This work is devoted to the consideration of the image of India and the realities of Indian culture in the works of Russian poets and writers throughout the XX century.

KEY WORDS: *India, interest, literature, Silver Age, Western values, traditions.*

ИНДИЙСКАЯ КУЛЬТУРА В ПРОИЗВЕДЕНИЯХ РУССКИХ ПОЭТОВ И ПИСАТЕЛЕЙ

Мылованова Елена Валерьевна¹

Муродова Хуршида Бахтиёровна²

¹Старший преподаватель, ²преподаватель
кафедры Русского языка и литературы
Каршинского государственного
университета. Узбекистан.

Аннотация

Данная работа посвящена рассмотрению образа Индии и реалий индийской культуры в произведениях русских поэтов и писателей на протяжении XX века.

Ключевые слова: *Индия, интерес, литература, Серебряный век, западные ценности, традиции.*

Индия – страна, интерес к которой в русской культуре зародился задолго до XX века. Это страна, которую с давних пор на Руси считали благодатной и сказочной. Основой для таких представлений были и легенды, и произведения, основанные на личном опыте авторов, нередко безызвестных; путевые заметки исследователей, побывавших там, – всё способствовало постепенному росту интереса к этой стране, осознанию необходимости изучить

ее подробнее, углубить понимание культуры этой страны. На протяжении всей истории России мы можем наблюдать, как постепенно видоизменялись представления об этой стране, углублялись и расширялись. Но понимание ее как страны-сказки, страны контрастов, страны глубочайшей мудрости остается преобладающим и в наши дни.

Издrevле на Руси путешествие в Индию воспринималось как открытие чего-то нового или



же как некий религиозный переход из обыденной жизни в жизнь потустороннюю. Как отмечает Ю.М. Лотман в работе «О понятии географического пространства в русских средневековых текстах», путешествие подразумевает смену обстановки, переезд, открытие чего-то нового для себя или уход от чего-то старого. Поэтому причиной путешествий в Индию могло быть стремление уйти от собственной греховности, чтобы попасть в недостижимое ранее место, рай. Или же наоборот, путешествие могло трактоваться как переход из собственной святости в греховные земли. [1: 216].

Интерес к Востоку можно наблюдать начиная с самых ранних периодов русской истории. Были также периоды, когда в центре внимания был Запад, но обычно непосредственно вслед за этим наступало некоторое разочарование в западных ценностях, традициях и жизненном укладе, и в качестве альтернативы всему этому начинала рассматриваться восточная мудрость.

Так называемый «поворот от Запада к Востоку» в культуре Серебряного века предвосхитило движение славянофилов, отстаивавших самобытность России, независимость ее от западной культуры. Начало разделению на сторонников восточного и западного пути развития – на западников и славянофилов – было положено «Философическими письмами» П.Я. Чаадаева, где утверждается, что Россия способна совместить в себе Западный и Восточный миры. А. С. Хомяков – один из представителей славянофилов, продолжая историософию Чаадаева и углубляясь в теорию о существовании двух начал, противоположных по своему мышлению и философии – иранства и кушитства, – отмечает, что «...монголы были случайностью, счастливою для нас: ибо эти дикие завоеватели, разрушая все существующее, по крайней мере, не хотели и не могли ничего создать...» [2: 466]. Это антихристианская сила, ниспосланная Богом, дабы объединить силы русского народа: таково, с точки зрения А. С. Хомякова, было значение монголов для России. Восток предстает источником той силы, которая способна повлиять на Россию, задать определенный вектор ее культурному развитию, отличный от западного.

В подтверждение данному тезису можно процитировать А.Е. Рыбаса, отмечавшего, что «противостояние монголизм-европеизм в значительной мере обуславливает направление культурного развития России с самой древности» [3: 65]. Нашествие монголов в корне изменило политику русских правителей, задало иной вектор развитию, однако, следует отметить, что несмотря на длительный период взаимодействия

и подчинения Руси монголам, не произошло ассимиляции между двумя народами - во многом благодаря веротерпимости монголов и их политике невмешательства [3: 69]. Наоборот, из-за семиотической несовместимости русская культура получила толчок для дальнейшего развития.

Стоит отметить, что «разворот в пользу Востока» в XIX веке можно отметить еще и до формирования славянофильского течения. В «Вестнике Европы» от 1811 года мы читаем «...Гордость Европы слишком долго пренебрегала Азию; теперь настало время дать лучшее направление этой гордости, попросить развалины, дабы открыть в них новые причины славы, а, может быть, и способы к распространению блеска...» [4: 32]. В этом же выпуске Индия названа, "колыбелью образования", что подразумевает, что кладезь знаний расположен именно на Востоке: «...Но в Индии, особенно в сем древнем и таинственном отечестве образования, находим мы первые младенческие следы его при неоспоримых доказательствах его величайшей зрелости...» [4: 32]

На рубеже XIX-XX веков интерес к Востоку не угасает, а напротив, проявляется с большей силой и оборачивается зарождением новых идей.

Примером этого является творчество В.С. Соловьева, идеи которого оказали существенное влияние на философию и поэзию Серебряного века. Соловьев отстаивал идею 'синтеза Востока и Запада' [5], утверждая, что «...отечество наше, естественно, гораздо более прочих европейских стран испытывает воздействие азиатского элемента, в чем и состоит вся наша мнимая самобытность..., у нас изначала, а особенно со времен Батые, азиатский элемент в природу вошел, второю душою сделался» [6: 695]. Он обращает внимание на то, что уникальность России состоит в ее непринадлежности ни к Западу, ни к Востоку. Как по географическим показателям, так и по духовному строению, Россия особенна тем, что она включает в себя и рационализм Запада, и веру и мистику Востока [5].

Владимир Соловьев ввел в оборот термин «панмонголизм», то есть «...собрание воедино, под своим главенством, всех народов Восточной Азии с целью решительной борьбы против чужеземцев, т. е. европейцев...» [6: 736]. Философ предвещает будущую гибель русского мира от панмонголизма или так называемой «китайщины» [7], «желтой угрозы». Он считал, что сила, идущая с Востока, есть божья кара, ниспосланная за все грехи христианские [8: 138]. Ту же идею мы можем проследить у Фридриха



Ницше, который утверждает, что Антихрист явится именно с Востока.

Соловьев критикует идеи славянофилов о полнейшей непричастности русского народа к Европе. Несомненно, как было сказано выше, он признает сочетание восточного и западного элементов в культуре России, но выступает за то, чтобы наша страна подавила в себе лишь кажущийся преобладающим восточный элемент, а оставила именно лучшую часть, способную к прогрессу, дальнейшему развитию – западную, ведь «...на самом деле мы бесповоротные европейцы, только с азиатским осадком на дне души» [6: 695].

Иными словами, Соловьев акцентирует внимание на том, что несмотря на присутствие восточных корней у русского народа, следует сохранить западный элемент в культуре как более плодотворный и разумный. При этом не следует отходить от изучения Востока, отворачиваться от него ввиду угрозы, идущей именно с этих земель.

Одним из важнейших событий, способствовавших сближению России и Востока в начале XX века, стало строительство дацана в Санкт-Петербурге в 1909-1915 гг. Разрешение на строительство храма в 1900 году получил представитель Далай-Ламы XIII Агван Доржиев. Научное руководство строительством осуществлял комитет востоковедов в лице С.Ф. Ольденбурга – одного из основателей русской школы индологии, Э.Э. Ухтомского – ориенталиста, дипломата, приближенного Николая II, сопровождавшего будущего царя в путешествии на Восток в 1890-1891 гг. Также строительству дацана способствовали Ф.И. Щербатской, один из основателей школы буддологии в России, и Н.К. Рерих – русский художник, писатель и путешественник.

С ростом контактов и интереса к Индии русские авторы стали обращаться к индийской теме, пытались осмыслить роль этой страны – прежде такой далекой и сказочной – как части мировой цивилизации. «Эта далекая восточная страна, в силу оригинальности и мощи своего культурного развития, не оставалась совершенно чуждою общему течению мирового прогресса; лучшие думы и помыслы ее сынов, ее литература, научные сведения были общечеловеческим достоянием. Старая Индия, без сомнения, прожила свой век не бесследно для человечества. Чем полнее и всестороннее изучается ее далекое прошлое, тем яснее и убедительнее становится роль далекой восточной страны в древних судьбах мира.» [9].

Интерес русских авторов к Востоку не угас и после Серебряного века.

Развитие идеи панмонголизма породило новую волну интереса к Востоку, а именно,

сложившееся в 20-30-е гг. XX века философско-политическое направление, именуемое «евразийством». Его следует отметить ввиду того, что именно один из участников этого течения, П.П. Сувчинский, сформулировал второе название эпохи Серебряного века – "эпоха ренессанса русской культуры" – в статье «Два ренессанса», опубликованной в журнале «Версты» от 1926 года в Париже. Позже этот термин стал более известен благодаря трудам Н.А. Бердяева. А первым показательным результатом работы евразийцев стало издание сборника «Исход к Востоку», который подчеркивает то обстоятельство, что Россия была более обращена к Востоку, а не к Европе. «...мы знаем, что историческая спазма, отделяющая одну эпоху мировой истории от следующей, — уже началась. Мы не сомневаемся, что смена западноевропейскому миру придет с Востока...» [10]. Согласно евразийцам, мы должны увидеть, что подлинное значение России в том, что она связующий элемент между Востоком и Западом.

В контексте темы разочарования в христианстве следует отметить, что в те годы в России был весьма популярен Фридрих Ницше. Общеизвестно его критическое отношение к христианству, отношение к этой религии как к нигилистической. Его высказывание «Бог умер» резко, но весьма точно, на мой взгляд, отражает сущность христианства той или даже нынешней эпохи. А именно: существует религия, живут люди, исповедующие эту религию, но нет ощущения истинной веры, все поверхностно, бесосновно, отчасти даже лживо, люди охладели к Богу, охладели к своей вере. Критикуя христианство, Ницше противопоставляет ему зороастризм, истоки которого приводят нас на Восток.

Еще одним примером обострения внимания к Восточным странам может послужить поездка цесаревича Николая, будущего императора Николая II, в страны Азии; в частности, он посетил многие города Индии, такие как Дели, Калькутта, Мумбаи, Бенарес, Ахмадабад. А результатом этой поездки стала выставка буддийских древностей в Петербурге. Развитие политических, экономических и торговых связей России с Востоком, а также совокупность вышеперечисленных факторов, способствовавших обращению к Востоку, подтверждают рост интереса к восточным странам. С одной стороны, в одни эпохи это можно объяснить стремлением к расширению территорий, распространению православия и как итог – расширению влияния российских правителей. С другой стороны, всегда имеет место культурное взаимодействие, тяга к



познанию иной, отличной от своей, культуры, которой можно вдохновиться; - культуры, в которой можно найти ответы на экзистенциальные вопросы, когда нет возможности найти их в своей среде.

Таким образом, несмотря географические, культурные и политические преграды, на протяжении XX века в русской культуре сохранялся интерес к Индии, и этот интерес находил выражение в произведениях русской литературы, как поэтических, так и прозаических. Более того, этот интерес с течением времени все больше углублялся, а отдельно взятые авторы демонстрировали свое знакомство с индийской культурой. Их произведения не просто являли читателю образ Индии как "страны чудес", но и знакомили его с азами индийской философии, религии, литературы и культуры.

Влияние индийской мотивы и в русской и узбекской литературе огромно. XX веке начались переводы произведения Робиндрата Тогора на русский и узбекский языки в Узбекистане. [11: 56-58]. А это способствует культурным и духовным отношениям между Узбекистаном и Индией.

Литература

1. **Лотман Ю.М.** О понятии географического пространства в русских средневековых текстах. // Ученые записки Тартуского государственного университета. 181 выпуск. Тарту, 1965. С. 210-216.
2. **Хомяков А.С.** Соч. В 2 т. Т. 1: Работы по историософии. М.: «Медиум», 1994.
3. **Рыбас А.Е.,** Понятие монголизма в русской философии и культуре. // Россия – Монголия. Культурная идентичность и культурное взаимодействие. СПб Изд-во философского ф-та СПбГУ, 2011. С. 65-89.
4. Мысли о заведении в России Академии Азиатской. Журнал Вестник Европы. 1811 г. №1, М., 1811.
5. **Пчелинцева К.Ф.** Отражение идей Вл. Соловьева в русской поэзии начала XX века. // [электронный документ]: <http://anthropology.ru/ru/text/pchelinceva-kf/otrazhenie-idey-vlsoloveva-vrusskoy-poezii-nachala-xx-veka>
6. **Соловьев В.С.,** Три разговора о войне, прогрессе, и конце всемирной истории, со включением краткой повести об антихристе и с приложениями. // Соловьев В.С. Соч. В 2 т. Т. 2. М., 1988. С. 635-763
7. **Казин А.Л.** Страна будущего. Русская философия и русская политика. // [электронный документ]: <http://www.perspektivy.info/print.php?ID=35960>
8. **Схиммельпенникван дер Ойе Д.** Навстречу Восходящему солнцу: как имперское мифотворчество привело Россию к войне с Японией. М., 2009
9. **Минаев И.П.** Об изучении Индии в русских университетах. // [электронный документ]: http://az.lib.ru/m/minaew_i_p/text_1884_ob_izuchenii_indii.shtml
10. **Сувчинский А.П.** Индийские мотивы в русской классике. М. 2017.
11. **Турсунов И.Н.** Роль творчества Рабиндраната Тагора в русской и узбекской литературе. // EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal Volume: 6 | Issue: 4 | April 2020



QUESTIONS OF TEACHING THE RUSSIAN LANGUAGE AT UZBEK GENERAL EDUCATIONAL SCHOOL

Meilieva Mohiba Olmurodovna
Teachers of the Department of Russian Language and literature of Karshi State university, Uzbekistan.

Khamraeva Dilafruz Zhuraevna
Teachers of the Department of Russian Language and literature of Karshi State university, Uzbekistan.

ABSTRACT

This article discusses issues related to teaching Russian in Uzbek classes.

KEYWORDS: *learning process, speech development, methodology, communicative activity, texts.*

ВОПРОСЫ ПРЕПОДАВАНИЯ РУССКОГО ЯЗЫКА В УЗБЕКСКОЙ ОБЩЕОБРАЗОВАТЕЛЬНОЙ ШКОЛЕ

**Мейлиева Мохибна Олмуродовна,
Хамраева Дилафруз Жураевна-**
Преподаватели кафедры Русского языка и литературы Каршинского государственного университета.
Узбекистан.

Аннотация

В данной статье рассматриваются вопросы, связанные с преподаванием русского языка в узбекских классах.

Ключевые слова: *процесс обучения, развитие речи, методика, коммуникативная деятельность, тексты.*

Важнейшей задачей обучения русскому языку в узбекской школе является развитие связной речи учащихся, что обусловлено принципом коммуникативной направленности обучения. Решение коммуникативных задач должно привести к тому, чтобы оканчивающие национальную школу хорошо владели родным и русским языками.

Процесс обучения коммуникативной деятельности на русском языке организуется на принципе текстоцентризма, или изучения языка на

текстовой основе. Теоретическая разработка этого принципа в обучении русскому языку началась в 60 – 70-е годы, когда в понятие связной речи Т.А.Ладыженской были включены не только речевая деятельность, но и результат акта коммуникации, определённое речевое произведение, текст.

Использование текстов художественных эффективны лишь в том случае, если учитель ведёт системную работу, параллельно связывая уроки языка с литературой. Именно языковой материал



позволяет учителю раскрыть перед нерусскими школьниками богатство и красоту русского языка, а также увидеть закономерности русского языка, в результате чего у учащихся развивается орфографическая зоркость, вырабатываются пунктуационные навыки и формируется мышление.

Например, при изучении пунктуации в бессоюзном сложном предложении в 9 классе диктую предложение: «Много вина пить – беды не избежать». Почему здесь тире? Объясняем: первое предложение (безличное) – условие второго, условие всяких бед и неприятностей. «Не жаль вина, а жаль ума: вино уму не товарищ». Почему здесь двоеточие? Здесь причинное значение. Почему жаль ума? Потому что пьянство – добровольное сумасшествие. Далее – самостоятельная работа. Объяснить постановку знаков препинания в предложениях: «Как только попадает в рот водка, тотчас ум в лес сбегает», «Если поздоровался с водкой, то простись с разумом», «Утонувших в стакане с водкой больше, чем утонувших в бурном океане». На таком знакомом языковом материале старшеклассники рассуждают о вредности употребления алкогольных напитков, доказывают, что алкоголь – основной источник всех пороков человеческой жизни.

Рассмотрим некоторые аспекты преподавания русского языка в узбекской школе. Поделюсь мыслями по этому поводу, исходя из своего опыта работы.

1) Это языковой барьер. В узбекской школе доминантным является узбекский язык. Дети с русским языком контактируют в ситуации урока и во внеурочных мероприятиях. Многие старшеклассники не могут грамотно излагать своё мнение, не могут найти в русском языке эквиваленты слов при общении, соответственно вставляют слова из родного языка, автоматически больше предпочитают отвечать на татарском языке;

- незнание лексических значений некоторых слов, даже из контекста учащиеся не могут установить значение слова;

- на уроке некоторые учащиеся зачастую отмалчиваются из-за боязни допустить ошибки в речи. Таким учащимся нужна своевременная помощь учителя, лингвистическая поддержка до определённого времени.

2) Значительные трудности для учащихся узбекской школы представляет правильная постановка ударения в русских словах. В узбекском языке ударение обычно падает на последний слог слова. Ударение в русском языке разноместное и подвижное. Это значит, что в русских словах ударение может быть на любом слоге: тóрты, срéдства, óтрочество, закúпорить,

добрáться. Метод сопоставления произнесения слогов под ударением в родном и русском языках поможет определить причины нарушения акцентных норм, наметить методические приёмы обучения нормам ударения. Учащиеся часто анализируют не звуки, опираясь на законы устной речи, а буквы, которые изображают их в письменной речи. Например, словоформа *тортов* произносится с ударением на последнем слоге, хотя правильным считается звучание *тòртов*; многие считают нормативным ударение *позвòним* (правильно: *позвонíм*).

Некоторые выпускники, особенно ребята, затрудняются при выполнении задания по русскому языку, так как необходимо среди пяти слов выписать слово, где неверно выделена буква, обозначающая ударный гласный звук. Чтобы избежать ошибок, приходится искать эффективные приёмы запоминания ударения в словах. В начале урока мы часто произносим вслух «по цепочке» слова, встречающиеся в русском языке. Например, в постановке ударения следующих слов: *докумÉнт, жалюзИ, корЫсть, сирОты, баловАть, клеИть, красИвее, слиВовый, оптОвый, добелА* ученики допускают ошибки, поэтому сначала сама их произношу вслух, а ученики – за нами. Так оттачиваем русское ударение. Или же проводим орфоэпический диктант. Для словарных работ мы завели отдельную тетрадь, словарь, где записываем трудные слова не только по правописанию, но и по постановке ударения.

3) Существует трудность, связанная с различием существительных по одушевлённости и неодушевлённости. При постановке вопросов к существительным *лошадь (ат), корова (сыер), собака (эт), рыба (балык), галка (карга)* учащиеся автоматически задают вопрос *что?* (нарса?)

4) Существительные *друг друга* пишут через дефис под влиянием родного языка (*бир-бири*);

5) На письме наблюдается замена букв *щ - ч* (маскировщик, очутился и др.). Порой орфографические ошибки носят самый элементарный характер и допускаются даже в часто употребляющихся словах: *счастливы́й* (вм. счастливый), *честно́сть* (вм. честность).

6) Есть трудности при осмыслении учащимися глаголов движения. Если в русском языке движение по земле дифференцируется на движение пешком и при помощи транспорта, то в татарском языке подобная дифференциация отсутствует: глаголы *ехать* и *идти* передаются одним словом (*бормок*). В итоге создаётся путаница между навыками в родной и русской речи.



7) Определение рода существительных. Трудность усвоения категории рода вызвана разными морфологическими способами обнаружения рода существительных. Род существительных с нулевым окончанием (конь - степь) определяется по окончаниям Р.п. и по суффиксам. Существительные муж. р. в Р.п. имеют окончание **-а, -я**, а женского рода – окончание **-и**; суффиксы **-тель, -арь** указывают на принадлежность к мужскому роду (*писатель, пахарь*), а суффикс **-ость** – показатель женского рода (новость, гордость).

8) Наблюдается неправильное использование самых простых предлогов, которые то опускаются детьми, то заменяются (в – на, с – з). Значение предлогов передаются послелогом, различными аффиксами, падежной формой.

9) Допускаются ошибки, вызванные интерференцией родного языка обучающихся. Ничего общего нет в творительном и исходном (чыгыш килеше) падежах. В результате этих несоответствий возникают ошибки: «копать с лопатой» вместо *копать лопатой (бел билан козмок)*, «любоваться с природой» вместо *любоваться природой (табиат билан рохатланиш)*. Для успешного изучения падежей следует учитывать сходство и различие падежей в русском и узбекском языках. Это непереносимое методическое условие правильного построения уроков и предупреждения специфических ошибок татарских школьников.

10) Основные трудности усвоения орфографии заключаются в несоответствии букв и звуков, некоторые грамматические формы (глаголы на **-ться** и **-тся**, окончания прилагательных и местоимений на **-ого, -его**).

11) В русском языке имеются грамматические категории, которые отсутствуют в узбекском языке: род, виды глагола, предлоги, приставки.

12) При изучении синтаксиса необходимо учитывать то, что в татарском языке сказуемое практически всегда находится в конце предложения, только в лирических произведениях для рифмовки сказуемое может быть в начале предложения.

13) Трудность заключается в нахождении предикативной части предложения, иногда вместо подлежащего учащиеся подчёркивают дополнение.

14) Изучение предложений с обособленными членами предложения. Наблюдаются случаи, когда нет чёткой грани между причастным оборотом и деепричастным оборотами. А ведь такие задания есть.

Считаю, необходимо учитывать вышеуказанные особенности, потому что учащиеся закономерности русского языка

понимают через призму татарского языка. Однако требования Государственный стандарт образования по русскому языку едины как для выпускников русской, так и национальной школы.

Другая проблема – это написание сочинений. Трудности в написании сочинений – рассуждений обусловлены слабо развитыми навыками аналитической работы со словом и текстом, отсутствием достаточной практики анализа текстов. Сочинения – это серьёзный источник для раздумий не только о школьном литературном образовании, но и об эффективности воздействия его на сердца воспитанников. Виды творческих работ разнообразны. Выбор их диктуется и требованием средней школы, и указаниями программы, федеральными стандартами образования, и запросами жизни. Нельзя забывать о принципе коммуникативной

целесообразности: *что* говорить, *как* говорить и *где* говорить. Иными словами, в любой речевой ситуации учитывать следующие условия: кому будет адресована речь, в какой обстановке будет она осуществляться (на экзамене или в дружеской беседе с приятелями) и каков предмет речи (о чём говорить).

Особое значение в практике обучения русскому языку имеют упражнения на аудирование. Тем более в 9 классе предстоит написать сжатое изложение.

Следует обратить внимание на приёмы формулировки домашнего задания. Эту весьма важную форму связи урока с внеурочными видами работы нельзя оставлять на самые последние минуты урока. Ученики при записи домашнего задания должны быть убеждены, что оно является необходимым продолжением проведенного на уроке закрепления материала, без которого невозможно успешное восприятие последующего.

Такая установка заставит учащихся серьёзно относиться к домашнему заданию, особенно если они сами участвовали в его формулировке.

Таким образом, в преподавании русского языка важным становится развитие личности школьника, способного жить и трудиться, творчески реализовывать себя в постиндустриальном обществе XXI века.

Литературы

1. *Т.А.Ладьяженская. Методика преподавание русского языка в национальной школе. //Русский язык и литература в национальной школе. № 2 2011. Москва.*
2. *Ахмедова М.А. Вопросы преподавание русского языка в начальных классах. //УзМУ хабарлари, №3.*



THE ROLE OF BANKS IN THE DEVELOPMENT OF THE ECONOMY AND SOCIETY OF THE COUNTRY. (ON THE EXAMPLE OF BANKS IN UZBEKISTAN AND SOUTH KOREA)

Nuralieva Barnokhon Kudratovna

Applicant Economist.

Tashkent

ANNOTATION

This paper we used Data Envelopment Analysis (DEA) to measure the efficiency of the Uzbekistan and Korean banks from 2015 to 2020, and then to explore implications about two countries' banks efficiency. Our findings in this paper are as follows. 1. Korean banks have CRS and IRS trends during these 5 years, but most Uzbekistan banks showed DRS trends. 2. The efficiency of PB and MKB in Uzbekistan is higher than other banks- state-owned banks. 3. The efficiency of NB is the highest in Korea. The results showed that Korean banks efficiency is higher than Uzbekistan banks.

KEY WORDS: Banks, Efficiency, Data Envelopment Analysis, Uzbekistan, South Korea

РОЛЬ БАНКОВ В РАЗВИТИИ ОБЩЕСТВА И ЭКОНОМИКИ СТРАНЫ. (НА ПРИМЕРЕ БАНКОВ УЗБЕКИСТАНА И ЮЖНОЙ КОРЕИ)

Нуралиева Барнохон Кудратовна

Соискатель –экономист.Ташкент.

Аннотация

В этой статье мы использовали анализ охвата данных (DEA) для измерения эффективности банков Узбекистана и Кореи с 2015 по 2020 годы, а затем изучили последствия для эффективности банков двух стран. Наши выводы в этой статье заключаются в следующем. 1. Корейские банки имели тенденции CRS и IRS за эти 5 лет, но большинство банков Узбекистана продемонстрировали тенденции DRS. 2. Эффективность ПБ и МКБ в Узбекистане выше, чем у других банков-госбанков. 3. Эффективность NB самая высокая в Кореи. Результаты показали, что эффективность корейских банков выше, чем банков Узбекистана.

Ключевые слова: банки, эффективность, анализ охвата данных, Узбекистан, Южная Корея.

I. INTRODUCTION

Uzbekistan Banking Association was established in July 1995 by initiative of the President of the Republic of Uzbekistan Islam Karimov. Association is a voluntary alliance of commercial banks of the Republic and represents a noncommercial public organization, which fulfils the tasks for protection of legitimate interests of banks,

ensuring of national commercial banks' conformity to the level of international standards with subsequent integration of banking sector in the world banking community. Presently, the Association unites 23 national commercial banks, which possess over 97% of bank assets in the Republic.

South Korean banks also achieved wonderful economic performance and played an important role



in the financial sector in the East Asia. But the South Korean financial sectors still have deficiency; the critical event happened during the Asian banking crisis, many South Korean institutions suffered from the crisis. The problem was exacerbated by the problem non-performing loans at many of South Korean's merchant banks. By January 1998, the government had shut down a third of Korean's merchant banks.¹ Meanwhile, Korean's currency experienced massive fluctuations, declining by 34% against the dollar. So, after the crisis, the government carried out many policies on the banking sector. And then, Korean government proposed a wonderful plan to develop Korea as a financial center in the Northeast Asia.

Korean government began a two stage financial restructuring. In the first² stage, two banks were nationalized for later sale to foreigners, five insolvent banks were closed and then merged with blue -chip banks, foreign capital injections were given to seven banks, and public funds were used to normalize operations of the remaining surviving banks. The second stage of restructuring began in June 2000 and focused on restoring bank profitability.

The reminder of the paper is organized as follows. Section 2 presents a brief overview of theoretical literature on bank efficiency. Section 3 introduces the research methodology related to this study. Section 4 presents data and empirical results. The final section concludes the paper.

II. THE LITERATURE REVIEW

The literature about efficiency of Uzbekistan and Korean banks is not extensive compared with the literature about western country's efficiency. Two countries quantitative analysis on banking efficiency starts relatively late but the study on the commercial banks efficiency is rapidly increasing.

1. Uzbekistan literature

The term "efficiency" is one of the key concepts for financial institutions. It has been extensively studied due to its importance. Mainly, the studies making typical comparisons of bank performance can be divided into two categories: (1) those which use simple aggregate bank ratios relating cost to revenues or assets, and (2) frontier technique which measures a bank's efficiency by its distance to the efficient frontier (Laeven 1999). In this paper we will use the particular frontier technique of Data

Envelopment Analysis (DEA) to analyze the efficiency of the Uzbek banking system.

So far no research has been conducted assessing the performance of Uzbek banks using Data Envelopment Analysis or any other frontier approaches. Usually, the papers in the literature are restricted by the qualitative assessment of aggregate bank ratios or relating these ratios to cost, revenue and asset structures of banks using regression analysis. For example, some yearly reports provided by investment companies such as Ansher Capital (2006) and East Orient Capital Management (2008) analyzed the overall performance of the system over each year. These analytic papers are comprehensive source which investigated the development of Uzbek banking sector and provide detailed analysis of individual banks using traditional methods of bank performance evaluation. Yet none of these studies used a predetermined frontier approach which eliminated the possibility to deeper analyze the reasons for inefficiencies in the operation of banking sector.

2. Korean Literature

Park and Kim (2002) estimated efficiency and productivity change for the period 1995-2000 and found that regional banks are less efficient and experience fewer gains in efficiency than nationwide banks.

Park and Yi (2002) used data from the period 1995-1999 to estimate efficiency and simulate the effects of various hypothetical merger scenarios. They found evidence of decreasing returns to scale for mergers of two technically efficient banks, but if those same two banks produce different mixes of outputs, strong scope economies might arise via the merger.

Kang H. Park, William L. Weber (2006) present estimates of Korean bank inefficiency and productivity change for the period 1992-2002 that are derived from the directional technology distance function. It indicates that technical progress during the period was more than enough to offset efficiency declines so that the banking industry experienced productivity growth.

Cho and Shin (2004) found that although the five biggest South Korean banks experienced a decline in profitability during 1992-1997, they maintained greater cost efficiency and technical efficiency relative to other Korean banks.

III. METHODOLOGY

DEA can be roughly defined as a non-parametric method of measuring the efficiency of Decision making unit (DMU) with multiple inputs and multiple outputs. The DEA CCR model was first created by Charnes Cooper and Rhode (1978) based on Ferrell's (1957) idea on production efficiency, which assumes CRS (constant return scale). We call

¹ Koo, Ja Hyeong and Kiser, Sherry L. (2001). "Recovery from a financial crisis: the case of South Korea" (w). Economic & Financial Review. Retrieved 2009-05-05

² Kang H. Park and William L. Weber, "A Note on efficiency and Productivity Growth on the Korean Banking Industry, 1992~2002", 2006

it DEA-CRS model. The DEA BCC model was first proposed by Banker Charnes and Cooper (1984) based on CCR model, which assumes VRS (variable return scale). We call it DEA-VRS model.

1. The Constant Returns to Scale Model (CRS)

The DEA=CRS technical efficiency (DEA-CRS model): to simplify the problem, let's consider that these N banks operate under the CRS and employ three inputs ($X_j, j = 1, 2, 3,$) to produce two output ($Y_i, i = 1, 2$). The formal problem for the technical efficiency (TE) can conveniently be expressed in the following way:

$$\begin{aligned} & \text{Min}_{TE,W} TE_i \\ \text{s.t. } & Y \cdot w_i \geq y_i, \quad (1) \\ & X_j \cdot w_i \leq TE_i \cdot x_i, \quad j = 1, 2, 3 \\ & w_i \geq 0 \end{aligned}$$

Where TE_i is a scalar and represents the technical efficiency measure for the i-th bank, w_{ij} is the $1 \times N$ vector of intensity weights defining the linear combination of efficient banks to be compared with the i-th bank. The inequality ($Y \cdot w_i \geq y_i$) implies that the observed outputs must be less or equal to a linear combination of outputs of the banks forming the efficient frontier. The inequality ($X_j \cdot w_i \leq TE_i \cdot x_i$) assures that the use of inputs at the linear combination of the efficient banks must be less or equal to use of inputs of the i-th bank. The formulation will show that $TE_i \leq 1$. According to the Ferrel (1957), an index value of 1 refers to a point on the frontier and thus to a technically efficient bank.

2. The variable Return to Scale model (VRS)

The VRS technical efficiency (DEA-VRS model): the CRS assumption is only appropriate when all DMU's are operating at an optimal scale. The CRS assumption will be incorrect if all banks are not operating at an optimal scale. In this case, the CRS specification will be as the estimation of the technical efficiency by confounding scale effects. But, the substitution of the CRS with variable returns to scale (VRS) assumption brings about the estimation of the pure technical efficiency (PTE), i.e., TE devoid of the scale effects. This can be achieved by adding a convexity constraint ($N_1 \cdot w_i = 1$) to (1) which allows VRS as demonstrated below:

$$\begin{aligned} & \text{Min}_{TE,W} TE_i \\ \text{s.t. } & Y \cdot w_i \geq y_i, \quad (2) \\ & X_j \cdot w_i \leq TE_i \cdot x_i, \quad j = 1, 2, 3 \\ & N_1 \cdot w_i = 1 \\ & w_i \geq 0 \end{aligned}$$

Where N_1 is a $1 \times N$ vector of ones, the VRS frontier obtained this way envelops the data more tightly than the CRS frontier and thus generates technical efficiency scores which are greater than or equal to those obtained from the CRS frontier.

3. -The scale Efficiency (SE)

Many studies have decomposed the TE scores obtained from a CRS DEA into two components, one due to scale inefficiency and one due to "pure" technical inefficiency. This may be done by conducting both a CRS and a VRS DEA upon the same data. If there is a difference in the two TE scores for a particular DMU, then this indicates that the DMU has scale inefficiency, and that the scale inefficiency can be calculated from the difference between the VRSTE score and the CRSTE score.³

IV. DATA AND EMPIRICAL ANALYSIS

In this paper, we used 3 inputs and 2 outputs. Inputs are X_1, X_2, X_3 and outputs are Y_1, Y_2 . We have selected 7 banks from Uzbekistan and Korea. They are Hamkor Bank (HB), KDB Bank (KDB), Microcredit Bank (MKB), Peoples Bank (PB), Trust Bank (TB), Aloqa Bank (AB), Ravnaq Bank (RB), and Hana Bank (HB), Kookmin Bank (KB), National Agricultural Cooperative Bank (NHB), Shinhan Bank (SB), Woori Bank (WB), and Korea exchange Bank (KEB) in Korea. We use the bank's annual panel data, for the years from 2015 to 2020.

³ We use the software DEAP version 2.1 computer program by Tim Coelli to measure DEA's efficiency.



Table 1 - Summary of the Input and Output Variables

Variable	Description	Unit	Mean	Min	Max	S. D
Y ₁	T- Loans	Million dollar	22.03722	14.19041	26.11543	3.808174
Y ₂	Operating Revenue	Million dollar	20.17573	13.92890	24.25210	2.870697
X ₁	Employees	People	8.183237	5.950643	10.02109	1.367239
X ₂	T- assets	Million dollar	22.67917	16.17944	26.49418	3.419503
X ₃	T- equity	Million dollar	20.48236	15.11234	24.08929	3.092455

Summary information on the input and output variables are shown in Table 1. All money values transformed into the US dollar applying Uzbekistan

currency exchange rate to US dollar and Korean currency also same exchange rate to US dollar.

V. THE RESULTS

Table 2 - Uzbekistan and Korean Bank's Efficiency

Year	Nation	CRSTE	VRSTE	SE
2010	Uzbekistan	0.973	0.987	0.986
	Korea	0.999	0.999	1
2011	Uzbekistan	0.972	0.987	0.985
	Korea	0.999	0.999	1
2012	Uzbekistan	0.959	0.984	0.974
	Korea	0.997	0.998	0.999
2013	Uzbekistan	0.954	0.962	0.992
	Korea	0.998	0.998	0.999
2014	Uzbekistan	0.934	0.956	0.977
	Korea	0.997	0.997	0.999

SE: scale efficiency = CRSTE/VRSTE.

CRSTE: technical efficiency VRSTE: Pure technical efficiency

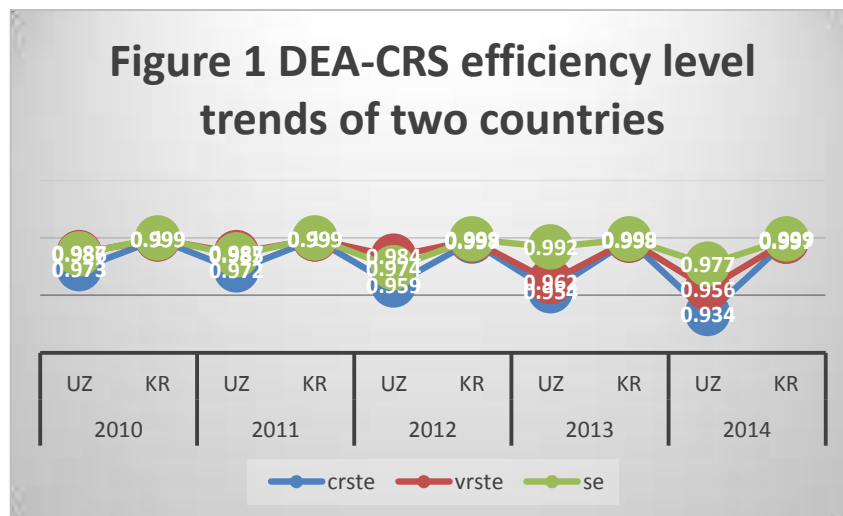


Table 2 and Figure 1 show the efficiency level of two countries' banks. The results showed that the banks of Korea have relatively

higher CRSTE than Uzbekistan, and scale efficiency of Korean banks is a little higher than that of Uzbekistan banks'.

Table 3 - the Efficiency Level of Input-Oriented DEA-CRS and DEA-VRS Model

		2010	2011	2012	2013	2014	Mean
DMU 1	CRS	0.966	0.965	0.949	0.941	0.903	0.9448
(PB)	VRS	0.966	0.965	0.954	0.95	0.906	0.9482
DMU 2	CRS	0.976	0.973	0.958	0.952	0.936	0.959
(AB)	VRS	0.977	0.974	0.959	0.959	0.945	0.9628
DMU 3	CRS	0.934	0.948	0.903	0.889	0.882	0.9112
(HB)	VRS	0.939	0.949	0.916	0.89	0.884	0.9156
DMU 4	CRS	1	1	1	1	1	1
(KDB)	VRS	1	1	1	1	1	1
DMU 5	CRS	0.957	0.948	0.924	0.91	0.882	0.9242
(MKB)	VRS	0.966	0.957	0.94	0.915	0.892	0.934
DMU 6	CRS	0.968	0.96	0.957	0.942	0.969	0.9592
(TB)	VRS	0.969	0.96	0.962	0.951	0.939	0.9562
DMU 7	CRS	0.997	1	1	0.987	0.969	0.9906
(RB)	VRS	1	1	1	1	1	1
DMU 8	CRS	0.971	0.981	0.982	0.97	0.962	0.9732
(HB)	VRS	1	1	1	1	1	1
DMU 9	CRS	0.976	1	1	1	1	0.9952
(IBK)	VRS	1	1	1	1	1	1
DMU 10	CRS	0.951	0.957	0.951	0.957	0.948	0.9528
(KEB)	VRS	0.988	0.986	0.986	0.978	0.979	0.9834
DMU 11	CRS	1	0.998	1	1	1	0.9996
(KB)	VRS	1	1	1	1	1	1
DMU 12	CRS	0.922	0.915	0.919	0.933	0.924	0.9226
(NHB)	VRS	0.992	0.991	0.98	0.977	0.977	0.9834



DMU 13	CRS	0.982	1	1	1	1	0.9964
(SHB)	VRS	1	1	1	1	1	1
DMU 14	CRS	0.941	0.947	0.941	0.95	0.933	0.9424
(WB)	VRS	0.993	0.991	0.99	1	0.987	0.9922

Table 3 shows the efficiency levels which are measured from the assumptions of CRS and VRS by using input-oriented DEA method. The average efficiency of DMU4 (KDB) is highest (equal to 1) in both CRS and VRS model; DMU3 (HB) is the lowest in CRS and VRS model. About Korean banks, the

average efficiency of DMU11 (KB) is the highest (equal to 1) in VRS. DMU14 (WB) is relatively low in both models. The efficiency values showed that the Uzbekistan banks are lower than Korean banks.

Table 4 - the Efficiency Level of Output-Oriented DEA-CRS and DEA-VRS Model

		2010	2011	2012	2013	2014	Mean
DMU 1	CRS	0.966	0.965	0.949	0.941	0.903	0.9448
(PB)	VRS	0.97	0.966	0.95	0.943	0.93	0.9518
DMU 2	CRS	0.976	0.973	0.958	0.952	0.936	0.959
(AB)	VRS	0.976	0.974	0.958	0.956	0.937	0.9602
DMU 3	CRS	0.934	0.948	0.903	0.886	0.882	0.9106
(HB)	VRS	0.942	0.959	0.938	0.919	0.92	0.9356
DMU 4	CRS	1	1	1	1	1	1
(KDB)	VRS	1	1	1	1	1	1
DMU 5	CRS	0.957	0.948	0.924	0.91	0.882	0.9242
(MKB)	VRS	0.972	0.967	0.956	0.936	0.91	0.9482
DMU 6	CRS	0.968	0.96	0.957	0.942	0.929	0.9512
(TB)	VRS	0.968	0.961	0.961	0.945	0.93	0.953
DMU 7	CRS	0.997	1	1	0.987	0.969	0.9906
(RB)	VRS	1	1	1	1	1	1
DMU 8	CRS	0.971	0.981	0.982	0.97	0.962	0.9732
(HB)	VRS	1	1	1	1	1	1
DMU 9	CRS	0.976	1	1	1	1	0.9952
(IBK)	VRS	1	1	1	1	1	1
DMU 10	CRS	0.951	0.957	0.951	0.957	0.948	0.9528
(KEB)	VRS	0.991	0.99	0.989	0.985	0.986	0.9882
DMU 11	CRS	1	0.998	1	1	1	0.9996
(KB)	VRS	1	1	1	1	1	1
DMU 12	CRS	0.922	0.915	0.919	0.933	0.924	0.9226
(NHB)	VRS	0.994	0.993	0.985	0.983	0.983	0.9876
DMU 13	CRS	0.982	1	1	1	1	0.9964
(SHB)	VRS	1	1	1	1	1	1
DMU 14	CRS	0.941	0.947	0.941	0.95	0.933	0.9424
(WB)	VRS	0.994	0.994	0.993	1	0.992	0.9946

Table-4 shows the efficiency levels which are measured from the assumptions of CRS and VRS by using output-oriented DEA method. The average

efficiency of DMU4 (KDB) is highest (equal to 1) in both CRS and VRS model; DMU3 (HB) is the lowest in CRS and VRS model. About Korean banks, the



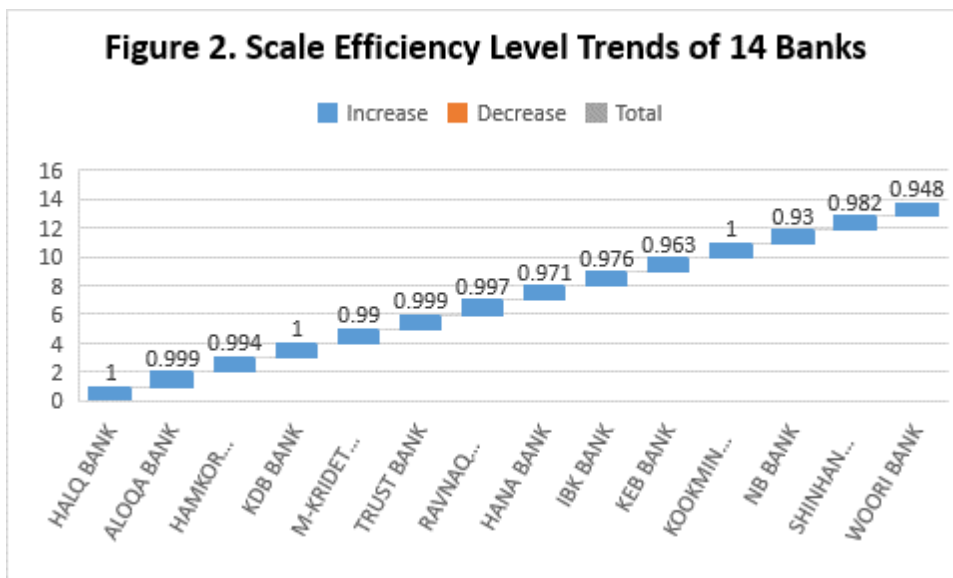
average efficiency of DMU8 (HB)-9 (IBK) and DMU11 (KB) are the highest (equal to 1) in VRS. DMU10 (KEB) is relatively low in both model. The efficiency values showed that the Uzbekistan banks are lower, but the efficiency of these banks has been increasing during 5 years.

Scale Efficiency and Return to Scale

Table 5 shows that scale efficiency (SE) and returns to scale (RTS). We compared Uzbekistan banks with Korean banks, and then results shows the Uzbek banks are relatively lower except M-Kredit bank and Ravnaq bank. The number of employees, the fixed assets and total equity in Uzbekistan banks are absolutely lower than Korean banks.

Table 5 - Scale Efficiency (SE) of DEA Model

	2010	2011	2012	2013	2014
HALQ BANK	1	1	0.995	0.99	0.997
ALOQA BANK	0.999	1	0.999	0.993	0.991
HAMKOR BANK	0.994	0.999	0.985	0.995	0.997
KDB BANK	1	1	1	1	1
M-KRIDET BANK	0.99	0.99	0.983	0.995	0.989
TRUST BANK	0.999	0.999	0.995	0.991	0.99
RAVNAQ BANK	0.997	1	1	0.987	0.969
HANA BANK	0.971	0.981	0.982	0.97	0.962
IBK BANK	0.976	1	1	1	1
KEB BANK	0.963	0.971	0.965	0.979	0.969
KOOKMIN BANK	1	0.998	1	1	1
NB BANK	0.93	0.923	0.937	0.955	0.945
SHINHAN BANK	0.982	1	1	1	1
WOORI BANK	0.948	0.955	0.95	0.95	0.946



**Table 6 - The Measure of Return to Scale from DEA model**

	2010	2011	2012	2013	2014
HALQ BANK	CRS	CRS	IRS	IRS	IRS
ALOQA BANK	IRS	CRS	IRS	IRS	IRS
HAMKOR BANK	IRS	IRS	DRS	IRS	DRS
KDB BANK	CRS	CRS	CRS	CRS	CRS
M-KRIDET BANK	DRS	DRS	DRS	IRS	IRS
TRUST BANK	IRS	IRS	IRS	IRS	IRS
RAVNAQ BANK	IRS	CRS	CRS	IRS	IRS
HANA BANK	DRS	DRS	DRS	DRS	DRS
IBK BANK	DRS	CRS	CRS	CRS	CRS
KEB BANK	DRS	DRS	DRS	DRS	DRS
KOOKMIN BANK	CRS	DRS	CRS	CRS	CRS
NB BANK	DRS	DRS	DRS	DRS	DRS
SHINHAN BANK	DRS	CRS	CRS	CRS	CRS
WOORI BANK	DRS	DRS	DRS	DRS	DRS

Table 6 shows the measure of returns to scale derived from DEA model. Roughly, Uzbekistan banks have shown IRS and CRS trends. But, the most Korean banks show CRS and DRS trends in few years. It means output increases is less than the input increases.

VI. SUMMARY AND CONCLUSION

Korean banks have CRS and IRS trends, but Uzbekistan banks have DRS during 5 years. But, the most of them are IRS during 5 years. They are developing well at the situation of the constant returns to scale.

DMU 3 and 4 showed relatively lower efficiency in DEA model. This result can be related to the inefficiency of state-owned commercial banks. Uzbekistan commercial banks input such as the number of employees and fixed assets are over-employed compared with other commercial banks, even 25 times more than Korean banks.

In Korea, an efficiency value of DMU 12 is relatively lower in DEA CRS model, but still higher compared with the Uzbekistan banks. But efficiency of two DMUs, are highest in both CRS and VRS model, even higher than some Korean banks. Therefore, Uzbekistan government should pay more attention on middle and small-sized commercial banks.

The average of the efficiency of Korean banks is higher than that of Uzbekistan. Uzbekistan located in Central Asia and Korea located in East Asia, even long distance between two countries, they have strong sense of competition at some aspects, especially in banking sector.

The model used in this paper is necessary to improve through more banks and data collections. More data and researches will be helpful to understand the bank shortcomings; furthermore, optimal allocation of resources will lead to the higher profitability and sustainable development. With the economic depression lasting for a long time, and the banking crisis that have been worldwide phenomena during the past 10 years, measuring, understanding and improving banking efficiency is a major matter of concern not only for banks managers, but also government.

REFERENCE

1. Ansher Capital 2019. *Uzbekistan Banking Sector: Emerging opportunities*. [Online] Available from: <https://www.anshercap.com>
2. Banker R., Conrad R. and Strauss R., 1986, *A comparative application of data envelopment analysis and Trans log methods: An illustrative study of hospital production*, *Management Science* 32(1), pp.30-44,
3. Banker R., Gadh M., and Gorr W., 1993 *A Monte Carlo comparison of two production frontier estimation methods: Corrected ordinary least squares and data envelopment analysis*. *European Journal of Operational Research*. 67, 332-343.
4. Berger A., Hancock D. and Humphrey D., 1993, *Bank efficiency derived from the profit function*, *Journal of Banking and Finance* 17, pp 317-347.
5. Camanho A., Dyson R., 1999. *Efficiency, Size, Benchmarks and Targets for Bank Branches: An Application of Data Envelopment Analysis*. *The Journal of the Operational Research Society*. Vol. 50, No. 9., pp. 903-915.



6. Grigorian D. and Manole V. 2002. *Determinants of Commercial Bank Performance in Transition: An Application of Data Envelopment Analysis*. IMF Working Paper. WP/02/146. International Monetary Fund.
7. Guzowska M., Isielewska M., Nellis J. and Zarzecki D. 2004. *Efficiency of the Polish Banking Sector – Assessing the Impact of Transformation*. In Emrouznejad A. and Podinovski V. 2004. Harada K., 2005. *Did Efficiency Improve? Megamergers in the Japanese Banking Sector*. Korea Institute for International Economic Policy (KIEP). CNAEC Research Series 05-02
8. Hassan Y., Grabowski R., Pasurka C, Rangan N., 1990. *Technical, Scale, and Allocative Efficiencies in U.S. Banking: An Empirical Investigation*. *The Review of Economics and Statistics*. Vol. 72, No. 2., pp. 211-218.
9. Koshelyuk Y. 2007. *Граничный анализ эффективности* (Frontier Analysis of efficiency). Paper presented during the seminar: Экспертные оценки и анализ данных [Online] Available from: <http://www.ipu.ru/>.
10. Koo, Ja Hyeong and Kiser, Sherry L. (2001). "Recovery from a financial crisis: the case of South Korea" (w). *Economic & Financial Review*. Retrieved 2009-05-05
11. Kang H. Park and William L. Weber, "A Note on efficiency and Productivity Growth on the Korean Banking Industry, 1992~2002", 2006
12. Lewin A., Morey R. and Cook T., 1982, *Evaluating the administrative efficiency of courts*, *International Journal of Management Science* 10(4), pp. 401-411.
13. Mertensa A. and Urga G. 2001. *Efficiency, scale and scope economies in the Ukrainian banking sector in 1998*. *Emerging Markets Review* Volume 2, Issue 3, 1 September 2001, 292-308
14. Oral M., Keffanaind O. Yolalan R. (1992) *An empirical study on analyzing the productivity of bank branches*. *IEE Trans.* 24, 166-176.



BOBURS KREATIVITÄT IN DEN ANSICHTEN DER WELT LITERATURSTIPENDIEN

**Polvonova Rano Mamatkulovna,
Murodova Takhmina Bakhtiyorovna**
Lehrer der Abteilung für deutsche Sprache und
Literatur des Karshi-Staates
Universität. Usbekistan.

ТВОРЧЕСТВО БОБУРА ВО ВЗГЛЯДАХ МИРОВЫХ ЛИТЕРАТУРОВЕДОВ

**Полвонова Рано Маматкуловна,
Муродова Тахмина Бахтиёровна-**
Преподаватели кафедры Немецкого языка и
литературы Каршинского государственного
университета. Узбекистан.

Аннотация

В статье рассматривается роль произведений Бабур в мировой литературе и их исследование зарубежными литературоведами. В частности, его работы по лингвокультурологии, сравнительное литературоведение, сопоставительное языкознание и переводоведение служат важным источником в широком спектре научных областей.

Ключевые слова и фразы: повествование, эпос, роман, образ, типология, произведение искусства, эволюция, бинарный анализ, тернарный анализ.

BOBUR'S CREATIVITY IN THE VIEWS OF THE WORLD LITERATURE SCHOLARS

ABSTRACT

This article discusses the role of Babur's creations in world literature and its study by foreign literary critics. In particular, his creations on cultural linguistics, comparative literary criticism, contrastive linguistics and translation studies serve as an important source in a wide range of scientific fields.

KEYWORDS: narration, epic, novel, image, typology, work of art, evolution, binary analysis, ternary analysis.

Jeder bemüht sich, sich selbst zu verstehen, mehr über seine Vorfahren zu erfahren und etwas über sein Leben zu lernen. In dieser Hinsicht sind historische Werke von großer Bedeutung. Dank der

Unabhängigkeit hatten wir die Gelegenheit, unsere Geschichte ehrlich zu studieren.

Präsident von Usbekistan Sh.M. Mit den Worten von Mirziyoyev: „Die Literatur zeigt das Herz des Volkes, die Spiritualität des Volkes. In der



heutigen komplexen Welt ist es notwendig, die einflussreiche Kraft der Literatur zu nutzen, um einen Weg in die Herzen der Menschen zu finden und sie zu edlen Zielen zu inspirieren. Wir werden alle Voraussetzungen für das Studium des Erbes der Vorfahren schaffen, die Schaffung einer großartigen Literatur, die unserer großen Kultur würdig ist "[1, 29].

Wenn wir die Seiten der Geschichte umblättern, können wir sehen, dass der große Beitrag des usbekischen Volkes zur Schatzkammer der Weltkultur, seiner Spiritualität, seit langem in der Welt bekannt und beliebt ist. Dank der Gnade Allahs, der Intelligenz, der harten Arbeit und der Bestrebungen unserer Vorfahren, Amir Temur Quragan, Al-Khwarizmi, Ibn Sino, Al-Beruni, Ahmad Yassavi, At-Termizi, Bahoviddin Naqshband, Alisher Navoi, Ulugbek, Babur, Behzod, Hunderte von Gelehrten, Genies, Wissenschaftlern, Dichtern, Malern, Königen und Generälen wie Mashrab und Nodirabegim sind aufgewachsen. Wenn es um Gelehrte geht, die den Namen der Nation verherrlichen, zieht Zahiriddin Muhammad Babur mit seinem Talent, seiner Intelligenz, seinem komplexen Schicksal und seiner offenen spirituellen Welt mehr Aufmerksamkeit auf sich.

Wie die Werke vieler unserer großen Vorfahren ist Baburs Arbeit für unsere Jugend lehrreich. Seine hochrangigen Eigenschaften der Liebe zum Mutterland, des Respekts für die Eltern, der Erziehung der Kinder, der Loyalität gegenüber einem Freund und des Produkts der Kreativität geben einem Menschen eine hohe spirituelle Lektion. Der berühmte Staatsmann Zahiriddin Muhammad Babur, einer der großen Vertreter der usbekischen klassischen Literatur, ein talentierter Wissenschaftler und Intellektueller, der einen unschätzbaren Beitrag zur Entwicklung der usbekischen Literatursprache und Literatur geleistet hat, lebte und arbeitete in einer komplexen sozio-historischen Periode.

Auf dem Gebiet der Weltliteratur haben geniale Künstler und große Schöpfer nicht nur die nationale Literatur mit ihren Meisterwerken bereichert, sondern auch einen würdigen Beitrag zur Entwicklung des universellen künstlerischen Denkens geleistet.

Zakhiriddin Muhammad Baburshah hat einen besonderen Platz unter den weltberühmten usbekischen Schriftstellern. Er ist sowohl ein großer nationalistischer Dichter, der Gründer eines großen Reiches als auch ein weltbekannter Gelehrter, der von den großen Literaturkritikern der Welt hoch geschätzt und geschätzt wird.

Zahiriddin Muhammad Babur wird immer noch von einer Reihe von Literaturkritikern der Welt als eine der großen Figuren anerkannt, die mit seiner reichen und fruchtbaren Arbeit einen großen Beitrag zur Schatzkammer der Weltkultur geleistet haben. Zur Bedeutung von Mirza Baburs Werken gibt der

englische Orientalist F. Talbot zu, dass "es für eine Person, die das moderne Indien studieren möchte, besser ist, zunächst Baburs Memoiren zu lesen [3, 121]".

Von den Großmächten Europas und Asiens anerkannt und in Eile diplomatische Beziehungen aufzubauen, vereint es Afghanistan und Indien (jetzt Afghanistan, Nordiran, Pakistan, Indien, Bangladesch), die sich in den Händen kriegführender Staaten wie Portugal und Großbritannien befinden. Aus dem Inhalt und der Geographie ihrer Werke ist bekannt, dass sowohl Gelehrte als auch Politiker, Schriftsteller und Theologen der Welt das Thema des baburidischen Königreichs, das in ihre Beziehungen involviert war, eifrig angesprochen haben [4, 56]. Es ist auch kein Geheimnis, dass die Erforschung der Aktivitäten von Baburshah, seiner Dynastie und seiner Werke in Großbritannien seit dem 16. Jahrhundert zu einem aktiven Prozess geworden ist.

Wie bereits erwähnt, hat Z. unter einer Reihe von Literaturkritikern der Welt Z. M. Im Rahmen von Baburs Arbeiten entstand ein Forschungsfeld. Insbesondere der deutsche Literaturkritiker, einer der weltbekannten Gelehrten der Mystik und Psychologie, Goetz Manfred, gibt zu, dass er sehr an der Haltung des Königs und Schriftstellers Bobur zur Poesie interessiert war [4, 91].

Baburs Leben und Werk wurden auch in Frankreich umfassend untersucht, und der französische Orientalist Bartoleme D'erbelo (1621-1695) informierte als erster französische Gelehrte über Zahiruddin Muhammad Babur und das Boburnoma. D'erbelo beschreibt in seiner Enzyklopädie Die Bibliothek des Orients (La Biblioteque orientale. Paris, 1967) mit großer Aufregung das Leben von Bobur, seine staatlichen und Führungsqualitäten sowie seine unschätzbare Kreativität und Intelligenz in Literatur und Kunst.

Es ist bekannt, dass im 19. Jahrhundert in Europa, insbesondere in der französischen Orientalistik, eine neue Ära in der Erforschung von Baburs Erbe, der Übersetzung seiner Werke, begann. In diesen Jahren haben französische Wissenschaftler bedeutende Forschungen zur Übersetzung von Boburs großartigem Werk "Boburnoma" ins Französische, zur Untersuchung seiner Textmerkmale und zur Bewertung seiner politischen und historischen Bedeutung durchgeführt.

Es sei darauf hingewiesen, dass das "Boburnoma" 1980 durch eine Sonderentscheidung der UNESCO in Paris ins Französische übersetzt wurde. Die Übersetzung wurde vom französischen Orientalisten Jean-Louis Bakye Grammon direkt aus dem Original, dh aus der alten usbekischen Sprache, angefertigt. Die UNESCO-Ausgabe verbreitete sich so schnell und erlangte so viel Ruhm, dass die Übersetzung 1985 erneut veröffentlicht wurde. Der Übersetzer Jean-Louis Bakye Grammon wurde in Frankreich gegründet und mit dem renommierten



Preis für die beste Übersetzung ausgezeichnet [5, 71]. Hier, zusammen mit den Fähigkeiten des Übersetzers, der Arbeit und ihres Autors, Z.M. Es ist keine Übertreibung zu sagen, dass Bobur auch auf das Produkt der Kreativität geachtet hat.

Zugegeben, er übersetzte das Boburnoma ins Englische,

Lane Pool, Monstuart Elfinston, Edward Dawson, Williams Rashbrooke, Henry Elliot, Edward Holden, Annetta Susan Beverij und andere britische Beamte, die über Babur geschrieben haben, und andere britische Beamte in Indien. Ihr Ziel, ihre Dominanz zu festigen, schwingt mit uns aus der Geschichte mit [2, 44].

Wenn wir unsere Aufmerksamkeit auf die Werke indischer Gelehrter richten, finden wir in ihren Geständnissen, wie wichtig der indische Marsch, den Baburshah selbst "das Gesicht der Schwärze" nannte, für die Entwicklung der Geschichte und Kultur desselben Volkes war:

*Толъё йўқи жонимга балолиғ бўлди,
Ҳар ишники айладим хатолиғ бўлди,
Уз ерни қўйиб, Ҳинд сори юзландим,
Ёраб, нетайин, не юз қаролиғ бўлди.
(uzb)*

*Нет Родины и счастья более нет,
И ничего уж кроме боли нет.
Я в этот край пришел своею волей.
Его оставить силы воли нет.
(rus)*

*No home and no more happiness.
Everything I did turned out a fault.
I left my home and went to India,
Oh lord, what to do, it's my greatest fault.
Wegen Schicksaalsfehlen wurde Geistkatastrophe,
Fehlerfoll wurde jede meine Arbeit,
Ich verliess mein Land, fuhr nach Indien weg,
O, mein Gott! Was soll ich tun? Das ist doch
Schämlichkeit.*

*Pas de bonheur sauff de peine.
Tout ce que je fis, ffus la peine.
Je pris la dirrection de l'Inde
Mon Dieu, que ca fut la peine (3, 31- 64- 98).
(Deuts)*

Der indische Wissenschaftler L.P. Sharmas Zitat "Wenn er nicht einen großen Teil Nordindiens erobert hätte, hätte er keinen so hohen Platz in den Seiten der Geschichte eingenommen" ist ein Beweis für seine hohe Wertschätzung für den König und Schriftsteller Babur [4, 102].

In den letzten Jahren hat das Interesse deutscher Forscher an der Arbeit von Zakhridin Muhammad Babur "Boburnoma" zugenommen. 2016

wurde das Werk "Boburnoma" ins Deutsche übersetzt und veröffentlicht. Diese Übersetzung wurde vom usbekischen Historiker H. angefertigt. Man kann stolz zugeben, dass es von Dalov unter der Leitung der deutschen Historikerin Manuella Daho gemacht wurde.

Es sei darauf hingewiesen, dass die deutsche Übersetzung der Babur-Zeit auch fünfzehn Farbminiaturen und drei strategisch wichtige Karten dieser Zeit enthält.

Unser eifriger und patriotischer Held Hamid Dalov führte Babur und Baburi in die deutsche Kultur, die deutsche Literatur und die Leser ein und sagte, sein Vater gehöre Amir Temur (1336-1405) und der timuridischen Dynastie an und er selbst gründete die Baburi-Dynastie. absorbiert.

Es ist wichtig, dass nicht nur die Übersetzung des Werkes des Königs und Dichters Zahiriddin Muhammad Babur "Boburnoma" auf Deutsch durch eine Reihe deutscher Literaturkritiker, sondern auch Übersetzungen in bedeutende Sprachen von Lesern westlicher und östlicher Länder noch studiert werden.

Kurz gesagt, die Erleuchtung der einzigartigen Werke unseres großen Vorfahren Zakhridin Muhammad Babur, der als leuchtender Stern am geistigen Himmel unserer Nation gilt, wird nicht nur die usbekische Nation, sondern auch die Herzen von mehr als hundert Lesern für immer erleuchten. Wir hoffen auch, dass viele unvoreingenommene Meinungen über die große Figur, die am Himmel der Geschichte leuchtet, von zukünftigen Historikern, Literaturkritikern und Forschern respektiert werden.

LITERATUR

1. **Mirziyoev Sh.M.** Wir werden unseren Weg der nationalen Entwicklung entschlossen fortsetzen und auf ein neues Niveau heben. Usbekistan, Taschkent: 2017 592 p.
2. **Dmitrieva L. V. V.** Orientierungsprobleme. –M.: 1959. –S. 143.
3. **Zahiriddin Muhitdinov Bobur Mirzo.** In Usbekisch (kyrillische und lateinische Schreibweise) Russisch, Englisch, Deutsch, Französisch, Hindi, Arabisch. Andijan Verlag-Druckerei 2005. 220 p.
4. **Rahmonov V., Hotamov N.** Bobur // Ausgewählte Werke // Lehrer, Taschkent: 1983. 248 p.
5. **S.Hasanov.** Zahriddin Muhammad Bobur. "Usbekistan", Taschkent: 2011. 242 p.
6. **Götz, Manfred,** Türkische Handschriften, Band XIII, 4, Wiesbaden: –S. 495.

LITERATURE

1. **Mirziyoev Sh.M.** We will resolutely continue our path of national development and raise it to a new level. Uzbekistan, Tashkent: 2017 592 p.
2. **Dmitrieva L. V.** Problems of Orientation. –M.: 1959. –S. 143.
3. **Zahiriddin Muhitdinov Bobur Mirzo.** In Uzbek (Cyrillic and Latin spellings), Russian, English,



German, French, Hindi, Arabic. Andijan Publishing House-Printing House 2005. 220 p.

4. **Rahmonov V., Hotamov N. Bobur** // *Selected works // Teacher, Tashkent: 1983. 248 p.*
5. **S. Hasanov. Zahridin Muhammad Bobur.** "Uzbekistan", Tashkent: 2011. 242 p.
6. **Götz, Manfred, Türkische Handschriften, Band XIII, 4, Wiesbaden: –S. 495.**



GERMAN POETICAL EXAMPLES IN UZBEK TRANSLATIONS

Yangiboeva Anorkhol Koraboevna
Teacher of the Department of German
Language and
Literature of the Karshi State University.
Uzbekistan.

Abdurakhimova Gulasal Khamidovna
Teacher of the Department of German
Language and
Literature of the Karshi State University.
Uzbekistan.

SUMMARY

The article compares samples of translation of the works of German poets into Uzbek. The appearance of works translated from the original forced to create a theory of translation. The main source for the article is the decomposition of versions of the translation of the lyrics by I.V. Goethe and G. Heine from the original into Uzbek.

KEYWORDS: translation, literature, creative inspiration, artistic thinking, culture, spiritual wealth.

НЕМЕЦКИЕ ПОЭТИЧЕСКИЕ ПРИМЕРЫ В УЗБЕКСКИХ ПЕРЕВОДАХ

Янгибоева Анорхол Корабоевна
Абдурахимова Гуласал Хамидовна
Преподаватели кафедры Немецкого языка и
литературы Каршинского государственного
университета. Узбекистан.

Аннотация

В статье сопоставлены образцы перевода на азербайджанский язык произведений немецких поэтов. Появление произведений переведенные с оригинала принуждают создавать теорию перевода. Главный источник для статьи разложение вариантов перевода лирики И.В.Гете и Г.Гейне из оригинала на узбекский язык.

Ключевые слова: перевод, литература, творческое вдохновение, художественное мышление, культура, духовные богатства.

Известно, что через переводную литературу народы знакомятся с историей, традициями и культурой друг друга и получают возможность читать бессмертные произведения мастеров речи на своих родных языках.

В то время как перевод, особая форма межъязыкового и межкультурного общения, является высшей стадией двуязычия взрослых. Кульминацией столетий перевода является художественный перевод, а его наиболее сложный вид - поэтический перевод. Именно



благодаря этому высшему искусству формируется и обогащается художественное мышление народов, а духовные богатства нации смешиваются друг с другом для обеспечения культурного и исторического развития человечества.

Корней Чуковский представлял себе высокохудожественную программу художественного перевода следующим образом: творческое вдохновение переводчика может быть эффективным только в том случае, если оно не отделено от оригинала, а буквально, то есть, от способа перевода, с улыбкой, музыкой, искренностью, передать читателю глубину чувств, яркость изображения, очарование красок и звуков, гармонию интонаций. Каждое переведенное произведение - это произведение переводчика. Он работает творчески, учитывая все уровни обоих языков, обогащая все возможности языка новыми жемчужинами.

Произведения немецкие поэтов Х. Гейне, Ю. В. Гете, Ф. Шиллер, М. Хорошо знают и в Узбекистане. Многие из них были переведены на узбекский язык преподавателями нашей кафедры. Обратим внимание на примеры из произведений Рильке, переведенных на узбекский язык. Из стихотворения Х. Хайна «*An den schönsten Sommertagen*»:

*Jetzt verwindet, krank und leidend,
In den schönsten Sommertagen,
Trag ich wieder, Menschen meidend,
Nach dem Wald die Bittern klagend.*

*Lohiy, go'zal yozni bilurmen
Yarador ruh uchun chekarman jafu.
Sokinlikda ulurib tanho
Odamlardan nola qilerman.
(Узбек.пер. Абдурахимовой Г)*

Или трогают следующие стихи из перевода стихотворения Г. Гейне, посвященного весне:

*Die blauen Frühlingsaugen,
Schauen aus dem Gras hervor,
Das sind die liben Veilchen,
Die ich zum Strauss error.*

*Bunchalar go'zaldir go'yo sen bahor,
Dunyoni bezaydi shukuhli onim
Bunda binafshalaring mehrga zor
Orzuym, umidim sen ila jonim
(Узбек. пер. Янгибаевой А)*

Вывод заключается в том, что перевод сохранил диалектическое единство между содержанием и формой оригинала, духом и буквой, передал читателю лексические,

синтаксические, стилистические возможности, описания и средства выражения противоположного языка.

Иногда перевод настолько совершенен и естественен, что читатель воспринимает его как оригинальное произведение:

*Der Frühling zwei schöne Augen
Verlocken mein Herz in neue Betörung!
Ich glaube, die Rosen und Nachtigallen,
Sind tief verwickelt in dieser Verschwörung.*

*Bahor - bu go'zal juftlik onlari
Uning tuzog'iga tushmagan bormi.
Bulbulning gullarga voh, armonlari
Birodar, bahorning bog'lari tormi.
(перевод Янгибаевой А)*

Суть перевода состоит в том, чтобы заново выразить смысл исходного текста через язык перевода. В процессе перевода общее значение и различие - это два разных языка. Сравним следующие стихи:

*Horchend stehen die stimmen Wälder,
Jedes Blatt ein grünes Ohr!
Und der Berg, wie träumend steckt er
Seinen Schattenarm hervor.*

*Bu ajib sokin tunlarda ham
Barglar yashil shoxga o'xshaydi.
Sukut birla o'tirib bir dam
Soyalari cho'zilganga go'yo o'xshaydi.
(Узбек.пер. Абдурахимовой Г)*

Несомненно, самое важное после Фауста произведение Ю. В. Гете - это, как все согласны, «Западно-Восточный диван». В этом произведении поэт посвятил стихи самым известным и историческим деятелям мусульманского мира, в том числе пророку Мухаммеду, классика Азербайджана Низами Джангани, турецкому полководцу Амиру Теймиру, Хафизу Ширази, потрясшим весь мир. Поэт, который понимает значение хадиса «Украшайте Коран своим голосом», пишет описания рая и стихи созерцания в Коране:

*Der echte Moslem spricht vom Paradise,
Als wenn er selbst allda gewesen wäre,
Er glaubt dem Koran, wie es der verhiesse,
Hierauf begründet sich die reine Lehre.
Jannatni madh etuvchi musulmon,
Guvohlik qiladi, qalbida iymon.
Aslida Islomning asosi Qur'ond, -
Har bir so'z uning mag'zida vijdon.*

(пер. Абдурахимовой Г)



В содержании стихотворения Ю.В. Гете, посвященного Навои, проникновенен поэтический отклик великого поэта на наш священный Коран и вера с образом и языком Навои. В поэтическом образе Навои поэт выразил свою любовь к Священному Корану в следующих стихах:

*Eshiting, javobim sahiy aylangiz,
Ushbu hikmatlarda chuqur ma'no bor.
Qur'oni karimni yod o'qingiz,
Men buni sizlarga etganman izhor.*

*Kerak emas menga birodar, boylik,
Vijdon pok bo'lsa- turmush chiroylik
Har qanday azoblarga turib beraylik
Bul dunyo tashvishlariga barham beraylik...*
(перевод Янгибаевой А)

Причина, по которой Ю.В.Гете был выбран в качестве объекта исследования перевода «Западно-Восточного дивана», заключается в том, что поэтический перевод шедевра великого немецкого поэта на любой развитый литературный язык, в том числе и на узбекский литературный язык, стал своеобразной энциклопедией переводческого искусства. Он

может существенно обогатить историю, теорию и практику перевода.

Хотелось бы отметить, что и немецкие ученые исследовали на территории нынешнего Узбекистана фольклорные произведения ещё в начале XX века. Немецкий ученый Генс Шварц и русский фольклорист-ученая А.Троицкая собирали фольклорные произведения узбеков и эти образцы фольклорных произведений были переведены на немецкий и русский языки.[5]

Значить литература и культура(духовность) -это одно целостное явление, которое без друг друга невозможно представит.

Литература

1. **А.Курбанли** «Перевод как один из основных источников словообразования». ADU. Тезисы докладов Международной конференции по переводу и транснациональным процессам. Баку. 2005 г.
2. **А.Рзаев**. Научные труды АПДИ "Перевод и оригинал" 1975 г.
3. **Г. Левый**. Искусство перевода, Москва, 1974
4. **А. Лилова**. "Введение в общую теорию перевода" Москва, 1985 г.
5. **Турсунов И.Н.**Халқ оғзаки ижодида диний мотивларни ўрганиши масалалари.//Ислом тафаккури.4-сон, 2020.



THE EFFECT OF STRATEGIC PLAN ON ORGANIZATIONAL PERFORMANCE IN REMITTANCE COMPANIES IN MOGADISHU SOMALIA

Ali Yusuf Omar

Graduating Master of Business Administration (MBA)
from University of Somalia

Supervisor: Mr. Mohamed Abdulle Sabriye

ABSTRACT

The main purpose of the study was to identify the effect of strategic plan on organizational performance of remittances in Somalia in Mogadishu. The study had three objectives. The first objective of the study was to determine the effect setting objectives on organizational performance of remittance companies in Mogadishu, Somalia. The second objective of this study was to assess the effect of budgetary allocations on organizational performance of remittance companies in Mogadishu, Somalia. The third objective of this study was to find out the effect of organization structure on organizational performance of remittance companies in Mogadishu, Somalia. The target population was 100 and the sample size was 40 respondents. The study used descriptive design. And 20 questionnaires were distributed. Descriptive and regression analysis was used. The study found that setting objectives, budgetary allocations and organization structure have significant positive relationships on organizational performance of remittance companies in Mogadishu-Somalia. Finally, the researcher found that the competitive strategy has significant positive relationships on organizational performance of remittance companies in Mogadishu-Somalia.

INTRODUCTION

Over the last two decades, developing countries have witnessed an unparalleled rise in workers' remittances. According to the (World Bank, 2006) estimates, official remittances received by LDCs increased from US\$31.2 billion in 1990 to US\$221.3 billion in 2005, representing an annual growth rate of over 13 percent. Remittances are now equivalent to about 35 percent of total financial flows to developing countries and have surpassed both official development aid flows and non-foreign direct investment flows. Moreover, the true size of remittances including unrecorded remittance flows is estimated to be at least 50 percent larger (World Bank, 2006).

According to, (Leeson, P., 2007), observed that in the 1980s the government of Somalia turned to inflation to finance its corrupt and bankrupt projects. Between 1983 and 1990, average annual depreciation of the Somali shilling against the US\$ was over 100 percent. In some years depreciation exceeded 300

percent (Little, 2003). Hyperinflation destroyed the savings of Somalis who managed to accrue modest sums over time. It also incapacitated the monetary unit as a means of economic calculation. Government's willful mismanagement of public resources prevented the state from being self-supporting. International development agencies, eager to woo Somalia from the influences of Eastern Europe, filled the shortfall with massive inflows of foreign aid. By the mid-1980s, 100 percent of Somalia's development budget and 50 percent of its recurrent budget was funded by foreign aid (UNDP , 2001). In 1987 more than 70 percent of the state's total operating budget was financed this way (Mubarak, J (1996),, 1996).

In Somalia, Financial remittances from Somalis living abroad are perhaps the outstanding feature of the economy although this was not new. Their significance grew as part of the emerging parallel economy in the 1980s, when they were estimated to be worth US \$370 million annually, 75% of which came from workers in



the Gulf countries. This was equal to 13 times the Somali-based national wages bill and partially explains how households at the time were able to survive on basic government salaries that covered only 8% of household expenditure. As a result of the civil war the size of the Diaspora has grown and along with it the volume of remittances. The source has also changed as the Somali Diaspora in Europe, USA, Canada, and Australia has increased. According to, (Adams, R.H. Jr., 2003) noted that although remittances have become the critical source of hard currency for the country, the precise value of remittance to elements of Social Development is still in doubt.

Business environment is volatile and ever changing; and organizations need to look for fresh ways to keep growing profit. (Heppelman, J. E., 2014) found Consumer preferences and demands are also continuously evolving and increasing respectively to remain dynamic environment like U S A, firms continually innovate to stay ahead strategic management practices and this enable them to gain higher profit because of using their unique resources. (Charles, 2008) Indicated that to maximize shareholder value and increase performance managers must formulate and implement strategies that enable their companies to outperform its rivals—that give it a strategic plan. A company is said to have a good strategic plan over its rivals when its performance is greater than the average performance and profit growth of other companies competing for the same set of customers. According to, (Tapinos, E; Dyson, R. G., 2005) Strategic Plan provides the basic direction and rationale for determining the focus of an organization; and also provides the specification against which any organization may best decide what to do and how to do it. Simply put, it is a process for creating and describing a better future in measurable terms and the selection of the best means to achieve the results desired. It is important to note that not all planning is actually strategic even though they may be termed so. It is said that failure to plan leads to planning to fail. (Dyson, R.G., 2000). In order to assess the level of success or otherwise of a corporate body, its established strategic plans relative to the performance of the organization in all fronts of operations have to be ascertained. Formulating, implementing and the evaluation of a Strategic Plan indisputably become a major activity in both profit and not-for-profit organizations, especially, the banking sector (Tegarden, F. (2003)., 2003).

Strategic planning standardizes the processes of goal/objective setting, situation analysis, alternative consideration, implementation and evaluation that enable an organization to attain its goals and objectives (Tapinos, E; Dyson, R.G., 2005).

Performance measurement has significant influence in supporting the achievement of an organization's goals and the effectiveness and efficiency of its strategic planning process. Thus, in order to assess the level of success or otherwise of a corporate body, its established strategic plans in connection with the performance of the company in all fronts of operations had to be established (Strickland, A. J., 2004).

Strategic planning is a management function that focuses on the growth and future sustained well being of an organization. Ansoff, (2003) affirms that the interest in strategy grew out of the realization that a firm needed a well defined scope and growth direction not just extrapolations of past performances which were being used to project into the future. Hart and Banbury, (1994), made an observation of firms' recognition for the need to do strategic thinking and planning.

In Africa similar research had developed , in Kenya study investigated strategic plan on organizational performance (Benjamin, M. N., 2017).

In Somalia, since the collapse of central government in (1991), many businesses started to boom up fast especially service industry. These businesses were facing an environment which is dynamic, changeable, and essential, as well as an intensive competition. These circumstances and many others compel the organizations to adopt certain business concepts, policies, and practices in order to attain their goals and to get prominent results. Among those business concepts is strategic planning (Ali Yassin Sheikh Ali (2016) In Somalia, after the collapse of the Somali state all financial institutions in the country were destroyed by the fighting factions. Although the last two decades the country has no effective government that monitor the quality of bank institutions on the other hand fortnightly there was increasing number of private remittances since 1990, according to our best knowledge there is no study that focus the impact of service quality provided by these institutions on customers's satisfaction. Thus, this is the main purpose of this study. (husein & Abdullah, 2007).

LITERATURE REVIEW

Strategic planning was about success and failure, about the ability to plan wars and win them; big mergers perhaps the most visible sign of strategic planning can transform the performance of an organization, make fortunes for shareholders or change the structure of an industry (Scholes, K and Johnson, G. , 2002). Ineffective strategic planning can bankrupt companies and win careers of chief executives thus hindering organization growth. Appleby (1994) defines



a strategic plan as deciding on major organizational goals and guidelines or policies used in achieving those goals. This planning relies on an unpredicted long term forecast from senior levels of the organization.

According to (Campbell B., 1999) and (Thompson A. A and Strickland A. I , 2007), a strategic plan is a process that involves assessment of treats and opportunities of an organization, determining weakness and strengths in changing environment.

They continue saying that a strategy is laid down to cope with the problem at hand, considering the goals, objectives of the organization. They further defines strategic planning as management tool that continually and systematically evaluate a business, identify its long-term goals and quantifiable objectives, develops a plan to implement, monitor performance, allocated resources, redefine the plan where need be, to ensure the organizational members work towards the defined goals in changing environment and observes that strategic plan should ask the questions; Why do organizations exists, what it does, where it should go and how it is going to get there. Strategic plan should encompass, a vision, mission and organizational values. A vision is an insight into the long-term future, which should be short, understood by everyone, describes a static stage. A mission is the route followed to achieve a vision.

(Bennett R., 1996), summarizes the benefit of having strategic plan as follows:- It formulates strategy for the future action and criteria for the future actions. It makes it easier the coordination of divisions, subsidiaries and other component parts of the organization hence act as the focal point for all operations in the organization, the organization can analysis its position through strategy formulation hence know its internal weaknesses and hence how to get a remedy. It makes decision in response to predictable changes, identification of external treats and opportunities. The organization through speculation of future events may lead to influencing the future for the benefit of the organization growth and after considering all facts important decisions can be made hence avoiding crisis situations.

The mission of an organization the unique aim that sets the organization apart from others of its type. Objectives are the specific targets to be reached by organization. They are translation of an organization mission into concrete terms against results can be measured.

(Bernard, 2004), identifies the benefits of setting objectives as follows; it provides a basis for planning and developing other types of plans such as policies, budget and procedures. It acts as motivators for individuals and departments of an enterprise mobilizing

their activities with a sense of purpose, it helps in development of effective control that measure results and lead to corrective actions, it facilitates coordination behavior of various groups which otherwise may pull in different directions, they function as a basis for managerial control by serving as standards against which actual performance can be measured, provides legitimacy to organization activities and finally it facilitate better management of organization by providing a basis for leading, guiding, directing and controlling the activities of various departments.

(Hugh, D.; Michael, 2002) argues that the one or two sentences vision statements most companies make available to the company of course provide only a glimpse of what executives are really thinking and the strategic course they have chartered. Company personnel really have much better understanding where the company is headed and why is revealed in the in the official vision. But the real purpose of strategic vision is to serve as management for giving the organization a sense of direction. Like any tool, it can be used properly or improperly, either clearly conveying a company's strategic course or not.

(Tosi H. , 1975), identified some of characteristics of efficient budgetary system which include budget oriented towards results, budgetary system should be more effective if the duties and responsibilities for all operations are well defined and rightly assigned budget should be simple and understandable, fair and objective. Budget should be based on documentable information and not simple guesswork and judgment. A quick and two-way communication should be adopted so that the managers get timely information on deviations. Lastly, budget should be viewed as positive and be conducive to self control.

However this (Arthur S, Mondy R.W & Shane R.P, 1990), argue that despite its benefits, budgeting has become crucial to the planning process because budgets are often too rigid and restrictive because HR supervisors are given little free hand in managing their resources, budget may be changed too often or not at all making it difficult for employees to meet performance levels, furthermore, funds are allocated for various activities may not be transferable from one account to another. Budgets are used to evaluate the performance and result but the causes of failures and success are not thoroughly investigated, budgets may used punitively whereby employees regards budgets simply as rating tool for catching their mistakes which lower their morale and dilute their sense of dedication, budgets make some managers believe that all funds allocated in a budget for a given activity must be spent on that activity which may be detrimental to the organization's effectiveness. Budgeted goals may be



perceived as too high often misused particularly during the evaluation of action with the plans and strategies in the light of the latest information. (Otley D.T., 1998).

(Nnabuike, E., 2009) defines organizational performance as setting up a structure or mending an already existing one to suit the organizational environment and the demands of technology.

Organizational structure also referred to as organizational design provides a solid foundation for company operations by laying out the physical grouping of employees and the managerial hierarchies within an organization. Organizational design essentially provides a guide for the way in which work is to be completed within the organization by determining how task, decision and information flow into the company. Organizational design translates the goals and desires of business leaders into actual, tangible plans. Organizational design can serve as an element of a strategic plan to accomplish specific objectives since organizational structure influences the way in which work flows in a company. Therefore, different design can help or hinder different strategic objectives and also can aid or hinder employees in their role.

Structure can dictate the means by which strategies are formed, for instance, Companies with good structure, on the other hand, often involve a range of employees in strategy sessions. For organization to deliver its plan, the strategy and the structure must be woven together seamlessly. They involve combining flexible decision making, and sharing the best ideas across the organization, with appropriate levels of management and control from the centre. A company's organizational structure must support its strategy. For instance, in a case where downsizing is the strategy, organizational design involves figuring out which positions or department to trim. When introducing a new line of business, organizational design means figuring out who is responsible for the new business, how many positions should be opened and where in the reporting structure in the new line belongs. Normally businesses draft these changes into a formal organizational chart so that everyone involved can clearly understand the changes and how the business should operate. Employees at all levels of company must be empowered to effectively complete the task necessary to achieve organizational objectives (Nnabuike, E., 2009)

There is hardly any organization that does not have profit and growth as its main objectives. The growth of a firm is principally measured on the percentage of market share captured and client served. By deciding how to approach the markets and Customers, employees are placed into different strategic

positions to execute the strategies established by the organization hence organizational structure is actually integral of strategic planning. However empirical evidence by Williams (1997) confirms a positive relationship between organizational structure and strategic planning while (Weir, C., 1995) in his effort to establish the relationship between organizational structure and corporate performance concludes that firms that adopted appropriate structure yield higher profits than those that do not (Weir, C., 1995).

METHODOLOGY

The research design that was used in this study was descriptive cross sectional survey method aimed at establishing the strategic planning on organizational performance of remittances in Mogadishu, Somalia. The method was preferred because it allows for prudent comparison of the research findings. A cross sectional and descriptive survey attempts to describe or define a subject often by creating a profile of a group of problems, people or events through the collection of data and tabulation of the frequencies on research variables or their interaction as indicated.

The questionnaire was used as an instrument for data collection. The questionnaire consists of three sections. The first section contained demographic profile which included gender, age, marital status, experience and type of work. Second section is strategic plan consists of three dimensions (setting objectives, budgetary allocations and organization structure) and third section is organizational performance.

The data on complete mixed questionnaire will be categorized or coded and will enter into a computer for the Statistical Package for Social Scientists (SPSS) to summarize the data using simple and complex frequency tables. The same package used to analyze by computing relative frequencies, means, and standard deviations. In the questionnaire each selected one to four scale for where, 1=strongly disagree, 2=disagree; 3= agree; 4= strongly agree.

FINDING OF THE STUDY

The findings of the study obtained from the target respondents that were involved in this study. This chapter highlights general information of the respondents, followed by the findings on the effect of strategic plan on organizational performance of remittance companies in Mogadishu-Somalia, the effect of setting objectives, budgetary allocations, and organization structure on Organizational performance.

Gender in majority of the respondents of this study which 30 respondents or (75.0%) were male while the remaining 10 respondents or (25.0%) were



female in terms of gender the majority of the respondents were male so this show male are dominated female in terms of work places.

The majority of the respondents of this study aged 18-30 years were 30 respondents or (20.0%), the respondents aged 8, while 2 respondents aged between 41-50 that were (5.0%),

The marital status of the respondents from the analysis, 25 respondents that is (62.5%) of the respondents were single 15 respondents (37.5%) of the respondents were single. This study shows that majority of the employees are single.

The majority of the respondents of this thesis were Bachelor level which was 27 respondents that equivalent (67.5%), 7 respondents that equivalent (17.5%) were secondary level, while the remaining 1 respondents which equivalent (2.5%) were diploma and 5 respondents that equivalent 12.5% were master degree.

The majority of the respondents of this study working 0-2 years were 27 respondents that equivalent (67.5%) or 3-5 years that was 10 which equivalent (25.0%) and 6-8 years that was 3 that was equivalent (7.5%).

The main objective of this study was the effect of strategic plan on organizational Performance of remittance companies in Mogadishu- Somalia. The study had three objectives. The first objective of the study was “To find out setting objective on organizational performance of remittance companies in Mogadishu- Somalia “the mean index of the questions was 3.75 which indicated Agree level. The second objective of this study was, about “budgetary allocations on organizational performance of remittance companies in Mogadishu- Somalia” the mean index of objective two was 3.71. Indicated Agree level

The third objective of this study was to find out organization structure on organizational performance of remittance companies in Mogadishu- Somalia “the mean index of the questions was 3.73 which indicated agree level. The study found that there is positive significant relationship between strategic plan on organizational performance of remittance companies in Mogadishu- Somalia.

REGRESSION ANALYSIS

Model Summary

According model summary revealed that adjusted R square of (0.511), implying that about (51%) variability in organizational performance is attributed to strategic formulation, strategy implementation and strategy evaluation.

Anova

According Anova indicated that, (the model involving constant, setting objectives, budgetary allocations, organization structure) is significant in predicting how setting objectives, budgetary allocations, organization structure determine organizational performance of remittances in Mogadishu Somalia. The regression model achieves a degree of fit as reflected by an R2 of 0.511 ($F = 12.542$; $P = 0.000 < 0.05$).

Coefficient

According to coefficient results indicated on how setting objectives, budgetary allocations, organization structure determine organizational performance of

Remittance companies in Mogadishu Somalia. The regression equation was that: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$ and the regression equation became: $Y = 0.748 + 0.182X_1 + 0.457X_2 + - 0.161X_3$. This indicates that there was positive and significant effect of strategic plan on organizational performance in remittances in Mogadishu- Somalia.

There was positive and significant effect of setting objectives and organizational performance ($\beta = 0.182$; $t = 1.538$; $p > 0.05$). There was positive and significant effects budgetary allocations and organizational performance ($\beta = 0.457$; $t = 3.291$; $p < 0.05$). There was no positive and significant effect of organization structure and organizational performance ($\beta = -0.161$; $t = 1.293$; $p > 0.05$) as shown table 4.7.3.

The researcher concluded that strategic Plan has positive significant on organizational performance of remittances in Mogadishu-Somalia

CONCLUSION & RECOMMENDATION

The study also found that there is positive significant relationship between strategic Plan on on organizational performance of remittances in Mogadishu-Somalia.

Focuses on summarizing of the research findings, major challenges met during the study and as well as the corrections of what have been found during of the research gathering data. The study aims to explore strategic plan on organizational performance of remittances in Mogadishu-Somalia. Based on the findings and the conclusions of the study, the research team offered the following recommendations:-

1. Researcher found that strategic plan had influences setting objectives, budgetary allocation and organization structure.
2. The researcher recommended the private companies, NGOs and other institutions to implement strategic plan, because without strategy no institution can work.



3. The researcher recommend to keep the positive relationship between the variables that the study denotes
4. Researcher has also recommend government and other institutions to utilize their opportunity about this study.
5. The researcher recommends making further research about strategic plan on organizational performance to telecommunication companies and banks.

REFERENCE

1. UNDP . (2001). *Human Development Report 2001-Somalia*. New York: UNDP.
2. Adams, R.H. Jr. (2003). "International migration, remittances and the brain drain: a study of 24 labor exporting countries", . Policy Research Working Paper 3069, The World Bank, June.
3. Ali. Y. A. (2009). *Service Quality and Student Loyalty: The Mediating Role of Student Satisfaction*.
4. Ansoff, I. . (2003). *Corporate Strategy*, McGraw Hill, New York.
5. Appleby R. (1994). *Modern Business Administration*, Publishers, Singapore.
6. Arthur S, Mondy R.W & Shane R.P. (1990). *Management and organizational behaviors*, Allyn and Bacon .335 . pp.335 .
7. Benjamin, M. N. (2017). *The Strategic Plan on Organizational Performance*. Research Pproject at University Nairobi .
8. Bennett R. (1996). *Corporate Strategy and Business Planning*, London: Pitman Publishing.
9. Bernard. (2004). *Managing Change. A Strategic Approach to Organizational Dynamics*.. London: Prentice Hall.
10. Bryson, J. M. (2010). *The future of Public and nonprofit Strategic Planning in the United States*. . *Public administration review* .
11. Campbell B,. (1999). *Fund Strategic Planning*. . U.S.A :Richmond, .
12. Campbell B. (1999). *Fund Strategic Planning*, U.S.A :Richmond,.
13. Charles, M. J. (2008). (2008). *Broadening the scope of the resource based view in marketing: The contingency role of institutional factors*. *Industrial Marketing Management*, 38(7), 757-768. , 7 (757-768).
14. Charles, M. J. (2008). *Broadening the scope of the resource based view in marketing: The contingency role of institutional factors*. *Industrial Marketing Management* , 7 (757-768).
15. Combs, J., & Ketchen, D. (1999). *Explaining interfirm cooperation and performance: Toward a reconciliation of predictions from the resource-based view and organizational economics*. *Strategic Management Control* .
16. Dyson, R.G. (2000). *Strategic Development and SWOT Analysis at the University of Warwick*. *European Journal of Operational Research* , 152 (631-640).
17. Heppelman, J. E. (2014). *on the origins of competative advantage: Strategic factor markets and Heterogenous resource complementary*. *Academy of Management Review*, .
18. Higgins, J.M. and J.W. Vincze, 1993. . (1993). *Strategic Management: Concepts and Cases*. Dryden Press, Chicago, IL .
19. Hugh, D.; Michael. (2002). *The Committed Enterprise. How To Make Vision And Values Work*, Butler worth : Oxford .
20. Leeson, P. (2007). *Better Off Stateless: Somalia Before and After Government Collapse* Department of Economics West Virginia. Department of Economics West Virginia University .
21. Mahoney, J. (2001). *A resource-based theory of sustainable rents*. . *Journal of Management*. , 6 (6, 651-660).
22. Maimbo, S.M. . (2006). *Remittances and EconomicDevelopment in Somalia*. *Social development papers, conflictprevention and reconstruction paper No.38* .
23. Maimbo, S.M. . (2006). *Remittances and EconomicDevelopment in Somalia*. *Social development papers, conflictprevention and reconstruction paper No.38*.
24. Mubarak, J (1996),. (1996). *From Bad Policy to Chaos: How an Economy Fell Apart*. . Westport: Praeger.
25. Mullins J.L. (1996). *Management and Organization Behaviour*, [4th Ed], London : Pitman Publishing.
26. Mullins J.L. (1966). *Management and Organization Behaviour*, [4th Ed], London : Pitman Publishing. .
27. Nnabuiwe, E. (2009). *Organizational Behaviour and Management Theory*, Nimo: Rex Charles. Rex Charles & Patrick Limited.
28. Odongo, M. S. (2015). *Effects of Strategic Planning on Organizational Performance*. *International Journal of Scientific and Research Publications* .
29. Otley D.T. (1998). *Budget use and managerial performance*. *Journal of accounting research*. 16 pp.122-149.Retrieved on 14th February. 2015, from the emerald database. , 16 (122-149.).
30. Rigby; Darrell; Barbara. (2013). *Management Tools & Trends* . Boston: Bain and Company .
31. Rudd, J. M., Greenley, G. E., Beatson, A. T., & Lings, I. N. (2007). *Strategic planning and performance: Extending the debate*. *Journal of Business Research*, 61(1) 99-108. Retrieved January 31, 2008, from Business Source Complete database.
32. Scholes, K and Johnson, G. . (2002). *Exploring Corporate Strategy* . Prentice Hall International, 6th Edition.
33. Shrader, C., Taylor, L., & Dalton, D. (1984). *Strategic planning and organizational performance: A critical appraisal*. *Journal of*



Management, 10(2), 149-171. Retrieved January 27, 2008, from Business Source Complete database

34. Strickland, A. J. . (2004). *Strategic Management Concepts and Cases*,. McGraw-Hill/Irwin.
35. Strickland, A. J. (2004). *Strategic Management Concepts and Cases*,. McGraw-Hill/Irwin .
36. Tapinos, E; Dyson, R. G. (2005). Tapinos, E., Dyson, R.G., Meadows, M., (2005). *The impact of performance measurement in strategic planning. . International Journal of productivity and performance management* , 370-384.
37. Tapinos, E; Dyson, R.G. (2005). Tapinos, E., Dyson, R.G., Meadows, M., (2005). *The impact of performance measurement in strategic planning. . International Journal of productivity and performance management* , 370-384.
38. Taylor, B. . (1997). *The return of strategic planning once more with feeling. Long Range Planning*, 30 (3), 334-344. Retrieved January 31, 2008, from Business Source Complete database.
39. Tegarden, F. (2003). (2003). "The Erosion of the Competitive Advantage of Strategic planning". *Journal of Business and Management* , 9, 1-21.
40. Thompson A. A and Strickland A. I . (2007). *Crafting and Executing Strategy. Quest for competitive advantage, concept and cases*.15th edition . McGraw Hill Companies, Inc.
41. Tosi H. . (1975). *The Human Effects of Managerial Budgeting Systems in J.L Livingstone (ed.) . Grid publishing. .*
42. Weinrich Heinz. (2007). *Management: A global perspective; . New York; McGraw Hill*.
43. Weinrich Heinz. (2007). *Management: A global perspective; New York; . McGraw Hill. .*
44. Weir, C. (1995). "Organizational Structure and Corporate Performance: An analysis of medium and Large U.K firms", *Management Decision*, Vol.33, Issue: 1, pp.24-32. *Management Decision. , 33 (1), 2*



THE DEVELOPMENT OF STUDENTS' INTEREST IN THE RUSSIAN LANGUAGE

Abdusalomova Moxchexra Ergashevna*

*, Teachers of Uzbek language, literature and foreign languages department,
Samarkand Institute of Veterinary Medicine,
UZBEKISTAN

Gafurova Savlat Tolibovna**

** Teachers of Uzbek language, literature and foreign languages department,
Samarkand Institute of Veterinary Medicine,
UZBEKISTAN

Saliyeva Ziroat Zokirovna***

***Senior lecturer,
Department of English Language and Literature,
English Faculty-I,
Samarkand State Institute of Foreign Languages,
UZBEKISTAN

Tagayeva Taxmina Odilbekovna****

****Student of Samarkand State Institute of Foreign Languages,
UZBEKISTAN

ABSTRACT

This article discusses the process of developing students' interest in teaching Russian to students of higher educational institutions of the Republic of Uzbekistan. Particular attention is paid to the reasons hindering this process and solving this problem.

KEYWORDS: *teaching the Russian language; speech activity; motivational factors; activity; creation.*

DISCUSSION

The advancement of the Russian language as the language of interethnic communication in our multinational republic is the most important factor in its ever-increasing role. "Fluency in the Russian language, along with the mother tongue ... becomes an object necessity and a need for every citizen." That is why the development of issues of improving the teaching of the Russian language, finding the most rational ways of mastering it acquire special relevance.

The success of mastering the Russian language as the second native language of students depends not only on the efforts of the objective order, but also subjective, among which the personal attitude to the language itself and the process of mastering it, or rather the cognitive process to it, is one of the most important points. No matter how full and perfect textbooks and teaching aids are, no matter how effective the learning process is, the attempts to achieve optimal results will be unsuccessful if the students themselves are indifferent and inert.

Although the language itself is a social phenomenon, activities for its assimilation and use, i.e. speech activity is a personal phenomenon, in the functional characteristic of which factors of a psychological order (memory, attention, thinking will, etc.) and motivational (motive goal, attitude, interest, etc.) are of no small importance. Moreover, factors of the motivational order have no less impact on the effectiveness of learning and the process of mastering knowledge than psychological factors. Under the influence of these factors, each student "on his own initiative will actively engage in the learning process and" voluntarily take upon himself the "burden" of learning, begin to willingly absorb knowledge and independently organize his educational activities.

In the use of motivational factors, in particular cognitive interest, there are great potential opportunities for the intensification of language acquisition and the development of speech skills. It is not only an interest in knowledge itself, but also an interest in the process of independently obtaining this knowledge and improving existing knowledge.



So the cognitive process should be considered as a means of more solid assimilation of the learning material and as an incentive to expand and deepen existing knowledge.

At the same time, interest in mastering knowledge is the first step towards achieving the main goal - developing interest in applying independent efforts to acquire knowledge, as a result of which a need is developed for mastering it.

In our multinational country, where knowledge of the Russian language has become an urgent need for everyone, interest in learning it and the desire to master it is formed from the first steps of a conscious life. Teaching the Russian language in the national republics begins with a kindergarten, and by the time high school graduates, interest in it has already been formed to a certain extent. That is why, bearing in mind students, we should not talk about the formation of interest, but its development and expansion, about the pedagogical guidance of this process.

The reasons that impede the development of students' interest in further expanding their knowledge are, firstly, the imperfection of textbooks, teaching aids and teaching materials, secondly, the use of uniform, not requiring mental activity methods of work, the predominance of explanatory and illustrative method, the lack of active speech practice, thirdly, shortcomings in the organization of classes, lack of an individual approach to students with different levels of training in the Russian language in schools, vocational schools colleges and lyceums, fourthly, the lack of systematic and regular extracurricular activities, etc.

The development of interest in mastering the language depends on a number of subjective conditions, such as the individual psychological characteristics of students, their abilities, their level of knowledge, etc.; but most of all from conditions of an objective nature, i.e. on, for example, what is the content of the learning material, what methods and techniques organize its assimilation, what are the forms of organization of the cognitive process. It has been established that the greatest interest of students is caused by such verbal and linguistic material that has social, professional or practical significance for them, is emotionally attractive, contains certain new information and is available for assimilation.

It stimulates interest and the use of such methods and techniques of work under which conditions are created for the activity, independence and creativity of students. The increase in interest is facilitated by the use of visibility, technical training aids (TCO), elements of competition, as well as a variety of types of work and exercises.

An important role in the development of cognitive interest of students is also played by various types of extracurricular activities, the comprehensive external impact of the media, the

environment, comrades, living conditions and everyday life. Interest in learning also depends on the psychological climate in the classroom, on the skill of the teacher, his ability to find an individual approach to each student and organize differentiated training, on the equipment of the classes, on the sanitary and hygienic conditions in which they are held, etc.

The presence of a whole system of factors affecting students' interest in the language also testifies to the variety of ways and means of practical solution of this problem in relation to the specific conditions of each university, as well as the possibility of establishing a specific work system. The implementation of not individual measures, but a focused system of them can lead to optimal results.

It is not necessary to adhere to a strict order in the arrangement of the components of this system, since each of these components is not associated with a specific structural organization of the lesson and their use entirely depends on the specific content and goals of each lesson, as well as on the existence of certain conditions for their use.

But, nevertheless, when choosing means of developing interest and determining ways of their specific methodological solution, it is advisable to take into account recommendations on the differentiation of types of speech activity according to the stages of training, according to which speaking and listening should dominate the national audience at the initial stage of work with non-philological students, in the second stage, speaking, listening and reading act as equivalent components of the educational process, at the final stage, reading and writing become dominant. Particular attention is paid to writing as a type of speech activity directly related to the development of a future specialty.

This differentiation should especially be taken into account at the initial stage, which provides for the use of all means of developing an interest in speaking and listening, and at the advanced and final stages, the use of all means of developing an interest in reading and writing.

REFERENCES

1. Abdullaev, A.A. *The culture of Russian speech in the conditions of national-Russian bilingualism Text.* / A.A. Abdullaev Makhachkala, 1995. - 298 p.
2. Vergasov, V.M. *Activization of cognitive activity of students in high school Text.* / V.M. Vergasov. Kiev, 1985. - 109 p.
3. Lipendina EA *The development of cognitive interest of students of professional higher education in a didactic dialogue Text: dis. Cand. ped sciences / E.A. Lipendina. Barnaul, 2006. - 187 p.*
4. Lviv, S.I. *The semantic analysis as a means of raising interest in the lessons of the Russian*



*language Text. / S.I. Lviv // RZh. - 1984.-№2.-
P.36- 39.*

5. *Sukhoverova, EA The development of cognitive interest among students of humanitarian universities Text: dis. Cand. ped sciences / E.A. Sukhoverova. M., 2003.-222 p.*
6. *Yushkova, L. B. The structure and dynamics of the cognitive interests of university students, depending on their ideas about the goals of the university Text: dis. Cand. psycho, sciences / L. B. Yushkova. St. Petersburg, 1991 .- 225 p.*



UTILISATION DE TERMES ET DE CONTENUS SCIENTIFIQUES DANS L'ENSEIGNEMENT DU FRANÇAIS AU SECONDAIRE

Jurakobilova Hamida

Maître de conférences au Département
de langue et littérature françaises
Université d'État de Karshi

Zusammenfassung

Der Artikel beschreibt die Möglichkeiten der Verwendung naturwissenschaftlicher Terminologie und naturwissenschaftlichen Wissens im Allgemeinen beim Unterrichten von Französisch für Schüler an Schulen mit eingehendem Studium der usbekischen Klassen. Die natürliche Terminologie kann als Mittel zum Studium des Wortschatzes, der Grammatik und der Kultur der Zielsprache als Teil des lexikalischen Systems dienen, um den Ort zu bestimmen, an dem echte naturwissenschaftliche Texte im Französischunterricht verwendet werden.

Schlüsselwörter: wissenschaftliche Terminologie; die Wissenschaft; authentische Texte; kommunikative Sphäre; soziokulturelle Sphäre, kontextuelle Annahme; visuelle Unterstützung.

ИСПОЛЬЗОВАНИЕ НАУЧНЫХ ТЕРМИНОВ И СОДЕРЖАНИЯ ПРЕПОДАВАНИЯ ФРАНЦУЗСКОМУ В СРЕДНЕЙ ШКОЛЕ

Журакобилова Хамида Холматовна

Старший преподаватель кафедры Французского языка
и литературы Каршинского государственного университета

Аннотация

В статье рассматриваются возможности использования естественнонаучной терминологии и естественнонаучных знаний в целом при обучении французскому языку учащихся школ с углубленным изучением узбекских классов. Естественная терминология может служить средством изучения лексики, грамматики и культуры изучаемого языка как части лексической системы, чтобы определить место использования реальных естественнонаучных текстов в процессе обучения французскому языку.

Ключевые слова: научная терминология; наука; аутентичные тексты; коммуникативная сфера; социально-культурная сфера; контекстное предположение; визуальная опора.



Dans le cadre du concept actuel d'enseignement spécialisé au niveau supérieur de l'enseignement général, il est nécessaire d'adapter le processus d'enseignement des langues étrangères en fonction de l'orientation de l'étudiant, de ses intérêts et des particularités du cours des processus de pensée [1].

Dans ce cas, il semble opportun de combiner les intérêts éducatifs non linguistiques des élèves et le processus d'apprentissage de la langue, qui peut se refléter dans la sélection du contenu de l'enseignement des langues étrangères, l'enseignement du matériel linguistique basé sur les phénomènes des sciences naturelles, etc.

Notre recherche se fonde précisément sur l'idée d'éducation des profils et, puisque le concept qui la décrit suppose l'existence de plusieurs profils thématiques, nous prendrons l'un d'entre eux comme base - physique et mathématiques - et tenterons de combiner son contenu avec le processus d'enseignement du français.

Malgré le fait que la norme éducative de l'État prévoit la formation de métasubjectifs et l'établissement de liens interdisciplinaires [2], dans les sciences domestiques modernes, des études théoriques du potentiel didactique des sciences naturelles dans le processus éducatif sont menées. La langue française n'est pas représentée et il n'y a pas de développements méthodologiques correspondants. On peut également noter qu'en linguistique ouzbek moderne, il n'y a pas de recherche dans le domaine de la terminologie scientifique naturelle de la langue française. Les efforts des terminologues visent principalement à étudier la terminologie économique [3], politique [4], juridique [5], tandis que la terminologie des sciences naturelles reste inexplorée. La terminologie des sciences naturelles, qui fait partie du système lexical, peut être utilisée pour étudier le vocabulaire, la grammaire et la culture de la langue cible. Cependant, la communication intersubjective ne se limite pas exclusivement à l'étude du vocabulaire des sciences naturelles.

Il convient de noter l'utilisation du contenu des matières des sciences naturelles dans le processus d'enseignement du français au plus haut niveau de l'enseignement dans les classes spécialisées. Cela permet, d'une part, de souligner le rôle d'une langue étrangère dans le processus d'apprentissage, de démontrer aux étudiants ses capacités en tant qu'instrument d'activité éducative et cognitive et, d'autre part, d'optimiser l'étude des matières scolaires afin d'atteindre l'objectif formel final du processus éducatif du plus haut niveau - la réussite à l'examen d'État. Dans l'enseignement domestique, des tentatives ont déjà été faites pour intégrer les sciences naturelles et les matériels techniques dans le processus d'enseignement du français. Ainsi, en 1961, E.E. Menzhinskaya a publié un manuel de

lecture extrascolaire en français "Du levier d'Archimède à la fusée moderne", qui combinait de nombreux manuels sur les sciences naturelles et le contenu technique. Dans la préface, l'auteur motive la publication de son manuel par la rapidité sans précédent des progrès scientifiques et technologiques et le renforcement des contacts internationaux, ainsi que par le rôle de l'école dans la formation du personnel prêt à être mis en œuvre. communication interculturelle [6, p. 4-6]. Comme nous n'avons trouvé aucun autre outil pédagogique en ouzbek, nous pensons que la responsabilité de façonner le contenu de l'enseignement du français dans cet aspect incombe aux enseignants en exercice.

Les méthodologistes modernes notent la faible efficacité de l'étude des mots isolés sous la forme sous laquelle ils sont présentés comme des unités de vocabulaire. Pour une mémorisation productive et une récupération de la mémoire au bon moment, les LU doivent être étudiées dans des segments d'œuvres vocales - modèles de discours ou textes [7, p. 34]. Cela permet à l'élève de se souvenir non seulement des formes phonétiques et graphiques du mot et de sa signification, mais aussi les cas de son utilisation dans la parole acceptés dans un environnement linguistique donné à travers la mémorisation de l'environnement du mot, ses connexions syntaxiques avec d'autres membres de la phrase ou la dépendance syntaxique dans le cadre de la phrase.

À cet égard, l'étude des termes extérieurs au texte nous paraît inappropriée. Cependant, le même fait nous pose une tâche assez difficile: sous une forme non isolée, les termes ne sont systématiquement présentés que dans des textes scientifiques et pédagogiques authentiques, ce qui peut être assez difficile à étudier dans le cadre d'un programme scolaire en français.

Cela nous pose plusieurs questions. Tout d'abord, il est nécessaire de déterminer la place de l'utilisation de textes authentiques d'histoire naturelle dans l'enseignement du français. Notre analyse de deux complexes modernes d'enseignement et d'apprentissage de la langue française (CEM) - ouzbek (Rasulov V.I .. G.I., Le français en perspective X / XI) [8] et authentique (Marie-Laure Poletti, Céline Himbert, Adosphere IV) [9] - utilisé dans les écoles avec une étude approfondie des langues étrangères au plus haut niveau de l'enseignement, a montré que les termes de sciences naturelles ne sont pas présentés sous une forme systématique dans les textes éducatifs. On ne les trouve que dans les textes du manuel en langue ouzbek contenant des informations géographiques régionales ou des informations sur des scientifiques français qui ont apporté une contribution significative au développement de la science mondiale, et des scientifiques - lauréats du prix Nobel (Les Prix Nobel, Men Who Glorified France, Marie Curie).



Dans un manuel authentique, les termes des sciences naturelles ne sont pas du tout représentés, ce qui s'explique par son orientation communicative et l'absence de section sur la géographie régionale.

À cet égard, l'étude de textes de sciences naturelles peut être, tout d'abord, des activités parascolaires (cours privés, cours au choix, apprentissage des langues pour entrer dans les universités d'Ouzbékistan). Du matériel scientifique authentique peut également être inclus dans la leçon en tant que guide d'étude primaire ou complémentaire. Cependant, cela implique que l'enseignant effectue une série d'opérations séquentielles:

- sélection de supports pédagogiques (travail avec des supports pédagogiques authentiques et des ressources Internet);

- analyse de leur potentiel dans le développement d'une ou plusieurs des compétences fournies par la norme éducative de l'État fédéral;

- comparaison des supports pédagogiques sélectionnés avec le thème actuel de la leçon ou de la section et les phénomènes lexico-grammaticaux ou phonétiques qui y sont présentés;

- détermination de la place de l'utilisation des supports pédagogiques dans le plan de cours (cours et étape de leçon);

- adaptation du texte (correction, élimination des difficultés linguistiques potentielles dans son étude, création d'un commentaire lexico-grammatical et d'un bloc de tâches, y compris des exercices de contrôle de la compréhension du texte (général et détaillé), des exercices de langage et de communication);

- le choix des supports pédagogiques dans la leçon et la comparaison du matériel sélectionné avec eux (travail avec le texte, y compris plusieurs étapes obligatoires - pré-texte, texte et post-texte).

Dans ce type de travail, les étapes suivantes sont particulièrement difficiles: l'analyse des capacités des manuels authentiques, ainsi que l'adaptation du texte. Les textes de sciences naturelles sont assez difficiles à étudier dans le cadre du programme scolaire et, en outre, ils peuvent ne pas convenir au développement des compétences attendues de l'enseignement public de deuxième génération en langues étrangères. À notre avis, ces questions ne peuvent avoir qu'une seule solution efficace: l'adaptation de manuels authentiques de physique au niveau de formation linguistique des étudiants; vers les objectifs d'apprentissage. Le premier point n'a pas besoin de commentaires, mais pour révéler le second, nous nous tournons vers le State Education Standard de la deuxième génération en langues étrangères.

Selon ce document, les résultats disciplinaires de l'étude d'une langue étrangère à l'école nécessitent un certain nombre de réalisations des élèves [2]:

- dans le domaine de la communication (connaissances, capacités et compétences dans tous les types d'activités de parole: parler, lire, écrire, écouter);

- dans le domaine de la langue (connaissance de l'orthographe de base, des règles grammaticales, dérivatives et phonétiques de la langue);

- dans le domaine socioculturel (connaissance de l'histoire et de la culture du pays de la langue cible, familiarité avec différents types de textes, y compris les ouvrages de vulgarisation scientifique);

- dans le domaine compensatoire (capacité à entrer en communication et à trouver une issue à une situation difficile dans des conditions de connaissances limitées);

- dans la sphère orientée vers la valeur (formation de concepts sur le monde multiculturel et vision de la langue comme moyen de communication et de cognition). [9, p. 41]

Ainsi, l'adaptation du texte aux tâches d'enseignement de la langue française à l'école ouzbèke présuppose, d'une part, sa correction afin de simplifier quelque peu et d'éliminer les difficultés lexicales, grammaticales et culturelles, et d'autre part, la création dans le processus éducatif de conditions pour le développement des niveaux de compétence à travers de ce texte. L'élimination des difficultés lexicales n'implique pas nécessairement une réduction du texte ou sa traduction partielle. Selon les exigences pour la formation des compétences pédagogiques et cognitives au plus haut niveau de l'enseignement, les élèves du troisième cycle devraient «pouvoir utiliser des dictionnaires (explicatifs) sans langue et d'autres matériels de référence, y compris des études linguistiques orientales» [10, p.37]. Ainsi, il suffit de mettre en évidence de nouvelles unités lexicales (termes) dans le texte et, éventuellement, de les placer hors du texte sans traduction. Une autre condition importante pour éliminer les difficultés lors du travail avec un texte éducatif authentique est d'attirer du matériel déjà familier aux étudiants ayant une expérience de l'étude de la physique en langue ouzbek.

Le développement des compétences requises par la norme éducative peut être réalisé, à notre avis, de deux manières: au moyen du texte authentique lui-même et par la création d'un bloc de tâches et de commentaires sur le texte authentique.

Bien sûr, dans les travaux pratiques, les deux méthodes sont utilisées en synergie, comme complémentaires, mais pour plus de commodité, nous les considérerons séparément dans la recherche. Le texte authentique lui-même a un grand potentiel en tant que moyen de développer les compétences en lecture (tout d'abord - phonétique, s'il n'est pas accompagné d'un certain nombre de tâches); développement de la compétence compensatoire grâce à la conjecture du langage (la lecture d'un texte



de vulgarisation scientifique implique la corrélation de ce qui a été lu avec des connaissances existantes, la mise en évidence du noyau sémantique de chacun des passages et de l'ensemble du texte dans son ensemble, la recherche de mots clés et d'expressions afin de comprendre la lecture globalement, c'est-à-dire nécessite le développement du langage conjectures et réception de nouveau matériel dans des conditions de connaissances linguistiques limitées); le développement de compétences socioculturelles (à condition que le texte comprenne du matériel régional, linguistique et culturel (par exemple, des informations sur des scientifiques français célèbres et leurs découvertes), et pas exclusivement du matériel de sciences naturelles par sujet), ainsi que le développement de la participation dans la sphère orientée vers la valeur (le texte lui-même sert de moyen de transfert de connaissances et présente des opportunités pour élargir les horizons des étudiants non seulement dans le cadre des travaux de cours, mais aussi dans le processus de lecture extrascolaire, non pas pour apprendre une langue, mais pour étudier une discipline non linguistique). De plus, un texte authentique de sciences naturelles peut servir de moyen d'étudier l'orthographe, la ponctuation, les caractéristiques stylistiques et phonétiques de la langue française, c'est-à-dire être la base du développement des compétences linguistiques.

Cependant, les plus grandes opportunités de communication lors du travail avec du texte s'ouvrent lors de la création d'un bloc d'accompagnement de tâches et de commentaires, visant, d'une part, à contrôler la compréhension du texte (à la fois général et détaillé) et à mettre en évidence le nouveau contenu qu'il contient, et d'autre part, à développer les compétences ci-dessus. En combinaison avec le texte, un bloc de tâches vous permet d'améliorer la compétence communicative dans tous les types d'activités vocales (les tâches peuvent inclure des exercices de communication, des exercices pour développer les compétences en écriture et en lecture, lors de la sélection de matériel audio et vidéo supplémentaire sur le sujet - des exercices pour développer les compétences d'écoute); Les commentaires post-textuels grammaticaux et lexicaux permettent d'améliorer les connaissances des élèves dans la sphère linguistique. Il convient également de noter qu'un bloc de tâches peut servir de moyen de développer les capacités de réflexion des élèves, leurs compétences pédagogiques et cognitives et leur érudition générale en incluant des exercices qui obligent les élèves à effectuer des tâches créatives et à se référer à des sources tierces.

Ainsi, travailler avec un texte authentique de sciences naturelles et le bloc de tâches et de commentaires qui l'accompagne répond aux exigences modernes pour les résultats de l'étude de la matière de la langue française et peut être inclus dans

le processus éducatif (comme matériel parascolaire supplémentaire, dans le cadre de l'un des blocs lexicaux thématiques ou dans le cadre de cours de langue) ... Il est important de noter que du point de vue de l'organisation du travail en classe, l'apprentissage du français à l'aide de matériaux authentiques de sciences naturelles ne diffère pas du travail avec des textes de fiction, journalistiques ou éducatifs. Considérons maintenant un exemple spécifique d'un texte authentique de sciences naturelles adapté de tout ce qui précède.

Comme nous l'avons déjà noté, l'adaptation d'un texte authentique implique, bien entendu, non seulement la suppression de divers types de difficultés et la réalisation de sa conformité avec les principaux objectifs de l'enseignement scolaire, mais aussi une certaine correction du texte en termes de contenu. Le texte doit comporter différents moyens d'expression dont la maîtrise est assurée par le programme d'un établissement d'enseignement général en français pour un stade de formation donné (mots connecteurs, structures impersonnelles, moyens d'exprimer des objectifs, des raisons, etc.), ainsi que des informations régionales (voir le programme pour 10-11 classes d'établissements d'enseignement en langue française E.Ya.Grigorieva) [10 p.511]. Autrement dit, il semble nécessaire d'inclure ce matériel dans le texte, s'il n'est pas utilisé dans une source authentique.

En conséquence, dans le matériel didactique que nous examinons, les commentaires post-texte incluent les informations suivantes:

vocabulaire - termes de la leçon en cours à partir du texte;

mot - connecteur tiré du texte - word-connector from the text;

civilisation - information linguistique et culturelle;

NB! - grammaire basée sur le texte - phénomènes grammaticaux retrouvés dans le texte.

Ces informations sont présentées dans les commentaires pour optimiser le processus de mémorisation en mettant en évidence de nouveaux éléments.

Après le texte et les commentaires suivants, le bloc de tâches est placé directement. Il comprend des exercices visant à développer les compétences de base fournies par la norme éducative (peuvent varier en fonction du contenu du texte et de ses capacités). Dans le matériel didactique que nous considérons, les trois premières tâches visent à contrôler la compréhension du texte. Les première et deuxième tâches sont marquées d'un, ce qui signifie la nécessité d'interpréter et d'analyser ce qui a été lu pour obtenir une réponse à la question.

La troisième tâche vise à développer les compétences pédagogiques et cognitives des élèves, à savoir travailler avec un dictionnaire étymologique.



La réalisation du devoir améliore les compétences des élèves dans la recherche d'informations et l'utilisation de la documentation pédagogique de référence. Étant donné que cette tâche suppose de fonctionner avec des sources tierces, elle est marquée

L'utilisation de tels textes (sous une forme adaptée) vous permet d'atteindre les objectifs d'enseignement de la langue française prévus par le niveau éducatif de l'Ouzbékistan et d'améliorer toutes les compétences requises à ce stade du processus. «formation - communicative (pour tous les types d'activités vocales), linguistique, socioculturelle, axée sur les valeurs, etc. de ce point de vue, le texte des sciences naturelles répond aux critères de choix d'un outil pédagogique. Cependant, pour un travail plus efficace avec un tel texte, il est nécessaire non seulement de l'adapter au niveau de préparation et aux tâches de l'enseignement scolaire, mais également de créer un bloc d'exercices qui vous permet de le gérer. comprendre et créer les conditions du développement

Bibliographies

1. *Le concept de l'enseignement de profil au niveau supérieur de l'enseignement général*, Tachkent, 1998.
2. *Programme scientifique des langues étrangères*
3. *Sobirova O.V. Améliorer les aspects lexicaux et sémantiques du français moderne*. URL: <http://www.dissercat.com/content/formirovanie-lexiko-semanticheskikh-svyazei-vekonomicheskoi-terminologii-sovremennogo-fran> (données obrashcheniya 24.05.2018).
4. *Monastyretskaya O.V. Le rôle de la langue française dans le processus de formation des sphères lexicales des relations internationales*. URL: <http://www.dissercat.com/content/rol-frantsuzskogo-yazyka-v-protse-formirovaniya-leksiki-sfery-mezhdunarodnykh-otnoshenii> (données obrashcheniya 24.05.2018).
5. *Yudina E.N. Terminologie juridique française dans le cadre du système lexical de la langue française moderne: analyse structurale-sémantique*. URL: <http://www.dissercat.com/content/frantsuzskaya-yuridicheskaya-terminologiya-kak-chast-leksicheskoi-sistemy-sovremennogo-frant> (données d'accès 24/05/2018).
6. *Menjinskaya E.E. Du levier d'Archimède à la fusée d'aujourd'hui / Ot rychaga Archimedes do rakety nashikh dney: kniga dlya chteniya na frantsuzskom yazyke dlya uch-sya 10-11 klassov sredney shkoly*. M. : Prosveshchenie, 1961. 100 p.
7. *Gapparova L.J. N.D. Enseignement des langues étrangères: méthodologie et théorie*. Manuel. Science, 1991
8. *Bubnova G.I., Tarasova A.N. Le Français en Perspective: uchebnik. 11 classe*. M. : Prosveshchenie, 2017. 199 p.

9. *Marie-Laure Poletti, Céline Himber Adosphère IV. Livre de l'élève*. Hachette FLE, 2012. 128 p.
10. *Grigoreva E.Ya. Langue française. Programmes obshcheobrazovatelnykh uchrejeniy: uchebnoe posobie*. M. : Prosveshchenie, 2009. 48 p.

Dans le cadre du concept actuel d'enseignement spécialisé au niveau supérieur de l'enseignement général, il est nécessaire d'adapter le processus d'enseignement des langues étrangères en fonction de l'orientation de l'étudiant, de ses intérêts et des particularités du cours des processus de pensée [1].

Dans ce cas, il semble opportun de combiner les intérêts éducatifs non linguistiques des élèves et le processus d'apprentissage

langue, qui peut se refléter dans la sélection du contenu de l'enseignement des langues étrangères, l'enseignement du matériel linguistique basé sur les phénomènes des sciences naturelles, etc.

Notre recherche se fonde précisément sur l'idée d'éducation des profils et, puisque le Concept qui la décrit suppose l'existence de plusieurs profils thématiques, nous prendrons l'un d'entre eux comme base - physique et mathématique - et tenterons de combiner son contenu avec le processus d'enseignement du français.

Malgré le fait que le Federal State Educational Standard (FSES) prévoit la formation de métasubjectifs et l'établissement de liens interdisciplinaires [2], dans les sciences domestiques modernes, les études théoriques sur le potentiel didactique des sciences naturelles dans le processus d'enseignement du français ne sont pas présentées et il n'y a pas de développements méthodologiques correspondants. On peut également noter que la linguistique russe moderne ne dispose pas de recherches dans le domaine de la terminologie scientifique naturelle de la langue française. Les efforts des spécialistes de la terminologie visent principalement à étudier la terminologie économique [3], politique [4], juridique [5], tandis que la terminologie des sciences naturelles reste inexploree.

La terminologie des sciences naturelles faisant partie du système lexical peut servir de moyen d'étudier le vocabulaire, la grammaire et la culture de la langue cible. Cependant, les communications intersubjectives ne se limitent pas exclusivement à l'étude du vocabulaire des sciences naturelles.

Il convient de noter l'utilisation du contenu matière des sciences naturelles dans le processus d'enseignement du français au stade supérieur de la formation dans les classes spécialisées. Il permet, d'une part, de souligner le rôle d'une langue étrangère dans le processus d'apprentissage, de démontrer



étudiants ses capacités en tant qu'instrument de l'activité éducative et cognitive et, deuxièmement, d'optimiser l'étude des disciplines scolaires dans la réalisation de l'objectif formel final du processus éducatif du niveau supérieur - réussir l'examen d'État unifié. L'étude de la physique en français permet aux étudiants de concentrer leurs efforts sur la préparation à l'examen de profil en physique et, en même temps, de créer des conditions confortables pour améliorer encore la compétence communicative en français.

En didactique domestique, des tentatives ont déjà été faites pour intégrer les sciences naturelles et le matériel technique dans le processus d'enseignement du français. Ainsi, en 1961, E.E. Menzhinskaya a publié un outil pédagogique pour la lecture extrascolaire en français «Du levier d'Archimède à la fusée de nos jours», qui combinait de nombreux textes de sciences naturelles et des contenus techniques. Dans la préface, l'auteur motive la publication de son manuel par la rapidité sans précédent des progrès scientifiques et technologiques et le renforcement des contacts internationaux, ainsi que par le rôle de l'école dans la formation du personnel prêt à la mise en œuvre de la communication interculturelle [6, p. 4-6]. Comme nous n'avons pas trouvé d'autres outils pédagogiques ultérieurs du russe, nous pensons que la responsabilité de façonner le contenu de l'enseignement du français dans cet aspect incombe aux enseignants en exercice.

Les méthodologistes modernes notent la faible efficacité de l'étude des mots isolés sous la forme sous laquelle ils sont présentés comme des unités de vocabulaire. Pour une mémorisation productive et une récupération de la mémoire au bon moment, les LU doivent être étudiées dans des segments d'œuvres vocales - modèles de discours ou textes [7, p. 34]. Cela permet à l'élève de se souvenir non seulement des formes phonétiques et graphiques du mot et de sa signification, mais aussi

les cas de son utilisation dans la parole acceptés dans un environnement linguistique donné à travers la mémorisation de l'environnement du mot, ses connexions syntaxiques avec d'autres membres de la phrase ou la dépendance syntaxique dans le cadre de la phrase.

À cet égard, l'étude des termes extérieurs au texte nous paraît inappropriée. Cependant, le même fait nous pose une tâche assez difficile: sous une forme non isolée, les termes ne sont systématiquement présentés que dans des textes scientifiques et pédagogiques authentiques, ce qui peut être assez difficile à étudier dans le cadre d'un programme scolaire en français.

Cela nous pose plusieurs questions. Tout d'abord, il est nécessaire de déterminer la place de l'utilisation de textes authentiques de sciences

naturelles dans l'enseignement du français. Notre analyse de deux complexes modernes d'enseignement et d'apprentissage en langue française (CEM) - russe (Bubnova G.I., *Le français en perspective X / XI*) [8] et authentique (Marie-Laure Poletti, Céline Himber, *Adosphère IV*) [9], - utilisé dans les écoles avec une étude approfondie des langues étrangères au niveau supérieur de l'enseignement, a montré que les termes de sciences naturelles ne sont pas présentés sous une forme systématique dans les textes pédagogiques. On ne les trouve que dans les textes d'un manuel russe contenant des informations géographiques régionales ou des informations sur des scientifiques français qui ont apporté une contribution significative au développement de la science mondiale et des scientifiques - lauréats du prix Nobel (Les prix Nobel, *Les hommes qui font la gloire de France*, Marie Curie). Dans un manuel authentique, les termes des sciences naturelles ne sont pas du tout représentés, ce qui s'explique par son orientation communicative et l'absence de section de géographie régionale.

À cet égard, l'étude de textes de sciences naturelles peut être, tout d'abord, une activité extrascolaire (cours particuliers, cours au choix, apprentissage des langues en vue de l'admission dans des universités techniques en Russie ou en Europe, etc.).

Des matériaux authentiques de sciences naturelles peuvent également être intégrés dans le cours de la leçon en tant qu'outil d'enseignement principal ou supplémentaire. Cependant, cela implique que l'enseignant effectue un certain nombre d'opérations séquentielles:

- Sélection de supports pédagogiques (travail avec des supports pédagogiques authentiques et des ressources Internet);

- analyse de leur potentiel dans le développement d'une ou plusieurs des compétences fournies par la norme éducative de l'État fédéral;

- Comparaison des supports pédagogiques sélectionnés avec le thème actuel de la leçon ou de la section et les phénomènes lexico-grammaticaux ou phonétiques qui y sont présentés;

- Détermination de la place de l'utilisation des supports pédagogiques dans le plan de cours (cours et étape de leçon);

- adaptation du texte (correction, élimination des difficultés linguistiques potentielles dans son étude, création d'un commentaire lexico-co-grammatical et d'un bloc de tâches, y compris des exercices de contrôle de la compréhension du texte (général et détaillé), des exercices de langage et de communication);

- le choix des supports pédagogiques dans la leçon et la comparaison du matériel sélectionné avec eux (travail avec le texte, y compris plusieurs étapes obligatoires - pré-texte, texte et post-texte).



Les étapes suivantes sont particulièrement difficiles dans ce type de travail: analyse du potentiel des manuels authentiques et des ressources Internet, ainsi que adaptation du texte. Les textes de sciences naturelles sont assez difficiles à étudier dans le cadre d'un programme scolaire et, de plus, peuvent ne pas être adaptés au développement des compétences prévues par le FSES de la deuxième génération en langues étrangères.

À notre avis, ces questions ne peuvent avoir qu'une seule solution efficace: l'adaptation des textes authentiques éducatifs sur la physique au niveau de formation linguistique des étudiants; vers les objectifs de la scolarité. Le premier point n'a pas besoin de commentaire, alors que pour révéler le second, tournons-nous vers le FSES de la deuxième génération en langues étrangères.

Selon ce document, les résultats disciplinaires de l'étude d'une langue étrangère à l'école nécessitent un certain nombre de réalisations des élèves [2]:

- dans le domaine de la communication (connaissances, capacités et compétences dans tous les types d'activités de parole: parler, lire, écrire, écouter);
- dans le domaine de la langue (connaissance de l'orthographe de base, des règles grammaticales, dérivatives et phonétiques de la langue);
- dans le domaine socioculturel (connaissance de l'histoire et de la culture du pays de la langue cible, familiarité avec différents types de textes, y compris les ouvrages de vulgarisation scientifique);
- dans le domaine compensatoire (capacité à entrer en communication et à trouver une issue à une situation difficile dans des conditions de connaissances limitées);
- dans la sphère orientée vers la valeur (formation de concepts sur le monde multiculturel et vision de la langue comme moyen de communication et de cognition).

Ainsi, l'adaptation du texte aux objectifs de l'enseignement des langues étrangères (FL) à l'école implique, d'une part, sa correction afin de simplifier quelque peu et supprimer les difficultés lexicales, grammaticales et culturelles et, d'autre part, la création dans le processus éducatif de conditions pour le développement des niveaux de formation des compétences au moyen de ce texte. La suppression des difficultés lexicales n'implique pas nécessairement une réduction du texte ou sa traduction partielle. Selon les exigences pour la formation des compétences éducatives et cognitives au niveau supérieur de l'enseignement, les élèves du troisième cycle devraient «pouvoir utiliser des dictionnaires sans langue (explicatifs) et autres ouvrages de référence, y compris les études linguistiques» [10, p. 37]. Ainsi, il suffit d'isoler de nouvelles unités lexicales (termes) dans le texte et, éventuellement, de les placer hors du texte sans

traduction. Une autre condition importante pour éliminer les difficultés lors du travail avec un texte éducatif authentique est d'attirer du matériel déjà familier aux étudiants de l'expérience de l'étude de la physique en russe. Cela signifie la nécessité de corréler le matériel français authentique avec le programme d'un établissement d'enseignement général en physique.

Le développement des compétences requises par la norme éducative peut être réalisé, à notre avis, de deux manières: au moyen du texte authentique lui-même et par la création d'un bloc de tâches et de commentaires sur le texte authentique.

Bien sûr, dans les travaux pratiques, les deux méthodes sont utilisées en synergie, comme complémentaires, mais pour plus de commodité, nous les considérerons séparément dans la recherche. Le texte authentique lui-même a un grand potentiel en tant que moyen de développer les compétences en lecture (tout d'abord - phonétique, s'il n'est pas accompagné d'un certain nombre de tâches); développement de la compétence compensatoire grâce à la conjecture du langage (la lecture d'un texte de vulgarisation scientifique implique la corrélation de ce qui a été lu avec des connaissances existantes, la mise en évidence du noyau sémantique de chacun des passages et de l'ensemble du texte dans son ensemble, la recherche de mots clés et d'expressions afin de comprendre la lecture globalement, c'est-à-dire nécessite le développement du langage conjectures et réception de nouveau matériel dans des conditions de connaissances linguistiques limitées); le développement de compétences socioculturelles (à condition que le texte comprenne du matériel régional, linguistique et culturel (par exemple, des informations sur des scientifiques français célèbres et leurs découvertes), et pas exclusivement du matériel de sciences naturelles par sujet), ainsi que le développement de la participation dans la sphère orientée vers la valeur (le texte lui-même sert de moyen de transfert de connaissances et présente des opportunités pour élargir les horizons des étudiants non seulement dans le cadre des travaux de cours, mais aussi dans le processus de lecture extrascolaire, non pas pour apprendre une langue, mais pour étudier une discipline non linguistique). De plus, un texte authentique de sciences naturelles peut servir de moyen d'étudier l'orthographe, la ponctuation, les caractéristiques stylistiques et phonétiques de la langue française, c'est-à-dire être la base du développement des compétences linguistiques.

Cependant, les plus grandes opportunités de communication lors du travail avec du texte s'ouvrent lors de la création d'un bloc d'accompagnement de tâches et de commentaires, visant, d'une part, à contrôler la compréhension du texte (à la fois général et détaillé) et à mettre en évidence le nouveau contenu qu'il contient, et d'autre part, à développer



les compétences ci-dessus. En combinaison avec le texte, un bloc de tâches vous permet d'améliorer la compétence communicative dans tous les types d'activités vocales (les tâches peuvent inclure des exercices de communication, des exercices pour développer les compétences en écriture et en lecture, lors de la sélection de matériel audio et vidéo supplémentaire sur le sujet - des exercices pour développer les compétences d'écoute); Les commentaires post-textuels grammaticaux et lexicaux permettent d'améliorer les connaissances des élèves dans la sphère linguistique. Il convient également de noter qu'un bloc de tâches peut servir de moyen de développer les capacités de réflexion des élèves, leurs compétences pédagogiques et cognitives et leur érudition générale en incluant des exercices qui obligent les élèves à effectuer des tâches créatives et à se référer à des sources tierces.

Ainsi, travailler avec un texte authentique de sciences naturelles et le bloc de tâches et de commentaires qui l'accompagne répond aux exigences modernes pour les résultats d'apprentissage de la matière en langue française et peut être inclus dans le processus éducatif (en tant que matériel parascolaire supplémentaire, dans le cadre de l'un des blocs lexicaux thématiques ou dans le cadre de cours de langue). Il est important de noter que, du point de vue de l'organisation du travail en classe, l'apprentissage du français au moyen de matériels authentiques de sciences naturelles ne diffère pas du travail avec des textes de fiction, journalistiques ou éducatifs.

Considérons maintenant un exemple spécifique d'un texte authentique de sciences naturelles adapté de tout ce qui précède.

Nous avons choisi le texte sur le thème "Vitesse", puisque cette grandeur physique est étudiée d'une manière ou d'une autre dans presque toutes les sciences naturelles et mathématiques, c'est l'une des catégories fondamentales de la physique. Cela implique que les étudiants connaissent ce sujet en russe et est l'un des garants de la suppression des difficultés psychologiques et, dans une certaine mesure, lexicales lors du travail avec le texte. Les informations qu'il contient sont présentées pratiquement sans abréviations (un paragraphe du chapitre consacré au thème "Vitesse" est utilisé) et présente les dispositions les plus générales de la science moderne concernant cette valeur [11].

Du point de vue de la structure, le matériel didactique se compose de plusieurs parties: l'en-tête, qui comprend une illustration qui transmet le contenu du texte; une brève définition du phénomène physique considéré pour mémoriser les concepts de base qui y sont liés et les termes les désignant - le texte lui-même, composé de plusieurs courts paragraphes thématiques (y compris des formules); bloc de tâches (plus d'informations ci-dessous).

Les nouvelles unités lexicales (termes) sont mises en évidence dans le texte en gras et placées (sans traduction) dans les commentaires lexicaux et grammaticaux après le texte. Les élèves sont encouragés à se référer à l'utilisation de dictionnaires spécialisés ou à deviner la signification des termes en fonction du contexte. En plus des nouvelles unités lexicales, des informations sur les phénomènes grammaticaux se produisant dans ce texte sont placées après le texte principal.

Comme nous l'avons déjà noté, l'adaptation d'un texte authentique implique, bien entendu, non seulement la suppression de divers types de difficultés et la réalisation de sa conformité avec les principaux objectifs de l'enseignement scolaire, mais aussi une certaine correction du texte en termes de contenu. Le texte doit comporter différents moyens d'expression dont la maîtrise est assurée par le programme d'un établissement d'enseignement général en français pour un stade de formation donné (mots connecteurs, structures impersonnelles, moyens d'exprimer des objectifs, des raisons, etc.), ainsi que des informations régionales (voir le programme pour 10-11 classes d'établissements d'enseignement en langue française E.Ya. Grigorieva) [10 p. 511]. Autrement dit, il semble nécessaire d'inclure ce matériel dans le texte, s'il n'est pas utilisé dans une source authentique.

En conséquence, dans le matériel didactique que nous examinons, les commentaires post-texte incluent les informations suivantes:

vocabulaire - termes de la leçon en cours à partir du texte;

mot - connecteur tiré du texte - word-connector from the text;

civilisation - information linguistique et culturelle;

NB! - grammaire basée sur le texte - phénomènes grammaticaux retrouvés dans le texte.

Ces informations sont présentées dans les commentaires pour optimiser le processus de mémorisation en mettant en évidence de nouveaux éléments.

Après le texte et les commentaires suivants, le bloc de tâches est placé directement. Il comprend des exercices visant à développer les compétences de base fournies par la norme éducative (peuvent varier en fonction du contenu du texte et de ses capacités). Dans le matériel didactique que nous considérons, les trois premières tâches visent à contrôler la compréhension du texte. Les première et deuxième tâches sont marquées d'un *, ce qui signifie la nécessité d'interpréter et d'analyser ce qui a été lu pour obtenir une réponse à la question.

La troisième tâche vise à développer les compétences pédagogiques et cognitives des élèves, à savoir travailler avec un dictionnaire étymologique. La réalisation du devoir améliore les compétences



des élèves dans la recherche d'informations et l'utilisation de la documentation pédagogique de référence. Étant donné que cette tâche suppose de fonctionner avec des sources tierces, elle est marquée **.

La quatrième tâche est consacrée au développement des compétences lexicales à travers la création d'une «famille de mots» qui ont la même racine et sont liés dans le sens, mais se réfèrent à différentes parties du discours (par exemple, la grandeur -grand (e) - grandir). Cette tâche est la plus difficile et est donc marquée dans le matériel avec le signe ***.

Enfin, la cinquième tâche est consacrée à l'automatisation des informations lexicales et grammaticales de la leçon en cours (texte) et à la création d'un support pour la mise en parole ultérieure du matériel étudié.

Vitesse

La vitesse est notamment le rapport entre la distance parcourue d'un objet et le temps écoulé.

La vitesse (v) est une grandeur qui mesure le rapport d'une évolution au temps.

Exemples: vitesse de déplacement, vitesse d'une réaction chimique, etc.

De manière élémentaire, la vitesse s'obtient par la division d'une mesure d'une variation (de longueur, poids, volume, etc) durant un certain temps par une mesure du temps écoulé.

En particulier, en cinématique, la vitesse est une grandeur qui mesure pour un

mouvement, le rapport de la distance parcourue au temps écoulé.

L'unité internationale de la vitesse cinématique est le mètre par seconde (m.s-1 ou m/s). Pour les véhicules automobiles, on utilise aussi fréquemment le kilomètre par heure (km.h-1 ou km/h), le système anglo-saxon utilise le mille par heure (mile per hour, mph). Dans la marine, on utilise le nœud, qui vaut un mille marin par heure, soit 0,514 4 m.s-1. En aviation, on utilise parfois le Mach[mac], Mach 1 étant la vitesse du son (qui varie en fonction de la température et de la pression).

Vocabulaire : La vitesse cinématique, la grandeur, mesurer, le rapport, la distance, le temps écoulé, le mètre par seconde, la vitesse du son, longueur, poids, volume.

Mot - connecteur : en particulier.

Civilisation : Unité de mesure dans différents domaines.

NB! Un mètre PAR seconde; comme une fois PAR jour, deux fois PAR an etc.

Devoirs à faire:

1. *Est-ce que les notions rapport et division sont identiques? Justifie ta réponse en t'appuyant sur le texte que tu viens de lire.

2. *Quelles unités internationales utilise-t-on pour mesurer la vitesse? Dans quels domaines?

3. **Consulte le dictionnaire étymologique pour trouver l'origine du mot Vitesse.

4. *** Cite, s'il te plaît, les mots et les expressions liés aux mots suivants (exemple : la grandeur - grand(e) - grandir) : mesurer, rapport, division, vitesse, particulier.

5. *Qu'est ce que la vitesse dans les sciences? Et dans la vie quotidienne?

Ce matériel didactique a été utilisé par A. Yelyshkin, élève de la zone de formation 44.03.01 "Enseignement pédagogique", profil "Langue étrangère (français)" pendant la période de pratique de l'enseignement en 10^e année du gymnase n° 1. Samara en cours de français.

L'intégration du texte de sciences naturelles dans le processus éducatif était justifiée, d'une part, par le thème du module actuel et, d'autre part, par le fait que le groupe dans lequel les résultats de la recherche ont été testés était composé d'élèves de la classe de physique et de mathématiques.

L'étude de ce matériel a été introduite par un aperçu des principaux styles fonctionnels de discours (artistique, journalistique, familial, officiel-commercial, scientifique) et des techniques de travail avec des textes déjà familiers aux étudiants (analyse du titre, illustrations, lecture pour une compréhension générale et détaillée, mettant en évidence les centres sémantiques des paragraphes individuels et texte dans son ensemble) sous forme de questions-réponses. À la fin de cette étape de la leçon, les élèves ont été invités à se familiariser avec le style de discours fonctionnel scientifique le moins étudié dans les cours de français à l'école.

Le travail direct avec le texte a commencé par l'analyse de son nom et du support visuel qui l'accompagne, ainsi que par une connaissance du dictionnaire du minimum lexical, dans lequel des technologies d'apprentissage heuristique ont été utilisées (l'étude de nouvelles unités lexicales en comparant leur forme, des parties morphologiques avec des mots ou termes français déjà étudiés, qui font partie de la terminologie des sciences naturelles de la langue russe, qui a permis d'assurer la «génération spontanée» heuristique des connaissances).

Pendant la phase de texte, les élèves lisent le texte deux fois. Après la première lecture, le contrôle s'est déroulé sous forme de questions-réponses orales. Les élèves ont répondu aux questions suivantes de l'enseignant: «Quel est le sujet du discours? Quelles sont les principales parties sémantiques de ce texte? Connaissez-vous ce matériel grâce à l'expérience de l'étude de la physique? (justifiez la réponse) ».

La deuxième lecture a été suivie d'un travail avec les tâches (1), (2) et (3), dont le but était de contrôler la compréhension détaillée du texte et d'approfondir les informations extraites de celui-ci (un dictionnaire étymologique de la langue française



a été préparé à l'avance pour travailler avec la tâche (3)). Sur ce le travail en classe avec le texte présenté a été achevé [12, p. 5-8].

En tant que devoirs, les étudiants ont effectué des devoirs (4) - linguistiques (par écrit) et (5) - communicatifs (par écrit, pour développer les compétences en écriture et créer un support pour la publication ultérieure du matériel étudié). Le but de cette étape était d'affiner et d'automatiser davantage les unités lexicales étudiées. La condition pour terminer le devoir était l'utilisation des termes étudiés et des structures grammaticales du texte pour compiler votre propre essai (raisonnement). La dissertation a été vérifiée dans la leçon sous forme de travail individuel et d'échange de travaux terminés par les étudiants dans le but d'une correction mutuelle sous la supervision de l'enseignant (10-15 minutes).

La dernière étape de travail sur ce matériel didactique - discours - a été réalisée dans le cadre d'un travail parascolaire sous forme de visioconférence utilisant les services Skype, où les étudiants se sont présentés leurs propres essais et ont discuté des idées les plus intéressantes [13].

L'utilisation de la terminologie des sciences naturelles et l'attrait du contenu des matières des sciences naturelles, à notre avis, doivent être construits sur la base d'ouvrages de discours entiers - scientifiques, vulgarisateurs et pédagogiques, car l'étude d'unités lexicales isolées n'est pas pratique.

L'utilisation de tels textes (sous une forme adaptée) permet d'atteindre les objectifs d'enseignement de la langue française, prévus par la norme éducative de l'État fédéral, et d'améliorer toutes les compétences nécessaires à ce stade de l'enseignement - communicatif (dans tous les types d'activité de parole), linguistique, socioculturel, orienté vers les valeurs, etc. ; de ce point de vue, le texte des sciences naturelles répond aux critères de sélection d'un outil pédagogique. Cependant, afin de réaliser le travail le plus efficace avec un tel texte, il est nécessaire non seulement de l'adapter au niveau de formation et aux objectifs de l'enseignement scolaire, mais aussi de créer un bloc d'exercices lui permettant de contrôler la compréhension et de créer les conditions du développement de la compétence communicative sous divers aspects.

Nerfs

1. *Le concept de l'enseignement de profil au niveau supérieur de l'enseignement général*, Tachkent, 1998.
2. *Programme scientifique des langues étrangères*
3. *Sobirova O.V. Améliorer les aspects lexicaux et sémantiques du français moderne*. URL: <http://www.dissercat.com/content/formirovanie-lexiko-semanticheskikh-svyazei-v-ekonomicheskoi-terminologii-sovremennogo-fran> (données obrashcheniya 24.05.2018).

4. *Monastyretskaya O.V. Le rôle de la langue française dans le processus de formation des sphères lexicales des relations internationales*. URL: <http://www.dissercat.com/content/rol-frantsuzskogo-yazyka-v-protsesse-formirovaniya-leksiki-sfery-mezhdunarodnykh-otnoshenii> (données obrashcheniya 24.05.2018).
5. *Yudina E.N. Terminologie juridique française dans le cadre du système lexical de la langue française moderne: analyse structurale-sémantique*. URL: <http://www.dissercat.com/content/frantsuzskaya-yuridicheskaya-terminologiya-kak-chast-leksicheskoi-sistemy-sovremennogo-frant#ixzz5GPNBnRw1> (données d'accès 24/05/2018).
6. *Menjinskaya E.E. Du levier d'Archimède à la fusée d'aujourd'hui / Ot rychaga Archimedes do rakety nashikh dnei: kniga dlya chteniya na frantsuzskom yazyke dlya uch-sya 10-11 klassov sredney shkoly*. M. : Prosveshchenie, 1961. 100 p.
7. *Gapparova L.J. N.D. Enseignement des langues étrangères: méthodologie et théorie*. Manuel. Science, 1991
8. *Bubnova G.I., Tarasova A.N. Le Français en Perspective: uchebnik. 11 classe*. M. : Prosveshchenie, 2017. 199 p.
9. *Marie-Laure Poletti, Céline Himber Adosphère IV. Livre de l'élève*. Hachette FLE, 2012. 128 p.
10. *Grigoreva E.Ya. Langue française. Programmes obshcheobrazovatelnykh uchrejeniy: uchebnoe posobie*. M. : Prosveshchenie, 2009. 48 p.
11. *Dr. Vallejo. Vitesse*. URL: <http://lewebpedagogique.com/> (données obrashcheniya 24.05.2018).
12. *Sysoev P.V. Informatsionnye i kommunikatsionnye tekhnologii v obuchenii inostrannomu yazyku: teoriya i praktika*. M. : Glossa-press, 2012. 153 p.
13. *Aleksyuk A.N. Méthodes générales de formation à l'école*. Kiev: école Radyanska, 1983. 244 p.



EINIGE MERKMALE DES DEUTSCHUNTERRICHTS AN EINER PÄDAGOGISCHEN UNIVERSITÄT

*Nazarova Shakhnoza Ismat kizi,
Yuldosheva Vohida Nazarovna
Lehrer der Abteilung für Deutsch
Sprache und Literatur von Karshi
Staatliche Universität, Usbekistan.*

НЕКОТОРЫЕ ОСОБЕННОСТИ ОБУЧЕНИЯ НЕМЕЦКОМУ ЯЗЫКУ В ПЕДАГОГИЧЕСКОМ ВУЗЕ

*Назарова Шахноза Исмат кизи,
Юлдошева Вохида Назаровна
Преподаватели кафедры Немецкого
языка и литературы Каршинского
государственного университета. Узбекистан.*

Аннотация

Статья посвящена вопросу повышения мотивации обучения немецкому языку в педагогическом вузе. Автор рассматривает также некоторые приемы и методы для эффективного обучения студентов.

Ключевые слова: мотивация, обучение, коммуникация, учебный процесс, интерес. Раздел: педагогика; история педагогики и образования; теория и методика обучения и воспитания (по предметным областям).

SOME FEATURES OF TEACHING GERMAN LANGUAGE AT A PEDAGOGICAL UNIVERSITY

*Nazarova Shakhnoza Ismat kizi,
Yuldosheva Vohida Nazarovna
Teachers of the Department of German
language and literature of Karshi
State University, Uzbekistan.*

ANNOTATION

The article is devoted to the issue of increasing the motivation of teaching the German language in a pedagogical university. The author also considers some techniques and methods for effective teaching of students.

KEY WORDS: *motivation, communication, interest.*



Im Zusammenhang mit dem Übergang zu einem neuen Grundschulniveau wurden neue Anforderungen an die Disziplin "Fremdsprache" für Hochschulabsolventen festgelegt. Und gemäß den neuen Standards muss der Absolvent über ein hohes Maß an Berufsausbildung verfügen und in der Lage sein, im täglichen und beruflichen Bereich in einer Fremdsprache zu kommunizieren. Die Hauptaufgabe beim Unterrichten einer Fremdsprache für Jungesellen aller Fachrichtungen ist der Erwerb von Kommunikationskompetenz durch Studierende, die es ihnen ermöglicht, eine Fremdsprache in ihrer beruflichen Tätigkeit zu verwenden. Fremdsprachenkenntnisse sind heute nicht nur ein kulturelles, sondern auch ein wirtschaftliches Bedürfnis. In der modernen Gesellschaft ist es für jeden Spezialisten, der in seinem Beruf erfolgreich sein will, wichtig, eine Fremdsprache zu beherrschen. Fremdsprachenkenntnisse erhöhen den Status eines jungen Spezialisten, seine Wettbewerbsfähigkeit, sichern den Erfolg seiner Karriere, ermöglichen die Nutzung fremder Informationsquellen, ohne die Forschungsaktivitäten nicht möglich sind. Vielleicht ist dies heute der Hauptfaktor für die Motivationsbildung zum Erlernen einer Fremdsprache. Dies gilt jedoch eher für die englische Sprache. Die objektive Realität zeigt, dass die deutsche Sprache zunehmend durch Englisch ersetzt wird, was sehr bedauerlich ist, insbesondere wenn wir die reiche Erfahrung des Unterrichts, die jahrhundertealte Verbindung zwischen den deutschen und russischen Völkern, die breitesten kulturellen Bindungen sowie die wissenschaftliche und technische Zusammenarbeit berücksichtigen. In unserer Gesellschaft gibt es die Meinung, dass Deutschlernen zwecklos ist. Und in dieser Hinsicht ist das Problem der Motivation beim Deutschlernen immer vorhanden.

IA Zimnyaya nennt Motivation den "Auslösemechanismus" jeder menschlichen Aktivität: Arbeit, Kommunikation oder Erkenntnis. Nährt und erhält die Motivation greifbar, real, schrittweise und Endergebnis. Wenn es keinen Erfolg gibt, schwindet die Motivation und dies wirkt sich negativ auf die mit dem Spracherwerb verbundenen Bildungsaktivitäten aus.

Das Interesse und der Wunsch, eine Fremdsprache zu lernen, sind ein wichtiger Trend, der die Popularität einer bestimmten Sprache in der modernen Welt widerspiegelt. Das Interesse ist die

Hauptantriebskraft für die kognitiven Aktivitäten der Schüler.

Studierende, die an die Universität kommen, haben unterschiedliche Kenntnisse der deutschen Sprache und unterschiedliche Einstellungen zum Erlernen der deutschen Sprache. Die meisten von ihnen glauben, dass die deutsche Sprache für sie in ihrer beruflichen Tätigkeit nicht nützlich sein wird, und es sind diese Studenten, die besonders ihre Motivation steigern müssen. Es ist notwendig, sie davon zu überzeugen, wie viel sie Deutsch brauchen und welche Kenntnisse sie benötigen, um einen prestigeträchtigen Job zu bekommen und nach dem Abschluss Karriere zu machen.

Die Schwierigkeit, an nichtsprachlichen Universitäten zu studieren, liegt auch darin, dass die Studierenden mit ihren Hauptfächern beladen sind und eine Fremdsprache als Nebenfach wahrnehmen. Für einige ist dies überhaupt nicht notwendig, daher ist es sehr wichtig, Interesse am Deutschlernen zu wecken. Es muss auch berücksichtigt werden, dass die Stunden für das Erlernen einer Fremdsprache erheblich reduziert wurden und die Lehrer noch eine Aufgabe haben: Wie und was sollen die Schüler unterrichten?

Zu Beginn des Lernens einer Fremdsprache ist die Motivation in der Regel sehr hoch, aber wenn die Schüler mit vielen Schwierigkeiten konfrontiert sind, nimmt die Motivation ab oder verschwindet ganz. Das Ziel des Lehrers in dieser Situation ist es, dies zu beeinflussen und alle Motivationsmittel anzuwenden. Der gesamte Bildungsprozess sollte so strukturiert sein, dass jeder mit der Kommunikation zufrieden ist. Es ist notwendig, die persönliche Orientierung zu stärken und relevantes Material für die Vorbereitung zu verwenden, insbesondere wenn der Schüler in der simulierten Situation im Klassenzimmer eine Rolle spielt.

Es ist notwendig, solche Bedingungen während des Trainings zu schaffen, damit sich der Schüler in seinen Fähigkeiten wohl und sicher fühlt. Wenn Sie Vertrauen in sich selbst haben, steigt auch die Motivation, eine Sprache zu lernen. Um den Schülern solche Aufgaben anzubieten, bei deren Ausführung sie die Aussichten ihrer Aktivitäten erkennen würden, streben sie ein Ergebnis an. Verwenden Sie alle Arten von Methoden (Projekte, Rollenspiele usw.), verschiedene Anreize und Belohnungen, die das Interesse und die Aktivität der Schüler erhöhen. Die Motivation kann gesteigert



werden, indem die Schüler in die selbständige Arbeit im Klassenzimmer einbezogen werden, problematische Aufgaben erledigt werden, regionales Material verwendet wird und eine Verbindung zwischen einer Fremdsprache und anderen Fächern hergestellt wird. Arten von Arbeit wie Gruppen-, Paar-, gemeinsame kreative Aufgaben und Projekte sollten einen bedeutenden Platz im Bildungsprozess einnehmen.

Den Studenten muss die Möglichkeit gegeben werden, ihre eigenen Absichten bei der Lösung bestimmter Kommunikationsprobleme zu verwirklichen. Das Wesentliche beim Erlernen einer Fremdsprache sollte nicht das Auswendiglernen sein, sondern die intellektuelle und kreative Verarbeitung des Materials und seine korrekte Interpretation.

Es muss sichergestellt werden, dass der Schüler kein passiver und gleichgültiger Beobachter ist, daher muss ihm die Möglichkeit gegeben werden, seine Tätigkeit zu zeigen. Er muss sich seiner Aktivitäten bewusst sein, das Ergebnis sehen und seine Fehler analysieren. In Anbetracht der Tatsache, dass die Schüler einer Gruppe unterschiedliche Wissensniveaus haben, ist es im Unterricht erforderlich, für jeden Schüler oder jede Mikrogruppe ein Problem individuell zu formulieren. Wenn ein Schüler mit den Ergebnissen seiner Arbeit zufrieden ist, steigt die Qualität der Ausbildung und dementsprechend die Motivation zum Lernen.

Es ist sehr wichtig, sich stärker auf die Persönlichkeit der Schüler zu konzentrieren, ihre Fähigkeiten und Fertigkeiten zu berücksichtigen, ihr Interesse aufrechtzuerhalten, Bedingungen für die Umsetzung der Prinzipien der Differenzierung und Individualisierung des Lernens zu schaffen, den Bildungsprozess flexibler zu gestalten, die Kreativität der Schüler zu fördern und zu fördern.

Untersuchungen der Lehrer E. I. Passova und E. S. Polat zeigen, dass nicht-traditionelle Formen der Durchführung von Klassen die Motivation zum Lernen und das Interesse an dem Fach erhöhen. Diese Sitzungen werden am besten nach dem Studium eines Themas oder mehrerer Themen durchgeführt, die als Kontrolle dienen. Unter solchen nicht traditionellen Aktivitäten kann Folgendes unterschieden werden:

Lektion - ein Streit, wenn zum Beispiel kontroverse Themen diskutiert werden. Diese Form der Arbeit hilft in der mündlichen Praxis, lehrt die Schüler, ihre Gedanken logisch richtig auszudrücken, in der Öffentlichkeit zu sein.

Lektion - Ausflug. Es werden Mikrogruppen von 3-4 Personen erstellt, und jede Gruppe erhält ihre

Aufgabe, geht ihren eigenen Weg und sammelt die erforderlichen Informationen. Solche Kurse können durchgeführt werden, wenn regionales Material zu den Themen Deutschland, Russland, meine Stadt usw. studiert wird.

Der Unterricht ist ein Problem, wenn eine tatsächliche Situation ausgewählt und mit den Schülern besprochen wird. Zu diesen Klassen gehören Schüler in Suchaktivitäten, was zur Entwicklung der Unabhängigkeit und ihrer kreativen Tätigkeit beiträgt.

Runder Tisch, wenn ein Meinungs austausch zu einem Thema oder Problem stattfindet. Dieses Formular erfordert eine vorbereitende Vorbereitung und das Vorhandensein bestimmter Kenntnisse, da der Schüler seine Gedanken richtig ausdrücken und seinen Standpunkt zu diesem Thema verteidigen muss. Es ist möglich, eine solche Lektion zu verwenden, wenn das Thema Umweltschutz oder Umweltprobleme untersucht wird.

Rollenspiele, bei denen die Schüler bestimmte Rollen übernehmen, die geschäftliche oder soziale Beziehungen nachahmen.[1]

Beim Deutschunterricht ist es notwendig, alle interaktiven Methoden und Unterrichtsformen anzuwenden. Einbindung der Schüler in die aktive Teilnahme an Fremdsprachenkonferenzen, Olympiaden usw. Eine der wichtigsten methodischen Techniken, mit denen eine Erfolgssituation geschaffen werden kann, ist die Projektmethode. Diese Methode aktiviert das Denken, entwickelt hohe Kommunikationsfähigkeiten und führt in eine neue Kultur ein. Als Ergebnis lernen die Schüler, ihre Gedanken zu formulieren, Material für die anschließende Präsentation zu sammeln und zu verarbeiten, die erhaltenen Daten anhand von Tabellen, Bildern und Grafiken zu analysieren. Solche Präsentationen haben einen großen Einfluss auf die Motivation der Studierenden, tragen zur Entwicklung kreativer Aktivität und Unabhängigkeit bei. Dank der nicht-traditionellen Form der Präsentation von Informationen haben die Schüler ein erhöhtes Interesse daran, die deutsche Sprache zu beherrschen. Die Projektaktivität trägt auch zur Stärkung der zwischenmenschlichen Beziehungen und zur Entwicklung der Kommunikationsaktivität auf der Grundlage der Zusammenarbeit bei. eröffnet Möglichkeiten für die Nutzung von Sprach- und Regionalkenntnissen in deutscher Sprache, um eine andere Kultur zu lernen und Kontakte zu knüpfen.

Es ist die Projektorganisation des Bildungsprozesses unter Verwendung von Informationstechnologien, die dazu beiträgt: die Entwicklung von Fähigkeiten, um Wissen unabhängig zu erwerben und in der Praxis anzuwenden; die Entwicklung jedes Schülers als kreative Person; Steigerung der Motivation, Deutsch zu lernen; Beteiligung an einem aktiven kognitiven



Prozess und kompetente Arbeit mit ausländischen Quellen. Die Schüler sollten das Bedürfnis verspüren, neues Sprachmaterial zu beherrschen, um ihren Horizont zu erweitern und ihre Fähigkeiten zu erweitern.

Die Sprache spielt eine führende Rolle in den Prozessen der Persönlichkeitssozialisierung. Daher ist es beim Unterrichten einer Fremdsprache notwendig, Bedingungen für die vollständige Entwicklung der Persönlichkeit zu schaffen. Der Inhalt der Ausbildung sollte zur Erweiterung bestehender und zum Erwerb neuer sozialer Erfahrungen beitragen. Bereitstellung von Bedingungen für die Bildung von Fähigkeiten zur Entwicklung des Sprachverhaltens in Übereinstimmung mit der Kultur des Landes in der Sprache, in der die Kommunikation stattfindet; tragen zur Erweiterung des Spektrums ihrer sozialen Rollen bei.

Es muss versucht werden, sicherzustellen, dass verschiedene Aspekte des Inhalts von den Schülern als persönlich bedeutsam und interessant wahrgenommen werden, was den Wunsch hervorruft, mit anderen Sprachpartnern in Kommunikation zu treten und ihre eigene Meinung zu äußern. Bei der Auswahl des Unterrichtsmaterials sollte die Kultur des Landes der Zielsprache durch die Mutterkultur ergänzt werden, die die internationale Kommunikation und den Austausch kultureller Werte in einer Fremdsprache erleichtert und mögliche Kommunikations- und psychologische Schwierigkeiten bei der realen Kommunikation verhindert.

Lernsituative Rollen und Texte sind von besonderer Bedeutung. Richtig ausgewählt und auf die Rollen der Schüler verteilt motivieren sie zur Kommunikation, programmieren ihr Sprachverhalten und schaffen die notwendige Kommunikationsgrundlage für die Entwicklung sozialer und sprachlicher Fähigkeiten und Fertigkeiten. Das Hauptprinzip ist hier das Prinzip der aktiven Kommunikation, bei dem berufliche Problemsituationen zugrunde gelegt werden. Diese Situationen werden durch kollektive Arbeit realisiert, in der sich jeder in einer Situation aktiver Interaktion befindet. Das Hauptaugenmerk liegt darauf, den Lernprozess so natürlich wie möglich und nahe an den Bedingungen einer echten Kommunikation zu gestalten.

Die richtige Organisation des Deutschlernprozesses trägt zur Erweiterung bestehender und zum Erwerb neuer Erfahrungen bei. Im Verlauf der Kommunikation implementieren die Schüler ein Verhaltensmuster, das sich aus früheren Lebenspraktiken ergibt und für den Träger einer bestimmten Rolle charakteristisch ist. Es ist notwendig, sozial akute, pädagogische und sprachliche Situationen anzubieten, in denen die

Schüler unabhängig voneinander Sprachaktionen programmieren, Ziele setzen, Kommunikationsaufgaben implementieren, den Gesprächspartner beeinflussen und den Grad des Erfolgs der Sprachinteraktion unabhängig bewerten können.

Soziale Kompetenz, die beim Erlernen einer Fremdsprache entsteht, ermöglicht es, Schwierigkeiten sozialer, psychologischer und kommunikativer Natur zu überwinden. Es ist notwendig, Techniken anzuwenden, die die Schüler in das System der sozialen Beziehungen "eintauchen" und sie zu einer aktiven zwischenmenschlichen Kommunikation zwingen. Durch die Teilnahme an verschiedenen Diskussionen, Rollenspielen und Geschäftsspielen erwerben die Schüler die notwendige Kommunikationserfahrung, die es ihnen ermöglicht, ihre persönliche Position zu verschiedenen Themen zu formulieren und zu argumentieren.

Eine einzigartige Gelegenheit zum Erlernen einer Fremdsprache bietet die Nutzung des Internets mit seinen kolossalen Informationsmöglichkeiten. Sie können mit Muttersprachlern kommunizieren und so eine Sprachumgebung schaffen. Wir wissen, dass beim Erlernen einer Fremdsprache eine Live-Kommunikation sehr wichtig ist. Mithilfe des Informationsnetzwerks im Klassenzimmer können Sie auch verschiedene didaktische Aufgaben lösen: Anzeigen thematischer Materialien, Verbessern der Hörfähigkeiten, Auffüllen des Wortschatzes, unabhängige Suche nach den erforderlichen Informationen oder Einbeziehen in den Kommunikationsprozess.

Video-Tutorials sind ebenfalls von großer Bedeutung. Das Video wirkt sich emotional auf die Schüler aus und hilft, Aufmerksamkeit und Gedächtnis zu entwickeln. Während des Betrachtens entsteht eine Atmosphäre gemeinsamer kognitiver Aktivität, und sogar passive Schüler werden in den Arbeitsprozess einbezogen. Die Einbeziehung von Videos in den Bildungsprozess trägt auch zur erfolgreichen Bildung der Kommunikationskompetenz der Schüler bei.[2]

Ein wichtiger Platz sollte auch der selbständigen Arbeit des Schülers eingeräumt werden. Unabhängige Arbeit umfasst die Suche und Analyse von Materialien, die Erstellung von Berichten und Präsentationen. Gleichzeitig nimmt die kognitive Aktivität der Schüler, die allgemeine Gelehrsamkeit, zu, wenn sie neues Wissen erwerben und ihre Fremdsprachenkenntnisse verbessern. Die Schüler erwerben Kenntnisse in der Arbeit mit Nachschlagewerken, dem Internet, lernen, mit ihrer anschließenden Präsentation Aufsätze in einer Fremdsprache zu schreiben, was für sie bei ihren zukünftigen beruflichen Aktivitäten zweifellos nützlich sein wird.



Die Effektivität des Fremdsprachenunterrichts kann erreicht werden, vorausgesetzt, die Schüler werden in den Prozess aktiver unabhängiger und kreativer Lernaktivitäten einbezogen. Die Schüler sollten in der Lage sein, in Übereinstimmung mit ihren internen Zielen und Bedürfnissen zu handeln, ihre Individualität zu bewahren und verantwortungsvolle Entscheidungen zu treffen. Es ist auch wichtig, ihnen eine breite Palette verschiedener Arten von Aktivitäten zur Verfügung zu stellen, aus denen sie auswählen können, welche ihren Fähigkeiten und Neigungen am nächsten kommen.

Zusammenfassend kann festgestellt werden, dass die produktivsten und relevantesten Methoden zum Unterrichten einer Fremdsprache meist kommunikative und problematische Techniken sind. Daher ist es notwendig, diejenigen Formen und Techniken des Unterrichts einer Fremdsprache zu verwenden, die die kommunikative und kognitive Aktivität am meisten aktivieren.[3]

Für einen effektiven Deutschunterricht ist es notwendig, moderne technische Informationsmittel einzusetzen. "Heute ist nur noch der traditionelle Unterricht vorbei. In einer Zeit, in der sich der Informationsfluss beschleunigt, ist es schwierig, die Aufmerksamkeit des Schülers auf das Wissen zu lenken, wenn nicht jede Lektion bunt ist. Dafür muss der Lehrer ständig suchen und kreativ sein." [4].

Alle diese Methoden tragen dazu bei, die mündliche und schriftliche Rede von Studenten einer pädagogischen Universität aktiv zu entwickeln.

Literatur

1. **Михайленко Л.В.** Особенности обучения немецкому языку в неязыковом вузе//*Концепт*. Москва, 2014.
2. **Рябова Н.Г.** Методика преподавания немецкого языка в начальной школе. Учебное пособие. Харьков, 1997. Украина.
3. **Хуррамова А.К.** Особенности немецкого языка в узбекской школе.//*ГулДУ ахборотномаси*. № 4 сон, 1987.
4. **Турсунов И.Н. Отажонов Ш.Ш.** Роль современных информационных технологий в обучении иностранному языку.// «Молодой учёный». № 17 (307) Педагогика. Апрель 2020 г.



TOPICAL ISSUES OF LANGUAGE, ITS FUNCTION IN SOCIETY AND CULTURE

Otajonova Shakhnoza Shavkatovna

Inogamova Nargiza Shavkatovna

Senior lecturers of the National

University of Uzbekistan

ANNOTATION

The problem of interaction of languages and cultures is considered. The combination of various approaches to the study of this issue allows us to determine the key features of the language in the context of active intercultural interaction. The author turns to an actively developing area - the study of the influence of language on the way of thinking of a native speaker.

KEYWORDS: national language, national culture, linguistic determinism, cultural determinism.

АКТУАЛЬНЫ ВОПРОСЫ ЯЗЫКА, ЕГО ФУНКЦИЯ В СОЦИУМЕ И КУЛЬТУРЕ

Отажонова Шахноза Шавкатовна,

Иногамова Наргиза Шавкатовна-

Старшие преподаватели Национального

университета Узбекистана

Аннотация

Рассматривается проблема взаимодействия языков и культур. Объединение различных подходов к изучению данного вопроса позволяет определить ключевые особенности языка в условиях активного межкультурного взаимодействия. Автор обращается к активно развивающемуся направлению — исследованию влияния языка на образ мышления носителя языка.

Ключевые слова: национальный язык, национальная культура, лингвистический детерминизм, культурный детерминизм.

One of the main problems of cultural and linguistic research is the specificity of the national language, the role of language in the genesis of culture, the phenomenon of the dialogue of cultures. Questions about the nature of language, its functions in society and culture are topical. Language is an object of study in various disciplines: culturology, philosophy, psychology, logic, semiotics, cultural linguistics, etc. People quite early discovered that the possession of language (speech) is one of the most important differences between humans and animals, and the ability to speak is closely related with the ability to

think. The problem of the origin and essence of language can be attributed to the oldest in science. IN XII-XIII centuries. interest in this issue was due to the search for a "universal language" of culture and attempts to construct a universal grammar, assuming the existence of an initial proto-language, for the role of which Hebrew or Latin was proposed.

According to the "natural" theory of Plato's language, the name of any object corresponds to the essence of this object. Plato thus posits a living, direct connection between ontology and language. In accordance with the theory of Aristotle, names are



given to objects "by appointment", that is, by virtue of a contract between people and are not associated with the nature and essence of the designated objects. It was this point of view that became dominant in the European culture of modern times. Therefore, throughout the XVIII-XIX centuries. linguistics problems were mainly studied in linguistics - an independent, separate science. In the XX century. language becomes the subject of interdisciplinary research and the question of the relationship between language and ontology is gaining relevance. [1]

Many works are devoted to the problem of the relationship between language and culture. According to the concept of K. Levi-Strauss, language can be viewed as a product, part and condition of culture: "it is with the help of language that an individual acquires the culture of his group" [2.] RO Shor claims that language is a cultural tool created and transmitted by the community, the team. The choice of a particular language by an individual, his assimilation of certain forms of speech is determined exclusively by that society, that ethnic or social collective, cultural and historical unity of which he is a member. [3] Thus, R.O. Shor defines language as a social form of thought transmission.

A. N. Whitehead states: "Human civilization is a product of language, and language is a product of a developing civilization" [4]. That is, a person can learn about the achievements of civilization of past eras only through language. In cultural linguistics, the understanding of language, formulated by PM Bitsilli, is widespread: "Language in relation to its structure, its vocabulary is one of the most important aspects of culture, perhaps the most important" [5.]

In the Explanatory Dictionary of the Living Great Russian Language of V. I. Dahl, language is defined as "the totality of all the words of the people and their correct combination, for the transmission of their thoughts" [6]. In the dictionary of linguistic terms by J. Maruso, "language is any system of signs suitable for serving as a means of communication between individuals" [7].

O.S. Akhmanova defines language as "one of the original semiological systems, which are the most important means of communication between members of a given human collective, for whom this system also turns out to be a means of developing thinking, transmitting cultural and historical traditions from generation to generation, etc." [8].

For the first time in the history of philosophy, thinkers of the 18th century turned to the study of culture as the most important aspect of the life of society and to the role of language in human life. Culture was understood as the result of the spiritual activity of people. I. Herder called it "a fragile revelation of the essence of the people" [9.] Moreover, the existence in the world of culture is recognized by the thinkers of the 18th century. the natural state of man. According to I. Herder, a person, living among

people, cannot "detach from culture" [9]. Language is considered as the main condition for human existence, because language made possible the development of the human mental sphere. IG Fichte, a follower of Kant, and then his critic, is convinced that the purpose of humanity in ensuring the constant progress of culture [10.] F. Schelling called culture the second nature, which in the process of his activity a person creates, building it over the first [11.] According to L. Feuerbach, language is a criterion that determines the level of human culture [12]. The decisive role of language in human mental activity was noted by G. Hegel, arguing that thought manifests itself, first of all, in language [13.] Thus, all representatives of German classical philosophy have a high assessment of the role of language.

Nominated by German thinkers of the XVIII century. the idea of language as the main component of human spiritual activity became the core of W. Humboldt's teachings, the main provisions of which are the fundamental basis of modern concepts of language. His idea that language is inherent in the very nature of man and is necessary for the development of his spiritual forces and the formation of his worldview is developed by researchers in the field of the humanities in many directions. W. Humboldt identified priority areas for further research on the relationship between language, culture and thinking. In his works, he sought to prove that intellectual activity and language are a single whole. Following I. Kant's idea of the difference between the transcendental and the transcendental, W. Humboldt believed that the connection of thought, organs of speech and hearing with language is as inexplicable as the structure of human nature is inexplicable. According to V. Humboldt, language always embodies the originality of the national vision of the world, national culture. V. Humboldt's ideas were further developed in the works of many foreign and domestic scientists - C. Bally, I. A. Baudouin de Courtenet, L. Weisgerber, J. Vandriez, A. A. Potebnya, E. Sapir, B. Whorf and others researchers who studied the problems of language and culture.

E. Sapir, following the views of Humboldt, considered language a tool, a means of communication and expression of thought: "Language is a communicative process in its purest form in every society we know" [14.] E. Sapir also did not deny the influence of thinking on language. B. Wharf, developing the thought of E. Sapir, argued that a person's mental activity is conditioned by the grammatical models of his own language: a person thinks within a certain language - English, Sanskrit, Chinese or any other [15]

E. Sapir put forward an important methodological proposition that reveals the unity and specificity of culture and language: "Culture can be defined as what a given society does and thinks. Language is the way people think. It goes without saying that the content of language is inextricably



linked with culture "[14.] In this regard, language acts as a realized" internal form "of expression of culture as an extra-linguistic content of a subject-conceptual nature, and culture - as a process of man's assimilation of reality and as a factor, influencing the development of human society, which is directly influenced by language. This is the essence of the well-known "theory of linguistic relativity" E. Sapir - B. Whorf, according to which, first, language determines the way of thinking of the people speaking it; secondly, the way of knowing the real world depends on the languages in which cognizing subjects think.

A staunch supporter of the ideas of E. Sapir B. Wharf did not question the determinism of language in relation to culture. The scientist argued that the generally accepted models of using words are a priori not only in relation to thought processes, but to forms of behavior. Whorf partly recognized the influence of cultural factors on language, but considered such influence insignificant and slow, arguing that linguistic phenomena have an immediate effect on culture. For all the absolutization of the role of language, he emphasized the complexity of the nature of the relationship between language and culture, arguing that language and culture are something whole, in which one can assume the interdependence between separate areas [16.]

The famous American psychologist and linguist Stephen Pinker challenges the Sapir-Whorf hypothesis of linguistic relativity: "The idea that thinking and language are the same is an example of what can be called a common fallacy" [17.] Stephen Pinker states that there is no scientific confirmation of the significant influence of language on the way of thinking of a native speaker. The idea of linguistic relativity, in his opinion, was born in the Boas school in the course of attempts to show that non-literate cultures are no less complex and sophisticated than modern Western culture. Stephen Pinker suggests the possibility of using a certain code for the embodiment of concepts and their interaction in our head, the language of thought or thought code, which is different from all languages existing in the world. As a result of the research, S. Pinker formulates an important proposition: "the images underlying thinking, on the one hand, and sentences in the language, on the other hand, act in many respects in opposition to each other" [18]. Thus, according to S. Pinker, people do not think in English or German; they think in a thought code, which is probably the basis of all languages. A person, presumably, has symbols to express concepts and combinations of symbols that correspond to the carrier and object of the action. Knowledge of the language means knowing how to translate the thought code into verbal chains and vice versa. People without language, however, have a thought code.

According to L.P. Tarnaeva, in the interpretation of the relations between language and culture, the authors of the hypothesis of linguistic relativity have

significantly departed from the views of their predecessor and teacher F. Boas. Not being a supporter of direct parallels between the state of language, the development of culture and intellectual activity, F. Boas admitted that the lexical system formed in the subconscious of people can influence the formation of their customs [18.] Based on the data of field research, F. Boas argued that features of the language are clearly reflected in the views and customs of the peoples of the world. Here he rather supports the point of view of cultural determinism, recognizing the influence of culture on thinking and language. He believed that language is a reflection of the state of culture and in its development follows its needs. F. Boas did not exclude the influence of language on culture: linguistic units can play a significant role in the formation of cultural relations, serve as symbols of these relations.

E. Sapir went even further in this direction. He considered language to be the basis of culture: in his opinion, the emergence of language preceded the initial development of material culture, the development of culture itself could not take place until language, an instrument for expressing meaning, took shape [14.] In this, E. Sapir follows Humboldt's idea that a person "must first be formed through language in order to understand art acting apart from language" [19.]

In the concept of L. Weisgerber, the hypothesis of linguistic relativity has received a modern, relevant meaning: language is considered as an "intermediate world" between objective reality and consciousness. L. Weisgerber defines the essence of language as a "force", the action of which is carried out in the following forms: language as "the force of spiritual formation", as "the force of cultural creativity", as "the force of historical life". Language as a "force" that forms a person's idea of the world around him determines his "micro-understanding", its internal form and influences the culture of the people.

The recognition of linguistic determinism is characteristic of many Russian scientists. So LV Shcherba, in particular, points out that "the world that is given to us in our direct experience, remaining the same everywhere, is comprehended in different ways in different languages" [20]. The same position is taken by Yu. D. Apresyan, believing that each language has its own way of "thinking the world", in this way "an integral collective philosophy is embodied, its own for each language" [21]. SGTer-Minasova believes that language "imposes" on a person the idea of the world (picture of the world).

The main provisions of the theory of linguistic determinism have been repeatedly and continued to be criticized by representatives of the anti-verbalist position (G.A. Brutyan, P. Ya.Gal'perin, N.I. , B. A. Serebrennikov and others). Proponents of this trend believe that language is a reflection of human consciousness, therefore, the interpretation of language as an ideal entity that develops independently of a person and pursues its own goals is erroneous.



Researchers adhering to the anti-Berlist tradition believe that in the human mental sphere there are some cognitive structures of an innate "universal" language that precede language, on the basis of which individual ethnic languages are built in the process of socialization of a child as he enters the world of the language around him. J. Piaget, for example, despite the high assessment of the role of language in human cognitive development, emphasizes its "secondary nature", believing that language is part of a broader context - the context prepared by different stages of sensorimotor intelligence [22.] The role of language J. Piaget sees in the fact that he conveys to the individual a ready, formed system of concepts.

In accordance with the theory of NI Zhinkin, thinking is carried out in a special information language - the language of schemes, images, kinetic impulses, etc. These operations do not depend on the language spoken by the person. The recognition of the concept of a universal subject code leads to the idea of the general genetic structure of the national language. From this point of view, languages differ only in the ways of integrating the subject code, thanks to which information about reality is processed.

The research literature examines two vectors of cultural determinism. According to one of them, the primacy of culture in relation to thinking is postulated, in accordance with the other, the determining role of the cultural factor in relation to language is affirmed, that is, it is recognized that language and the texts generated by it are only a reflection of the stereotypes of a given society. The determining role of the cultural factor in relation to language is understood in different ways by researchers. J. Bruner, highlighting language among the most important factors affecting human cognitive activity, comes to the conviction that the individual development of a person largely depends on the cultural conditions in which he grew up [23.] D. Hymes believes that people belonging to different cultures, have special communication systems, and not the same natural communication capabilities, which allows us to assert that "cultural values and beliefs partly create linguistic reality" [24.]

In the studies of Russian scientists (A. A. Leontiev, Yu. A. Sorokin, E. F. Tarasov and others), the prevailing belief is that language "models the system of relations of a public person to the world" [25.] A. M. Shakhnarovich, for example, it emphasizes that any process of assimilation of sociocultural facts of the environment in human society is carried out with the most direct participation of language. Language serves as a repository of the social experience of previous generations and of all mankind [26].

MA Tsareva in the monograph "Intercultural Communication and Dialogue of Cultures" refers to the nominalist and relativistic points of view in the study of the issue of a different vision of the world of representatives of different linguistic pictures [27]. According to the nominalist approach, a person's

perception of the world around him is carried out without the help of the language in which he speaks. Language is simply an external "form of thought". Different languages do not mean that people have different perceptual worlds, and thought processes are different. The relativistic approach assumes that the language spoken, especially the structure of this language, determines the peculiarities of thinking, perception of reality, structural patterns of culture, stereotypes of behavior, etc. That is, the formation of thoughts is part of a particular language and differs in different cultures. and sometimes very significantly, as well as the grammatical structure of languages. According to this approach, language has an impact on culture, and culture has an impact on the expression of concepts and categories in the language.

Thus, we can conclude that language is a multifaceted and unique cultural phenomenon. Language and culture turn out to be correlative and inextricably linked. Moreover, language and culture are in a relationship of bidirectional vectors, language cannot exist outside of culture, and culture without language. The ambiguity of understanding the relationship between language and culture testifies to the complexity of this problem, which confirms its relevance for several hundred years. The study of the relationship between language and culture in science is carried out within the framework of various approaches and theories. They showed that the language embodies the originality of the people, the national vision of the world, is the basis of its culture. It should be noted that the theories of linguistic and cultural determinism are of particular importance.

LITERATURE

1. See: *In the perspective of cultural studies: everyday life, language, society* / Ros. Institute of Culturology; editorial board: O. K. Rumyantsev (editor-in-chief) et al. M.: Acad. project: RIK, 2005.S. 449.
2. Levi-Strauss, K. *Structural Anthropology*. M.: Eksmo-Press, 2001.512 p.
3. See: Shor, R.O. *Language and society* / preface.V.M. Alpatov. 3rd ed., Rev. and add. M.: Librokom, 2010.160 p.
4. Whitehead, AN *Selected Works on Philosophy*. M., 1990.366 p.
5. Ter-Minasova, S. G *Language and intercultural communication*. M.: Publishing house of Moscow State University, 2004.348 p.
6. Dahl, V.I. *Explanatory Dictionary of the Living Great Russian Language: in 4 volumes*.Vol. 2.M., 1978. 1980 p.
7. Maruso, J. *Dictionary of linguistic terms*. 2nd ed., Rev. M.: URSS, 2004.435 p.
8. Akhmanova, OS *Dictionary of linguistic terms*. 5th ed. M.: Librokom: URSS, 2009.569 p.
9. Herder, I. G. *Ideas for the philosophy of humanity*. M.: Nauka, 1977.388 p.
10. See: Fichte, I.G. *Appointment of a person // Fichte, I.G. Works: in 2 volumes*. T. 2. SPb. : Mirfil, 1993.



11. See: Schelling, F.V. *The system of transcendental idealism* // Schelling, F.V. *Works: in 2 volumes. T. 1.M.* : Mysl, 1998.580 p.
12. See: Feuerbach, L. *Preliminary theses for the reform of philosophy* // Feuerbach L. *Works: in 2 volumes.Vol. 1.M.*, 1995.
13. See: Hegel, G.V.F. *Lectures on aesthetics: in 2 volumes. Vol. 1. St. Petersburg: Science, 1998.*
14. *14 Selected works on linguistics and cultural studies: per. from English. / E. Sapir; ed. and foreword. A. E. Kibrik. M.: Progress: Univers, 1993.654 p.*
15. Whorf, B. *The relation of habitual thought and behavior to language* // *Language, Thought and Reality. N. Y.; L., 1956, p. 258.*
16. See: Wharf, B. *The relation of norms of behavior and thinking to language / B. Wharf // Foreign linguistics.I. M.: Progress, 2002.91 p.*
17. Pinker, S. *Language as an instinct: trans. from English. / total ed. V. D. Mazo. 2nd ed., Rev. M.: Librikom, 2009.*
18. Boas, F. *Linguistics and Ethnology // Language in Culture and Society / Dell Hymes. N. Y. etc. : Harper and Row, Publishers, 1964, p. 449.*
19. See: Humboldt, V. *The nature of language and the nature of the people // Language and philosophy of culture. M.: Progress, 1985.S. 378.*
20. See: Shcherba, L.V. *Language system and speech activity. L.: Nauka, 1974.69 p.*
21. Apresyan, Yu. D. *Deixis in vocabulary and grammar and the naive model of the world // Apresyan, Yu. D. Selected Works. T. 2.M. : Languages rus. culture, 1995.629 p.*
22. Piaget, J. *Language within cognition // Language and Learning. Camb., Massachusetts: Harvard University Press, 1980.167 pp.*
23. Bruner, JS *Psychology of Cognition (Beyond Direct Information). M.: Progress, 1977.377 p.*
24. Hymes, D. H. *Ethnography of speech // New in linguistics. Issue VII. M., 1975.S. 232-233.*
25. Leont'ev, A.A. *Language, cognition and communication // Methodological problems of language analysis. Yerevan, 1976, p. 46.*
26. See: Shakhnarovich, A. M. *Language, culture and socialization of the individual // National and cultural specificity of speech communication of the peoples of the USSR. M.: Nauka, 1982.20 p.*
27. See: Tsareva, M. A. *Intercultural communication and dialogue of cultures: monograph. Khabarovsk: Publishing house of FESGU, 2006.61 p.*



EPIDEMIOLOGICAL CASE ANALYSIS OF NIPAH VIRUS: A META-ANALYSIS

Jayakumar K¹

¹Professor,
Department of Biochemistry,
PMS College of Dental Science and Research,
Vattapara, Trivandrum,
Kerala, India.

Sarath Babu Kurra²

²Associate Professor,
Department of Pharmacology,
Dhanalakshmi Srinivasan Medical College and
Hospital,
Perambalur, Trichy,
Tamil Nadu.

ABSTRACT

Nipah virus is the most common seen in forest area where bats can survive and the virus causes encephalitis in humans. On 19 May 2018, a Nipah virus disease (NiV) outbreak was reported from Kozhikode (Dist), Kerala, India. This is the first NiV outbreak in South India. There have been 17 deaths and 18 confirmed cases as of 1st June 2018. The two affected districts are Kozhikode and Mallapuram. A multi-disciplinary team led by the Indian Government's National Centre for Disease Control (NCDC) is in Kerala in response to the outbreak. WHO is providing technical support to the Government of India as needed. WHO does not recommend the application of any travel or trade restrictions or entry screening related to the NiV outbreak. The Nipah outbreak reported in Kozhikode and Malappuram districts of Kerala in May 2018 was the third of Nipah Virus Outbreaks in India, the earlier being in 2001 and 2007, both in West Bengal. A total of 23 cases were identified, including the index case with 18 laboratory-confirmed cases. The outbreak was managed by the state government and central government agencies and has been acknowledged as a success story. Recognizing the importance of documenting and sharing the Kerala experience, the Kerala government requested WHO to conduct an external review and documentation of the NVD response

INTRODUCTION

Nipah virus (NiV) has become one of the most recognized deadly viruses that we have observed, of late. The first 2 recorded NiV outbreaks reported in India, in 2001 [1] and 2007 [2], were from West Bengal. NiV was first discovered in Malaysia during a 1998 outbreak [4] and subsequently in Singapore (in 1999) [5], Bangladesh (in 2001) [6], and the Philippines (in 2014) [7]. NiV has 2 genetic lineages, known as NiV-Malaysian (NiV-M) and NiV Bangladesh (NiV-B) [8]. Considering its potential to cause public health emergencies, NiV infection was designated one of 10 priority diseases in the World Health Organization Research and Development Blueprint of 2018 [9]. On 17 May 2018, a 28-year-old man reported to a private hospital in the district of Kozhikode, State, India, with encephalitis. His father and aunt developed fever, body ache, and vomiting on the same day. 12 days earlier, his brother expired from a similar trend in illness. The family cluster of encephalitis cases among adults prompted the laboratory to test for NiV in addition to common causes

of encephalitis [3]. Detailed microbiologic and virologic analysis at the Manipal Centre for Virus Research (MCVR), an Indian Council of Medical Research (ICMR) Virus Research and Diagnostic Laboratory (VRDL), resulted in the diagnosis of NiV infection late during the evening on 18 May. The ICMR National Institute of Virology-Pune reconfirmed the results on 20 May 2018 (Figure-1-See Appendix). In this report, we shall understand the characteristics of this outbreak, including case details, clinical features, laboratory and epidemiologic investigations, and human-to-human transmission dynamics.

EPIDEMIOLOGIC CASE HISTORY IN KERALA

Index case

The index case (case 1) was apparently healthy prior to this event. He reportedly had limited social contacts and was a nature and animal lover. At the time of his death, he owned pet rabbits and ducks. The broad timing of this outbreak coincided with the breeding



season for bats, a known zoonotic reservoir of this disease. The index case may have come into contact with a NiV-infected baby bat.

Transmission dynamics

The outbreak had 3 clusters of cases, identified at hospitals, termed hospital 1, hospital 2, and hospital 3. Figure 4(See Appendix) depicts the transmission dynamics of this outbreak within the various hospital settings. Hospital 1, 4 May. The index case (case 1) was admitted to the male ward of hospital 1 on 4 May. There were at least 22 persons, including admitted patients, companions, housekeeping staff, and a staff nurse, in the ward during the night. Nine of 22 persons were infected with NiV. Case 2 (a brother of case 1) and case 5 (the father of case 1) provided close care of case 1. Case 7 provided direct nursing care to case 1 and spent at least 10 hours with the patient while his symptoms worsened. Cases 3, 4, 8, 9, and 10 were either patients or companions in the ward who reportedly helped case 1 or came close to his bed, as his bed was next to the entrance of the ward (Figure 4- See Appendix). Case 6, an aunt of case 1, visited him at hospital 1 in the morning, before he was referred to hospital 2. The remaining 11 persons present in hospital 1 were not infected. The mother of case 1, present throughout his illness, did not become ill. She was observed to wear a long scarf on her head. She reported being uncomfortable with the indoor smell of hospitals and therefore covered her nose with the scarf while in the hospital. The brother and father had longer and more intimate contact with the index case, compared with the mother. Sick patients who were restricted to their beds were not infected. Hospital 2, 5 May. Case 1 was referred to hospital 2 on 5 May. The patient arrived at the emergency department of hospital 2 at around 10:00 am and was attended to by a junior physician. A trainee nurse (case 11) collected samples from case 1 before he was referred for CT. At 12:04 pm, the father (case 2) and brother (case 5) brought case 1 on a stretcher to the corridor, outside the CT room; the patient was restless and persistently coughing the patient spent approximately 3 hours in the corridor, during which 3 attempts were made before CT was successful. The initial attempt failed because the patient was persistently coughing; the patient was sent back to the emergency department. Fifteen minutes later, CT was attempted for a second time but again could not be performed. Case 1 was returned to the emergency department and brought back after 20 minutes, and CT was successful. He was then taken to the observation room near the emergency department, where he died of his illness at around 5:30 pm (Supplementary Materials). Based on the surveillance footage, at least

70–100 people potentially had contact with case 1 in the corridor, of whom 10 contracted the infection. Cases 12–18, and 20 were present in the corridor during the same period as case 1. They were either patients or companions of patients. Case 19 was an assistant in the radiology department.

- **Hospital 2, 14 May.** Case 3, who was exposed at hospital 1 on 4 May, developed symptoms on 13 May and sought care at the emergency department of hospital 2 on 14 May. Case 22 was a companion of a patient in the emergency department during the same day.
- **Hospital 3, 19 May.** Case 10, who was present at hospital 1 on 4 May, developed symptoms on 17 May and was admitted to hospital 3 for treatment. Case 23 was in the bed across from case 10 during this period (Figure 4- See Appendix).
- Most of the transmissions from case 1 occurred during the 2 days preceding his death. Even though cases 1, 3, 4, 8, 12, and 16 died before the confirmation of the disease etiology, and their corpses were prepared for burial without any protective measures, including touching, bathing, and carrying the dead body, no disease transmission events were reported. We observed that the caregivers who contracted the disease had closer and longer contact, touched body fluids, or were coughed on.
- **Environmental Samples.** Of the 60 environmental samples, including partially eaten mangoes, guava, and areca nuts with bite marks of bats, collected from the surroundings of the residence and potential work places of the index case, none had evidence of NiV RNA detected by real-time RT-PCR. The pet rabbits and ducks of case 1 tested negative for NiV.

Public health response

The public health response by Kerala Health Services was launched on 18 May with the isolation of cases, contact tracing, enforcement of hospital infection control practices, and risk communication. The national team of experts deputed by the Ministry of Health and Family Welfare, Government of India, guided the response in close collaboration with the Kerala State health services. A total of 2642 contacts were identified and kept under surveillance. The antiviral ribavirin was imported by the Department of Health and Family Welfare, Government of Kerala. Fifty doses of an experimental monoclonal antibody against Hendra virus (M102.4) were provided by the Queensland Department of Health, Australia, at the request of the Indian Council of Medical Research, New Delhi, for compassionate use and stored at Government Medical



College, Kozhikode. Since 30 May 2018, no new cases have been reported.

MATERIALS AND METHODS

Detection of nipah virus in bats

As part of a broader study on filoviruses and henipaviruses in wild bats, we systematically searched Web of Science, Centre for Agriculture and Biosciences International (CAB) Abstracts, and PubMed with the following terms: (bat OR Chiroptera) AND (filovirus OR henipavirus OR "Hendra virus" OR "Nipah virus" OR "Ebola virus" OR "Marburg virus" OR ebolavirus OR marburgvirus) NOT (human); we also performed a secondary search that included "human". We followed a systematic exclusion protocol [37] and, because the search was conducted during a study on viral detection or serological detection estimates, we only retained records from observational studies that measured the proportion of wild bats positive for each viral group as assessed by PCR (prevalence) or serology (seroprevalence). We supplemented these data with studies referenced in the systematically identified publications that report viral isolation but not prevalence or seroprevalence. For the generalized boosted regression analysis, we culled the global data by including only studies that reported Nipah virus (by serology or PCR). This search yielded 286 records from 25 papers. For each record, we classified the species, country of sampling, diagnostic method (PCR or serology), sample size, sampling and reporting method (single or multiple cross-sectional events, samples pooled to one estimate), and the proportion of PCR-positive or seropositive bats (Fig 1- See Appendix). We display these data in a phylogenetic context using the bat phylogeny derived from the Open Tree of Life and the *rotl* and *ape* packages (Fig 2) [38, 39].

Machine learning analyses

To make predictions of bat species that may carry Nipah virus in India and the surrounding region, we trained a generalized boosted regression model on data that characterized 48 traits of 523 extant bat species with geographic ranges in Asia, Australia, and Oceania. By learning the intrinsic features of species that have previously been found to have evidence of Nipah virus- infection (in this study, either through serology or PCR), the objective is to identify additional bat species whose trait profiles suggest a high probability of being Nipah virus-positive. In addition, by examining those traits that are most predictive of Nipah virus-positive species, we may also glean ecological insights about why some bats are found to be Nipah virus- positive compared to others in this region. While examination of these suites of shared

traits can be insightful, it is important to note that these methods are designed for pattern recognition rather than to identify mechanisms; however, in some cases, mechanisms may be suggested [42]). We acquired range maps from the International Union for Conservation of Nature (IUCN) [43]. We obtained data on foraging method and diet composition from EltonTraits [44]. We derived data on biological and ecological attributes from PanTHERIA [45]. We took data on torpor and migration behaviors from Luis et al. [46], and data on production (a measure of fitness output) from Hamilton et al. [47]. All variables, their definitions, coverage, and data source citations are reported in S1 Table. Models were trained on 80% of this full data set and comprised of 50,000 trees specifying a Bernoulli error distribution and built with 10-fold cross-validation to prevent overfitting. In addition, we weighted each species by its sample size ("sum.sample.size") to account for the fact that some species are more frequently sampled for henipaviruses compared to others. We also applied target shuffling methods to calculate the corrected area under the curve (AUC) [48]. We conducted a second generalized boosted regression analysis to diagnose whether greater data availability for better-studied species leads to trait profiles that describe well studied bat species rather than species where evidence of Nipah virus infection has been reported. In this model, we used the number of citations in Web of Science for each species' scientific name as a proxy for study effort at the time this study was conducted. As before, models were trained on 80% of the full data set and were comprised of 30,000 trees specifying a Poisson error distribution and built with 10-fold cross-validation to prevent overfitting. Hyperparameter values and outputs for generalized boosted regression models can be found in S2 Table.

RESULTS

One hundred twelve species of bats have been detected in India, of which 39 have been detected within the state of Kerala [43, 49, 50]. Thirty-one bat species that occur in India (and 18 that occur in Kerala) have been sampled for Nipah virus and 11 of these species have been identified as having antibodies that react to Nipah virus serological tests. However, almost all sampling of these species occurred outside of India. The 11 positive species include seven species that reside in Kerala, including five Pteropodidae (*Cynopterus brachyotis*, *C. sphinx*, *Eonycteris spelaea*, *Rousettus leschenaultii*, and *P. medius* [formerly *P. giganteus*]) and two non- Pteropodidae (*Scotophilus kuhlii* and *Hipposideros Pomona*). Although all of these species had serological evidence of Nipah virus (or



cross-reacting Nipah-like viruses), *P. medius* was the only species with virological evidence of Nipah virus (1 out of 31 individuals tested with PCR [3%]) [40, 41]. Seroprevalence in sampled species ranged from 0–83% and prevalence from 0–3% (Table 1). *P. medius* [41] and *R. leschenaultia* [56, 57] were the only species with seroprevalence >30%. However, most studies reported seroprevalence as pooled detection over time (i.e. samples from multiple time points were included in a single seroprevalence estimate). Only three species (*P. medius*, *Cynopterus sphinx*, and *Megaderma lyra*) were sampled within India, and one of these species (*P. medius*) had evidence of viral shedding within India [40, 41] (Table 1 and Fig 2). Recent media reports suggest that additional cross-sectional surveys of bats have been conducted in response to the outbreak in Kerala and that *P. medius* tested positive by PCR [14]. In Fig 2- (See Appendix), we map detections of Nipah virus by serology or PCR onto the phylogeny of bat species found in India. Our qualitative assessment of Nipah virus detections among these species, within a phylogenetic context, suggested clustering of Nipah virus positivity within Pteropodidae, consistent with the ongoing focus of research efforts on this family. However, Nipah virus reactivity was also detected in other bat families. Moreover, some clades that contain Nipah virus-seropositive bats also contain species that occur in Kerala but have not been sampled. For example, a number of unsampled *Hipposideros* and *Rhinolophus* that occur in Kerala are members of clades that include Nipah-virus seropositive bats (Figure-2- See Appendix). Phylogeny of Indian bats and Nipah virus detections (Figure-3 See Appendix).

Likely Reservoirs

The generalized boosted regression model that we applied to species-level trait data identified Nipah virus-positive bat species with ~83% accuracy (Fig 3; corrected AUC = 0.83; complete model outputs and hyperparameters are reported in S2 and S3 Tables). In addition to Nipah virus-positive bat species, we identified six species with geographic ranges overlapping Asia, Australia, and Oceania that are not currently identified as Nipah reservoirs but, on the basis of trait similarity with known Nipah virus-seropositive or virological-positive bat species, have high likelihood of exposure to Nipah virus: *Rousettus aegyptiacus*, *Taphozous longimanus*, *Taphozous melanopogon*, *Rhinolophus luctus*, *Chaerophon plicatus*, and *Macroglossus minimus*. The geographic ranges of four of these species overlap with India: *C. plicatus*, *R. luctus*, *T. longimanus*, and *T. melanopogon*. The latter two species overlap with Kerala, with probabilities of Nipah virus-positivity ~80%. (S3 Table and Fig 4- (See Appendix); note that

IUCN distribution maps erroneously include *R. luctus*, *Murina cyclotis*, *Taphozous theobaldi*, and *Pipistrellus pipistrellus* in Kerala; however, these species are not found in Kerala [58, PO Nameer personal communication, 59]). Study effort was not predictable on the basis of traits, suggesting that the trait profile of bat species that are Nipah virus-positive are not confounded by traits simply associated with well-studied species. Model hyperparameters, performance metrics, and relative importance scores for all traits are available in S2 pooled events report results from multiple time points as a single estimate

- a) formerly known as *Pteropus giganteus*
- b) The IUCN distribution maps erroneously include *R. luctus*, *M. cyclotis*, *T. theobaldi*, and *P. pipistrellus* in Kerala; however, these species are not found in Kerala [58, PO Nameer personal communication]

DISCUSSION

Our trait-based analyses identified four additional Indian bat species to target for surveillance for Nipah virus; two of these species occur within Kerala. Our predictions inform a research pipeline that should include serosurveys of these potential bat reservoirs and the 11 Indian bat species previously identified to have evidence of Nipah virus infection. Species that are sero-positive on these initial surveys should then undergo longitudinal spatiotemporal surveillance to detect shedding. Our predictions must be combined with local knowledge on bat ecology—including distribution, abundance, and proximity to humans—to design sampling plans that can effectively identify hosts that pose a risk to humans [60]. Moreover, sampling of bats should be combined with epidemiological, anthropological, ecological, immunological, and virological work to uncover the relations that drive transmission of virus from animals to humans. Nipah virus has a wide host breadth in both reservoir bat species and recipient animal species. Therefore, identifying the reservoir in a new location can be challenging. We used a systematic literature search to collate data from previous studies of Nipah virus in bats. We then prioritized surveillance of bats in Kerala, and more generally in India, on the basis of these data. We applied a trait-based generalized boosted regression that identified species with traits similar to those associated with serological or virological evidence of Nipah virus. Nipah virus was detected by PCR in only one species occurring in India, *P. medius*, which also is the known reservoir in Bangladesh. However, Nipah virus was detected by serology in many species. Eleven out of 112 bat species that occur in India, and seven of the 39 species that



occur in Kerala, had serological evidence of Nipah virus exposure (most were sampled outside of India). Our work provides a list of species to guide early surveillance and should not be taken as a definitive list of reservoirs. A series of further studies are required to triangulate on the reservoir hosts that pose a risk to humans. A major reason these studies do not identify definitive reservoirs is because almost all previous Nipah virus studies relied on serology, but serological assays often lack specificity; detection of Nipah virus may represent cross-reactions to closely related viruses [61]. For example, multiple studies have shown cross reactivity among Hendra, Cedar, and Nipah viruses using glycoprotein assays [62–64]. It is likely that many of the positive tests reported here represent exposure to uncharacterized henipaviruses with antigenic similarity to Nipah virus. These viruses may or may not be zoonotic. PCR is specific and sensitive, and positive results demonstrate presence of Nipah virus RNA; however, the prevalence of Nipah virus is usually so low that large sample sizes are needed to yield positive detections [27, 65] outside of pulses of shedding [29, 36]). Therefore, PCR may not be informative in the early stages of identifying reservoirs. Serology remains an important tool for these initial surveys as long as the assays are interpreted correctly, and positive detections are followed by virological studies to detect shedding. These field surveys need to be followed by virological studies to characterize viruses and their zoonotic risk and then epidemiological studies to understand risk to public health [61]. In addition to suggesting potential reservoir species, the associative traits that predict reservoir capacity inform the ecology of potential bat reservoirs, which may guide epidemiological studies of Nipah virus infection. However, the utility of these traits as predictors of reservoir capacity should be interpreted as associative rather than causal. Some of the traits in the generalized boosted regression (see Supporting Information S2 Table) capture potential phylogenetic structure of Nipah virus hosts. For example, the relative importance of adult body length and forearm length could reflect the strong association of Nipah virus with medium to large Pteropodidae bats, although 'Pteropodidae' was not itself an important predictor. Beyond including bat families as taxonomic predictor variables, our analysis largely subsumes additional phylogenetic structure underlying patterns of Nipah virus seropositivity in bat species. It is likely that patterns of evolutionary relatedness among host species may underlie similarities in factors that determine host receptivity. Such factors may include functional receptors that enable viral entry into host cells and host factors required for viral replication [66, 67]. Patterns

of co-divergence of hosts and viruses [68] are also reflected in host and viral phylogeny. The association of these traits with reservoir capacity should be elucidated by future phylogenetic comparative analyses of host traits, which will rely on expanded availability of relevant data (e.g., characterization of species level differences in functional receptors).

Other traits with high relative influence included aridity (mean precipitation [mm]/mean potential evapotranspiration [mm]), the maximum latitudinal extent of each species geographic range, the richness of mammal species found within a species' geographic range, and the trophic level of each species. In general, our analysis suggests Nipah virus-positive bats in this region tend to be herbivorous or omnivorous species whose geographic ranges overlap with tropical desert (arid) habitats, maximally extending to the northern limit of the tropical belt and overlapping with a high diversity of other mammal species (S1 Fig). Given that bats from arid habitats may forage more widely when water or food resources become limited in dry years, it is also possible that Nipah virus transmission may occur with increasing contact between multiple bat species mixing at higher densities around limited resources [24]. A current constraint on progress towards understanding the epidemiology of Nipah virus in India is the dearth of virologic and taxonomic studies on bats in India. The majority of studies used for these analyses were conducted outside of India and no studies, to our knowledge, investigated Nipah virus in Kerala prior to this outbreak. India encompasses many different bioregions. The outbreak in Kerala shows that the ecological niche for Nipah virus is very wide and could include the entire distribution of *P. medius*, as well as the distributions of other potential reservoirs proposed here. Studies in wildlife and humans must cover this broad geography to assess future risk in India. Moreover, the last comprehensive and systematic taxonomic study on the bats in India was conducted more than a century ago. There are several cryptic species or species with unresolved taxonomic status in India, and it is possible that species with Nipah virus detections outside of India may have been misidentified. Therefore, our conclusions may change after detailed and systematic taxonomic studies are done on Indian bats. Once serological evidence of Nipah virus is detected in potential reservoir hosts, longitudinal spatial and temporal surveillance of these hosts will be necessary. Detection of virus at a single point in time and space conveys limited information and could represent a spillover event from another species. To confirm reservoir status of a species, virus must be consistently found within that species [69].



Moreover, maintenance of henipaviruses can be extremely dynamic. Seasonal, annual, interannual, or stochastic pulses of shedding can be driven by extinction and recolonization of virus among bat populations or episodic shedding in response to stress (see discussions in [26]). Therefore, discriminating viral maintenance versus spillover, and characterizing shedding dynamics, requires intensive sampling over time and space.

Identifying reservoir hosts and then characterizing the diversity of their viruses and their virus shedding patterns are critical steps in understanding spillover. However, the transmission of Nipah virus from bats to humans requires alignment of a number of other ecological and epidemiological factors [67], including bat and human behaviors that expose humans to an infectious dose of Nipah virus. In Bangladesh and Australia, bat and human behaviors facilitate exposure to Nipah and Hendra virus, respectively, when bats exploit human food. In Bangladesh, bats contaminate human-harvested date palm sap [7]. In Australia, bats exploit food from trees in peri-urban areas when native winter food sources are cleared [26, 70]. When pulses of virus shedding in bats coincide with bat and human or horse contact through food, spillover is more likely to occur [71]. Understanding these important interfaces requires a variety of epidemiological studies including niche and spatial risk modeling [72], as well as animal and human behavioral studies [7, 11]. In addition to sampling bat reservoir hosts, sampling plans should consider that henipaviruses could be maintained in domestic recipient hosts. These hosts, with closer and more frequent contact with humans, can become bridge hosts for human infections [36]. For example, Nipah virus was repeatedly introduced into intensive commercial pig populations in Malaysia. These repeated introductions of Nipah virus into pig farms allowed accumulation of herd immunity and the conditions for long term persistence and regional spread that facilitated transmission to humans [10]. To narrow potential spillover pathways to humans in India, studies should consider susceptible domestic animal species with husbandry that facilitates virus persistence (e.g., intensive commercial farming systems with high turnover of animals).

CONCLUSION

Projecting the risk of Nipah virus outbreaks in humans requires identification of the reservoir hosts and the dynamics of Nipah virus within those hosts. Our predictions inform initial sampling that can be followed by a sequence of studies that investigate the bat species highlighted here. The machine learning

approaches presented here can be the first step in a research pipeline to eventually understand the mechanisms underpinning epidemiologically important cross-species contacts.

REFERENCES

1. Leroy EM, Kumulungui B, Pourrut X, Rouquet P, Hassanin A, et al. (2005) Fruit bats as reservoirs of Ebola virus. *Nature* 438: 575-576.
2. Towner JS, Pourrut X, Albariño CG, Nkogue CN, Bird BH, et al. (2007) Marburg virus infection detected in a common African bat. *PLoS One* 2: e764.
3. Li W, Shi Z, Yu M, Ren W, Smith C, et al. (2005) Bats are natural reservoirs of SARS-like coronaviruses. *Science* 310: 676-679.
4. Chua KB, Crameri G, Hyatt A, Yu M, Tompang MR, et al. (2007) A previously unknown reovirus of bat origin is associated with an acute respiratory disease in humans. *Proc Natl Acad Sci U S A* 104: 11424-11429.
5. Lu G, Liu D (2012) SARS-like virus in the Middle East: a truly bat-related coronavirus causing human diseases. *Protein Cell* 3: 803-805.
6. Chua KB, Bellini WJ, Rota PA, Harcourt BH, Tamin A, et al. (2000) Nipah virus: a recently emergent deadly paramyxovirus. *Science* 288: 1432-1435.
7. Chua KB (2003) Nipah virus outbreak in Malaysia. *J Clin Virol* 26: 265-275.
8. Field H, Young P, Yob JM, Mills J, Hall L, et al. (2001) The natural history of Hendra and Nipah viruses. *Microbes Infect* 3: 307-314.
9. Lamb RA, Parks GD (2007) Paramyxoviridae: The viruses and their replication. In: Knipe DM, Griffin DE, Lamb RA, Straus SE, Howley PM et al., editors. *Fields Virology*. Philadelphia: Lippincott Williams & Wilkins. pp. 1449-1496.
10. Eaton BT, Broder CC, Middleton D, Wang LF (2006) Hendra and Nipah viruses: different and dangerous. *Nat Rev Microbiol* 4: 23-35.
11. Pallister J, Middleton D, Broder CC, Wang LF (2011) Henipavirus vaccine development. *J Bioterror Biodef: SI*:005.
12. Eaton BT, Mackenzie JS, Wang LF (2007) Henipaviruses. In: Knipe DM, Griffin DE, Lamb RA, Straus SE, Howley PM et al., editors. *Fields Virology*. Philadelphia: Lippincott Williams & Wilkins. pp. 1587-1600.
13. Marsh GA, de Jong C, Barr JA, Tachedjian M, Smith C, et al. (2012) Cedar virus: a novel Henipavirus isolated from Australian bats. *PLoS Pathog* 8: e1002836.
14. Hyatt AD, Zaki SR, Goldsmith CS, Wise TG, Hengstberger SG (2001) Ultrastructure of Hendra virus and Nipah virus within cultured cells and host animals. *Microbes Infect* 3: 297-306.
15. World Organisation for Animal Health (Office International des Épizooties: OIE) (2009) Nipah



- (virus encephalitis). *Technical Disease Cards, OIE, Paris.*
16. Lam SK, Chua KB (2002) Nipah virus encephalitis outbreak in Malaysia. *Clin Infect Dis* 34 Suppl 2: S48-51.
 17. Luby SP, Gurley ES, Hossain MJ (2012) Transmission of human infection with Nipah virus. In: Institute of Medicine (US). *Improving Food Safety through a One Health Approach: Workshop Summary.* Washington (DC): National Academies Press (US), A11.
 18. Uppal PK (2000) Emergence of Nipah virus in Malaysia. *Ann N Y Acad Sci* 916: 354-357.
 19. Cobey S (2005) Nipah virus. *The Henipavirus ecology collaborative research group.*
 20. Center for Food Security and Public Health (2007) *Nipah Virus Infection.*
 21. Bossart KN, Zhu Z, Middleton D, Klippel J, Cramer G, et al. (2009) A Neutralizing Human Monoclonal Antibody Protects against Lethal Disease in a New Ferret Model of Acute Nipah Virus Infection. *PLoS Pathog* 5: e1000642.
 22. Torres-Velez FJ, Shieh WJ, Rollin PE, Morken T, Brown C, et al. (2008) Histopathologic and immunohistochemical characterization of Nipah virus infection in the guinea pig. *Vet Pathol* 45: 576-585.
 23. Marianneau P, Guillaume V, Wong T, Badmanathan M, Looi RY, et al. (2010) Experimental infection of squirrel monkeys with nipah virus. *Emerg Infect Dis* 16: 507-510.
 24. Geisbert TW, Daddario-DiCaprio KM, Hickey AC, Smith MA, Chan YP, et al. (2010) Development of an acute and highly pathogenic nonhuman primate model of Nipah virus infection. *PLoS One* 5: e10690.
 25. Rockx B, Bossart KN, Feldmann F, Geisbert JB, Hickey AC, et al. (2010) A novel model of lethal Hendra virus infection in African green monkeys and the effectiveness of ribavirin treatment. *J Virol* 84: 9831-9839.
 26. de Wit E, Bushmaker T, Scott D, Feldmann H, Munster VJ (2011) Nipah virus transmission in a hamster model. *PLoS Negl Trop Dis* 5: e1432.
 27. Dhondt KP, Mathieu C, Chalons M, Reynaud JM, Vallve A, et al. (2013) Type I interferon signaling protects mice from lethal henipavirus infection. *J Infect Dis* 207: 142-151.
 28. Wang X, Ge J, Hu S, Wang Q, Wen Z, et al. (2006) Efficacy of DNA immunization with F and G protein genes of Nipah virus. *Ann N Y Acad Sci* 1081: 243-245.
 29. Bishop KA, Broder CC (2008) Hendra and Nipah: Lethal Zoonotic Paramyxoviruses. In: Scheld WM, Hammer SM, Hughes JM, eds. *Emerging Infections.* Washington, D.C.: American Society for Microbiology. pp 155-187.
 30. Yob JM, Field H, Rashdi AM, Morrissy C, van der Heide B, et al. (2001) Nipah virus infection in bats (order Chiroptera) in peninsular Malaysia. *Emerg Infect Dis* 7: 439-441.
 31. Chua KB, Koh CL, Hooi PS, Wee KF, Khong JH, et al. (2002) Isolation of Nipah virus from Malaysian Island flying-foxes. *Microbes Infect* 4: 145-151.
 32. Rahman SA, Hassan SS, Olival KJ, Mohamed M, Chang LY, et al. (2010) Henipavirus Ecology Research Group. Characterization of Nipah virus from naturally infected *Pteropus vampyrus* bats, Malaysia. *Emerg Infect Dis* 16: 1990-1993.
 33. Reynes JM, Counor D, Ong S, Faure C, Seng V, et al. (2005) Nipah virus in Lyle's flying foxes, Cambodia. *Emerg Infect Dis* 11: 1042-1047.
 34. Hayman DT, Suu-Ire R, Breed AC, McEachern JA, Wang L, et al. (2008) Evidence of henipavirus infection in West African fruit bats. *PLoS One* 3: e2739.
 35. Li Y, Wang J, Hickey AC, Zhang Y, Li Y, et al. (2008) Antibodies to Nipah or Nipah-like viruses in bats, China. *Emerg Infect Dis* 14: 1974-1976.
 36. Halpin K, Hyatt AD, Fogarty R, Middleton D, Bingham J, et al. (2011) Pteropid bats are confirmed as the reservoir hosts of henipaviruses: a comprehensive experimental study of virus transmission. *Am J Trop Med Hyg* 85: 946-951.
 37. World Health Organization, Regional Office for South-East Asia (SEARO) (2012) *Nipah virus outbreaks in the WHO South-East Asia Region.*
 38. Institute of Epidemiology, Disease Control and Research (2013) *Nipah Infection in 2013.*
 39. Rahman M, Chakraborty A (2012) Nipah virus outbreaks in Bangladesh: a deadly infectious disease. *WHO South-East Asia Journal of Public Health* 1: 208-212.
 40. Ali MY, Fattah SA, Islam MM, Hossain MA, Ali SY (2010) Outbreak Of Nipah Encephalitis In Greater Faridpur District. *Faridpur Med Coll J* 5: 63-65.
 41. Integrated Regional Information Networks (2012) *Concern over deaths from incurable fruit bat disease.*
 42. World Health Organization (2009) *Nipah virus. Media Center. Fact sheet* 262.
 43. Montgomery JM, Hossain MJ, Gurley E, Carroll GD, Croisier A, et al. (2008) Risk factors for Nipah virus encephalitis in Bangladesh. *Emerg Infect Dis* 14: 1526-1532.
 44. Blum LS, Khan R, Nahar N, Breiman RF (2009) In-depth assessment of an outbreak of Nipah encephalitis with person-to-person transmission in Bangladesh: implications for prevention and control strategies. *Am J Trop Med Hyg* 80: 96-102.
 45. Gurley ES, Montgomery JM, Hossain MJ, Bell M, Azad AK, et al. (2007) Person-to-person transmission of Nipah virus in a Bangladeshi community. *Emerg Infect Dis* 13: 1031-1037.
 46. Hossain MJ, Gurley ES, Montgomery JM, Bell M, Carroll DS, et al. (2008) Clinical presentation of nipah virus infection in Bangladesh. *Clin Infect Dis* 46: 977-984.



47. Wahed F, Kader SA, Akhtarunnessa, Mahamud MM (2011) Nipah Virus: An Emergent Deadly Paramyxovirus Infection In Bangladesh. *J Bangladesh Soc Physiol.* 6: 134-139.
48. Chong HT, Tan CT. (2003) Relapsed and late-onset Nipah encephalitis, a report of three cases. *Neurol J Southeast Asia* 8: 109-112.
49. Mohd Nor MN, Gan CH, Ong BL (2000) Nipah virus infection of pigs in peninsular Malaysia. *Rev Sci Tech* 19: 160-165.
50. Hooper P, Zaki S, Daniels P, Middleton D (2001) Comparative pathology of the diseases caused by Hendra and Nipah viruses. *Microbes Infect* 3: 315-322.
51. Middleton DJ, Westbury HA, Morrissy CJ, van der Heide BM, Russell GM, et al. (2002) Experimental Nipah virus infection in pigs and cats. *J Comp Pathol* 126: 124-136.
52. Wong KT, Shieh WJ, Kumar S, Norain K, Abdullah W, et al. (2002) Nipah virus infection: Pathology and pathogenesis of an emerging paramyxoviral zoonosis. *Am J Pathol* 161: 2153-2167.
53. Lim T (2009) MR imaging in Nipah virus infection. *Neurology Asia* 14: 49- 52.
54. Sarji SA, Abdullah BJ, Goh KJ, Tan CT, Wong KT (2000) MR imaging features of Nipah encephalitis. *AJR Am J Roentgenol* 175: 437-442.
55. Wong KT, Grosjean I, Brisson C, Blanquier B, Fevre-Montange M, et al. (2003) A golden hamster model for human acute Nipah virus infection. *Am J Pathol* 163: 2127-2137.
56. Bossart KN, McEachern JA, Hickey AC, Choudhry V, Dimitrov DS, et al. (2007) Neutralization assays for differential henipavirus serology using Bio-Plex protein array systems. *J Virol Methods* 142: 29-40.
57. Tanimura N, Imada T, Kashiwazaki Y, Sharifah SH (2006) Distribution of viral antigens and development of lesions in chicken embryos inoculated with nipah virus. *J Comp Pathol* 135: 74-82.
58. Mungall BA, Middleton D, Crameri G, Bingham J, Halpin K, et al. (2006) Feline model of acute nipah virus infection and protection with a soluble glycoprotein-based subunit vaccine. *J Virol* 80: 12293-12302.

APPENDIX

Figure-1: Epidemiologic curve of Nipah virus disease (NVD) outbreak, Kozhikode, Kerala, India, 2018, by date of illness onset

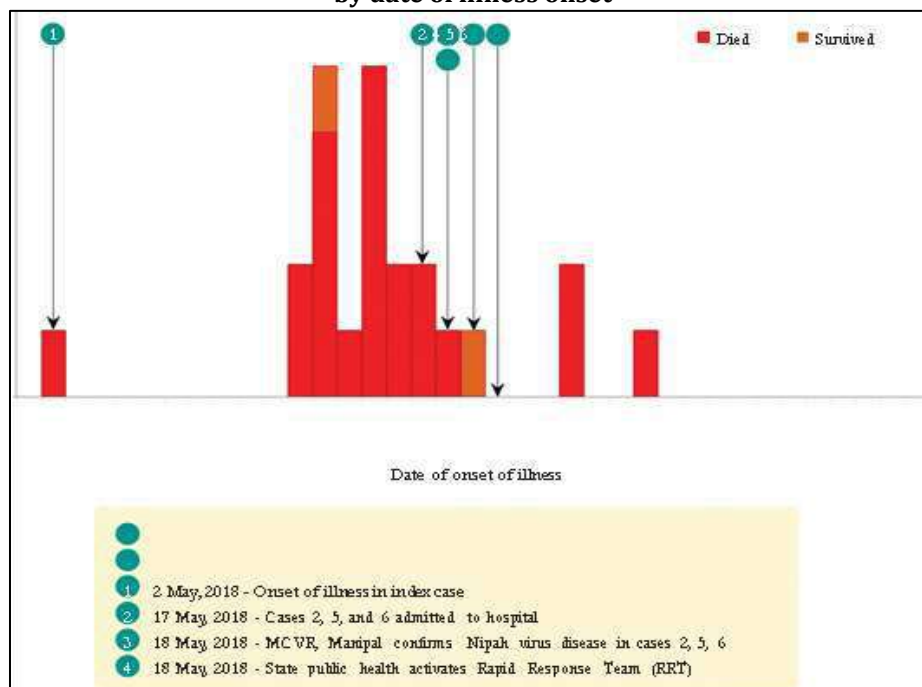




Figure-2: Clades that include Nipah-virus seropositive bats

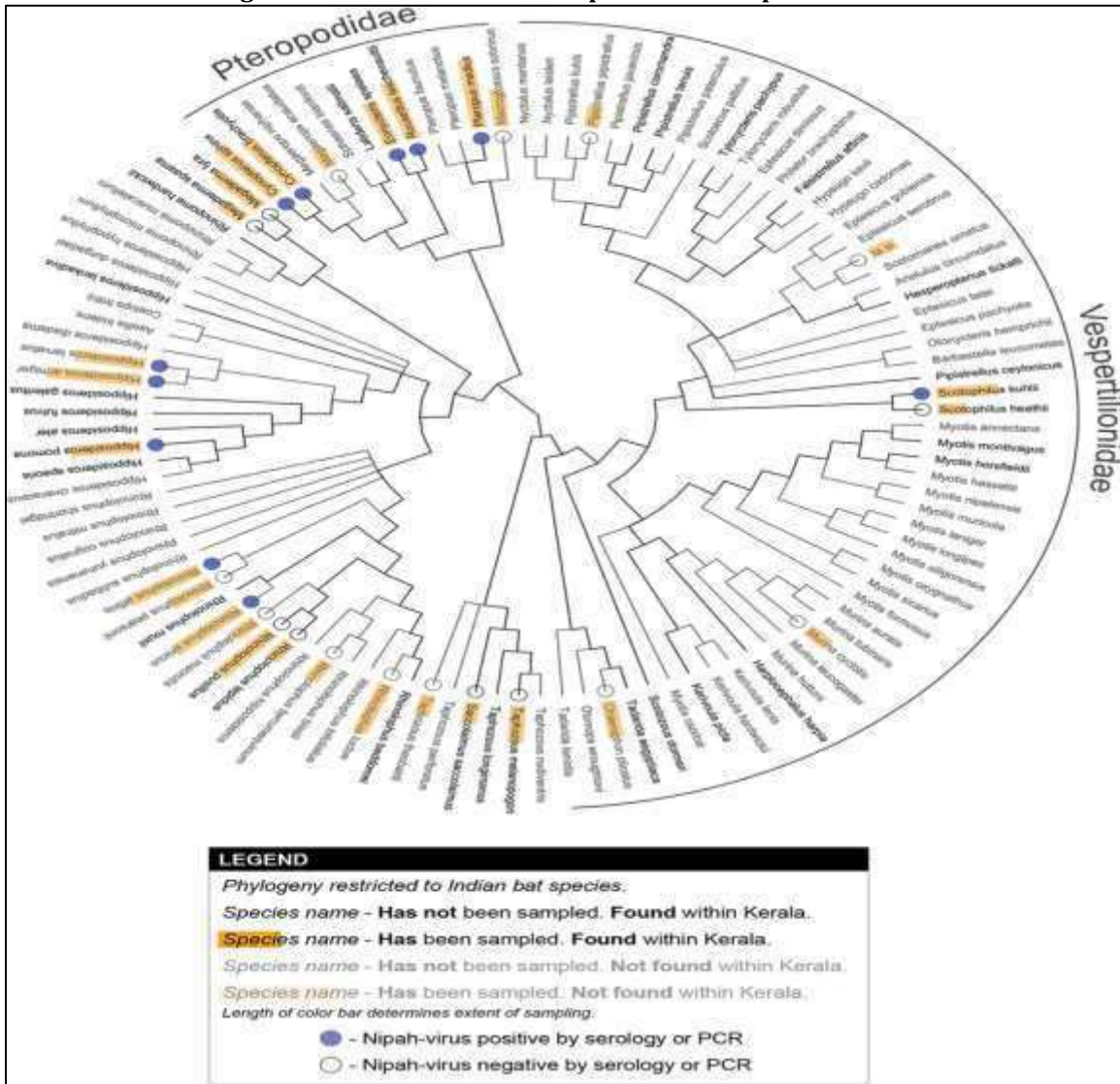
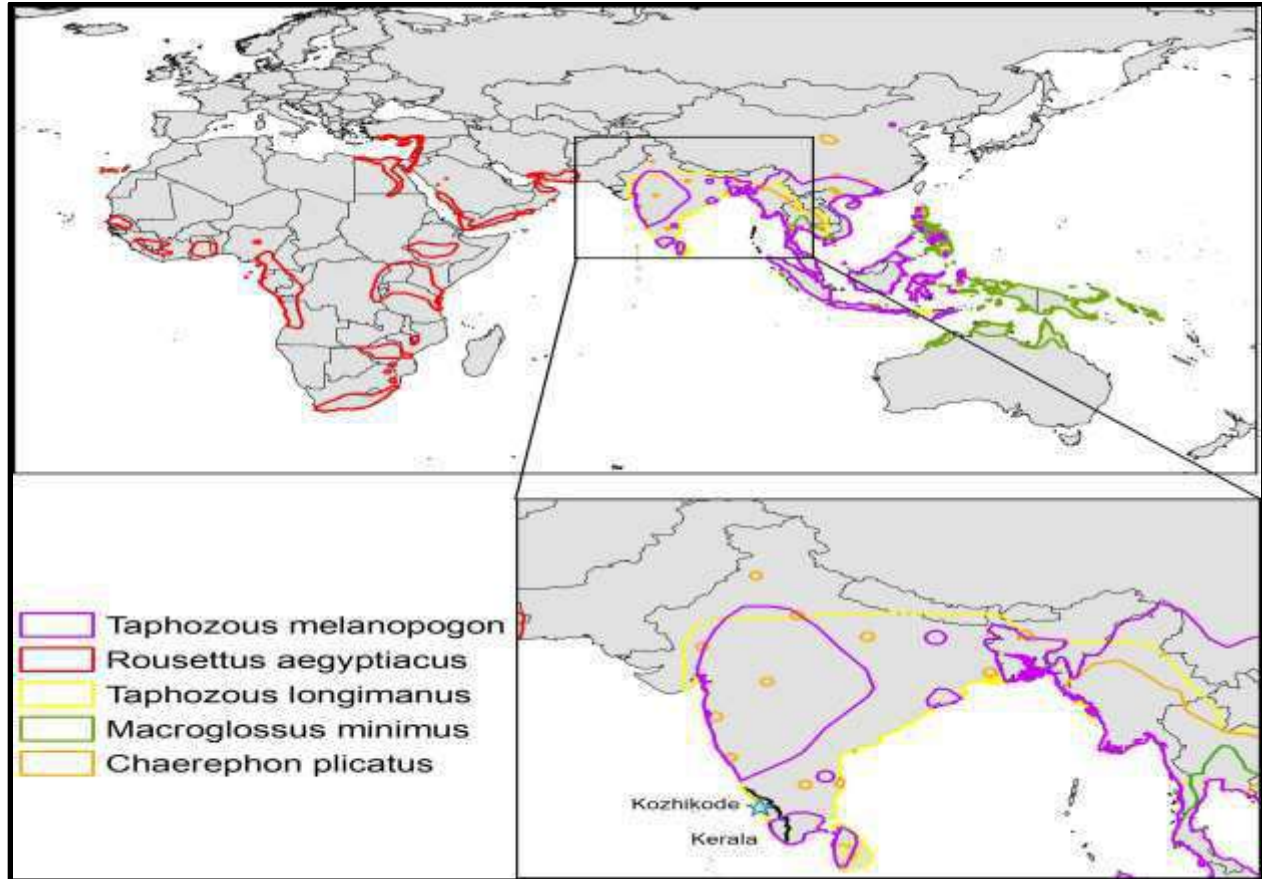




Figure-3: Phylogeny of Indian bats and Nipah virus detections





A STUDY OF ACCIDENTS OCCURS IN KOLHAPUR CITY USING STATISTICAL MEASURES

Prakash S. Chougule¹

¹Associate Professor,
Rajarshi Chhatrapati Shahu College,
Kolhapur (MS),
India

Abhijit M. Nimbalkar²

²Research Student,
Rajarshi Chhatrapati Shahu College,
Kolhapur (MS),
India

Savita C. Pujari³

³Research Student,
Rajarshi Chhatrapati Shahu College,
Kolhapur (MS),
India

ABSTRACT

The impact Globalization is shown on many developing countries across the world. India is one of the such country, which benefited the most. Increased number of economic activity raised the consumption levels of the people across the country. This created wide scope for increase in transportation and travel. The increase in the number vehicles since last 20 years has put lot of pressure on the existing roads and ultimately resulting in road accidents. there is an increase of the two wheeler and four wheeler vehicles with no road expansion. Motor vehicle crashes are a common cause of death, disability and demand for emergency medical care.. In this study we study the pattern of various types road accidents in Kolhapur over a few years. Our study shows the number of accidents, proportion of injuries and deaths as well as the proportion of the male and female are same and the accidents are distributed uniformly throughout the year.

KEYWORDS: Graphical Representation, Z- Test, Level of Significance, ANOVA.

INTRODUCTION

The process of rapid and unplanned urbanization has resulted in an unprecedented revolution in the growth of motor vehicles worldwide. The alarming increase in morbidity and mortality owing to road traffic incidents (RTI) over the past few decades is a matter of great concern globally [1, 2, 4, 5]. Currently motor vehicle accidents rank ninth in order of disease burden and are projected to be ranked third in the year 2020 [7-9, 11-13, 15-16]. In India, more than 70,000 people get killed due to RTI every year, and this needs to be recognized as an important public health issue [3,14,17]. Very few studies have attempted to understand the epidemiology of risk factors associated with RTI in Indian cities [10, 18]. Globally, more than 1 million people die each year from traffic crashes and about 20–50 million are injured or permanently disabled

The death rates due to various diseases are decreased due to the scientific development. But the death rates due to accidents are increasing rapidly.

The accidents cause loss of human lives, injuries and huge loss of vehicles. The accidents are not purely random. There are several causes for the accidents namely rough road, increase in population, narrow roads, increase in number of vehicles & their poor maintenance and improper knowledge of driving. In this study we have collected the information regarding the accidents in the Kolhapur city area from last five years. The collected data is analysed for studying the various characteristics. The Kolhapur is a city having about 38 lakh 76 thousand population with an area about 7686.54 sq.km. The Kolhapur city is having 4 police stations.

COLLECTION OF DATA

The data is collected from records of 4 units of police station in Kolhapur city which are “Laxmipuri police station”, “Rajarampuri Police station”, “Karveer Police station” and “Shahupuri Police station”. We collect the information about the date of accidents also about the number of deaths and injuries in accidents and their age & sex. Also we

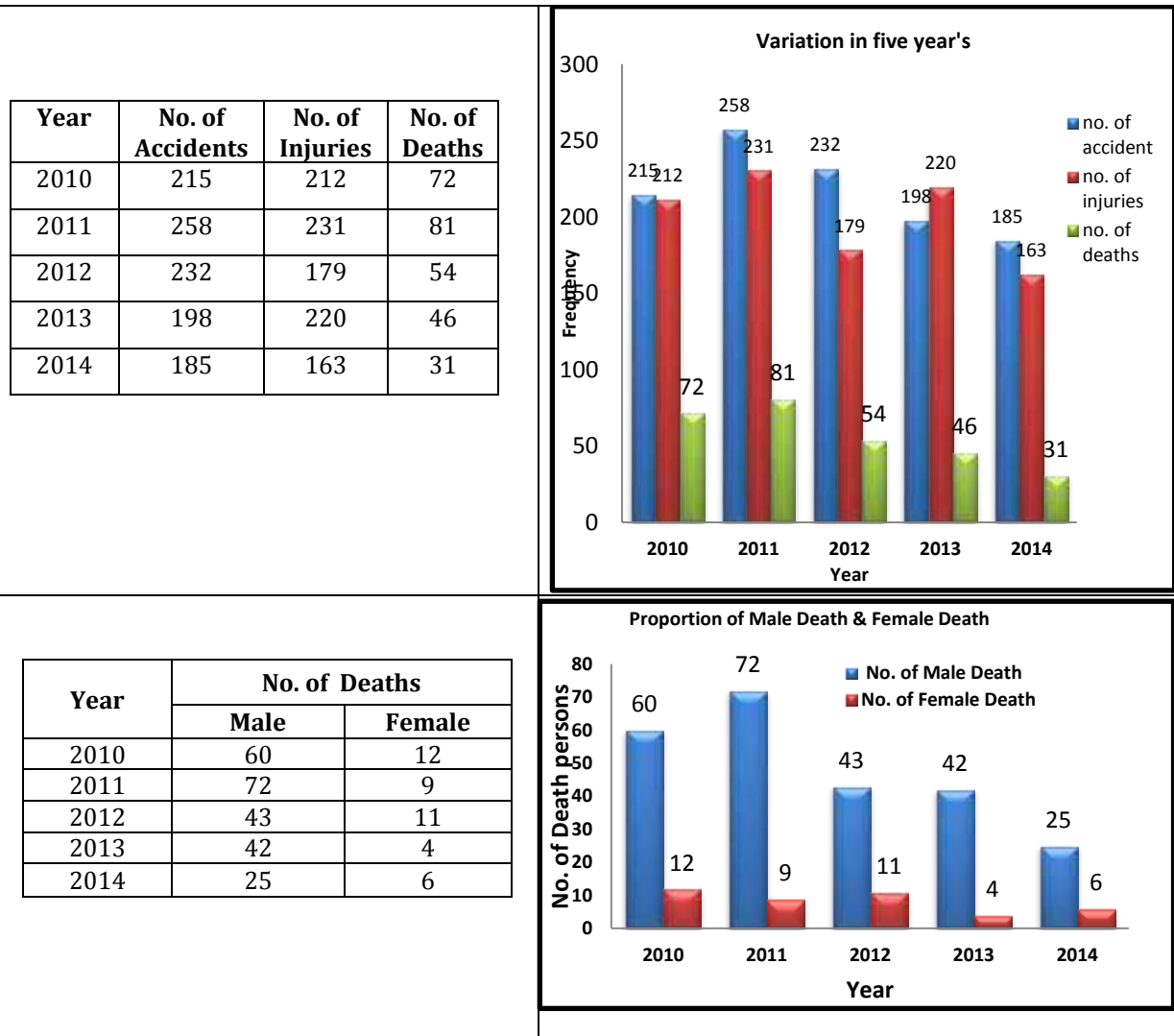


collect the information about the type of vehicles due to which accidents are taken place.

TECHNIQUES

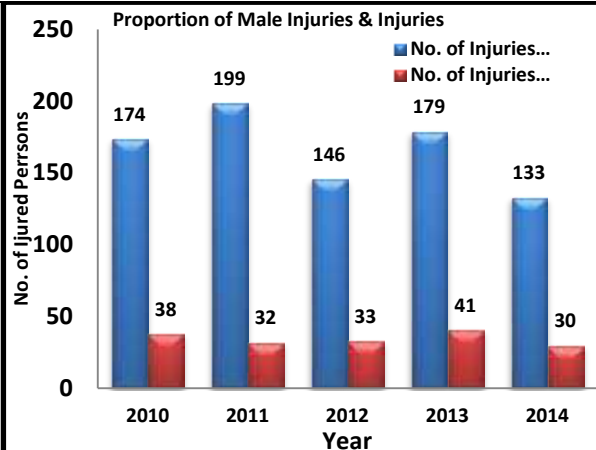
The data is classified according to many characteristics and prepared the contingency tables. Various charts have been drawn in order to understand the factors affecting the causes of accidents. The Chi-square test of uniformity of

accidents during the years, type of vehicles of accidents. The equality of age of drivers is also tested. ANOVA technique is used to test the equality of accidents made by various types of vehicles. The nature of age distribution of various characteristics involved in the accidents is considered. Predicted value of no. of accidents for Year 2015 by using Time Series Analysis.

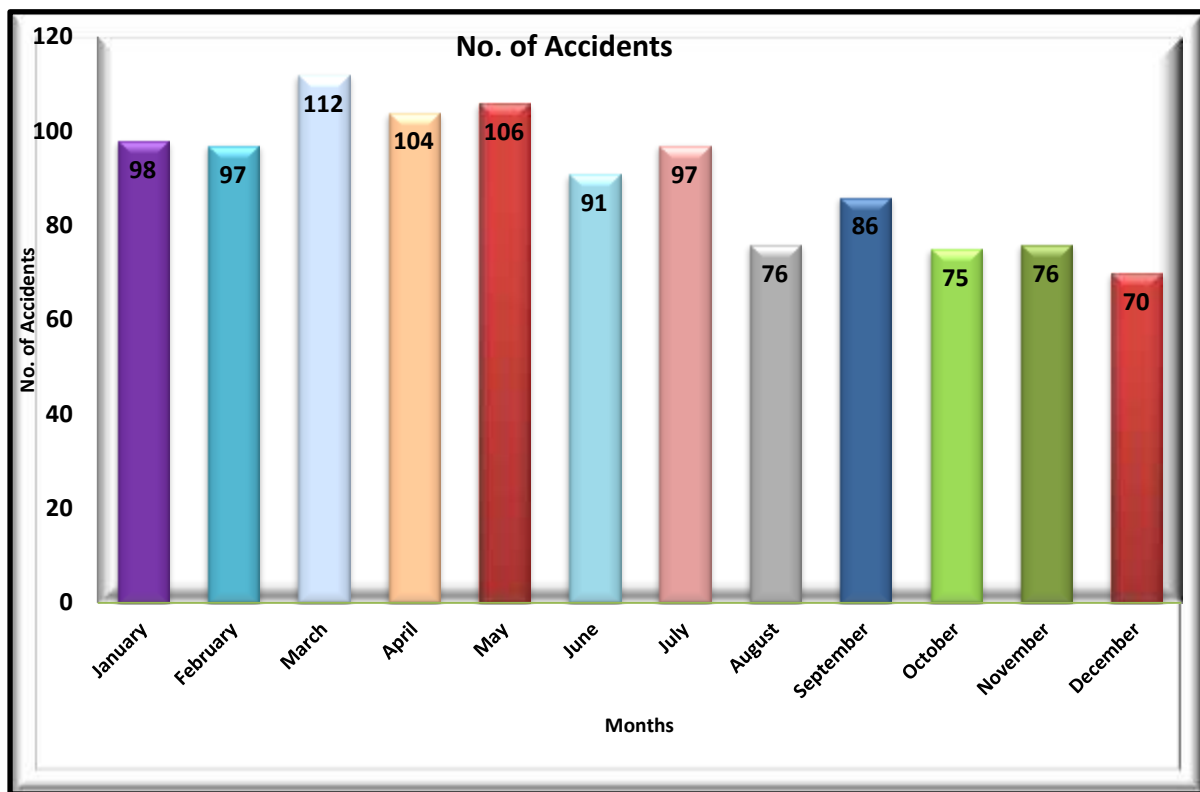




Year	No. of Injuries	
	Male	Female
2010	174	38
2011	199	32
2012	146	33
2013	179	41
2014	133	30



Months	Jan	Feb	March	Apr	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of Accidents	98	97	112	104	106	91	97	76	86	75	76	70



DATA ANALYSIS

- a) Chi-Square Test for the uniform of number of accidents:
 Hypothesis are stated as ;
 H0 : Accidents are distributed uniformly over the year.v/s
 H1: Accidents are not distributed uniformly over the year.
 Calculation:
 The test statistic is,



$$\chi^2 = \sum_{i=0}^n (O_i - E_i)^2 / E_i \sim \chi^2 (n - k - 1)$$

Therefore, $\chi^2 = 23.4572$,
 At the level of significance 1%,
 $\chi^2_{0.01}(11) = 24.725$ and $\chi^2_0 < \chi^2_{0.01}(11)$

b) Test for equality of mean age of male & female driver who made the accidents.
 Hypothesis:

- H₀ : $\mu_x = \mu_y$
 i.e. Mean age of male driver is equal to mean age of female drivers.
 H₁ : $\mu_x \neq \mu_y$
 i.e. Mean age of male driver is not equal to mean age of female drivers.

We have,

$$\bar{x} = 37.1039, \quad \bar{y} = 38.7662,$$

$$S_1^2 = 194.0634, \quad S_2^2 = 245.6852,$$

$$n_1 = 1073, \quad n_2 = 216$$

Under H₀, $|Z_0| = \frac{|\bar{x} - \bar{y}|}{\sqrt{\left(\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}\right)}} \sim N(0,1)$
 $|Z_0| = 1.4477$
 At the level of significance 5%, $Z_{\alpha/2} = 1.96$.

ANOVA Technique

c) Test for equality of average accidents made by various types of vehicle during different year.

Years	Wheeler to Wheelers					Total
	2×2	2×4	2×6	4×4	4×6	
2010	75	71	32	21	16	215
2011	72	85	44	18	39	258
2012	65	78	27	31	31	232
2013	67	55	35	23	18	198
2014	78	43	15	40	9	185
Total	357	332	153	133	113	1088

Hypothesis:- H₀₁: Average numbers of accidents due to Wheeler to Wheeler are same.
 H₀₂: Average numbers of accidents are same in different years.

Calculation :

G=Grand Total= 1088, Total S.S.= 13618.24,
 S.S.due to vehicle= 10958.24,
 S.S.due to year = 658.64,
 S.S.due to error=2001.36,
 MSY=164.66, MSV=2739.56, MSE=125.085

ANOVA Table

S.V.	d.f.	S.S.	M.S.S.	F	F _α
Between Vehicle	4	10958.24	2739.56	21.90	3.01
Between Year (block)	4	658.64	164.66	1.316	3.01
Error	16	2001.36	125.085	-	-
Total	24	13618.24	-	-	-

d) Test for equality of types of vehicles which made the accidents in different years.



Years	Accidents made by the wheelers			
	2	4	6	Total
2010	73	36	24	133
2011	79	47	42	168
2012	72	47	29	148
2013	71	32	27	130
2014	84	31	12	127
Total	379	193	134	706

Hypothesis:- H01: Average number of accidents made by different wheelers are same.

H02: Average numbers of accidents are same in different years.

Calculation: G=Grand Total=706, Total S.S.= $S^2T=7374.94$, S.S.due to vehicle= $S^2v=6540.14$,
 S.S.due to year = $S^2y=386.27$, S.S.due to error= $S^2E=448.53$, MSY=96.56,
 MSV=3270.07, MSE=56.06

S.V.	d.f.	S.S.	M.S.S.	F	F α
Between Vehicle	2	6540.14	3270.07	58.33	19.37
Between Year (block)	4	386.27	96.56	1.72	6.04
Error	8	448.53	56.06	-	-
Total	14	7374.94	-	-	-

e) Nature of Distributions

Age distribution of male who died in the accidents.	Age distribution of female who died in the accidents
Mean = $\bar{x} = 38.7644$ Variance = 185.6378 C.V. = 35.1477 Central moments : $\mu_2 = 185.6378$ $\mu_3 = -113685.43$ $\mu_4 = 61387.5976$ Skewness:- $\beta_1 = -2020.2747$ $\gamma_1 = 44.9474$ Kurtosis :- $\beta_2 = 1.7813$ $\gamma_2 = -1.2187$	Mean = $\bar{x} = 33.7976$ Variance = 211.17 C.V. = 42.9959 Central moments : $\mu_2 = 211.17$ $\mu_3 = -895.007$ $\mu_4 = 95325.61$ Skewness:- $\beta_1 = -0.0850$ $\gamma_1 = 0.2915$ Kurtosis :- $\beta_2 = 2.1376$ $\gamma_2 = -0.8624$



Age distribution of male who injured in the accidents	ii) Age distribution of female who injured in the accidents.			
Mean = \bar{x} = 36.6203 Variance = 222.03 C.V. = 40.68 Central moments : $\mu_2 = 222.03$ $\mu_3 = 909.91$ $\mu_4 = 117567.71$ Skewness:- $\beta_1 = 0.0756$ $\gamma_1 = 0.2749$ Kurtosis :- $\beta_2 = 2.3848$ $\gamma_2 = -0.6152$	Mean = \bar{X} = 39.9655 Variance = 246.62 Central moments : $\mu_2 = 246.62$ Skewness:- $\beta_1 = -0.0150$ Kurtosis : $\beta_2 = 2.3489$	C.V. = 39.29 $\mu_3 = -474.56$ $\gamma_1 = 0.1224$ $\gamma_2 = -0.6511$	$\mu_4 = 142869.43$	
Age distribution of male who suffered in the accidents	Age distribution of male who suffered in the accidents		Age distribution of female who suffered in the accidents.	
Mean = \bar{X} = 37.1039 Variance = 214.6181 C.V. = 39.4725 Central moments : $\mu_2 = 214.6181$ $\mu_3 = 616.730$ $\mu_4 = 104009.019$ Skewness:- $\beta_1 = 0.0384$ $\gamma_1 = 0.1961$ Kurtosis :- $\beta_2 = 2.2580$ $\gamma_2 = -0.7419$	Mean = \bar{X} = 38.76 Variance = 246.17 C.V. = 40.45 Central moments : $\mu_2 = 246.17$ $\mu_3 = -499.25$ $\mu_4 = 144601.43$ Skewness:- $\beta_1 = -0.0167$ $\gamma_1 = 0.1292$ Kurtosis :- $\beta_2 = 2.3861$ $\gamma_2 = -0.6139$			

f) TIME SERIES ANALYSIS

Years	2010	2011	2012	2013	2014
No. of Accidents	215	258	232	198	185

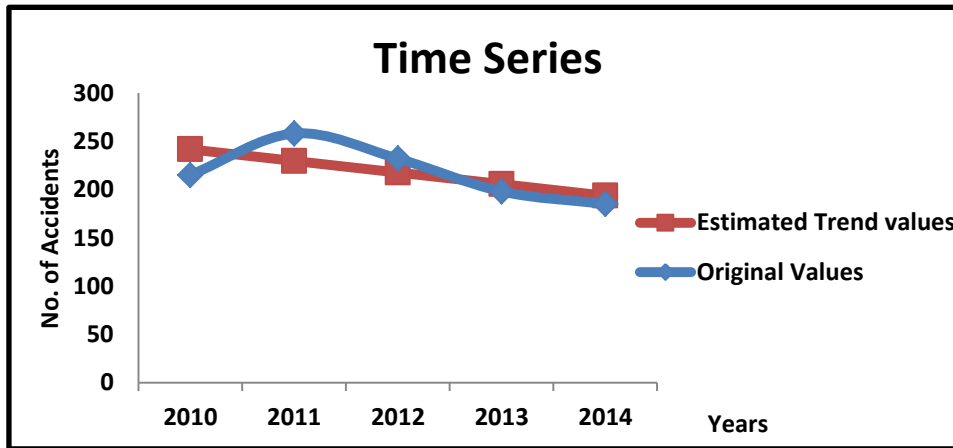
Fit a linear trend for a data by using least squares method



Let, X=Year, Y=No. of Accidents.

$$\therefore \bar{X} = \frac{\sum X_i}{n} = \frac{10060}{5} = 2012, u = X - \bar{X}, \hat{Y} = a + bu$$

Year		No. of Accidents			Estimated Trend values
X	U	Y	uy	U ²	
2010	-2	215	-430	4	241.6
2011	-1	258	-258	1	229.6
2012	0	232	0	0	217.6
2013	1	198	198	1	205.6
2014	2	185	370	4	193.6
		$\Sigma y = 1088$	$\Sigma uy = -120$	$\Sigma U^2 = 10$	



$$\hat{a} = \frac{\sum Y_i}{n} = \frac{1088}{5} = 217.6,$$

$$\hat{b} = \frac{\sum U_i Y_i}{\sum U_i^2} = \frac{-120}{10} = -12$$

$$Y = \hat{a} + \hat{b}u$$

∴ For year 2015

$$U=3, \quad \hat{a}=217.6, \quad \hat{b}=-12$$

$$Y = \hat{a} + \hat{b}u = 217.6 + (-12) * 3$$

$$Y = 181.6$$

$$Y \cong 182$$

For year 2015 Estimated no. of accidents is 182



g) Test for Regression Coefficient:

Test for Regression Coefficient of y on x i.e. $\beta=0$

Year	No. of Accidents	Estimated Trend values
X	Y	
2010	215	241.6
2011	258	229.6
2012	232	217.6
2013	198	205.6
2014	185	193.6
	$\Sigma y = 1088$	

Hypothesis:- $H_0: \beta = 0$

$H_1: \beta \neq 0$

Calculation :

$$\text{Cov}(x,y) = -24, \sigma_x^2 = 2, \therefore b_{yx} = \frac{\text{Cov}(x,y)}{\sigma_x^2} = -12, \Sigma(x_i - \bar{x})^2 = 10, \Sigma(y_i - \hat{y}_i)^2 = 1440, n=5.$$

$$|t| = \left| (b_{yx} - \beta) \left[\frac{(n-2)\Sigma(x_i - \bar{x})^2}{\Sigma(y_i - \hat{y}_i)^2} \right]^{\frac{1}{2}} \right| \sim t_{(n-2)}$$

Under H_0 ,

$$|t| = \left| (b_{yx}) \left[\frac{(n-2)\Sigma(x_i - \bar{x})^2}{\Sigma(y_i - \hat{y}_i)^2} \right]^{\frac{1}{2}} \right| \sim t_{(n-2)}$$

$$|t| = 1.73066$$

At the level of significance 5% , $t_{(n-2)} = t_{3,0.05} = 3.182$ and $|t| < t_{3,0.05}$

OVERALL CONCLUSION

- The number of accidents, proportion of injuries and deaths as well as the proportion of the male and female are same in five years.
- The accidents are distributed uniformly throughout the year.
- The mean age of male drivers is almost equal to mean age of female drivers.
- There is significant difference in the average number of accidents made by different types of vehicles.
- The average number of accidents made by different types of vehicles are significantly different.
- The distribution is negatively skewed & platykurtic. Variation in female death is greater than male death.
- The age distribution of male who injured in accidents is positively skewed whereas female is negatively skewed & both are

platykurtic. The variation in female age is higher than male age.

- The age distribution of male who suffered in accidents is positively skewed whereas female is negatively skewed & both are platykurtic.
- Regression Coefficient of Y on X i.e. (β) for the given sample is insignificant.
- For year 2015 Estimated trend value (No. of Accidents) is 182

REFERENCES

1. Afukaar FK, Antwi P, Ofosu-Amaah S. Pattern of road traffic injuries in Ghana: Implications for control. *Inj Control Saf Promot* 2003;10:69–76.
2. Centers for Disease Control. *CDC Surveillance Update*. Atlanta: Centers for Disease Control and Prevention; 1988.
3. Government of India. *Code of Criminal Procedure—1973*. New Delhi: Ministry of Home Affairs, Government of India; 1973.



4. Holder Y, Peden M, Krug E, Lund J, Gururaj G, Kobusingye O (eds). *Injury surveillance guidelines*. Geneva:World Health Organization; 2001.
5. Jacobs G, Aaron-Thomas A, Astrop A. *Estimating global road fatalities*. TRL Report 445. London:Transport Research Laboratory; 2000.
6. [6] Joint Transport Commissioner and Secretary. *Vehicles registered in twin cities*. Hyderabad:Government of Andhra Pradesh; 2003. <http://www.aptransport.org> (accessed October 2003). [7] Kapp C. WHO acts on road safety to reverse accident trends. *Lancet* 2003;362:1125.
7. Krug E (ed). *Injury: A leading cause of the global burden of disease*. Geneva: World Health Organization; 1999.
8. Krug EG, Sharma GK, Lozano R. The global burden of injuries. *Am J Public Health* 2000; 90:523–6. [9] Mohan D. Road traffic injuries—a neglected pandemic. *Bull World Health Organ* 2003;81:684–5.
9. Murray CJL, Lopez AD, Mathers CD, Stein C. *The Global Burden of Disease 2000 Project: Aims, methods, and data sources (revised)*. Global Program on Evidence for Health Policy Discussion Paper No. 36. Geneva:World Health Organization; 2001.
10. Nantulya VM, Reich MR. The neglected epidemic: Road traffic injuries in developing countries. *BMJ* 2002;324:1139–41.
11. Nantulya VM, Sleet DA, Reich MR, Rosenberg M, Peden M, Waxweiler R. Introduction: The global challenge of road traffic injuries: Can we achieve equity in safety? *Inj Control Saf Promot* 2003;10:3–7.
12. [13] National Crimes Records Bureau. *Accidental deaths and suicides in India— 1999*. New Delhi:Ministry of Home Affairs, Government of India; 2001.
13. Odero W, Garner P, Zwi A. Road traffic injuries in developing countries: A comprehensive review of epidemiological studies. *Trop Med Int Health* 1997;2: 445–60.
14. Odero W, Khayesi M, Heda PM. Road traffic injuries in Kenya: Magnitude, cases and status of intervention. *Inj Control Saf Promot* 2003;10:53–61.
15. Registrar General of India. *Population totals: India, Census of India 2001*. New Delhi: Ministry of Home Affairs, Government of India; 2001. <http://www.censusindia.net> (accessed October 2003).
16. World Health Organization. *The World Health Report 1999: Making a difference*. Geneva:World Health Organization; 1999.



AYURVEDIC HEALTH TOURISM IN KERALA

Priya Chandran¹

¹ Research Scholar,
 Pavanatma College,
 Murickasseri, Ernakulam,
 Kerala

Dr. Johnson V²

² Research Supervisor,
 Pavanatma College,
 Murickasseri, Ernakulam,
 Kerala

ABSTRACT

Medical tourism which is the subject matter of health tourism is a futuristic and growing segment in India. The major motives for the ever-increasing development are cost effectiveness, high quality health care, specialized treatment options, efficient management of foreign and domestic tourists; time bound services and offering of good holidays. In India the state of Kerala with enormous prospective is emerging as a leading health tourism pivot for its Ayurvedic packages. Long lasting ritual of ancient Kerala Ayurveda creates a centre of attention for a good number of foreign and domestic tourists to call on the state for Ayurvedic medical tourism. Foreign tourists arrivals in Kerala shows an increase of 0.42 percent and domestic tourists arrivals shows an increase of 6.35 percent in 2018 than the previous year. This study focuses on the factors which attracts the tourists (domestic and foreign) in to Ernakulam and Thiruvananthapuram districts for Ayurvedic Health tourism. 100 tourists (domestic and foreign) availing ayurvedic treatment in Ernakulam and Thiruvananthapuram districts are selected for the study and appropriate statistical tools are used for analysis.

KEYWORDS - Ayurveda, Ayurvedic healthcare tourism, tourists' satisfaction

1. INTRODUCTION

Medical tourism, a subject of health tourism, is a novel and growing sector in India. As explained in the abstract the main reasons for the increasing trend is cost effectiveness, high quality health care, specialized treatment options, efficient management of languages, no waiting queue and offering of good holidays. In India the state Kerala with huge potential is emerging as a prime health tourism hub for its Ayurvedic packages.

Ayurveda is not only about good body structure but it is a healing that assures worldwide robustness. The ayurvedic plants and oils which are used for the treatments are of boundless medicinal worth which is mentioned in the vedic works on Ayurveda. The antiquity of Ayurveda which belongs to Vedic period obviously states the guidelines to conserve the wellbeing of the people and the devices for curing the diseases by using different remedial measures like massages, medicines from plants, yoga, meditation, diet control and workouts.

The most popular objective of this Ayurvedic healing is the removal of noxious features from the physique and thus the human structure acquires better immunity. This process will rejuvenate the mind, body and soul.

Kerala is perfectly appropriate for medical tourism given that Kerala's ideal weather condition during the year, superior hospitals by means of outstanding amenities, well known doctors dedicated in foremost discipline, well qualified paramedical workforce and technicians and global association. Kerala is appreciated for elevated grade of sanitation prolonged by the well-established resorts and hotels that are providing the health care services in Kerala. The age old folklore of classical Indian ayurveda catapults Kerala into worldwide tourism objective. There are 924 Ayurvedic health tourism centres in Kerala and several Ayurvedic healings are accessible in these centres which are extended to the 14 districts of Kerala.

TOURIST'S ARRIVAL TO KERALA

Table 1: Foreign Tourists

Year	No of foreign Tourists	% Variation over P.Y	Foreign Exchange Earnings(Crores)	% Variation over P.Y
2017	1091870		8764.46	
2018	1096407	0.42%	8392.11	4.44%

Source: Kerala Tourism Statistics.2018



Table 2: Domestic Tourists Arrivals

Year	No of Domestic Tourists	% Variation over P.Y	Total Revenue(Crores)	% Variation over P.Y
2017	14673520		33383.68	
2018	15604661	6.35%	36258.01	8.61%

Source: Kerala Tourism Statistics.2018

It is understood from the Kerala tourism statistics that there is an increase in the arrival of the tourists both foreign and domestic in 2019 even if there were some unexpected and uncontrollable natural calamities like flood. An enormous number of tourists reached India, being aware of the Ayurvedic therapies of Kerala for treatment purposes together with rejuvenation. Total number of tourists visited Kerala in 2019 are 18384233(domestic) and 1189771(foreigners) and there is a growth rate of 17.81percent (domestic) and 8.52percent (foreign) respectively.

2. SIGNIFICANCE OF THE STUDY

Life When we are analysing Health tourism exclusively ayurvedic health tourism the real world can examine the first-class potentials provided to all tourists by the various health tourism centres in Kerala. Life long relief to the entire body, no side effects, availability of different strategies for freedom from infection, provide relief from tension and make younger the body are the major benefits of Kerala ayurvedic health tourism. The global tourists have recognized these benefits of travelling to Kerala for ayurvedic medical tourism and thus Kerala has achieved international recognition in this field, also fetching as a well-known medical tourism destination. In these circumstances identifying the level of satisfaction among tourists visiting Kerala for ayurvedic treatment is relevant.

3. REVIEW OF LITERATURE

Padmasani and Remya (2015) studied the factors which influence the tourists in Ayurvedic health care centres. The most effective factors in the field of destination are quality of services, opportunities, attractiveness, benefits and promotion. Generally the result of the study revealed that as Ayurvedic fitness service destination Kerala has to establish its own standing in the international market.

Jaiswal and Williams, Yoginiet (2017) opined Ayurveda, most popular way of treatment from ancient India is persisted and succeeded from past to present. Here the authors try to enrich the history of Ayurveda which include the role of Ayurveda in different periods. We get knowledge about vedas, Pancha Mahabhootas, tridoshas, Pancha Karma and other related activities.

Varghese and Zacharias (2020) found out that vital strategy for attracting the patients from abroad is on line communication and the clients also rely on the information received from on line transactions.

Louis (2018) there were substantial connotation amongst the satisfaction level and the essentials connected to it and Kerala has ample resources for attracting the world as it is the brand ambassador of Ayurvedic sector.

Bulsara and Yadav (2018) Users are nowadays practical oriented and they understand that Ayurveda the traditional medicine treat the body as a whole rather than quick relief but rarely people use modern medicine in critical situations

Oatochet al (2017) studied the significance of AYUSH system in the development of Ayurveda. People accept a solid trust in AYUSH and persuaded or induced by its value and it has to make the people aware. It is needed to educate the people about the ancient wisdom ayurveda and makes it easily available. The requirements to come across the universal standards are multi-disciplinary research, standardization, quality assurance, authentication of the ayurvedic medication etc. The governments have to establish the rules and guidelines to brandish Ayurveda in both India and foreign nations.

Acharyya (2020) explained that Ayurveda has enough opportunities as a precautionary measure for fighting against COVID 19 pandemic. In order to practise ayurveda as restorative and deterrent facet scientific studies associated with it and its principles are desirable. WHO also recommended these types of activities at the time of epidemic diseases.

Yoshida et al (2016) studied the awareness of the natural remedy Ayurveda, among the natives of Dhaka. As regards youths there exists uncertainty about the use of Ayurvedic medicines than the seniors. But they are further satisfied with the ayurvedic medicines than the elders. To upsurge the use of ayurvedic medicines in Dhaka scientific information regarding it should be properly collected and disseminated among them in order to elude the misunderstanding about the usage among the citizen.

Katoch et al (2017) focus on different prospects of government rules and ingenuities for the growth and expansion of traditional Ayurveda. Indian System of Medicine which is of late known as AYUSH was established by the government of India for the protection and promotion of Ayurveda and other traditional methods of treatments. Different



regulatory authorities and development agencies are established under AYUSH for the advancement of ayurveda.

Pani and Das (2014) emphasis on the measures taken by the tourism department for the progress and expansion activities of Ayurveda. An attempt is made to establish an effective co- relation between traditional ayurvedic therapy and new schemes and the study lead the public towards the prominence of ayurveda.

Louis (2018) tried to find out the satisfaction of the tourists who visited Kerala and the study arrange for proper understandings concerning the importance of Ayurveda for improving the activities of tourism. There were substantial connotations among the satisfaction level and the essentials connected to it and Kerala has ample resources for attracting the world as it is the brand ambassador of ayurvedic sector.

4. SCOPE OF THE STUDY

In Kerala, Ernakulum and Thiruvananthapuram districts have distinguishing position in ayurvedic medical tourism in contrast to other districts of tourists visiting Kerala for ayurvedic treatment. Hundred percent literacy rate, better transportation facilities, native culture along with hospitality, real authentic Ayurveda attracts tourists both foreign and domestic. NRIs also attracted to these two districts to heal their body as a whole for Ayurvedic medical treatments. The study is mainly concentrated on Ayurvedic Health Tourism in Kerala in Ernakulum and Thiruvananthapuram districts as

total earnings from Ernakulum is the highest followed by Thiruvananthapuram.

5. OBJECTIVES OF THE STUDY

In view of the above introductory remarks, the following have been laid down as the specific objectives of the study.

- To identify the level of satisfaction of tourists visiting Kerala for ayurvedic treatment.
- To identify the profile of tourists who availed Ayurvedic treatment from Ernakulum and Thiruvananthapuram districts.

6. RESEARCH METHODOLOGY

The study is based on both primary and secondary data. Primary data required for the study have to be collected by administering structured interview schedule among patients in the Ayurvedic hospitals in Ernakulum and Thiruvananthapuram districts. Secondary data will be collected from books, reports, journals and periodicals, inflienet, Internet sites like Wikipedia, investopedia etc. The questionnaire was supplied to 120 respondents subject to their convenience at various Ayurvedic hospitals in Ernakulum and Thiruvananthapuram districts. Out of 120 respondents only 100 of them responded properly. Data is analysed by using percentages, mean and standard deviation. IBM SPSS software is used for analysis.

7. DATA ANALYSIS AND RESULT DISCUSSION

a. General Profile of respondents

Table 3: Gender Wise Details of Tourists

	Frequency	Percent
Male	49	49.0
Female	51	51.0
Total	100	100.0

Gender wise details of tourist considered for the study is given in table 3. It is clear from the table that out of the total respondents interviewed, 49percent

belong to the male community and 51percent are female tourists.

b. Nationality

Table 4: Nationality

	Frequency	Percent
Indian	51	51.0
Foreigner	49	49.0
Total	100	100

Nationality of tourists considered for the study is given in table 4. It is clear from the table that

51percent of the respondents are Indians and the rest 49 percent are foreigners.



c. Marital Status

Table 5: Marital Status

	Frequency	Percent
Married	75	75.0
Unmarried	18	18.0
Divorced	3	3.0
Widow/widower	2	2.0
Physically Separated	2	2.0
Total	100	100

Marital Status of the respondents shows in Table 5. The table shows that 75 percent of them are married, 18 percent are unmarried, 3 percent are divorced, 2 percent are widower/widow and 2 percent are physically separated.

d. Educational Qualification

Table 6: Educational Qualification

	Frequency	Percent
Below Secondary	3	3.0
Secondary	2	2.0
Higher Secondary	23	23.0
Graduate	58	58.0
Post Graduate	14	14.0
Total	100	100

Educational Qualification of the respondents shows in table 6. The table shows that majority of the respondents are Graduates (58 percent), 23 percent of the respondents qualified Higher Secondary, 14 percent are graduates and rest of them belongs to higher secondary (2 percent) and Below Secondary (3 percent) level.

e. Occupation

Table 7: Occupation

	Frequency	Percent
Business	7	7.0
Professional	12	12.0
Government Officials	6	6.0
Private Employee	40	40.0
Student	1	1.0
House Wife	34	34.0
Total	100	100

Occupation of the respondents shows in table 7. The table shows that 40 percent of the respondents belong to Private Employee, 34 percent of them Housewives, 12 percent of them professionals, 7 percent of them business men, 6 percent of them belong to government officials and one percent gone for studies.

f. Person Accompanied with tourists

Table 8: Person Accompanied With Tourists

	Frequency	Percent
Single	55	55.0
Spouse	32	32.0
Family Members	11	11.0
Friends and Relatives	2	2.0
Total	100	100



Table 8 shows the person accompanied with tourists. 55 percent of the respondents came alone. 32 percent came with spouse, 11 percent accompanied by family

members and 2 percent accompanied by friends and relatives.

g. Purpose of Visit

Table 9: Purpose of Visit

	Frequency	Percent
Medical Treatment Only	86	86.0
Medical treatment and Business	3	3.0
Medical treatment and Site Seeing	5	5.0
Ayurvedic Medicare	4	4.0
Pleasure/Relaxation	2	2.0
Total	100	100

Table 9 shows the purpose for which the tourist visited Kerala. Majority of them came for medical Treatment itself (86 percent). 5 percent of the

respondents came for medical treatment and site seeing, 4 percent came for ayurvedic Medicare and rest came for pleasure and relaxation. (2 percent).

h. Mode of Transportation

Table 10: Mode of Transportation

	Frequency	Percent
Air	77	77.0
Land	22	22.0
Air and Land	1	1.0
Total	100	100

Table 10 shows the Mode of Transportation used by the respondents. Majority of them used Air line for transportation (77 percent). Least of them used both

air and land mode of transportation (1 percent) and 22 percent used land way for transportation

i. Treatment undergone by the tourists

Table 11: Treatment Undergone By the Tourists

Type of Treatment	Availed		Not availed	
	Frequency	Percentage	Frequency	Percentage
Panchakarma	47	47.0	53	53.0
Pizhichil	44	44.0	56	56.0
Thalam	21	21.0	79	70.0
Kizhi	36	36.0	64	64.0
Nasyam	15	15.0	85	85.0
Dhara	29	29.0	71	71.0
Vasti	44	44.0	56	56.0
Massage	65	65.0	35	35.0

Table 11 shows different types of treatments undergone by the tourists. Among the total tourists interviewed 65 percent have undergone for massage, 47 percent have undergone for panchakarma, 44 percent have undergone for both

pizhichil and vasti, 36 percent have undergone for kizhi, 29 percent have undergone for dhara, 21 percent have undergone for thalam and 15 percent have undergone for nasyam.



j. Sources consulted for selecting Kerala for medical treatment

Table 12: Sources Consulted for Selecting Kerala for Medical Treatment

Variables	Source		Not a Source	
	Frequency	Percentage	Frequency	Percentage
Medical tourism guide	75	75.0	25	25.0
Medical tourism operator	66	66.0	34	34.0
Hospital websites	52	52.0	48	48.0
Friends and relatives	44	44.0	56	56.0
Doctors	49	49.0	51	51.0
Advertisements	39	39.0	61	61.0
Word of Mouth	70	70.0	30	30.0

Table 12 shows the Sources consulted by the tourists for selecting Kerala for medical treatment. The main source the tourists consulted for medical treatment is medical tourist guide since all the respondents agreed that the main source they consulted is medical tourist guide. Word of Mouth (70 percent) is the second source the tourist consulted for availing treatment in Kerala followed by Medical tourism operator (66 percent), Hospital websites (52 percent), doctors (49 percent) and Friends and relatives (44 percent). Advertisement is considered as the least source of consultation for ayurvedic treatment by the tourists (39 percent).

DATA ANALYSIS ON CUSTOMER SATISFACTION

Customer satisfaction is studied by asking statements in five point Likerts scale. Values were assigned based on five point likert scale as 1 for very poor, 2 for poor, 3 for moderate, 4 for good and 5 for very good. Mean is calculated for quantifying the Likerts scale. This score was classified into one of the four groups as 'not satisfied' if the mean is less than 2, 'less satisfied' if the mean is between 2 and 3, 'Satisfied' if the mean lies in the interval 3 to 4 and 'highly satisfied' if the mean above 4.

k. Opinion of the tourists on various services

Table 13: Opinion of the Tourists on Various Services

	Mean	Standard deviation	Level of Satisfaction
Match you with appropriate clinic and Physician	4.78	0.866	Highly satisfied
Arrange and confirm appointments	4.92	.280	Highly satisfied
Obtain Visa	4.83	.447	Highly satisfied
Transportation facility	3.26	.345	Satisfied

Table 13 shows Tourist's opinion on different services provided by the hospitals. They were highly satisfied with clinic and physician, arrangement and confirmation of appointments and obtaining visa. In

the case of arrangement of transportation facility they are satisfied.

1. Opinion about services related to treatment

Table 14: Opinion about Services Related to Treatment

	Mean	Standard deviation	Level of Satisfaction
Quality in treatment	4.94	.232	Highly satisfied
Technology used	2.8	.229	Less Satisfied
Doctors experience	4.21	.123	Highly satisfied
Medicines	4.23	.182	Highly satisfied
Equipments	3.2	.211	Satisfied

Table 14 shows Tourist's opinion on services related to treatment. They are highly satisfied with the quality in treatment, doctor's experience & medicines

used. The tourists are satisfied with the equipment used by the hospitals for treatment. In the case of technology used they are less satisfied.



m. Opinion about post treatment services provided

Table 15: Opinion about Post Treatment Services Provided

	Mean	Standard deviation	Level of Satisfaction
Nursing care	4.92	.553	Highly satisfied
Doctors follow up	4.12	.513	Highly satisfied
Dietary	4.23	.218	Highly satisfied
Pharmacy	4.11	.277	Highly satisfied

Table 15 shows Tourist's opinion about post treatment services provided by the hospitals. All the post treatment services are highly satisfactory to the tourists.

n. Opinion about different facilities

Table 16: Opinion about Different Facilities

	Mean	Standard deviation	Level of Satisfaction
Sanitation	3.21	.277	Satisfied
Drinking Water	4.95	.229	Highly satisfied
Security Services	4.86	.419	Highly satisfied
Laundry	3.21	.232	Satisfied
Entertainment	2.13	.277	Less Satisfaction
Transportation	3.22	.164	Satisfied
Personalized care	4.97	.167	Highly satisfied

Table 16 shows the opinion about different facilities provided by the ayurvedic health care hospitals. The respondents are highly satisfied with drinking water, security services & personalized care, satisfied with sanitation laundry and transportation, less satisfaction with entertainment.

o. Opinion on cost of medical treatment

Table 17: Opinion on Cost of Medical Treatment

	Mean	Standard deviation	Level of Satisfaction
Accommodation	4.23	.212	Highly satisfied
Food	4.12	.289	Highly satisfied
Consultation Fee	4.95	.232	Highly satisfied
Medicine	4.95	.112	Highly satisfied
Counselling & follow up	4.95	.114	Highly satisfied

Table 17 shows the opinion of the respondents on cost of medical treatment offered by the ayurvedic health care hospitals. All the facilities accommodation, food, consultation fee, medicine, counselling and follow up cost imposed by the hospitals affordable to the respondents.

government of India it is suggested that all the divisions of both the government (state and central) and all other private segments and all other interested people have to come to be effective participants in the attempt to achieve appropriate growth in tourism industry especially the Ayurvedic tourism which will be a golden chance to India to be a most attractive universal medical tourism industry.

CONCLUSION

From There are enormous opportunities for engendering chances and gain huge amount of foreign exchange and thus there is a boost in the other sectors like economic and social expansion. Much has been achieved but much more remains to be achieved. Even though there are a number of incentives and plans for the promotion of medical tourism in the annual report of ministry of Tourism,

In the present study an effort has been taken to know the level of satisfaction of tourists visiting Kerala for ayurvedic treatment. The entire result of the study showed that there is plenty of opportunities for Kerala intended as ayurvedic health tourism destination.



REFERENCES

1. Ahmed, Acharyya, A. (2020). Prospect of Ayurveda System of Medicine in recent COVID-19 Pandemic in India . *International Journal of Ayurveda and Traditional Medicine*, 2(2), 26-29
2. Bulsara, H. P., & Yadav, N. (2018). Study On The Current Scenario Of Consumers Buying Behavior Towards Ayurvedic Medicines In Gujarat. *IOSR Journal of Business and Management* , 31-35
3. G, H. N. (2005). "Study of the application of information technology in the treatment and preparation of medicine in ayurveda with special reference to Kerala". Calicut: University of Calicut.
4. Jaiswal, Y. S., & Williams, L. L. (2017). A glimpse of Ayurveda e The forgotten history and principles of Indian traditional medicine. *Journal of Traditional and Complementary Medicine* , 50-53
5. Menon, I., & Spudich, A. (2010). The Ashtavaidya physicians of Kerala: A tradition in transition. *Journal of Ayurveda & Integrative Medicine*, 1 (4), 245-250.
6. Muralidhar, S., & Karthikeyan, P. (2016). Ayurvedic Tourism in India: Practices and Policies. *Asian Journal of Research in Social Sciences and Humanities*, 6 (6), 1043-1052.
7. T, B. V., & Swain, S. K. (2012). A Study on Destination Image of Kerala as an Ayurvedic Healthcare Destination. *Asia Journal of Transfusion Science*, 7 (1), 45-58.
8. Agnives, C. R. (2002). *Development of Ayurveda through Ages*. (pp. 1-5). Kochi: Swadeshi Science Movement,
9. B, S. K., Weiermair, K., & Chen, R. F. (2011). *What Lite Beneath: The Untapped Health Tourism Market in India and the Role of Social Vetur Capital in Rejuvenating Ayurveda Tradition*. *Global Journal of Contemporary Management* , 1-12.
10. Benke, V. R. (2016). *Impact of Ayurveda Tourism*. *New Man International Journal of Multidisciplinary Studies*, 3 (1), 14 - 18.
11. Chaudhary, A., & Singh, N. (2011). *Journal of Ayurveda and Integrative Medicine*, 2 (4).
12. Deshpande, S. M. (2015). *Study of Current Market Scenario & Marketing Prospects against Changing Attitude of Consumers towards Buying Of Ayurvedic Medicines in India*. *International Journal of Business and Management Invention*, 4 (6), 48-54.
13. HrishnanKutty Varier, N. v. (2009). *History of Ayurveda*. Kottakkal: Arya Vaidya Sala.
14. Louis, F. T. (2018). *Tourists' Satisfaction towards Ayurveda Tourism in Kerala*. *International Journal of Arts, Science and Humanities*, 6 (2), 68-74.
15. Meulenbeld, G. J. (1992). *The Many Faces of Ayurveda*. *Ancient Science of Life*, XI (3 & 4), 106 - 113.
16. Mukherjee, P. K., Nema, N. K., Venkatesh, P., & Debnath, P. K. (2012). *Changing Senario for Promotion and Development of Ayurveda-Way Forward*. *Journal of Ethnopharmacology*, 143 (2), 424-434.
17. Muraleedharan, T. S., & Raghava Varier, M. R. (2010). *Ayurveda in Transition*. Kottakkal: Arya Vaidya Sala, Kottakkal.
18. Narayanaswamy, V. (1981). *Origin and Development of Ayurveda*. *Ancient Science of Life*, 1 (1), 1-7.
19. Pani, A., & Das, B. (2015). *Role of Hotels and Resorts to Promote Ancient Ayurveda through Health Tourism: A Special Reference to Odisha*. *Purushartha*, VII (2), 114-123.
20. Rastogi, S., Pandey, D. N., & Singh, R. H. (2020). *COVID-19 pandemic: A pragmatic plan for ayurveda intervention*. *Journal of Ayurveda and Integrative Medicine* , 1-4.
21. T, B. V., P, C., & George, B. P. (2009). *Perception of Tourists towards Kerala as a Preferred Alternate Health Tourism Destination: A Study*. *South Asian Journal of Tourism and Heritage*, 2 (1), 68-76.
22. Varghese, A. A., & Zacharias, S. (2020). *Influence of Digital Marketing on Ayurvedic Tourism in Kerala*. *Our Heritage*, 68 (30), 424 -440.
23. Variar, P. R. (1985). *The Ayurvedic Heritage of Kerala*. *Ancient Science of Life*, V (1), 54-64.
24. Vira, K. (2016). *Make in India: Impact on Medical Tourism*. *IOSR Journal of Business and Management (IOSR-JBM)* , 01-05.



DESIGN AND CHARACTERIZATION OF STAVUDINE LOADED NANOPARTICLES

Mrs.Rama Shukla¹

¹Assistant Professor,
Department of pharmaceuticals,
Lakshmi Narain College of Pharmacy,
Raisen road, Bhopal-462022,
M.P, India.

Dr.G.Jagadish²

²Professor & Principal,
Department of Pharmaceuticals,
DBM College of Pharmacy,
Janjgir Champa
Chhattisgarh-495690

ABSTRACT

Nanoparticles represent a promising drug delivery system of controlled and targeted drug release. They are specially designed to release the drug in the vicinity of target tissue. The aim of this study was to prepare and evaluate polymethacrylic acid nanoparticles containing Stavudine in different drug to polymer ratio by nanoprecipitation method. SEM indicated that nanoparticles have a discrete spherical structure without aggregation. The average particle size was found to be $121 \pm 8 - 403 \pm 4$ nm. The particle size of the nanoparticles was gradually increased with increase in the proportion of polymethacrylic acid polymer. The drug content of the nanoparticles was increasing on increasing polymer concentration up to a particular concentration. No appreciable difference was observed in the extent of degradation of product during 60 days in which, nanoparticles were stored at various temperatures. FT-IR studies indicated that there was no chemical interaction between drug and polymer and stability of drug. The in-vitro release behaviour from all the drug loaded batches was found to be zero order and provided sustained release over a period of 24 h. The developed formulation overcome and alleviates the drawbacks and limitations of Stavudine sustained release formulations and could possibly be advantageous in terms of increased bioavailability of Stavudine.

KEYWORDS : nanoparticles, Stavudine, biodegradable, polymethacrylic acid

INTRODUCTION

During last two decades, considerable attention has been given to the development of novel drug delivery system (NDDS)¹. The rational for control drug delivery is to alter the pharmacokinetics and pharmacodynamics of drug substance in order to improve the therapeutic efficacy and safety through the use of novel drug delivery system. Besides more traditional matrix or reservoir drug delivery system, colloidal drug delivery system has gained in popularity. The major colloidal drug delivery system includes liposome and polymeric nanoparticles. These systems have been investigated primarily for site specific drug delivery, for controlled drug delivery, and also for the enhancement of dissolution rate/bioavailability of poorly water-soluble drugs. The primary routes of administration under investigation are parenteral route, however, other routes such as the oral, ocular, or topical routes are also being investigated. In era of oral drug delivery system microsphere², microcapsule, nanoparticles, liposomes, and niosomes are better options to conventional dosage form. Nanoparticles are colloidal polymer particles of a size below $1\mu\text{m}$ ³⁻⁴

and hold promise as drug delivery for parenteral, peroral and ocular administration as well as adjuvant for vaccines. Due to their greater stability and due to their easier manufacturing they offer advantages over other colloidal carriers such as liposomes and cell ghosts. They offer advantages like increased bioavailability, site specific drug delivery, sustained release of drug over longer period of time, retention of dosage form in entire length of gastrointestinal tract and convenient to patient due to reduction in frequent dosing⁵.

Eudragit polymers are series of acrylate and methacrylate polymer available in different ionic forms. Eudragit RS 100 is insoluble in aqueous media but it is permeable and has pH- independent release profile. The permeability of Eudragit RS 100 is due to presence of quaternary ammonium group in their structure⁶. Stavudine is a potent antiviral agent used in the treatment of AIDS.

Conventional oral formulations Stavudine are administered multiple times a day (150 mg twice daily) because of its moderate half-life (5-7 hours)⁷⁻⁸. Treatment of AIDS using conventional formulations of Stavudine is found to have many



drawbacks, such as adverse side effects resulting from accumulation of drug in multidose therapy, poor patient compliance, and high cost. The objective of the present study was to prepare nanoparticles of Stavudine to overcome some of these problems.

MATERIAL AND METHOD

Stavudine was a gift sample from Ajantha pharma. Eudragit RS 100 was obtained from Rohm Pharma, Germany. Dichloromethane was procured from E. Merck Ltd., Mumbai. All other chemicals used were of analytical grade.

Preparation of nanoparticles

Nanoparticles containing Stavudine were prepared using nanoprecipitation method⁹⁻¹⁰. Drug was dissolved in water, and then cosolvent (acetone) was added into this solution. A cosolvent was needed in order to make the inner phase more homogeneous. Then polymer and 150 mg of propylene glycol were dissolved in chloroform, and this solution was added to the drug solution to form dispersion. The dispersion was added to 10 ml of aqueous ethanol solution (70%). After 5 minutes of mixing, the organic solvents were removed by evaporation at 35° under normal pressure, nanoparticles were separated by using cooling centrifuge (10000 rpm for 20 min), supernatant were removed and nanoparticles washed with water and dried at room temperature in a desiccator. By following the above mentioned procedure five other batches of nanoparticles ratio of 1:1, 1:2, 1:3, 1:4 and 1:5 were prepared and named F1, F2, F3, F4 and F5 respectively.

Particle size, surface morphology and zeta potential The surface morphology (roundness, smoothness, and formation of aggregates) and particle size were studied by scanning electron microscopy (SEM)¹¹⁻¹². Zeta potential of the best formulation (F4) was determined by zeta potential probe model DT- 300.

Drug content

Drug content was determined by centrifugation method. The redispersed nanoparticles suspension was centrifuged at 15,000 rpm for 40 min at 25° to separate the free drug in the supernatant. Concentration of Stavudine in the supernatant was determined by UV-Vis spectrophotometrically at 271 nm after suitable dilution. Fourier Transform Infra-red Spectroscopy (FT-IR) analysis

The FT-IR spectra of pure Stavudine and Eudragit RS 100 nanoparticles loaded with Stavudine were recorded to check drug polymer interaction and stability of drug. In vitro release studies In vitro release studies were carried out by using dialysis tubes with an artificial membrane. The prepared Stavudine nanoparticles and 10 ml of phosphate buffer pH 7.4 was added to the dialysis tube and subjected to dialysis by immersing the dialysis tube to the receptor compartment containing 250 ml of phosphate buffer pH 6.8. The medium in the receptor

was agitated continuously using a magnetic stirrer a temperature was maintained at 37±1°. 5ml of sample of receptor compartment were taken at various intervals of time over a period of 24 h and each time fresh buffer was replaced. The amount of drug released was determined spectrometrically at 271 nm.

Kinetic modeling

In order to understand the kinetic and mechanism of drug release, the result of in vitro drug release study of nanoparticles were fitted with various kinetic equation like zero order¹³ (cumulative % release vs. time), first order¹⁴ (log % drug remaining vs time), Higuchi's model¹⁵ (cumulative % drug release vs. square root of time). r² and k values were calculated for the linear curve obtained by regression analysis of the above plots. Stability study:

The stability study was carried using the batch F4. The stability of drug loaded nanoparticles was evaluated in terms of its drug content¹⁶. The stability of nanoparticles was evaluated in PBS (pH 6.8). Nanoparticles formulation was incubated at 5-8° and 37 ± 1° for a period of 60 d. After specified time intervals, the suspension was centrifuged at 15,000 rpm for 1 h, supernatant was removed and nanoparticles were dissolved in dichloromethane. After adding of water and separation, the amount of drug was detected by UV-Vis spectrophotometrically method at 271 nm.

RESULT AND DISCUSSION

Stavudine nanoparticles with varying proportions of Stavudine and Eudragit RS 100 were prepared by nanoprecipitation method. The scanning electron microphotograph of Stavudine nanoparticles is shown in fig.1. It indicated that Stavudine nanoparticles have a discrete spherical structure without aggregation. The particle size of nanoparticles varied some what among the formulation due to variation in the composition of formulations. Zeta potential of best formulation was determined and it was found +27mV due to quaternary ammonium group of Eudragit. Since there was a decrease of surface potential, it could be concluded that a part of drug was absorbed on the polymeric particles.

The drug content was determined by centrifugation method and it was maximum in formulation FN4. The nanoparticles exhibited an increase in drug content with an increased in the polymer ratio, up to particular concentration (1:4). A decrease in drug content was observed after that point due to the saturation capacity of polymer. In FT-IR study the characteristic peak due to pure Stavudine has appeared in the spectra of nanoparticles without any markable change in the position. It indicated that there was no chemical interaction between Stavudine and Eudragit RS 100. In stability study there was no remarkable change in the drug content. This indicated

that formulation was stable in storage medium condition. The in vitro release profile of all formulation is shown in fig.2. The release of Stavudine mainly depended upon the polymer concentration. The burst release of Stavudine from nanoparticles at initial stage resulted from the dissolution of drug crystals on the surface of nanoparticles. On increasing polymer concentration, the release rate of Stavudine from nanoparticles decreased drastically. The in vitro release data was applied to various kinetic models to predict the drug release kinetic mechanism. The release constant was calculated from the slope of appropriate plots, and the regression coefficient (r²) was determined. It was found that the in-vitro drug release of nanoparticles was best explained by zero order kinetics for best

formulation F4 as the plots shows highest linearity. The correlation coefficient (r²) was found 0.99 for F4.

CONCLUSION

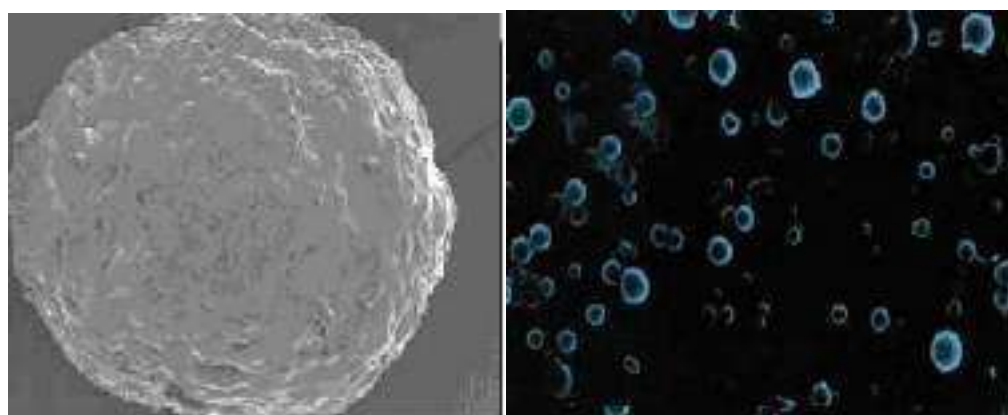
The method of preparation of nanoparticles of Stavudine was found to be simple and reproducible. The slow and constant release of Stavudine from nanoparticles maintain constant drug plasma concentration thereby increasing therapeutic efficacy. This study shows that polymethacrylic acid nanoparticles could be a useful carrier for Stavudine. The developed formulation overcome and alleviates the drawbacks and limitations of Stavudine sustained release formulations.

APPENDIX

TABLE 1: Formulation and physicochemical characterization of Stavudine nanoparticles

Formulation code	Drug: Polymer ratio	Drug Content [±] (%)	Particle Size [±] (nm)
FN ₁	1:1	58.32 ± 0.02	121 ± 8
FN ₂	1:2	64.13 ± 0.08	265 ± 5
FN ₃	1:3	70.83 ± 0.03	287 ± 9
FN ₄	1:4	64.62 ± 0.02	332 ± 5
FN ₅	1:5	59.96 ± 0.04	403 ± 4

* Average of three preparation ± S.D



A.

B.

Fig.1 : Scanning electron microphotograph of Stavudine nanoparticles (A) At lower magnification (B) At higher magnification

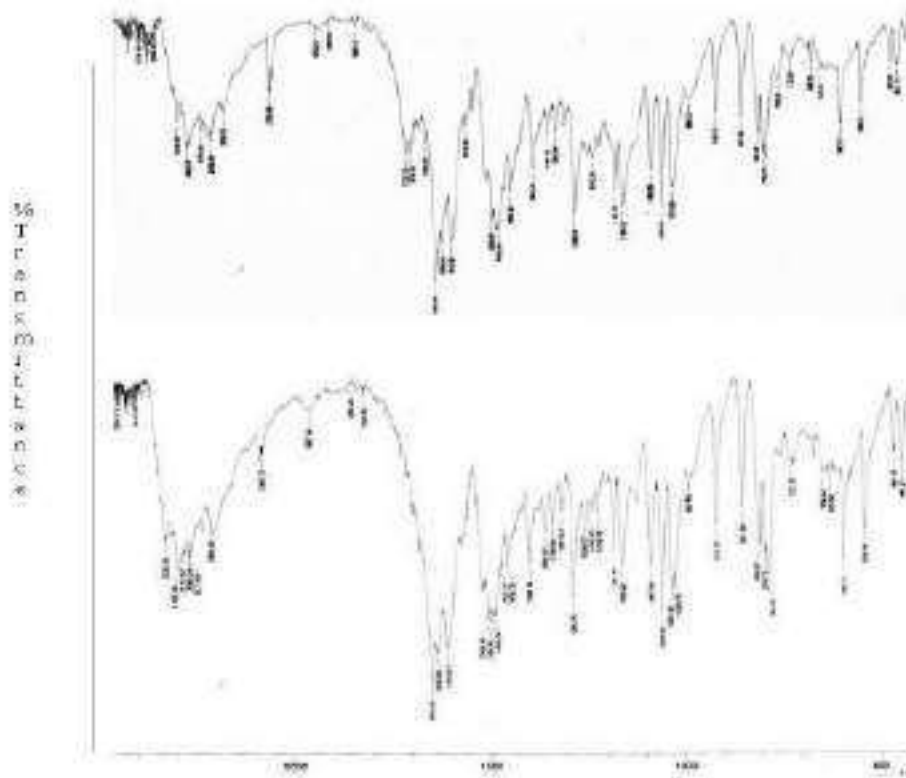


Fig.2 : FT-IR spectra of pure Stavudine and Stavudine loaded nanoparticles formulation (FN4)

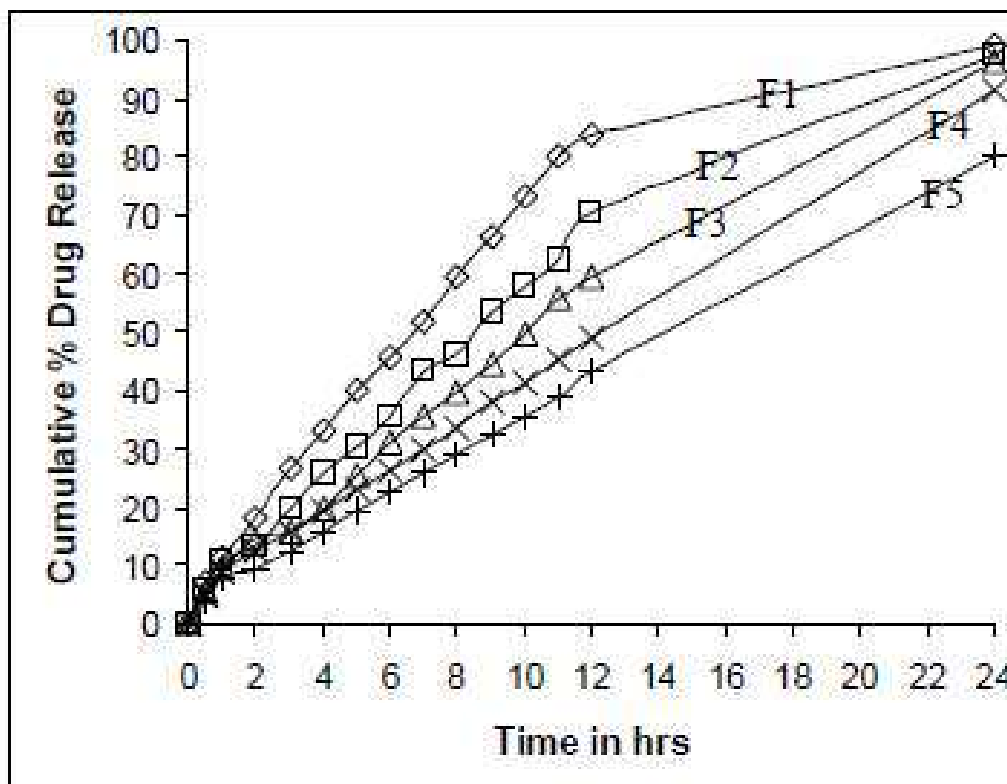


Fig.3 : In vitro drug release of Stavudine from polymethacrylic acid nanoparticles formulation



REFERENCES

1. Santhi K., Dhanraj S.A., Nagasamyvenkatesh D., Sangeetha S., Suresh B., Preparation and optimization of sodium alginate nanospheres of methotrexate, *Indian J. Pharm. Sci.*, 2005, 67,691-696.
2. Tamizharasi S., Rathi J.C., Rathi V., Formulation, characterization and in vitro release kinetics of aceclofenac loaded poly(ϵ -caprolactone) microspheres, *Indian Drugs*, 2007, 44, 973-975.
3. Kreuter J., Nanoparticles based drug delivery systems, *J. Control. Rel.*, 1991, 16, 169-176.
4. Bandameedi R, Pandiyan PS. Formulation and evaluation of gastro retentive floating bioadhesive tablets of hydrochlorothiazide. *Asian J Pharm Clin Res* 2017;10:150-5.
5. Chen D.B., Yang T. Z., Lu W. L., Zhang Q., In vitro and in vivo study of two types of long circulating solid lipid nanoparticles containing paclitaxel, *Chem. Pharm. Bull.*, 2001, 49, 1444-1447.
6. Ubrich N., Schmidt C., Bodmeur R., Hoffman M., Maincent P., Oral evaluation in rabbits of cyclosporine loaded Eudragit RS or RL nanoparticles, *Int. J. Pharm.*, 2005, 288,169-175.
7. Punna R.R., Sindhura G., Saha R.N., Design and Study of Stavudine Oral Controlled Release Tablet, *AAPS PharmSciTech*, 2007, 8, E1-E9.
8. Ramu B, Chittela KB. High Performance Thin Layer Chromatography and Its Role Pharmaceutical Industry [Review]. *Open Sci. J. Biosci. Bioeng.* 2018;5(3):29-34.
9. Leena Peltonen., The Effect of Cosolvents on the Formulation of Nanoparticles From Low-Molecular-Weight Poly(l)lactide *AAPS PharmSciTech.*, 2002, 3, E1-E7.
10. Barbault S, Gref R., Russo P., Guechot J., Bochot A., Design of poly- ϵ -caprolactone nanospheres coated with bioadhesive hyaluronic acid for ocular delivery, *J. Control. Rel.*, 2002, 83, 365-375.
11. Peltonen L., Koistinen P., Karjalainen M., Hakkinen A., Hirvonen J., The effect of cosolvents on the formulation of nanoparticles from low molecular weight poly(l)lactide, *AAPS PharmSciTech*, 2002, 3, 1-7.
12. Cui F., Oian F., Yin C., Preparation and characterization of mucoadhesive polymer-coated nanoparticles, *Int. J. Pharm.*, 2006, 316,154-161.
13. Saparia B., Murthy R.S.R., Solanki A., Preparation and evaluation of chloroquine phosphate microspheres using cross-linked gelatin for long term drug delivery, *Indian J. Pharm. Sci.*, 2002, 64, 48-52.
14. Haznedar S., Dortunc B., Preparation and evaluation of Eudragit microspheres containing acetazolamide, *Int. J. Pharm.*,2004, 269, 131-140.
15. Higuchi T., Mechanism of sustained action medication: theoretical analysis of rate of release of solid drugs dispersed in solid matrices, *J. Pharm. Sci.*, 1963, 52, 1145-1149.
16. Ramteke S., Maheshwari R.B.V., Jain N. K., Clarithromycin based oral sustained release nanoparticulate drug delivery system, *Indian J. Pharm. Sci.*, 2006, 68, 479-484.
17. Chowdary K.P.R., Rao Y.S., Mucoadhesive microcapsules of glipizide : Characterization, in vitro and in vivo evaluation, *Indian J. Pharm. Sci.*, 2006, 68, 479-484.
18. Chowdary K. P. R., Rao N. K., Malathi K., Ethyl cellulose microspheres of glipizide : Characterization, in vitro and in vivo evaluation, *Indian J. Pharm. Sci.*, 2004, 66, 412-416.



CONSUMER BEHAVIOUR DURING A CRISIS: THE IMPACT OF COVID-19 ON FOOD CONSUMPTION PATTERNS IN THE URBAN AREAS IN THE WESTERN PROVINCE OF SRI LANKA

Tharindu Udayanga¹
¹Institute of Policy Studies of Sri Lanka,

Segar Dhanukshaan²
²Department of Economics,
University of Colombo,

Krishanth Murugadas³
³Department of Economics,
University of Colombo,

ABSTRACT

Several studies have identified the substantial influence of crises on the changes in food consumption behavior in various economies. This research examines the impact of the COVID-19 pandemic on food consumption patterns of the urban areas in the Western Province of Sri Lanka. Further, the research investigates the difference in food consumption expenditure over two periods: before COVID-19 and during restrictions. The study was based on primary data collected from structured questionnaires. Simple Random Sampling method was adopted to select 52 households representing the urban areas of Western Province. Primary data were analyzed utilizing the Paired t-Test and Descriptive Statistical Methodologies. Even though there is no statistically significant difference in the food consumption expenditure over two periods, the research found substantial changes in the food consumption behavior and patterns especially during the restriction i.e. quarantine curfew/lockdown. Astonishingly, the study revealed that urban consumers have increased their spending on essential food items whilst reducing the spending on non-essential food items i.e. Beverages and fast food. Moreover, the majority of the consumers have reduced the consuming quantities to manage income shocks, food price increase, and food scarcity. The research concludes that the uncertainties arisen in the goods and services market and the labour Market have substantially changed the food consumption behavior during the crisis period. Policy makers may develop a social protection system to provide basic needs of the people during a crisis.

KEYWORDS: COVID-19, Food consumption behavior, urban consumers, income shocks, food price increase, and food scarcity

INTRODUCTION

The emergence of some critical incidents of economic, biological type- crises, armed conflicts, and natural cataclysms can significantly affect the activity of human society (Silvius, et al., 2020). Due to the spread of COVID 19, most of the economies are suffering several economic difficulties as well. The World Bank (2020a, 2020b) emphasizes that the impact of COVID-19 on commodities has been uneven. This can influence adversely consumer behavior in world economies. Most especially, the International Monetary Fund (2020a) depicts that low-income developing countries (LIDCs) are in a particularly challenging

situation to react to the socio-economic shocks of the COVID-19 pandemic. Most LIDCs cannot sustain their economies for long as large sections of the population live at near subsistence levels (IMF 2020a). Some constraints make it problematic to reach the needy such as large informal sectors, weak institutional capacity, and incomplete registries. Further, the fiscal resources of the government are inadequate to facilitate them. Recent surveys conducted across 20 African countries reveal that more than 70 percent of the people in the African countries are at risk running out of food during a lockdown (IMF, 2020b, 2020c).



For Sri Lanka, a high 68% of the workforce are in informal employment and with only 29% of the country's workforce covered by social protection, the risks of widening existing income disparities are elevated (Institute of Policy Studies, 2020). Thus, the informal community of the country faces substantial difficulties with the pandemic and considerable changes could be seen in their consumption pattern. Currently, more than 1.7 million temporary employees in the private sector are at the risk of facing drastic wage cuts and layoffs (Jayawardena, 2020). These wage cuts and job losses substantially cause a decline in the income level. The change of the income received for the consumers can significantly change the consumer decision making and their consumption patterns. Thus, examining the changes in consumer behavior, identifying the reasons for those changes, and formulating effective policies to overcome the consumers' difficulties would significantly assist to mitigate the negative impacts of the crisis on the market equilibrium.

The urban population in Sri Lanka raised at nearly 3.94 million people in the year 2020 (Statista, 2020). Around 23 percent of the workforce in urban areas has engaged in informal sector enterprises. The percentage of living in informal settlements in urban areas is around 28 percent (Perera, 1994). Moreover, the external sources mostly supply the foods in urban areas. As a consequence of these circumstances, urban areas in Sri Lanka are more vulnerable to income shocks and supply chain interruptions that could arise with the prevailing pandemic. Thus, there is a substantial possibility of occurring consumer behavioral changes in urban areas of the country within the crisis. Therefore, the main purpose of the current study is to study the consumer behavior of urban people during the crisis. The urban areas in the Western Province of Sri Lanka was selected for this study. The objectives of the current study are as follows:

- i. To examine whether there are substantial changes in consumer behavior in the urban areas of Sri Lanka during the crisis.
- ii. To propose effective policy recommendations which can mitigate the negative impacts on urban consumer behavior during a crisis.

LITERATURE REVIEW

Consumer behavior is the process of groups or individuals making their purchase decisions and choices to satisfy needs. Buying behavior depends on factors such as demographics, earning, sociocultural factors (Drakopoulos 2008, Kar, 2010). Consumer behavior is also defined as a combination of consumer's buying behavior and awareness coupled

with external factors and motivators which results in a change (Kar, 2010). The socioeconomic impacts of the crisis are more consequential in the developing nations where the communities below the poverty line are being severely affected as the demand for labour falls whereas the prices of essential food items exponentially rise whilst social services are cut (Amalia and Ionut 2009, Arnould, 2002). It is more pellucid that consumer buying behavior before the crisis was not based on thorough decision-making processes. However, with the effects of the crisis a change in consumption patterns can be observed. This had taken a toll on inflation, purchasing power, unemployment, and a decrease in wage rates.

Considering the supply side, primarily, the negative effect of the crisis restricts the mobility of people, leads to the imposition of border restrictions, employee absenteeism, quarantine curfews, and lockdowns. This contributes to labour shortages in food production by slowing harvests and cultivation (OECD, 2020). Secondly, limited access to the physical markets to sell food items and logistical disruptions in the supply chain has created significant interruptions in the food supply chain (HLPE, 2020), thereby resulting in unsold food items. This paved the way for food loss and waste of perishable products such as vegetables, fruits, dairy products, and other meat and fish items (FAO, 2020a, 2020b). In many countries, due to the supply interruptions, producers and farmers have been burying perishable food items as a result of supply chain disruption and falling consumer demand. Cappelli and Cini (2020) state that the COVID-19 pandemic has heavily impacted the local production of food and dismantled the short food supply chain across various product lines. Thirdly, even though the international food market supplies were effective during the pandemic (FAO, 2020a), protectionist measures and export restrictions in some countries including Sri Lanka have created food shortages thereby increasing instability in global food markets, and leading to an increase of world food prices, and ultimately setting up a global food crisis similar to the 2008 crisis (OECD, 2020). Similar to the Sri Lankan context, many countries have decreased meat and fish consumption as it could be possible hosts of the virus (FAO, 2020b) and in Sri Lanka, the Peliyagoda fish market infection cluster also lead to a stark reduction in the food consumption.

Focusing on the demand side, the consumer behavior, and the patterns of purchase and incurring of expenditure on food items and consumption has significantly changed. According to Beard-Knowland (2020) at the inception of the epidemic, the viral pathogenesis and its severity were limited. Hence, the



consumers focused on reaction-based panic buying to maintain buffer stocks to mitigate the risk of future shortages. Panic purchase of non-perishable food items (i.e., rice, wheat flour, pasta, canned foods, and frozen foods) have been observed throughout the world. Baker et al. (2020) state that consumers from the United States have increased their spending on food items during the pandemic in an attempt to stockpile food as essential food and nutrition intake is the most vital aspect. The majority of the consumers stockpile food items to reduce the number of shopping visits made to the physical markets, to mitigate the risk of exposure to the infection (Cranfield, 2020). It is also noted that the reactionary panic buying behavior of consumers may disturb the supply chain and have negative repercussions, such as an unusual increase in food prices, stock-out, food waste, over-consumption, and unequal distribution of food products and could ultimately impact vulnerable groups (i.e., poor and the

elderly) from access to essential food items (Wesseler, 2020). Since physically shopping at a grocery store has been limited, consumer buying behavior has drastically shifted to online shopping and online grocery delivery and pickup services (Deloitte, 2020). It is expected that E-commerce for food consumption gained continuous traction as a part of digitization (Deloitte, 2020).

CONCEPTUAL FRAMEWORK

The conceptual framework for this study was developed based on the Model of Consumer Behaviour for Foods introduced by Wierenga et al (1997) in “*Agricultural Marketing and Consumer Behaviour in a Changing World*”. The model expounds that three aspects namely (1) properties of food, (2) personal factors, and (3) environmental factors determine the consumers’ decision-making process.

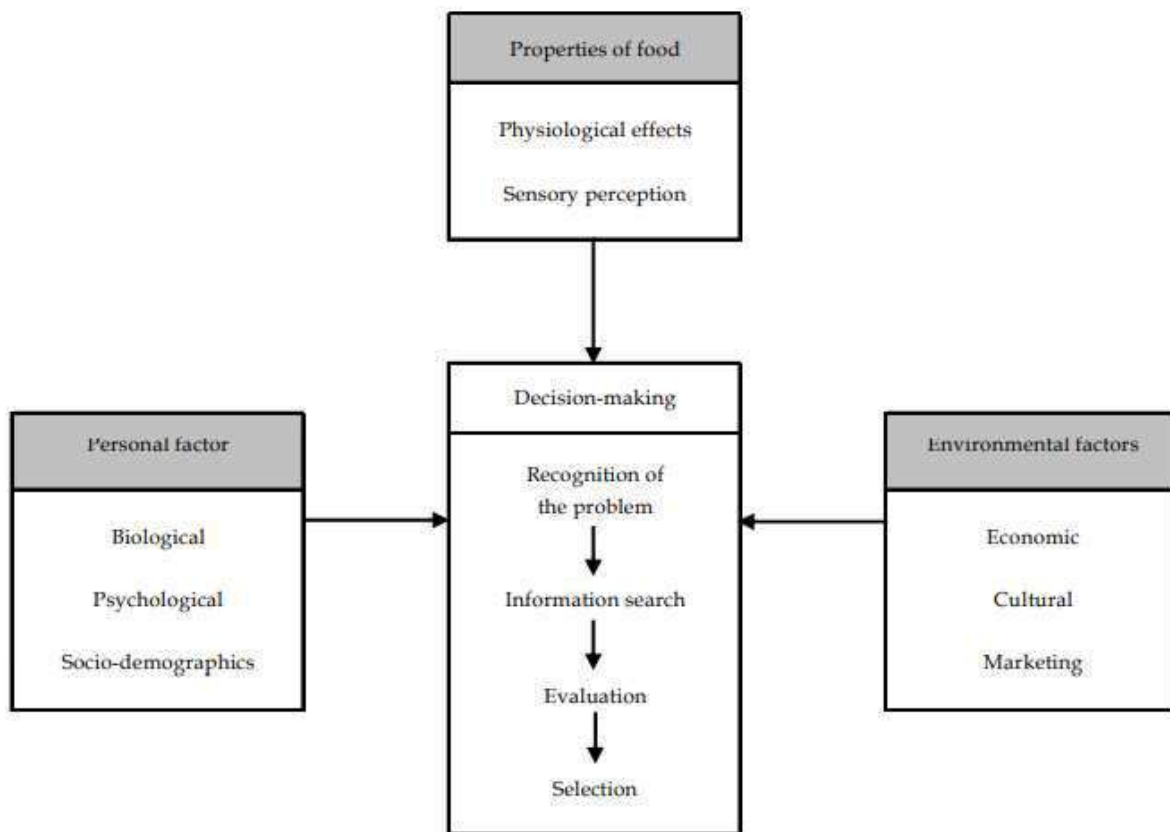


Figure: 01- Conceptual Framework

Source: Wierenga et al. 1997



The properties of the food aspect consist of two components namely, Physiological effects and Sensory perception. Physiological effects focus on reducing hunger which leads to satiation and intake of vital nutrients while Sensory perception emphasizes the influence of taste, smell, and the visual appearance (sensory impressions) of the food items to determine the consumption decision. The personal factor aspect consists of three components namely, Biological, Psychological, and Socio-demographics. The Biological and Psychological components indicate the importance of quality consciousness and consumer ethnocentrism. Social-demographics explains the impacts of consumers' income-level, size of the household, employment status, age, gender, and level of education (rational thinking) in the decision making.

The Environmental factors consist of three components namely economic, cultural, and marketing. The economic component indicates the comparison between the consumers' income and the price of food items (purchasing power). Secondly, the influence of culture in defining the food consumption patterns (how it is prepared, the rules and traditions) is explained. Thirdly, the Marketing component sets out the emergence of new consumers' buying behaviors and technological advancements in the market platforms i.e. E-commerce and mobile delivery services.

METHODOLOGY

This research was based on primary data. Data were collected from 52 households in the Western Province of Sri Lanka by using a structured questionnaire. The Simple Random Sampling method has been adopted for the study. The statistical methodologies adopted were the Paired t-Test and descriptive statistical methods. The Paired t-Test is used to examine whether the mean difference between the two sets of observations is zero. Thus, the purpose of employing a paired t-test in this research was to examine the presence of significant differences in monthly food consumption expenditures between the periods before COVID-19 and during the restrictions. These tests were employed by using STATA/SPSS data analysis software. Further, this study examined the changes in food consumption patterns and mean expenditures relevant to nine food types, namely (A) Rice, Wheat flour, Bread, Pasta and Noodles and Pulses i.e. Dhal and lentils; (B) Vegetables; (C) Fruits; (D) Meat/Egg/Fish/Dry Fish/Sprats and Seafood; (E) Milk and Milk-based products; (F) Oil and Fats based products; (G) Sweets based products; (H) Spices and condiments and; (I) Beverages and fast-food items.

DATA ANALYSIS AND DISCUSSION

The sample size is 52 households representing the Western Province of Sri Lanka. It is observed that 75 percent of respondents represented Colombo District while 17.3 percent and 7.7 percent of respondents represented Gampaha and Kalutara Districts respectively. 57.7 percent of the sample belongs to the age group between 25 to 35 years, whereas 1.9 percent of the sample belongs to the 55 to 64 years age group. It is pivotal to note that the sample selected for the study is from the labor force. It is also observed that there were no respondents from the age group between 65 and above which represents the dependency population.

Considering the monthly income levels, the majority of the sample represents the high-income level Rs.50, 000, and above. This is because studies show that urban areas of the country have the lowest poverty rate. Thus, 3.8 percent of the sample represents the low-income level below Rs.10, 000 per month. 48.1 percent holds permanent employment whereas temporary and contract modalities are 28.8 and 23.1 percent respectively. The highest respondents (86.5%) are from the service sector and 11.5 percent from the industry sector and the lowest respondents are from the agriculture sector (1.9%). As a whole, 80.8 percent of the sample belongs to the formal sector and 19.2 percent is from the Informal sector.

The majority of the urban community (53.8%) has strongly experienced a significant change in food consumption habits during the restrictions (Table 01). Few factors determine the significant change in food consumption habits. Out of which 61.5 percent accounts for "scarcity in food items", 59.6 percent account for non-availability of access to the market, 40.4 percent accounts for food price changes, and 38.5 percent for income shocks. It is observed that urban communities have experienced scarcity in food items during the restrictions. The top three scarce food types during the period were Fruits, Meat/Egg/Fish/Dry fish/Sprats and Seafood, and Spices and condiments (Table 01). It is presumed that the scarcity has occurred in fruit items because the cultivation is predominantly undertaken especially in the upcountry and low-country. As the fruit items are highly perishable, the imposed restrictions could have adversely impacted the availability for a longer period. Furthermore, the supply chain of Meat/Egg/Fish, etc. was interrupted due to the identification of COVID-19 clusters in the fish markets across the island. In addition to the above, the scarcity occurred due to the consumers' irresponsible consumption patterns. Moreover, disruptions that emerged in both export and import destinations due to the crisis, negatively influenced the occurrence of the



scarcity in food items. i.e. Turmeric. More specifically this scarcity has paved the way for the creation of the

black markets, lack of standards in production and has ultimately motivated to avoid consumption.

Table 01: Descriptive Statistics

Income Shocks During COVID – 19 Restrictions	<i>Experienced</i>					<i>Not Experienced</i>				
	53.8%					46.2%				
Access to the Physical Markets	<i>Received</i>					<i>Not Received</i>				
	53.8%					46.2%				
Changes in Monthly Consumption Habits	<i>Experienced</i>					<i>Not Experienced</i>				
	86.5%					13.5%				
Food Scarcity (%) During the COVID-19 Restrictions (According to Food Types)*	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	
	45.2	52.83	67.92	62.26	43.39	32.07	35.84	60.37	50.94	
Managing Consumption During the COVID-19 Restrictions	<i>Reduced Consumption</i>		<i>Online Banking</i>		<i>Brand Switching</i>		<i>Obtained Loans</i>			
	33.5%		23.43%		11.45%		3.125%			

Note: * (A) Rice, Wheat flour, Bread, Pasta and Noodles and Pulses i.e. Dhal and lentils; (B) Vegetables; (C) Fruits; (D) Meat/Egg/Fish/Dry Fish/Sprats and Seafood; (E) Milk and Milk-based products; (F) Oil and Fats based products; (G) Sweets based products; (H) Spices and condiments and; (I) Beverages and fast-food items.

Before the COVID-19 crisis, the mean expenditure value of the monthly food consumption of the urban community was Rs. 36, 321.67. During the restrictions in COVID-19, this value has increased to RS. 37, 236.46. Although there is Rs. 909.79 difference between the two periods, the Paired t-test confirms that this difference is not statistically significant (Table 02). The key implication of this finding is that the COVID-19 crisis has not significantly influenced to make a substantial difference in the consumers' monthly total food consumption expenditure. There could be several reasons for this. Although the community faced income shocks, generally they do not give up the amount that

they expend for foods, since foods are necessary items for consumption. Furthermore, the Government intervened to the economy to stabilize the food price fluctuations during the crisis. Due to these conditions, the urban community in the Western Province has maintained their monthly total consumption expenditure during the period of restrictions at the same-level like similar to the period before COVID-19. However, the study finds that the demand for environmentally friendly food items has declined during the COVID 19 restrictions. At the same time, when the lockdown was released the demand for such items has recovered in the urban areas.



Table 02: Results of the Paired t-Test for the mean differences of total food expenditure values between the periods, Before COVID-19 and During the COVID-19 Restrictions

Variable	Mean	Std. Error	Std. Deviation	95% Confidence Level	
Total Expenditure (Before COVID-19)	36326.67	3005.099	20819.94	30281.19	42372.15
Total Expenditure During COVID Restrictions	37236.46	4046.706	28036.4	29095.54	45377.38
Difference	-909.7917	2091.341	14489.24	-5117.028	3297.444
Mean Difference = Mean (Total Ex. Before – Total Ex. During t = -0.4350					
H0 : Mean (Difference) = 0					
H1 : Mean (Difference) < 0 Pr(T < t) = 0.3328		H1 : Mean (Difference) != 0 Pr(T > t) = 0.6655		H1 : Mean (Difference) > 0 Pr(T > t) = 0.6672	

However, differences can be seen in mean food consumption expenditure values between two periods on particular food types. There is a statistically significant difference between the mean values of the amount spent per month (Rs.) on Rice, Wheat flour, Bread, Pasta and Noodles, and Pulses i.e. Dhal and lentils before COVID-19 and during the restrictions (Table 03). Consumers have spent more on the above food items during restrictions than the period before COVID-19. As the Sri Lankan traditional food consumption pattern heavily relies on the above food items, a distinction can be observed. Before restrictions the working community in the urban areas of the Western Province, usually consume meals from restaurants and cafes, this also shows that the urban community does not necessarily consume home-cooked meals during work hours. However, with the imposition of restrictions, it is noted that the majority of the working community adapted to the “Work from Home” modality to follow the health guidelines of the Government. As a backdrop, the household consumption expenditure has been substantially increased.

Similarly, a statistically significant difference has been observed in the mean expenditure value of Beverages and Fast-food items (Table 04). The study reveals that urban consumers have comparatively expended lesser amounts for the above food items during the restrictions as opposed to the period before COVID-19. As the movements were restricted to access to the physical markets, the daily routine of the consumers has experienced a change. In addition to the above, urban consumers mainly prioritized their consumption for the necessary and essential food items rather than Beverages and fast-food.

Table 03: Results of the Paired t-Test for the mean differences in expenditure values of Rice, Wheat flour, Bread, Pasta and Noodles and Pulses i.e. Dhal and lentils between the periods, Before COVID-19 and During the COVID-19 Restrictions

Variable	Mean	Std. Error	Std. Deviation	95% Confidence Level	
A*	10322.92	944.7843	6545.658	8422.256	12223.58
A1**	11958.33	1200.697	8318.675	9542.842	14373.82
Difference	-1635.417	623.267	4318.121	-2889.268	-381.5651
Mean Difference = Mean(A-A1)				t = -2.6239	
H0 : Mean (Difference) = 0					
H1 : Mean (Difference) < 0 Pr(T < t) = 0.0058		H1 : Mean (Difference) != 0 Pr(T > t) = 0.0117		H1 : Mean (Difference) > 0 Pr(T > t) = 0.9942	

Note: * indicates Expenditure of Rice, Wheat flour, Bread, Pasta and Noodles and Pulses i.e. Dhal and lentils in the period of Before COVID – 19; ** denotes the Expenditure of Rice, Wheat flour, Bread, Pasta and Noodles and Pulses i.e. Dhal and lentils during the period of COVID – 19 restrictions.



Table 04: Results of the Paired t-Test for the mean differences in expenditure values of Beverages and Fast-Food Items between the periods, Before COVID-19 and During the COVID-19 Restrictions

Variable	Mean	Std. Error	Std. Deviation	95% Confidence Level	
I*	3489.583	618.4891	4285.018	2245.344	4733.823
I1**	2114.583	469.2375	3250.973	1170.599	3058.567
Difference	1375	371.911	2576.675	626.8115	2123.188
Mean Difference = Mean(I-I1)					t = 3.6971
H0 : Mean (Difference) = 0					
H1 : Mean (Difference) < 0 Pr(T < t) = 0.9997		H1 : Mean (Difference) = 0 Pr(T > t) = 0.0006		H1 : Mean (Difference) > 0 Pr(T > t) = 0.0003	

Note: * indicates Expenditure of Beverages and fast-food items in the period of Before COVID – 19; ** denotes the Expenditure of Beverages and fast-food items during the period of COVID – 19 restrictions.

According to the results of the paired t-Test, for the food items namely, Vegetables, Fruits. Meat/Egg/Fish/Dry Fish/Sprats and Seafood, Milk and Milk-based products, Oil and Fats based products, Sweets based products, Spices and Condiments, a substantial difference in the monthly mean expenditure value was not observed. This is because though the consumption amount has been reduced; consumers have consumed less quantity for a higher price. Due to the above reason, there is no significant difference in the aggregate consumption expenditure before and during the restrictions.

It is revealed that the majority of the urban community reduced consumption as an alternative action to overcome the constraints namely income loss/decrease (34.61%), increase in food item prices (36.53%), food scarcity in the market (30.76%). The study also found that 38.46 percent of the respondents opted for online shopping methods. Apart from this, a considerable number of consumers have also shifted to alternative patterns of consumption i.e. utilization of home-grown products as a convenient and safety measure. Due to the increased food item prices, scarcity, and income shocks, it is evident that the majority of the consumers have reduced consumption. Therefore, the required nutrition-level may not be attained. Further, this can lead to a threat to food security. Therefore, Sri Lanka will have to make relevant policy decisions to overcome these shortfalls.

Most especially the key findings of the study relate to the Model of Consumer Behaviour for Foods. The study reveals the substantial influence of physiological effects, socio-demographic factors, and environmental factors (i.e. economic, cultural, and marketing). The research found a significant increase in the monthly expenditure for Rice, Wheat flour, Bread, etc., and a significant decrease in the food category of

Beverages and Fast-food. The physiological effect and cultural factor directly related to the increase in main meals i.e. Rice, wheat flour, etc. which contain high calories compared to Beverages and Fast-food. Furthermore, the socio-demographic factors such as income level, size of the household, employment status, age, gender, and level of education have substantially determined the consumer behavior and decision making during the crisis. Moreover, the economic component led to the reduction in consumption of several food items to manage the increase in prices. This reflects the behavior of consumers in reacting to a decrease in purchasing power. In wake of the restriction of access to the physical markets, the promotional campaign towards E-commerce platforms and mobile food delivery services had significantly arisen. This can be observed as a direct impact of marketing strategies via social and mainstream media.

CONCLUSION AND RECOMMENDATIONS

The study concludes that the COVID-19 pandemic has substantially influenced the occurrence of uncertainties across the goods and services market and the labour market. The food price increase, food scarcity, and supply chain interruptions are the key uncertainties that arisen in the goods and services market whilst the occurrence of income shocks is the key uncertainty in the labour market. This study further concludes that the above uncertainties have substantially influenced the changes in food consumption behavior even though a significant difference was not observed in the aggregate food consumption expenditure during the restrictions.

Focusing on the goods and services market, it is recommended to sustain food transportation as an essential service to address market scarcity and supply



chain interruption regardless of a crisis. Furthermore, this research suggests enhancing the food storing capacities as the Western Province in Sri Lanka records the highest population density. The findings of the study further highlight the necessity of practicing responsible consumption behavior neglecting panic demand as well. As the consumers in Western Province are shifting towards technology inherited E-commerce based buying behavior, it is recommended to further strengthen and regulate this platform. Moreover, promoting mobile food delivery services will be an effective alternative option during such a crisis. Data speeds, efficiency and rate might have a significant impact on goods and services distribution and the economic development. This area might be a potential area for future research.

In terms of the labor market, implementing a holistic social protection scheme is pivotal due to the considerable number of vulnerable populations in the urban informal sector in the Western Province. Yet, these schemes should be developed with traits of accuracy and authenticity. The state entities are responsible to monitor and evaluate the progress of the implemented schemes. During crises, the Government should intervene to reduce market uncertainties by imposing effective and productive price control mechanisms to manage the market disequilibrium.

REFERENCES

1. Amalia, P. and Ionut, P. (2009), "Consumers' reaction and organizational response in crisis context", *Uni. Of Oradea. The Journal of the Faculty of Economics*, 1(5), pp. 779-782.
2. Arnould, E., Price, L. and Zinkhan, G. (2002), "Consumers", (2nd ed.). McGraw-Hill, New York
3. Baker, S.; Meyer, S.; Pagel, M.; Yannelis, C. (2020) *How Does Household Spending Respond to an Epidemic? Consumption during the 2020 COVID-19 Pandemic*. NBER Working Papers 26949, National Bureau of Economic Research, Inc. 2020. Available online: <https://ideas.repec.org/p/nbr/nberwo/26949.html> (accessed on 15 November 2020).
4. Beard-Knowland, T. (2020) *The Impact of Covid-19 on How We Eat*. 2020. Available online: https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-05/impact_of_covid-19_on_how_we_eat_ipsos_sia.pdf (accessed on 15 November 2020).
5. Cappelli, A.; Cini, E. (2020), *Will the COVID-19 pandemic make us reconsider the relevance of short food supply chains and local productions?* *Trends Food Science Technology*, 99, 566–567.
6. Cranfield, J.A.L. (2020), *Framing consumer food demand responses in a viral pandemic*. *Canadian Journal of Agricultural Economics*, 68, 151–156.
7. Deloitte. M (2020), *How Modernized IT Systems Can Help Businesses Thrive in a Post-Pandemic World*. Available online: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-how-modernized-it-systems-can-help.pdf> (accessed on 14 July 2020).
8. Drakopoulos, S. (2008), "The paradox of happiness: towards an alternative explanation", *Journal of Happiness Studies*, Volume 9, No. 2, pp.303-315.
9. Eckstein, D., Künzel, V., Schäfer, L. & Wings, M., (2020). *Who Suffers Most from Extreme Weather Events?*, Berlin: Germanwatch.
10. FAO. (2020a), *Food Outlook—Biannual Report on Global Food Markets*; FAO: Rome, Italy.
11. FAO. (2020b) *Mitigating Risks to Food Systems during COVID-19: Reducing Food Loss and Waste*; FAO: Rome, Italy.
12. HLPE. (2020), *Interim Issues Paper on the Impact of COVID-19 on Food Security and Nutrition (FSN) by the High-Level Panel of Experts on Food Security and Nutrition (HLPE)*; FAO: Rome, Italy.
13. IMF, (2020a). *COVID-19: Without Help, Low-Income Developing Countries Risk a Lost Decade*, IMF, Washington DC.
14. IMF, (2020b). *Sub-Saharan Africa's Difficult Road to Recovery*, IMF, Washington DC.
15. IMF, (2020c). *Pandemic Persistence Clouds Latin America and Caribbean Recovery*, IMF. Washington DC.
16. Institute of Policy Studies, (2020). *Pandemics and Disruptions: Reviving Sri Lanka's economy beyond COVID-19*, Daily FT.
17. Jayawardena, P., (2020). *COVID-19 and Sri Lanka's Labour Market Gaps: Permanent Protection for Temporary Employees*, Talking Economics, IPS.
18. Kar, M. (2010), *Consumer behavior over the last 25 years*, *Oxirm Research Themes*, Oxford Institute of Retail Management, *The Retail Digest*, pp. 46-53.
19. OECD. (2020) *COVID-19 and the Food and Agriculture Sector: Issues and Policy Responses*; OECD: Paris, France.
20. Perera, L., (1994). *Relationship between Urban population in Sri Lanka from 2011 to 2020*,
21. Silviu, S., Riana, R. I., Sapiria, V. & Bratovenanu, B. D., (2020). *Consumer Behaviour in Crisis Situation. Research on the Effects of COVID-19 in Romania*. *Annals of "Dunarea de Jos"*.
22. Statista, (2020). *Urban population in Sri Lanka from 2011 to 2020*. [Online] Available at <https://www.statista.com/statistics/603515/sri-lanka-urban-population/#:~:text=In%202020%2C%20the%20urban%20population,in%20urban%20areas%20in%202021>.
23. Vodopivec, M., (2006). *Sri Lanka: Strengthening Social Protection*, World Food Programme, [Online] Available at:



<https://www.wfp.org/countries/sri-lanka> [Accessed 25 April 2020].

24. Wierenga, B., van Tilburg, A., Grunert, K.G., Steenkamp, J.-B.E.M., Wedel, M. (1997) *Agricultural Marketing and Consumer Behaviour in a Changing World*, Springer
25. Wesseler, J. (2020), *Storage Policies: Stockpiling Versus Immediate Release*. *Journal of Agricultural and Food Industry Organization*. 18, 1–9.
26. World Bank, (2020a). *Impact of COVID-19 on Commodity Markets Heaviest on Energy Prices; Lower Oil Demand Likely to Persist Beyond 2021*, The World Bank.
27. World Bank, (2020b). *Three ways Sri Lanka can deal with COVID 19 induced poverty*, United Nations. *Policy Brief: The Impact of COVID-19 on Food Security and Nutrition*; United Nations: New York, NY, USA.



ABOUT BASIC RULES, TYPES AND ELEMENTS OF LEGAL TECHNIQUE

Berdiyarov Shukhrat Namazboevich

Acting Professor of the Department of
General Theoretical Legal Disciplines of the
Military-Technical Institute of the National Guard of
the Republic of Uzbekistan, Doctor of Law

ABSTRACT

This article theoretically analyzes the scientific positions on the basic regulations, rules, types and elements of legal technique as a part of the legal action. From the analysis it is possible to ensure that the legal machinery has both scientific and practical significance. To date, comparison of legal technique with other legal sciences, leads to the conclusion that the organic connection and interdependence between them. Legal entity (reality), is composed of many parts and small industries, depending on their availability and the degree of the study also divided and jurisprudence.

KEY WORDS: *legal activities, legal activities, the implementation of law, application of the law, legal act, jurisprudence, legal advice, legal instrument, rules of legal technique, types of legal technique, elements of legal technique.*

DISCUSSION

Modern statehood has adapted to carry out public administration through documents. The emergence of computer technologies did not affect the disappearance of documents, but on the contrary, contributed to the emergence of their new types and forms - electronic. Paper and electronic forms of documents in their content can be of a different nature: text, graphic, videographic, photographic, visual, sound, etc. Legal documents are mainly written and reflected on paper [14].

Along with this, the question arises - which documents are legal? According to A.F. Cherdantsev, these include: 1) regulatory legal acts; 2) documents regulating relationships of an individual nature; 3) documents reflecting legal facts; 4) money and securities; 5) documents proving facts [14].

Another opinion of E.S. Shugrin. Thus, she divides legal documents into four groups: a) normative legal acts; b) law enforcement documents; c) contracts; d) other types of legal documents [14].

In our opinion, A.F. Cherdantsev more fully reveals the types of legal documents, while E.S. Shugrina points to their generalized form - "other types of legal documents". Legal documents have the peculiarity of creating, canceling or changing any rights and obligations. When developing all these documents, they are based on the provisions of legal technology.

Regarding the types of regulatory legal acts among a number of legal scholars [9,10] there are positions. In accordance with the Law of the Republic of Uzbekistan of December 24, 2012 "On regulatory legal acts", these include: a) the Constitution; b) laws; c) resolutions of the chambers of the Oliy Majlis; d) decrees, decisions and orders of the President; e) resolutions of the Cabinet of Ministers; f) orders and decisions of ministries, state committees and departments; g) decisions of local government bodies.

From the above, it can be seen that regulatory legal acts have their own different types, which have their own peculiarities in the content and scope of regulation of social relations. The types of subjects of regulatory legal acts, methods, means and rules for their preparation are also different. Such methods, means and rules constitute the structural elements of legal technology.

The invaluable importance of legal technology in the development of laws, which is one of the most important and basic types of regulatory legal acts. Lawmaking as an integral part of lawmaking is based on the relevant provisions of legal technology.

The purpose of legal technique, as noted above, is to ensure that the legal document is perfect. To achieve this goal, she sets herself a number of important tasks, a list of which is disclosed in the legal literature [15]. These tasks



include, for example, the quick and high-quality preparation of legal documents, the introduction of amendments and additions to them, the recognition as completely or partially invalid, the provision of concreteness, brevity and clarity of the statement of provisions, etc.[8]

For a closer representation of the goals and objectives of legal technology, you should pay attention to its rules, forms and structural elements. So, N.A. Vlasenko divides the general rules of legal technology into five groups: 1) requisite requirements (rules for external design); 2) meaningful rules; 3) structural rules; 4) language requirements; 5) logical requirements [1].

Unlike N.A. Vlasenko, the position of Yu.A. Tikhomirov, who divides the rules of legal technique into six interrelated groups: 1) cognitive and legal rules; 2) regulatory and structural rules; 3) logical rules; 4) language requirements; 5) documentary and technical rules; 6) procedural requirements [11].

According to T.V. Kashanina, substantive legal technique includes the following groups of rules: 1) rules for achieving social adequacy of law (substantive rules); 2) the rules for ensuring the logic of law; 3) structural rules (internal form of a legal document); 4) language rules; 5) formal (requisite) rules; 6) procedural rules [3].

In our opinion, the rules of legal technique T.V. Kashanina grouped them relatively fully and specifically. In fact, its classification is based on the classification of N.A. Vlasenko, in contrast to whom T.V. Kashanin, being in solidarity with Yu.A. Tikhomirov, emphasizes "procedural rules".

Agreeing with the opinion of T.V. Kashanina, as the seventh rule of legal technique, we can recognize its prognostic feature put forward by I.T. Tulteev [12].

So, we will briefly analyze each rule of legal technique, considering its peculiar features.

1. The *rules of legal technique regarding the content* presuppose that the legal document corresponds to social reality. Since any legal activity occurs precisely within the framework of social reality. Due to the fact that legal activity is associated with people, the subjects carrying it out should pay special attention to the correct content of this activity. In this case, public relations will be regulated correctly, and legal relations will correspond to a legal document.

2. The *rules of logic*, in our opinion, are expressed in two aspects: first - the definition of the most acceptable direction of regulation of social relations, providing for the effective implementation of legal activities; the second is to ensure the internal logical structure of a legal document.

3. *Structural rules*. Legal activity is an activity that takes place in a specific system. In this

regard, legal technique manifests itself systemically as an interconnected sequential process. The regulation of social relations is carried out in a certain sequence. On this basis, a legal document also has a peculiar structure, in most cases determined by regulatory legal acts.

4. *Language rules* are important in the legal activities carried out for people. For this reason, any legal document must be human-readable, specific, concise and meaningfully correct.

5. *Formal (requisite) requirements*. Even if these rules do not affect the content of a legal document, in many cases its legal force and peculiarity are determined precisely by the details. Details provide information about the limits of the document, its subjects and many other issues.

6. *Procedural rules* assume a systematic process of developing a legal document. The preparation of a document in some cases should be scientifically grounded, practically tested and thoughtfully creative process. During this process, the legal document is brought to completion in accordance with the requirements of the legal technique.

7. Conventionally, the *prognostic feature of legal technique* can be considered as a separate aspect. According to I.T. Tulteeva, like any other part of lawmaking, legal technique also "looks ahead", setting the goal of creating legal norms. The main task of legal technique is to correctly and completely "introduce" the needs of the legal system into the content of a legal document, to accurately reflect the decisions of the subject of lawmaking in its text. And this cannot be achieved without the use of certain forecasting methods. Forecasting tasks of legal technique answer the following questions: what branch of public relations should be regulated; what concepts and terms are necessary for the settlement of these relations; which method is more appropriate for the legal regulation of these relations, what will be the construction of legal norms and the legal document as a whole; how such relations are regulated in foreign legal systems; what conflicts or shortcomings may arise when introducing the envisaged legal novelty into practice; what changes are expected in the legal system as a result of the adoption of the draft document [13].

In reality, all these rules are inextricably linked with each other, the first presupposes the second. All general rules of legal technique serve to implement the following: ensuring a logical relationship between sentences and terms of a legal document; determination of the correct construction of a legal document from the position of the form; correct use of legal terms; exclusion of repetitions of legal norms, gaps in the regulation of certain social relations; determination of the type of document regulating public relations, etc.



According to VN Kartashov, legal technique is divided inheriting types: legislative, enforcement (pravorealizatsionnaya), interpretational, pravosistemo forming, judicial, investigative, prosecutorial, and so forth. [4]

Without joining this position, T.V. Kashanina notes: "Firstly, the specialization of legal activity is likely to increase, since social life is constantly becoming more complicated. The list of types of legal techniques is thus incomplete. In addition to those indicated, it can include the technique of conducting an inquiry, examination, execution of a court decision, carrying out work to prevent delinquency among minors, concluding contracts, assigning pensions, registering and paying benefits to the unemployed, lawyer, notarial techniques, etc. Secondly, legal documents prepared in the implementation of some types of legal work have similarities. So, an inquiry officer, an investigator, and a judge dealing with gross legal pathology (commission of crimes) must act accurately and be especially scrupulous when drawing up legal documents. In addition, they act on behalf of the state, and this fact is seen through the details of their legal acts. The common thing that is inherent in various law enforcement documents allows them to be combined into one group" [5].

Continuing his thought, T.V. Kashanina divides the types of legal techniques into the following six groups: 1) law-making technique; 2) the technique of publishing normative acts; 3) the technique of systematizing normative acts; 4) interpretation technique; 5) law enforcement technique; 6) law enforcement technique [5].

Such a grouping of types of legal technique seems to be the most complete in relation to the classification of V. Kartashova, to a certain extent reflecting its essence. However, in this grouping there are some controversial aspects: firstly, in the above 2, 3 and 4 points of the classification, the author linked the types of legal technique only with normative acts, in reality, legal technique is manifested in all legal activities. Secondly, the law enforcement technique at the moment also covers the law enforcement technique, that is, according to the generally accepted provisions of the theory of state and law [2], law enforcement is considered an integral part of the implementation of the law, one of its forms. The author divides them into separate groups.

Legal technology has a complex structure, which, in our opinion, consists of the following elements:

1. Depending on the volume: the technique of drawing up international documents (agreements); legislative technique; the technique of drawing up by-laws (decrees, orders, resolutions, orders, etc.); technique for the development of

individual documents for the implementation of the right.

2. Depending on the tasks: the technique of consciousness of legal documents; technique of publishing legal documents; technique for making changes and additions to legal documents; technique for organizing legal documents; technique for eliminating legal contradictions; technique for interpreting legal documents; a technique for completing legal gaps.

Thus, based on social needs and the general policy of the state, the legal technique contains the requirements and rules for creating, publishing a legal document, making amendments and additions to it, systematizing, implementing, eliminating legal contradictions and completing legal gaps, manifesting itself as an inseparable part legal activity.

LIST LITERATURES

1. Власенко Н.А. Правила законодательной техники в нормативных правовых актах субъектов Российской Федерации // Законотворческая техника современной России: состояние, проблемы, совершенствование: Сборник статей. Т.1. – Н. Новгород, 2001. – С. 170-183.
2. Давлат ва ҳуқуқ назарияси: Дарслик / Х.Т.Одилқориев, И.Т.Тулътеев ва бошқ.; проф. Х.Т.Одилқориев таҳрири остида. – Тошкент.: Ўзбекистон Республикаси ИИВ Академияси, 2011. – Б. 310. Исломов З.М. Давлат ва ҳуқуқ назарияси. – Т., 2007. – Б. 789.
3. Кашанина Т.В. Юридическая техника: Учебник. – 2-е изд., пересмотр. – М.: Норма: ИНФРА-М, 2011. – С. 76.
4. Карташов В. Н. Юридическая техника, тактика, стратегия, технология (к вопросу о соотношении) // Проблемы юридической техники: Сборник статей / под ред. В. М. Баранова. – Н. Новгород, 2000. – С. 12.
5. Кашанина Т. В. Юридическая техника: Учебник. – 2-е изд., пересмотр. – М.: Норма: ИНФРА-М, 2011. – С. 93.
6. Нерсесянц В.С. Ҳуқуқ назарияси. – Т.: «Адолат», – 2003, –Б. 108.
7. Проблемы юридической техники. Сборник статей // Под.ред. В.М. Баранов. – Н.Новгород, – 2002. – 823 с.
8. Одилқориев Х.Т., Тулътеев И.Т. Икки палатали парламент. – Т.: Ўзбекистон Республикаси ИИВ Академияси, 2005. – Б. 166-168.
9. Одилқориев Х.Х. Ўзбекистон Республикасининг қонунчилик тизими. – Т., 2008. – Б. 69–70.
10. Саидов А.Х., Таджиханов У.Т., Одилқориев Х.Т. Давлат ва ҳуқуқ асослари. – Т., 2002. – Б. 40;
11. Тихомиров Ю.А. Законодательная техника: понятие и элементы // Законодательная техника: Научно-практическое пособие. – М., 2000. – С. 9.



12. Тультеев И.Т. *Правотворческая деятельность и прогнозирование / Отв. ред. Х.Т. Адълқариев. – Т.: Академия МВД Республики Узбекистан, – 2008. – С. 149-160.*
13. Тультеев И.Т. *Правотворческое прогнозирование: теория, методология, практика: Автореф. дис. ... д-ра юрид. наук. – Т., 2009. – С.33, 95.*
14. Черданцев А.Ф. *Теория государства и права. – М., 1999. – С. 11, 362–364.*
15. Қонун ижодқорилиги ва қонунчилик техникаси: назария ва амалиёт муаммолари. *Семинар материаллари / Масъул муҳаррир: Ф.Ҳ. Отахонов. – Т.: ТДЮИ, – 2005. – 171 б.;*



SOCIAL MEDIA ADDICTION AND ACHIEVEMENT IN HISTORY AT THE HIGH SCHOOL LEVEL

Sr. Jackulin

Ph. D Research scholar,
Dept. of Education,
Bharathidasan University,
Tiruchirappalli

Dr. A. Edward William Benjamin

Professor & Head,
Dept. of Education,
Bharathidasan University,
Tiruchirappalli

ABSTRACT

This article focuses on the theme of social media addiction and achievement in history at the high school level by adopting survey method with a sample of 510 students. The main objective of this study is to find out how the social media affect the achievement in history at the higher secondary level. Also this study has proved that there exists a positive correlation between social media addiction and achievement in history at the high school level. Hence this piece of research throws light on the social media addiction and achievement in history at the high school level.

INTRODUCTION

Social media plays a vital role in the sphere of all aspects in every body's life. It is placed as the first among all facilities for sophisticated life in the twenty first century. It predominantly occupies all age group from children to age old people. Especially teenagers use social media for all the time for everything by proper usage of social media it will help us to do things on time. It may also be the reason for lack of concentration in their studies. Procrastination can be overcome with regular study habits and improving one's study habits can become the key to better studying. Being organized and having homework routines are the most important things in helping a child/student develop good study habits.

NEED AND SIGNIFICANCE OF THE STUDY

The word "Social media" kindles the children's interest in knowing something they like more. Sometime it helps as source of knowledge about everything across the globe. It transmits the message of all types to every nook and corner of the world in a fraction of second. Social media helps school students as ready reckoner for instant reference; otherwise they have to go for reference to a scholarly people or various dictionaries, and hard copies of books. Social media like whatsapp, Instagram, twitter, facebook, byjus, YouTube, newspaper, etc. are inseparable from the life of men.

Thus the topic is entitled as "Social Media addiction and Achievement in History at the High School Level".

OBJECTIVES OF THE STUDY

1. To find out whether there is any significant relationship between Social media addiction and achievement in history at the high school level
2. To find out whether there is any significant difference between social media addiction and achievement in History at the high school level with respect to Gender.
3. To find out whether there is any significant difference between social media addiction and achievement in History at the high school level with respect to locality.

METHOD OF STUDY

This study adopts Normative Survey method

Research Tools

The following research tools will be adopted

1. Social Media Addiction Scale constructed and validated by CengizSahin (2018)
2. Achievement test

Sample of the study

Five hundred and ten ninth standard students were selected using random sampling technique from



various schools of Thiruchirappalli district for this study.

Statistical Techniques Used

This study utilizes descriptive, differential and correlation analysis

Testing of Hypotheses

Hypothesis 1

There is no significant relationship between Social media addiction and achievement in history at the high school level

variables	r	Table value
Social media addiction and achievement in history	0.84	0.139

The correlation between social media addiction and Achievement in history at the high school level is 0.84. The calculated 'r' value 0.84 is greater than the table value 0.139 at 0.05 level of significance. Hence the hypothesis is rejected. Therefore there exists

a positive correlation between social media addiction and Achievement in history at the high school level.

Hypothesis 2

There is no significant difference between social media addiction and achievement in History at the high school level with respect to Gender.

Gender	N	Mean	S.D	't' value
Male	190	2.23	0.423	1.93
Female	320	2.31	0.463	

The mean score of Achievement in history are 2.23 and 2.31 for Male and Female students at the high school level. The standard deviation score for Male and Female students are 0.423 and 0.463 respectively. The calculated 't' value 1.93 is lesser than the table value 1.96 at 0.05 level of significance. Therefore the null hypothesis is accepted. It could be concluded that there is no significant difference between social media

addiction and achievement in History at the high school level with respect to Gender.

Hypothesis 3

There is no significant difference between social media addiction and achievement in History at the high school level with respect to locality.

Group of study	N	Mean	S.D	't' value
Rural	290	2.32	0.468	2.36
Urban	220	2.23	0.420	

The mean score of Achievement in history are 2.32 and 2.23 for the locality with rural and urban high school students. The standard deviation score for rural and urban students are 0.468 and 0.420 respectively. The calculated 't' value 2.36 is greater than the table value 1.96 at 0.05 level of significance. It is observed that the significant difference exists between the samples. Therefore the null hypothesis is rejected. It could be concluded that there is a significant difference between social media addiction and achievement in History at the high school level with respect to locality.

- Boys and girls of high school students do not differ significantly in social media addiction and achievement in History.
- Higher secondary students whose locality was rural and urban differ significantly in social media addiction and achievement in History.

Recommendations

After analyzing and listing down the findings, it is found that students are very much influences and affected by social media especially in their academic performance

FINDINGS

- 63 percentage of high school students had an average level of social media addiction.
- There exists a positive correlation between social media addiction and Achievement in history at the high school level.

- Students should develop the cognitive and intuitive ability to analyze how much what really matters in their life and how much of this virtual life translates to real life.
- The teachers should also help the students on how to make used of social media and also tell



them the advantages and disadvantages of social media so that they can be aware of what to do and what not to do.

3. Teachers should ensure they use the social media as a tool to improve the achievement of students in schools.

CONCLUSION

This study has revealed that majority of the high school students in Tiruchirappalli district use the social media for a variety of reasons and majority spend long hours on the social media. This has negative effects on their academic achievement. The implication is that as good as the social media may be, obsession and addiction to it have serious consequence on the academic life of the students.

BIBLIOGRAPHY

1. Burkhalter, Bettye.B (1983) *Impact of physical environment on academic achievement of high school youth*, *Journal of Human Ecology* Volume 23, 2008 - Issue 1
2. Carpenter, Robert Marshall (1990) *The relationship of self-concept and study habits of at risk students*, *Journal on Early Child Development and Care* Volume 188, 2018 - Issue 2.



SOCIAL MATURITY OF STUDENTS IN RELATION TO THEIR ACHIEVEMENT IN SCIENCE

¹**Sr. Fabiola Ricci**

¹Ph. D Research Scholar,
Bharathidasan University,
Tiruchirappalli,
Tamil Nadu (India)

²**R.Selvaganapathy**

²Ph. D Research Scholar,
Bharathidasan University,
Tiruchirappalli,
Tamil Nadu (India)

³**Dr. A. Edward William Benjamin**

³Research Supervisor,
Bharathidasan University,
Tiruchirappalli,
Tamil Nadu (India)

ABSTRACT

The present study undertaken to assess the Social Maturity among High School Students in relation to their Achievement in Science. The study was conducted over a sample of 340 students of 9th class selected from both rural and urban schools of Trichy District in Tamilnadu. A Social Maturity Scale (RSMS) as a tool to be used to measure the Social Maturity. Data were collected and investigated by using 't' test and Pearson correlation. The findings of the study revealed that no significant differences were observed between boys and girls in rural as well as in urban society on the basis of their Social Maturity. Positive correlation was found between Social Maturity and Academic Achievement of the High School Students.

INTRODUCTION

Both collectively and individually human persons need growth and development. During the process of social growth students learn to live up to the expectations of the Society. Childhood is an important period for developing social skills that which could help to build positive relationship with others, parents, friends, and relations maturely. It is very important to teach adolescents multy social skills during the adolescent period. Learning Effective social skills in schools improves students' confidence significantly. Having good social skills would build a good and healthy relationships among peer groups and this can reduce the levels of emotional mental stress during the examination. Good social skills are critical to successful functioning in life (Semrud 2007). These skills help students to make good choices to behave in different situations and it may be a great support in the overall personality development. To the extent in

which students cultivate good social skills can influence their academic performance and aid to achieve success in life. Socially skilled persons are always highly respected and rated top in the society. Therefore, with a proper guidance and directions students can easily attain social maturity. And such a person has an ability to make adjustment within himself and can reach out to others easily. This type of person is considered as socially matured person. Such a person who has behavioral attitudes like group adjustment, kindness and sympathy, courtesy and politeness, self- confidence and team spirit are highly respectable in the society. Thus, education is considered to be one of the most prevailing agencies in molding and shaping the future of the person. One of the main aim of education is to create a healthy integrated personality among students withemotionally intelligent and socially matured behavioral attitudes. No doubt such students will surely be anexceptional



achievers in their academic performances. Hence, the researcher intends to study the social maturity in relation to academic performance of high school students.

NEED AND SIGNIFICANCE OF THE PRESENT STUDY

Education is a life promoting process in the life of students. In this process of growth, students become socially balanced and learn to communicate responsibly. Socially matured students' will attain personal growth to lead a harmonious life in the society. Thus, it will be evident by an individuals' ability for making and keeping sound relationships with others. According to Hurlock(1950) "social development means attaining maturity in social-relations". Social relations are to be effective and meaningful, one needs to cultivate the social skills which enable him/her to deal with people in a diplomatic manner. The socially matured person must be conscious of the interest of others and appreciate them.

The objectives of education and the development of the physical, social, aesthetic and emotional qualities in the children are assessed only through the academic achievement. While in the process of assessment, the school plays an important role in development. And it contributes life disciplined attitudes and educational values towards the

development of a student's personality. This process becomes very important in the life of students to have a balanced Social maturity. Therefore, the need and significance in such a situation, social maturity has to adopt the norms of the society and live an established relationship in the present time.

OBJECTIVES

1. To find out the significant difference in social maturity with respect to gender in the high school students.
2. To find out the significant difference in social maturity with respect to locality in high school students.
3. To find out the correlation between social maturity and achievement of high school students.

HYPOTHESES OF THE STUDY

1. There is no significant difference in social maturity of male and female high school students.
2. There is no significant difference in social maturity of rural and urban high school students.
3. There is no correlation between social maturity and academic achievement of high school students.

METHODOLOGY OF THE STUDY

The present study adopted the survey method. 340 samples were collected using simple random sampling technique from ninth standard from 3 High schools from Trichy district.

ANALYSIS AND INTERPRETATION OF DATA HYPOTHESIS

There is no significant difference in social maturity of Male and Female high school students.

Sub variables	Group	N	Mean	S.D	D.f	't'-value	Level of significance
social maturity	Male	170	89.15	7.11	338	1.78	Not Significant at 0.05 level
	Female	170	90.45	6.73			

The calculated' value (1.78) is less than the table value (1.96)with corresponding to the 0.05 level of significance. Hence the hypothesis is accepted. Hence,it is concluded that there is no significant

difference in social maturity of male and female high school students.Thus the result reveals that the mean scores of Female (90.45) is higher than Male (89.15) in respect of their social maturity of high school students.

**HYPOTHESIS :2**

There is no significant difference in social maturity of Rural and Urban high school students.

Sub variables	Group	N	Mean	S.D	D.f	't'-value	Level of significance
social maturity	Rural	170	84.74	6.76	338	1.25	Not Significant at 0.05 level
	Urban	170	85.61	6.88			

The calculated t value 1.25 is less than 1.96 with the corresponding to the the 0.05 level of significance. Hence the null hypothesis is accepted. It is concluded that there is no significant difference in social maturity

of rural and urban high school students. Thus the result reveals that the mean scores of Urban areas (85.61) is higher than Rural areas (84.74) in respect of their social maturity of high school students.

HYPOTHESIS :3

There is no correlation between social maturity and academic achievement of high school students.

Sub variables	N	'r'-value	Level of significance
Social maturity and Achievement	340	0.432	Significant at 0.05 level

The hypothesis was tested by using correlation. The test was computed to find out whether there is any correlation between social maturity and academic achievement of high school students. The calculated r value 0.432 is greater than 0.098 with corresponding to the 0.05 level of significance. Hence the null hypothesis is rejected. Hence it is concluded that there is a high level positive correlation between Social maturity and Academic achievement of high school students.

responsibility to play the role to enhance. Hence, the socially matured student stands as a boon to the present society.

CONCLUSION

Social maturity is an important aspect in the development of a person. It is very essential in the life of students and the schools should give suitable inputs to improve their social maturity. Thus, it can help the students in making them socially matured and balanced. By appreciating their goals and supporting their attitudes to make free decision in order to enhance the academic achievement and social adjustment. For in today's world socially matured person is a need of the hour. A sound socially matured environment can help to achieve this status and perform a better academic performance in this regard, the schools have a greater

REFERENCES

1. Mangal, S.K. (2002) *Advanced Educational Psychology*, Prentice Hall of India, New Delhi.
2. Surjit Singh Puar (2012). *Role of Social Maturity in Academic Achievement of High School Students published by International Journal of Educational and Psychological Research, Volume 1, Issue 1, pp.6-11.*
3. Jyotsana, K., Shah (2012). *A study on Social Maturity, School Adjustment and Academic achievement among residential school girls. Published in Journal of Education and Practice, Vol. 3, No 7, PP. 69-80.*
4. Paur, S.S. & Thukral, P. (2012). *Role of social maturity in academic achievement of high school students. International Journal of Educational and Psychological Research, Vol. 1, Issue 1, 6-11.*
5. Kumar, D. and Ritu (2013). *Social Maturity of Senior Secondary School Students In Relation To Their Personality. A Publication of TRANS Asian Research Journals AJMR*



DRUGS DISSOLUTION ENHANCEMENT BY USING SOLID DISPERSION TECHNIQUE: A REVIEW

¹Bhavik Sharma

¹Department of Pharmacy,
Madhav University,
Rajasthan, India

ABSTRACT

The oral route of drug administration is the most common and preferred method of delivery due to the convenience and ease of ingestion. Oral bioavailability of a drug depends on aqueous solubility, drug permeability, dissolution rate, first pass metabolism. More than 40% new chemical entities (NCEs) developed in pharmaceutical industry are practically insoluble in water. Solid dispersion is a technique to enhance dissolution characteristics of drugs having poor water solubility. This technique can be applied to the preparation of solvent free solid dispersion. Supercritical fluids are those fluids whose temperature and pressure are greater than its critical temperature (TC) and critical pressure (TP). Various mechanism is involved in dispersion of solid technique. Various application is used for the dissolution of solid.

KEYWORDS: *solid dispersion, techniques, mechanism and application*

INTRODUCTION

The oral route of drug administration is the most common and preferred method of delivery due to the convenience and ease of ingestion. Oral bioavailability of a drug depends on aqueous solubility, drug permeability, dissolution rate, first pass metabolism. The solubility of a drug is a key determinant of its oral bioavailability and permeability. So, the major problems associated with drugs were its low solubility in the body fluids, resulting into poor bioavailability after oral administration. Poorly water-soluble compounds have solubility and dissolution related bioavailability problems. The “dissolution rate” is directly proportional to solubility of drugs.^{1,2,3}

More than 40% new chemical entities (NCEs) developed in pharmaceutical industry are practically insoluble in water. These poorly water-soluble drugs having slow drug absorption leads to inadequate and variable bioavailability and gastrointestinal mucosal toxicity.^{4,5,6}

Improvement in the dissolution rate of poorly soluble drugs after oral administration is one of the most crucial challenges in modern pharmaceuticals. So, the “pharmaceutical researchers” focuses on two areas for improving the oral bioavailability of drugs which includes:^{7,8,9}

- (i) Enhancing dissolution and solubility of poorly permeable drugs.
- (ii) Enhancing permeability of poorly permeable drugs.

So, the “Solid dispersion” has become an established solubilization technique for poorly water-

soluble drugs in order to enhance the dissolution and oral bioavailability.^{10,11} Although there are various techniques such as particle size reduction, micronization, physical modifications, complexation, solubilization, co solvency etc which can enhance solubility and dissolution rate of insoluble drugs but these techniques having some practical limitations, solid dispersion technique overcome these practical limitations.^{12,13}

Solid dispersion though have numerous advantages, despite the advantages offered by the solid dispersions, the marketed products based on this technology are few. This is generally related to the poor predictability of solid dispersion behaviour due to lack of basic understanding of their material product.^{14,15}

The term “Solid dispersion” is based on the concept that the drug is dispersed in an inert water-soluble carrier at solid state. By preparing solid dispersion, it is possible to provide better dispersibility and wettability of the drug by carrier material. Carriers which are soluble and dissolve in water at a faster rate are widely used in pharmaceutical industries. The increase in dissolution rate of the drug may be due to the increase in wettability, hydrophilic nature of the carrier and due to reduction in particle size. Fusion method has been used in order to prepare solid dispersion of active pharmaceutical ingredient by incorporating different carriers. So, several water-soluble carriers such as methyl cellulose, urea, lactose, polyvinyl pyrrolidone and polyethylene glycols and poloxamers etc are used as carriers for solid dispersion.^{16,17,18}

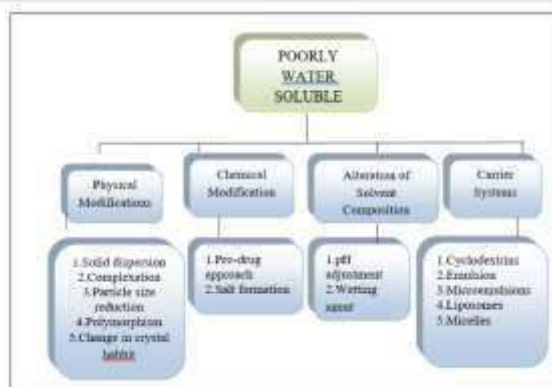


Fig 1. Approaches to increase solubility/dissolution

Ideal Candidate for Solid Dispersion

The poor solubility and low dissolution rate of poorly water-soluble drugs in the aqueous gastrointestinal fluids often causes insufficient bioavailability.^{19,20} Especially for class II (low solubility, high permeability) substances according to BCS, the bioavailability may be enhanced by increasing the solubility and dissolution rate of the drug in gastrointestinal fluids. For BCS class II drugs, rate limiting step is drug release from the dosage form and solubility in the gastric fluid and not the absorption, so increasing the dissolution rate in turn increases the bioavailability for BCS class II drugs.^{21,22,23}

TYPES OF SOLID DISPERSIONS

I. On the basis of carrier used.

II. On the basis of their molecular arrangement.

I. On the basis of carrier used: On the basis of carrier used solid dispersions can be classified into three generations:

a) First generation: First generation solid dispersions were prepared using crystalline carriers such as urea and sugars, which were the first carriers to be employed in solid dispersions. They have the disadvantage of forming crystalline solid dispersions, which were thermodynamically more stable and did not release the drug as quickly as amorphous ones.^{24,25,26}

b) Second generation: Second generation solid dispersions include amorphous carriers instead of crystalline carriers which are usually polymers. These polymers include synthetic polymers such as povidone (PVP), polyethylene glycols (PEG) and polymethacrylates as well as natural products-based polymers such as hydroxypropylmethyl-cellulose (HPMC), ethylcellulose, and hydroxypropylcellulose or starch derivatives like cyclodextrins.^{27,28}

c) Third generation: Recently, it has been shown that the dissolution profile can be improved if the carrier has surface activity or self-emulsifying properties. Therefore, third generation solid dispersions appeared. The use of surfactant such as inulin, inutec SP1, compritol 888 ATO, gelucire 44/14 and poloxamer407 as carriers was shown to be

effective in originating high polymorphic purity and enhanced in vivo bioavailability.^{29,30,31}

Biopharmaceutical Classification System of Drugs

The drug substances are categorized into 4 classes based on their solubility parameters and permeability to bio membranes. Such classification system is known as BCS system. The BCS is an experimental model that measures permeability and solubility under prescribed conditions. BCS is used as a tool in drug development in various pharmaceutical industries.^{32,33,34}

The BCS defines three dimensionless numbers; dose number, dissolution number, absorption number.

In BCS, class II drugs having low solubility and high permeability and BCS class IV drugs having low solubility and low permeability. So, solid dispersion technologies are particularly used for improving the oral absorption and bioavailability of BCS class II and BCS class IV.^{35,36,37}

Techniques for Solid Dispersion

There are various methods for solid dispersion: -

I. Fusion method

This method is also known as “melting method”. This method was first proposed by ‘Sekiguchi and Obi’ in 1961, to prepare fast release solid dispersion dosage forms. It involves the preparation of a physical mixture of drug and a water-soluble carrier, heating it until it melted. The melted mixture is then solidified and cooled rapidly in an ice- bath under vigorous stirring.^{38,39,40}

II. Solvent evaporation method

This method is used for the first to dissolving both the drug and carrier in a common solvent and then evaporate under vacuum to produce a solid solution. In this method, the physical mixture of the drug and carrier is added in a common solvent, which is evaporated until a clear, solvent free dried mass is left. Mixing at molecular level is preferred because this leads to optimal dissolution properties.^{41,42}

III. Melting solvent method (melt evaporation method)

In this method the drug is dissolved in a suitable liquid solvent and the solution is directly incorporated into the melt carrier (PEG) which is then evaporated until a clear, solvent free film is left. The film is further dried to a constant weight. This method has advantages of both the melting and solvent methods.^{43,44,45}

IV. Hot - melt extrusion

This method is essentially the same as the fusion method except that intense mixing of the components is induced by the extruder. In this method the physical mixture of drug and carrier is simultaneously melted, homogenized and then extruded and shaped as tablets, granules, pellets or powder etc.^{46,47,48}



V. Supercritical fluid technology (SFT)

This technique can be applied to the preparation of solvent free solid dispersion. Supercritical fluids are those fluids whose temperature and pressure are greater than its critical temperature (TC) and critical pressure (TP).^{49,50} The most commonly used supercritical fluids (SCFs) includes carbon dioxide, nitrous oxide, water, methanol, ethanol, ethane, n-hexane and ammonia. Carbon dioxide is most commonly used. In this technique the drug and the carrier are dissolved in a common solvent. When the solution is sprayed, the solvent is rapidly extracted by SCFs, resulting in precipitation of solid dispersion particles on the wall and bottom of the vessel.^{51,52,53}

VI. Electrospinning method

It is a process in which the solid fibers are produced from a polymeric fluid stream solution or melt delivered through a millimeter scale nozzle. This process involves the application of a strong electrostatic field over a conductive capillary attaching to a reservoir.^{54,55,56} The reservoir contains a polymer solution or melt and a conductive collection screen. This technique has tremendous potential for the preparation of nanofibers and controlling the release of biomedicines. It is simplest and cheapest process so it can be utilized for the preparation of solid dispersions in future.^{57,58,59}

VII. Melt agglomeration method

This technique has been used to prepare the solid dispersion where the binder acts as a carrier. Solid dispersions are prepared either by heating the binder, drug and excipients to a temperature above the melting point of the binder (melt-in procedure) or by spraying a dispersion of drug in molten binder on the heated excipients (spray-on procedure) using a high shear mixture.^{60,61,62} Melt-in procedure gives higher dissolution rates than spray-on procedure with poloxamer 188, PEG 3000 and gelucire 50/13 attributed to immersion mechanism of agglomerate formation and growth. Melt-in procedure also results in the homogenous distribution of drug in agglomerates.^{63,64,65}

VIII. Spray drying method

This method was initiated by atomising suspension or solution into fine droplets followed by a drying process. It is a useful method to obtain spherical particles and narrow distributed particles. In this method drug and carrier is dissolved in a volatile organic solvent with the help of magnetic stirrer to get a clear solution.^{66,67,68} Solvent is evaporated at 40°C under reduced pressure by using vacuum evaporator. Dry mass is obtained in a dessicator over anhydrous calcium chloride for 1-2 days depending upon the removal of solvent. The product is then crushed, pulverized and sieved through a suitable mesh size.^{69,70,71}

IX. Lyophilization technique

This is a molecular mixing technique where the drug and carrier are co dissolved in a common solvent, frozen and sublimed to obtain a lyophilized

molecular dispersion. In order to get porous, amorphous powder with a high degree of interaction between drug and cyclodextrins, lyophilization technique is considered suitable.^{72,73,74}

X. Use of surfactants

Adsorption of surfactants on solid surface can modify their hydrophobicity, surface charge, and also interfacial processes such as dispersion/flocculation, floatation, wetting, solubilization, detergency etc. surfactants have been reported to cause salvation/plasticization, manifesting in reduction of melting point of active pharmaceutical ingredients, glass transition temperature and combined glass transition temperature of solid dispersions. Because of these unique properties surfactants have attracted the attention of investigators for preparation of solid dispersions.^{75,76,77}

XI. Dropping Method

Dropping technique facilitate the crystallization of different chemicals, which is a new procedure for producing round particles from melted solid dispersions. A solid dispersion of a melted drug carrier mixture is pipetted and then dropped onto a plate, where it solidifies into round particles.^{78,79,80} The size and shape of the particles can be influenced by factors such as the viscosity of the melt and the size of the pipette. The dropping method does not use organic solvents and, therefore, has none of the problems associated with solvent evaporation technique. This method also avoids the pulverization, sifting and compressibility difficulties.^{81,82,83}

XII. Adsorption on Insoluble Carriers/ Fluidized Bed System/ Surface Solid Dispersion

The approach involves a fluidized bed coating system, wherein a drug-carrier solution is sprayed onto the granular surface of excipients or sugar spheres to produce either granules ready for tableting or drug-coated pellets for encapsulation in one step.^{84,85,86} The method has been applied for both controlled and immediate-release solid dispersions. Itraconazole coated on sugar sphere, is made by layering onto sugar beads a solution of drug and hydroxy propyl methylcellulose (HPMC) in an organic solvent of dichloromethane and ethanol.^{87,88} A solid solution of drug in HPMC is produced upon coating (co- solvent evaporation) and controlled drying of coated beads in a closed Wurster process. As this thin film dissolves in water or gastric fluid, the molecularly dispersed Itraconazole is released at supersaturated concentration. HPMC acts as a stabilizer to inhibit recrystallization of the Itraconazole. The supersaturated solutions of Itraconazole are sufficiently stable to allow for absorption and distribution.^{89,90}

XIII. Surface Active Carriers

A surface-active carrier may be preferable in almost all cases of the solid dispersion of poorly water-soluble drugs. Such carriers prevented the formation of the water insoluble surface layers by dispersing or emulsifying the drug in a finely divided state, which



resulted in a high surface area of the drug.^{91,92} The commonly used surface-active carriers in solid dispersions are Gelucire 44/14, vitamin E and Tween 80. One of the limitations of bioavailability enhancement by this method might be the low solubility of drug in available carriers.^{93,94}

XIV. Solvent Melt Method

In solvent melt technique, the drug is dissolved in an organic solvent and mixed with the melted carrier. The solvent is then evaporated and the resultant product is pulverized to the desired size. This technique has been particularly useful for thermo labile drugs with high melting point and it is only limited to drugs with a low therapeutic dose e.g. below 50 mg.^{95,96}

XV. Kneading Technique

In kneading technique, a mixture of drug and carriers are wetted with water and kneaded thoroughly for 30 minutes in a glass mortar. The paste is dried under vacuum for 24 hours and then passed through sieve no.60 and stored in a desiccator. Solid dispersion involving PVP and valdecoxib were prepared by kneading technique. This method cannot be applied to all poorly water-soluble drugs.^{97,98}

XVI. Inclusion Complexes

The improvement in solubilization ability within these water-soluble polymers/drug-included cyclodextrin (CD) aggregates requires less cyclodextrin to solubilise the same amount of drug, reducing the volume constraints present for non-aggregated CDs and increasing the range of delivery technologies available. Drug-CD complexes are commonly formed through either supersaturating a CD solution with drug and mildly agitating the solution for an extended period of time, or adding a mass of drug to a CD and solvent slurry and 'kneading' to produce a paste which is then dried and sieved. This method is not applicable to all poorly water-soluble drugs.^{99,100,101}

XVII. Direct Capsule Filling

Direct filling of hard gelatin capsules with the liquid melt of solid dispersions avoids grinding-induced changes in the crystallinity of the drug.^{102,103} This molten dispersion forms a solid plug inside the capsule on cooling to room temperature, reducing cross contamination and operator exposure in a dust-free environment, better fill weight and content uniformity was obtained than with the powder-fill technique.^{104,105} However, Polyethylene glycol was not a suitable carrier for the direct capsule-filling method as the water-soluble carrier dissolved more rapidly than the drug, resulting in drug-rich layers formed over the surface of dissolving plugs, which prevented further dissolution of the drug. A surfactant must be mixed with the carrier to avoid formation of a drug-rich surface layer.^{106,107,108}

XVIII. Spray drying

The solvent-based process uses organic solvent to dissolve and intimately disperse the drug and carrier molecule. In this methods drug and carrier is

dissolved in a volatile organic solvent with help of magnetic stirrer to get a clear solution and solvent is evaporated at 400 °C under reduced pressure by using vacuum evaporator, obtained mass is dried in a desiccator over anhydrous calcium chloride for 1-2 days depending on the removal rate of solvent.^{109,110} The product is crushed, pulverized and sieved through a suitable mesh number sieve. This technique was successfully employed for the preparation of solid dispersions of etoricoxib, carbamazepine and glibenclamide.^{111,112}

XIX. Particle Size Reduction

The bioavailability of low solubility drugs is often intrinsically related to drug particle size. By reducing particle size, the increased surface area may improve the dissolution properties of the drug to allow a wider range of formulation approaches and delivery technologies.^{113,114}

XX. Co-evaporates

In this technique, drug and copolymer are dissolved separately in same organic solvent and then these two solutions are mixed with further evaporation of solvent under either vacuum or using flash evaporation. Co-evaporates have mainly been employed for dermatological products.e.g., co-evaporates of hydrocortisone - PVP and betamethasone dippropionate- PVP.^{115,116,117}

XXI. Co-precipitate

Co-precipitation is a recognized technique for increasing the dissolution of poorly water soluble drugs, so as to consequently improve bioavailability.^{118,119} In this method nonsolvent is added drop wise to the drug and carrier solution, under constant stirring. In the course of the nonsolvent addition, the drug and carrier are co-precipitated to form micro particles. At the end, the resulted micro particle suspension is filtered and dried.^{120,121}

REFERENCES

1. Yanbin H, Guo-Wei D. *Fundamental aspects of solid dispersion technology for poorly soluble drugs. Acta Pharmaceutica Sinica B.* 2014; 4(1): 18-25.
2. Charman WN. *Lipids, lipophilic drugs, and oral drug delivery: some emerging concepts.*
3. *Journal of Pharmaceutical Sciences.* 2000; 89: 967-978.
4. Ketan T, Anuradha K, Savjani K. *Drug solubility: Importance and enhancement techniques. International Scholarly Research Notices Pharmaceutics.* 2012; 3(1): 15-20.
5. Leuner C, Dressman J. *Improving drug solubility for oral delivery using solid dispersions. European Journal of Pharmaceutical Sciences.* 2000; 50: 47-60.
6. Chiou WL, Reigelman S. *Pharmaceutical applications of solid dispersion systems. Journal of Pharmaceutical Sciences.* 1971; 60: 281-302.
7. Dhirendra K, Lewis S, Udupa N, Atin K. *Solid dispersions: a review. Pak Journal of Pharmaceutical Sciences.* 2009; 22: 234-46.



9. Sareen S, George M, Lincy J. Improvement in solubility of poor water-soluble drugs by solid dispersion. *International Journal of Pharmaceutical Investigation*. 2012; 2(1): 12-17.
10. Nirika B, Nirmala H. Current trends in solid dispersion: A review journal on drug delivery and therapeutics. *Journal of Pharmaceutical Sciences*. 2014; 4(3): 80-86.
11. Rinaki E, Valsami G, Macheras P. Quantitative biopharmaceutical classification systems: The central role of dose/ solubility ratio. *Pharm Research*. 2003; 20: 1917-1925.
12. Biswal S, Sahu J, Murthy PN, Giradkar RP, Avari JG. Enhancement of dissolution rate of Gliclazide using solid dispersions with PEG 6000. *American Association of Pharmaceutical Sciences*. 2011; 9(2): 563-570.
13. Chiou WL, Reigelman S. Pharmaceutical applications of solid dispersion systems. *Journal of Pharmaceutical Sciences*. 1971; 60: 281-302.
14. Dash V, Kesari A. Role of biopharmaceutical classification system in drug development program. *Journal of Current Pharmaceutical Research*. 2011; 5(1): 28-31.
15. Shargel L, Wu-Pong S, Andrew. *Applied Biopharmaceutics and Pharmacokinetics*. Fifth edition. 453-487.
16. Anand A, Lawrence X, Dale P, Barbara M. Dissolution testing for generic drugs: An FDA perspective. *American Association of Pharmaceutical Sciences*. 2011; 13(3): 328-335.
17. Amidon GL, Lenneras H, Shah VP, Crison JR. A theoretical basis for a biopharmaceutical drug classification: the correlation of in vitro drug product dissolution and in-vivo bioavailability. *Pharm Research*. 1989; 5: 413-420.
18. Singh DP, Dhaked U, Mishra AK. Solid Dispersion: Promising future: A review. *International Journal of Drug Formulation and Research*. 2010; 1(2): 65-82.
19. Kapoor B, Kaur R, Behl H, Kour S. (2012) Solid Dispersion: An Evolutionary Approach For Solubility Enhancement Of Poorly Water Soluble Drugs. *International Journal of Recent Advances of Pharmaceutical Research*, 2(2), 1-16.
20. Bhut V Z, Prajapati A B, Patel K N, Patel B A, Patel P A (2012) Solid Dispersion Strategy to Enhance Solubility: A Review Article *International Journal for Pharmaceutical Research Scholars (IJPRS)* ISSN No: 2277-7873
21. Rawat A, Verma S, Kaul M, Saini S. (2011) Solid Dispersion: A Strategy For Solubility Enhancement. *International Journal of Pharmaceutical and Technology*, 3(2), 1062-1099.
22. Patil R M, Maniyar A H, Kale M T, Akarte A M, Baviskar D T. (2011) Solid Dispersion: Strategy to Enhance Solubility. *International Journal of Pharmaceutical Sciences, Review and Research*, 8(2), 66-73.
23. Kadam V, Bharakhad V S, Jadhav S B, Kute A, Chintale AG. (2014) Role of Solid Dispersion In Improving Solubility And Dissolution Rate: A Comprehensive Review
24. *World Journal of Pharmaceutical research* Volume 3, Issue 1, 1841-1860
25. Serajuddin AT, Sheen PC. Improved dissolution of a poorly water-soluble drug from solid dispersions in PEG: polysorbate 80 mixtures. *Journal of Pharmaceutical Sciences*. 1990; 79: 463-464.
26. Argade PS, Magar DD, Soudagar RB. Solid Dispersion: Solubility enhancement technology for poor water-soluble drug. *Journal of Advanced Pharmaceutical Education and Research*. 2013; 4(3): 427-439.
27. Singh DP, Dhaked U, Mishra AK. Solid Dispersion: Promising future: A review. *International Journal of Drug Formulation and Research*. 2010; 1(2): 65-82.
28. Singh S, Baghel RS, Yadav L. A review of solid dispersion. *International Journal of Pharmaceutical Life Sciences*. 2011; 2(9): 1078-1095.
29. Das S, Roy S, Kalimuthu Y, Khanam J, Nanda A. Solid dispersion: An approach to enhance the bioavailability of poorly water-soluble drug. *International Journal of Pharmacology and Pharmaceutical Technology*. 2012; 1(1): 37-46.
30. Nirika B, Nirmala H. Current trends in solid dispersion: A review journal on drug delivery and therapeutics. *Journal of Pharmaceutical Sciences*. 2014; 4(3): 80-86.
31. Ford JL. The current status of solid dispersions. *Pharm Acta*. 1986; 61: 69-88.
32. Jia L, Feng C, Can Z, Qineng P. Use of polymer combinations in the preparation of solid dispersions of a thermally unstable drug by hot-melt extrusion. *ActaPharmaceuticaSinica B*. 2013; 3(4): 262-272.
33. Vyas V, Sancheti P, Karekar P, Shah M. Physical characterization of solid dispersion system of Tedelafil using poloxamer 407. *ActaPharmaceuticaSinica B*. 2009; 59: 450-461.
34. Kumar DP, Arora V. Solid Dispersion: A review. *Journal of Pharmaceutical and Science Innovation*. 2012; 1(3): 27-34.
35. Ahuja N, Kishore K, Garg A, Purohit S. Solid dispersion- preparation methods, pharmaceutical applications and evaluation techniques: a review. *International Journal of Pharmaceutical Sciences*. 2012; 1(2): 103-114.
36. Gibadli M. *Biopharmaceutics and pharmacokinetics*. Fourth edition. 146-163.
37. Sharma S, Jain CP. Solid dispersion: a promising technique to enhance solubility of poorly water soluble drug. *International Journal of Drug Delivery*. 2011; 3: 149-170.
38. Serajuddin AT. Solid dispersion of poorly water-soluble drugs: Early promises, subsequent problems and recent breakthroughs. *Journal of Advanced Pharmaceutical Education and Research*. 1999; 88: 1058-66.
39. Patidar K, Kshirsagar MD, Saini V, Joshi PB, Soni M. Solid dispersion technology: A boon for poor water soluble drug. *Indian Journal of Novel Drug Delivery*. 2011; 3(2): 83-90.
40. Sharma S, Jain CP. Solid dispersion: a promising technique to enhance solubility of poorly water soluble drug. *International Journal of Drug Delivery*. 2011; 3: 149-170.



41. Ahuja N, Kishore K, Garg A, Purohit S. Solid dispersion- preparation methods, pharmaceutical applications and evaluation techniques: a review. *International Journal of Pharmaceutical Sciences*. 2012; 1(2): 103-114.
42. Sinha S, Ali M, Sanjula B, Ahuja A, Kumar A, Ali A. Solid dispersions as an approach for bioavailability enhancement of poorly water soluble drug Ritonavir. *Saudi Pharmaceutical Journal*. 2010; 11(12): 518-527.
43. Luhadiya A, Agrawal S, Jain P, Dubry PK. A review on solid dispersion. *International Journal of Advanced Research in Pharmaceutical and Biomedical Sciences*. 2012; 1(2): 218-291.
44. Dixit A K, Singh R P, Stuti S. (2012) Solid Dispersion -A Strategy For Improving The Solubility Of Poorly Soluble Drugs. *International Journal of Research in Pharmaceutical and Biomedical Sciences*, 3(2)90-964
45. Chiou W L, Riegelman S. (1971) *Pharmaceutical Applications Of Solid Dispersion Systems*. *J. Pharm. Sci.* (1971), 60, 1281-1302.
46. Aggarwal S, Gupta GD, Chaudhary S. (2010) Solid Dispersion As An Eminent Strategic Approach In Solubility Enhancement Of poorly Soluble Compounds. *Journal Pharmaceutical Sciences Research*, 1(8), 1-14.
47. Murtaza G, Khan SA, Najam M. Comparative evaluation of various solubility enhancement strategies for Furosemide. *Pak Journal of Pharmaceutical Sciences*. 2014; 27(4): 963-973.
48. Gurunath S, Baswaraj K, Nanjwade P, Patila PA. Enhanced solubility and intestinal absorption of Candesartan cilexetil solid dispersions using everted sac technique. *Saudi Pharmaceutical Journal*. 2014; 22: 246-257.
49. Zhao Y, Teigang X, Tiantin Y, Xingang Y, Weisan P. Solid dispersion in the development of a Nimodipine delayed-release tablet formulation. *Asian Journal of Pharmaceutical Sciences*. 2014; 9: 35-41.
50. Sriram N, Bindu RH. Formulation and evaluation of Glimepiride microspheres. *International Journal of Pharmaceutical Development and Technology*. 2013; 5(2): 36-42.
51. Jasem MA, Ghareeb MM. Preparation and characterization of orthodispersible tablets of Candesartan cilexetil by direct compression method. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2013; 5(1): 328-333.
52. Krishnamurthy JB, Sachin JP. Formulation and evaluation of self microemulsifying system of Candesartan cilexetil. *European Journal of Applied Sciences*. 2013; 2(4): 143-146.
53. Pandit V, Roopa S, Devi K, Sarasija S. In vitro-in vivo evaluation of fast-dissolving tablets containing solid dispersion of Pioglitazone hydrochloride. *International Journal of Pharmaceutical Sciences*. 2012; 3(3): 160-170.
54. Ahad HA, Sreeramulu J, Sreenivasulu R, Sumu PB, Narsimha RM. Fabrication of Glimepiride Hibiscus esculentus fruit mucilage and Povidone sustained release matrix tablets. *European Journal of Applied Sciences*. 2012; 2(2): 91-100.
55. Aggarwal AK, Singh S. Physicochemical characterization and dissolution study of solid dispersions of Diacerein with PEG 6000. *Drug Development and Industrial Pharmacy*. 2011; 37(10): 1181-1191.
56. Narang AS, Srivastava AK. Evaluation of solid dispersions of Clofazimine. *Drug Development and Industrial Pharmacy*. 2010; 28(8): 1001-1013.
57. Gill B, Kaur T, Kumar S, Gupta GD. Formulation and evaluation of Glimepiride solid dispersion tablets. *Asian Journal of Pharmaceutics*. 2010; 4(3): 212-218.
58. Kiran T, Shastri N, Ramakrishna S, Sadanandam M. Surface solid dispersion of Glimepiride for enhancement of dissolution rate. *International Journal of Pharmaceutical Research*. 2009; 7(2): 1491-1498.
59. Chulang G, Patil K, Ghodke D, Khan S, Yeole P. Preparation and characterization of solid dispersion tablets of Furosemide and Crospovidone. *Research Journal of Pharmaceutical Technology*. 2008; 1(4): 286-289.
60. Nathalia Rodríguez-Burneo I, Maria Antònia Busquets I,2 ID and Joan Estelrich I,2,* *Magnetic Nanoemulsions: Comparison between Nanoemulsions Formed by Ultrasonication and by Spontaneous Emulsification*, *Nanomaterials* 2017, 7, 190; doi:10.3390/nano7070190.
61. Tushar Hemant Nikam, Mahesh Pralhad Patil, Snehal Sunil Patil, Gautam P. Vadnere, Santram Lodhi* *Nanoemulsion: A brief review on development and application in Parenteral Drug Delivery* Department of Pharmacognosy, Smt. Sharadchandrika Suresh Patil College of Pharmacy, Chopda Dist. Jalgaon (Maharashtra) 425107 India., DOI: <https://doi.org/10.31024/apj.2018.3.2.2>
62. Khurana, S., N.K. Jain, and P.M.S. Bedi, *Nanoemulsion based gel for transdermal delivery of meloxicam: Physico-chemical, mechanistic investigation*, *Life Sciences*, 92(6-7), 2013, p. 383-392.
63. KhHussan R. *Nanoemulsion as a Novel Transdermal Drug Delivery System*. *International Journal of Pharmaceutical Sciences and Research*. 2011; 2(8):1938-1946.
64. Pranita Savardekar* and Amrita Bajaj, *NANOEMULSIONS- A REVIEW*, Department of Pharmaceutics, SVKM's Dr. Bhanuben Nanavati College of Pharmacy, Mumbai- 400056, Maharashtra, India., *IJRPC* 2016, 6(2), 312-322 Pranita et al. ISSN: 2231-2781 312 *INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACY AND CHEMISTRY*.
65. Forgiarini, A.; Esquena, J.; González, C.; Solans, C. *Studies of the relation between phase behavior and emulsification methods with nanoemulsion formation*. In *Trends in Colloid and Interface Science XIV; Progress in Colloid and Polymer Science*; Buckin, V., Ed.; Springer, 2000; Vol. 115, pp 36-39, doi: 10.1007/3-540-46545-6_8.
66. Charles Lovelyn, Anthony A. Attama* *Current State of Nanoemulsions in Drug Delivery*, Department of Pharmaceutics, University of Nigeria, Nsukka, Nigeria., *Journal of*



- Biomaterials and Nanobiotechnology*, 2011, 2, 626-639 doi:10.4236/jbnb.2011.225075
Published Online December 2011
(<http://www.scirp.org/journal/jbnb>)
67. DeLuca T, Michael Kaszuba, Kevin Mattison. *Optimizing Silicone Emulsion Stability Using Zeta Potential*. *Am Lab*. 2006;38(13):14-15.
68. Swarbrick James, Boylan Janes C., "Encyclopedia of pharmaceutical technology", volume- 2nd, edition-2nd, pages-1864-1882.
69. Aarti P.Nilkam, mukesh.P. Ratnaparkhiand, etal "nanoparticles- an overview", international journal of research and development in pharmacy and life sciences, agust-september, 2014, vol.3, no-5, pp1121-1127.
70. Tice TR, Gilley RM. Preparation of injectable controlledrelease microcapsules by solventevaporation process. *J Control Release*. 1985;2:343-52.
71. S. Geng, Y. Zheng, M. Meng, Z. Guo, etal, *Gingerol reverses the cancer-promoting effect of capsaicin by increased TRPV1 level in a urethane-induced lung carcinogenic model*, *J. Agric, food chem*. 64(2016)6203-6211.
72. Borhade V, Pathak S, Sharma S, Patravale V. Clotrimazole nanoemulsion for malaria chemotherapy. Part I: Preformulation studies, formulation design and physicochemical evaluation. *Int J Pharm* 2012;431:138-48.
73. Calligaris S, Plazzotta S, Bot F, Grasselli S, Malchiodi A, Anese M. Nanoemulsion preparation by combining high pressure homogenization and high power ultrasound at low energy densities. *Food Res Int* 2016;83:25-30.
74. Gaidhani A. Kunal, Harwalkar Mallinath, Bhambere Deepak, Nirgude S. Pallavi, "Lyophilization/Freeze drying- A review", volume 4, issue 8,516-543.
75. Chien & Yiew W. *Pharmaceutical dosage form: Parenteral medications*. *Indian journal of pharmaceutical science and technology*, 1981; 106-118.
76. Liberman HA, Lachman L. and Schwartz BJ., *Pharmaceutical dosage form: Parenterals*, Marcel Dekker Publisher, 1989; p-1.
77. Jaiswal J, Gupta SK, Kreuter J. Preparation of biodegradable cyclosporine nanoparticles by high-pressure emulsifi cation solvent evaporation process. *J Control Release*. 2004;96:169-78.
78. Niwa T, Takeuchi H, Hino T, Kunou N, Kawashima Y. Preparation of biodegradable nanoparticles of water-soluble and insoluble drugs with D, Lactide/glycolide copolymer by a novel spontaneous emulsifi cation solvent diffusion method, and the drug release behavior. *J Control Release*. 1993;25:89-98.
79. Haidar, Iman, Harding, Ian H., Bowater, Ian C., Eldridge, Daniel S., Charman,William N., *The Role of Lecithin Degradation on thepHDependent Stability of Halofantrine Encapsulated Fat Nano-emulsions*.*International Journal of Pharmaceutics* <http://dx.doi.org/10.1016/j.ijpharm.2017.06.040>
80. Ping L, Ghosh A, Wagner R.F., Krill S, Joshi Y.M and Serajuddin A.T.M., *Effect of combined use of nonionic surfactant on formation of oil-in-water microemulsions*, *Int. J. Pharm*, 2005; (288), 27-34.
81. Barry BW. *Novel mechanisms and devices to enable successful transdermal drug delivery*. *Eur J Pharm Sci*. 2001;14(2):101-4.
82. Mbela TKM, Deharo E, Haemers A, Ludwig A, Submicron oil-in-water emulsion formulations for mefloquine and halofantrine : *Effect of electric-charge inducers on antimalarial activity in mice*, *J Pharm Pharmacol*, 1998; (50), 1221-1225.
83. C. Arancibia a, *, M. Miranda a, S. Matiacevich a, E. Troncoso b, c *Physical properties and lipid bioavailability of nanoemulsion-based matrices with different thickening agents, a Food Properties Research Group, Food Science and Technology Department, Technological Faculty, Universidad de Santiago de Chile, Obispo Uma~na 050, Estacio n Central, Santiago, Chile*, <http://dx.doi.org/10.1016/j.foodhyd.2017.07.010> 0268-005X/© 2017 Elsevier Ltd. All rights reserved.
84. Delmas, T.; Piraux, H.; Couffin, A.-C.; Texier, I.; Vinet, F.; Poulin, P.; Cates, M. E.; Bibette, J. *How to prepare and stabilize very small nanoemulsions*. *Langmuir* 2011, 27, 1683-1692.
85. Jihan Hussein a, Mona El-Bana a, Eman Refaat a, Mehrez E. El-Naggar b,†, *Synthesis of carvacrol-based nanoemulsion for treating neurodegenerative disorders in experimental diabetes, a Medical Biochemistry Department, National Research Center, 33 El Behouth St., 12622 Dokki, Giza, Egypt*, <http://dx.doi.org/10.1016/j.jff.2017.08.011> 1756-4646/ 2017 Elsevier Ltd. All rights reserved.
86. Wilking, J. N.; Mason, T. G. *Irreversible shear-induced vitrification of droplets into elastic nanoemulsions by extreme rupturing*. *Phys. Rev. E* 2007, 75, 041407.
87. Nauman Khalida,b, Gaofeng Shuc, Brenden J. Hollanda, Isao Kobayashid, Mitsutoshi Nakajimac,d, Colin J. Barrowa,□, *Formulation and characterization of O/W nanoemulsions encapsulating high concentration of astaxanthin, Centre for Chemistry and Biotechnology, Deakin University, Waur n Ponds, Victoria 3217, Australia*, <http://dx.doi.org/10.1016/j.foodres.2017.06.019>
Received 25 April 2017;
88. Helgeson, M. E.; Moran, S. E.; An, H. Z.; Doyle, P. S. *Mesoporous organohydrogels from thermogelling photocrosslinkable nanoemulsions*. *Nat. Mater*. 2012, 11, 344-352.
89. Schwartz JS, Weisspapir MR, Friedman DI, *Enhanced transdermal delivery of diazepam by submicron emulsion creams*, *Pharm Res*, 1995; (12): 687-692.
90. 23. Calvo P, Lopez R, Vila-Jato JL, Alonso MJ, *Evaluation of cationic polymer-coated nanocapsules as ocular drug carriers*, *Colloid polym Sci*, 1997; (275): 46-53.
91. Ibai Tamayo a, Carlos Gamazo a, Juliana de Souza Rebouças a, Juan M. Irache b, **Topical*



- immunization using a nanoemulsion containing bacterial membrane antigens, Department of Microbiology, University of Navarra, 31008 Pamplona, Spain, <http://dx.doi.org/10.1016/j.jddst.2017.02.009> 1773-2247/ 2017 Elsevier B.V. All rights reserved.
92. Haritha*, Syed Peer Basha, Koteswara Rao P, Chakravarthi Vedantham, a brief introduction to methods of preparation, applications and characterization of nanoemulsion drug delivery systems Nimra College of Pharmacy, Vijayawada, India
93. Sole, I., Solans, C., Maestro, A., Gonzalez, C. and Gutierrez J.M., Study of nano-emulsion formation by dilution of microemulsions, *Journal of Colloid and Interface Science*, 376, 133–139, 2012.
94. Setya, S., Talegaonkar, S., and Razdan, B.K., Nanoemulsions: Formulation Methods and Stability Aspects, *World Journal of Pharmacy and Pharmaceutical Sciences*, 3, 2214-2228, 2014.
95. McClements, D.J., and Rao, J., Food-Grade Nanoemulsions: Formulation, Fabrication, Properties, Performance, Biological Fate, and Potential Toxicity, *Critical Reviews in Food Science and Nutrition*, 51, 285–330, 2011.
96. Solans, C., Izquierdo, P., Nolla, J., Azemar, N. and Garcia-Celma, M.J., Nano-emulsions, *Current Opinion in Colloid & Interface Science*, 10, 102-110, 2005.
97. Caldero, G., Maria, J.G.C. and Solans, C., Formation of polymeric nano-emulsions by a low-energy method and their use for nanoparticle preparation, *Journal of Colloid and Interface Science*, 353, 406–411, 2011.
98. Anandharamakrishnan, C., *Techniques for Nanoencapsulation of Food Ingredients*, Springer, 2014.
99. Shah, P. and D. Bhalodia, 2011. Nanoemulsion a pharmaceutical review, *Sys Rev. Pharm.*, 1(1): 24-31.
100. Aubrun, O. Sonnevile, J.T. Simonnet and F.L. Alloret, 2004. Nanoemulsions: a new vehicle for skincare products, *Advances in Colloid and Interface Science*, 108-109: 145-149.
101. Bhalani VT, Satishchandra SP, *Pharmaceutical composition for cyclosporines*, US Patent 5858401 A. 1999.
102. Ghosh PK. and Murthy RSR, Microemulsions: A potential drug delivery system, *Curr Drug Deliv*, 2006; (3):167–180.
103. Ziani, K., Y. Chang, L. Mc, L.S. borough and J. McClements David, 2011. Physicochemical Properties and Antimicrobial Efficacy of Electrostatic Complexes Based on Cationic E- - Polylysine and Anionic Pectin. *J. Agric. Food Chem.*, 59(11): 6247-6255.
104. Hamoud, T., A. Myc, B. Donovan, A.Y. Shih, J.D. Reuter and J.R. Baker, 2001. A novel surfactant nanoemulsion with a unique non-irritant topical antimicrobial activity against bacteria, enveloped viruses and fungi. *Microbiological Research*, 156(1): 1-7.
105. Liu, X., H.S.S. Qhattal, S. Wang, T. Salihima and S.K. Srivastava, 2011. Nanoemulsions of Cancer Chemopreventive Agent Benzyl Isothiocyanate Display Enhanced Solubility, Dissolution and Permeability. *J. Agric. Food Chem.*, 59(23): 12396-12404.
106. Souto, E.B., A.P. Nayak and R.S. Murthy, 2011. Lipid nanoemulsions for anti-cancer drug therapy. *Pharmazie*, 66(7): 473-8.
107. Patel, P.D., G.J. Patel, P.D. Bharadia, V.M. Pandya and D.A. Modi, 2011. Nanoemulsion: An advanced concept of dosage form. *Journal and Cosmetology*, 5(1): 122-133.
108. Sharma, N., M. Bansal and S. Visht, 2010. Nanoemulsion: A new concept of delivery system, 1(2): 2-6.
109. Anthony, A. Attama and L. Charles, 2011. Current state of nanoemulsion in drug delivery. *Scientific Research*, 2: 1-14.
110. Trotta M. Influence of phase transformation on indomethacin release from microemulsions. *J Control Release.*, 1999; 60: 399-405.
111. Shah P, Bhalodia DI, Shelat P. Nanoemulsion-A Pharmaceutical Review. *Sys Rev Pharm.*, 1(1): 2010.
112. Sarker A, Shimu I J, Tuhin M R H, Raju A A. Nanoemulsion: An excellent mode for delivery of poorly soluble drug through different routes. *Journal of Chemical and Pharmaceutical Research.*, 201; 7(12): 966-976.
113. Kwon HY, Lee JY, Choi SW, Jang Y, Kim JH. Preparation of PLGA nanoparticles containing estrogen by emulsifi cation-diffusion method. *Colloids Surf A Physicochem Eng Aspects.* 2001;182:123–30.
114. Sukanya G, Subhrajit M, Shirin A. Review on Nanoemulsions. *IJPSR.*, 2013; 1(2): 192-205.
115. Pavan Walvekar, Ramesh Gannamani, Thirumala Govender, Combination drug therapy via nanocarriers against infectious diseases. *Phasci (2018)*, doi:10.1016/j.ejps.2018.10.017
116. Gasco MR, Gallarate M, Pattarino F. In vitro permeation of azelaic acid from viscosized microemulsions. *Int J Pharm.*, 1991; 69: 193–196.
117. Kriwet K, Muller-Goymann C. Diclofenac release from phospholipid drug systems and permeation through excised human stratum corneum. *Int J Pharm.*, 1995; 125: 231–242.
118. Trotta M. Influence of phase transformation on indomethacin release from microemulsions. *J Control Release.*, 1999; 60: 399–405.
119. Jumaa M, Mueller B.W. Formulation and stability of benzodiazepines in a new lipid emulsion formulation. *Pharmazie.*, 2002; 57: 740-743.
120. Anderson BD. Chemical and related factors controlling lipid solubility. *BT Gattefosse.*, 1999; 92: 11-8.
121. Singh KK, Vingkar SK. Formulation, antimalarial activity and biodistribution of oral lipid nanoemulsion of primaquine. *Int J Pharm* 2008;347:136-43.



NACHNI: THE OUTCAST ENTERTAINERS, WITH SPECIAL REFERENCE TO POSTOBALA DEVI KARMAKAR

Arif Ansari

Former Student of Department of English,
Sidho-Kanho-Birsha University

ABSTRACT

West Bengal is the store house of many rich cultures and traditions. Purulia is famous for two unique art forms, Chhau Nach and Nachni Nach. Chhau Nach originates in the Purulia district in West Bengal and draws inspiration from martial arts and combative training. This form of dance is a means to portray stories to the audience, which is why elaborate masks and headgear associated with battle and war are worn during the performance. The story itself revolves around the two great epics of Indian Mythology – Ramayana and Mahabharata. Women are the practitioners of Nachni Nach. ‘The Nachnis are the marginalized socially excluded second sex. Society approves the life of the Nachnis as sub women. They belong to lower socio-economic status. Economic and various social forces push the Nachnis to be marginalized in the social system. This marginalized community is gradually endangered as people now-a-days people are not much interested in Nachni Nach.’ But presently Nachni Nach is on the verge of decline. It is losing its popularity day by day. The Nachni dancers generally dance on Jhumur songs. The men who sing the songs are called ‘rasik’. The Nachnis are not generally married. It is because most of them are generally sold in their childhoods. They have to live their lives with their rasiks. They have to live the life of outcasts for being great entertainers of the society. They are unable to lead a daily healthy life. They have to engage in other professions outside of Nachni nach. This is the reason that most Nachni dancers are multi-professionals. But, whatever may be the obstacles, they are trying their best to preserve Nachni Nach.

KEYWORDS- Nachni, Nach, Culture, Outcasts, Entertainers.

ACKNOWLEDGEMENT

I express my humble and whole-hearted gratitude to Prof. Dr. Aparajita Hazra, the honorable Dean of Art of Sidho-Kanho-Birsha University for her constant guidance, encouragement and valuable suggestions throughout this project. Also, I would like to express my special thanks to Postobala Devi Karmakar, Bijay Karmakar, Samala Devi Sardar, Shanti Devi Karmakar, Manju Devi Bauri, Shanti Gope and Sudhir Gope for the unique information that I received from them.

INTRODUCTION

‘The Nachnis are the marginalized socially excluded second sex. Society approves the life of the Nachnis as sub women. They belong to lower socio-economic status. Economic and various social forces push the Nachnis to be marginalized in the social system. This marginalized community is gradually endangered as people now-a-days people are not much

interested in Nachni Nach.’ They are considered outcasts, even though they are the greatest entertainers of the society. They are the source of entertainment. But, society is not ready to accept them. They are deprived of their basic human rights. They are not allowed to live inside a village as they are considered outcast. They are not given the opportunity to get elementary education. Their lower socio-economic status doesn’t allow them to fulfill their daily needs. Still they are the preserver of one of the ancient dances of Purulia.

AIMS AND OBJECTIVES

The aim of this paper is to analyze the ancient practice Nachni Nach, one of the intangible heritages of Purulia. Through this research I want to unfold the socio-economic conditions of the Nachnis. The time of performance is also important as it will tell something about their social condition. I want to know the reasons behind considering the Nachni artists outcasts. My aim



is to make people aware about the Nachnis and their beliefs. Recognition is necessary for preservation. I want to keep this ancient dance form alive for our coming generations. I also want to talk about the future of Nachni Nach and the reasons behind its celebration in Purulia district in particular.

SPECIFIC OBJECTIVES OF THE STUDY

- a) To explore the socio-economic conditions of the Nachnis in Purulia District.
- b) To find out the reasons behind considering the Nachni artists outcasts.
- c) To make people aware about the Nachnis.
- d) To seek the reasons for the celebration of Nachni Nach in Purulia.
- e) To know something about the future of Nachni Nach.

METHODOLOGY

In preparing this paper I have taken the help of a few research papers, short essays and articles related to Nachni Nach and the culture of Purulia. I collected essays and articles from various sources. In order to get authentic information about the art Nachni, I contacted Postobala Devi Karmakar, one of the prominent Nachni artists of Purulia. She suggested that one day I must visit Manbhum Lok Sanskriti and Nachni Unnayan Samity. Then I did go to Surulia, the place Manbhum Lok Sanskriti and Nachni Unnayan Samity was located to gather information about this art and the artists. There I met a few Nachni dancers including Postobala Devi Karmakar. I took the help of a questionnaire for the collection of the data. I prepared thirty questions related to their socio-economic condition, the reason behind considering them outcasts, the future of Nachni etc. Basic questions were asked to extract their point of view. Finally, I analyzed the data.

ORIGIN OF NACHNI NACH

Mahasweta Devi had written a lot about the origin of Nachni Nach in her article "Fundamental Human Rights for the Nautch Girls of Purulia." To quote her:

"Not a lot is known about the origin of the Nachni dance. According to Dipak Barpanda of 'Durbar', a leading sex workers organization, the custom of keeping dancing and singing girls can be traced to 12th Century Bengal. But today the Nachni dancers and the Jhumur singers are found mainly in Purulia."

"The origin of Nachni Dance can be traced to Ayodhya Prasad Singdeo of a small feudal estate of Baghmundi, and his descendants. After the Permanent Settlement — 1793 was enacted by Lord Cornwallis. Baghmundi was one of the many feudatory estates in Purulia."

"According to Subodh Basu Roy, a rare scholar and a Purulia based field-researcher, Nachni dance is an illogical outcome of the tradition of tribal folk-dancers. To the tribal people, dance and song are part of their life."

RESEARCH FINDINGS

Socio-economic condition of the Nachni artists: Nachnis in Purulia generally come from the Dalit and tribal society. They are a deprived community both socially and economically. They are not generally married. They are not accepted by society. The Nachnis, in most of the times, become mothers through their rasiks. They have to live the life of abandonment, if they are deserted by their rasiks. Their income is very low, approximately 20000-40000 per year. It is not sufficient to fulfill their daily needs. This is the reason that they are multi-professionals. They are helped a little by the state government with the pension of RS-1000 per month. This is their only pillar of help in their old age. Even now they are considered outcasts and have to live outside of their villages. Most of the Nachni dancers start their dancing career at a very early age. Actually, it is poverty which led them to do so.

Educational status of the Nachni artists: None of the Nachni dancers takes their higher education. Most of them can't even write their name. They have been deprived of their elementary education. They don't get any opportunity to go to school. Their parents don't let them go to school. Many of them are sold in their childhood to their Rasiks. And their Rasiks don't let them go to school. Among all the Nachnis, Postobala Devi Karmakar was the one and only who could write and read her name. Education is enlightenment. So, their deprivation can be the result of their illiteracy. They would have questioned their poverty, if they were educated. We all know that knowledge is power. Power comes through knowledge and knowledge comes through education. So, if the Nachnis are to change their fortune, then they must promote higher education to their coming generations.

Time of performance: Nachni Nach is performed throughout the year. But, in spring and autumn the artists get most of their shows. Nachni Nach in Purulia is a part of people's celebration. People enjoy the dance in their free times. The seasons of spring and autumn are the seasons of festivals. And people are probably



free from their works of cultivation. This is the reason that in spring and autumn people enjoy Nachni Nach the most.

The reasons behind considering the Nachnis outcasts: According to the Nachni artists, traditional mindset can be one of the reasons behind considering them outcasts. People simply cannot come out of their traditional values and value the real art. People just take it as a form of entertainment, not as an art. People don't know that Nachni Nach is one of the ancient dance forms of India. It is a unique art form, not just a form of entertainment. But most of the people take it as a source of entertainment. This is the reason that they are unable to see the unique things in Nachni Nach. Postobala Devi opines that there is a purpose behind considering them outcasts. People enjoy their dance and love to see the Nachnis on the stage. But people hate them so that they are not imitated. If the dancers are liked by the society, then they may be imitated. But society doesn't want that. Society pretends to hate them so that they are not imitated.

The reasons behind the celebration of Nachni Nach in Purulia: Purulia is a neglected and poverty-stricken part of West Bengal. It continues to remain the target of the state government's cruel indifference. Nachni Nach is very popular in Purulia. It has developed its own history. Nachni Nach always depicted the hard realities of Purulia. The songs of the Nachnis were original and touched the heart of Purulians. So, it is one of the few things through which Purulians were entertained from very ancient times. This is the reason that even now Nachni Nach is very close to the heart of the Purulians. Though, it can be said that Westernization is trying its level best to change the entire scenario.

Future of Nachni Nach: There are various opinions on the future of Nachni Nach. Some dancers think that Nachni Nach is losing its popularity day by day. The young generation is not taking interest in Nachni Nach as now-a-days there are various sources of entertainment. Some think that its future is glorious. Government has taken initiatives to promote Nachni Nach. The dancers are less hated now. Society has probably accepted them. The fact is that society has to embrace them unconditionally. Otherwise, it can be that there will be no Nachnis in future. We will read about Nachni Nach in books only.

POSTOBALA DEVI KARMAKAR AND HER ACHIEVEMENTS

'Pastubala devi Karmakar is a Nachni of 50 years of age. She lives at Purulia, near Deer Park. She can just read and write her name and belongs to Hindu

general caste. She has spent her childhood at Karmatari village at Purulia with her parents.'

She is one of the prominent Nachni dancers of Purulia. She is doing her best to preserve this most ancient dance form. This is the reason that she was awarded with Lalan Puraskar in 2018 for her great contribution to Indian dance. She is the present president of Manbhumi Lok Sanskriti and Nachni Unnayan Samity.

Her childhood was very traumatic. Her father died when she was a child. She had to get married at a very young age. She was not allowed to get her elementary education. She had to marry an aged person, though she was twelve at that time. She was accepted by the society as her mother was also a Nachni dancer. She was looked at with indignation even by her in-laws. She had a very unhappy married life. She was tricked to make a ligation operation. Even after the operation she was unaware of what had happened. Finally, she had to come to the world of Nachnis. Her master was Sarala Devi, a famous Nachni artist.

Finally, she eloped with her rasik Bijoy Karmakar. Both of them love each other very much. They got married and now live together in their new home in Surulia, near Deer Park. They have no children. Now Shilpi Vata is helping them very much.

Postobala Devi Karmakar is the winner of many prestigious awards including Lalan Puraskar. She was given Manush Somman Puraskar in Manush Mela in 2016. She was given an honorary award by R Plus News for her contribution in preserving Nachni Nach and Jhumor. Barsamangal Kobita Utsav Committee called Postobala Devi and accepted her great contribution in Indian dance. They also gave her an honorary award. She was invited on the famous TV show Didi No 1. But, perhaps, the greatest of her contributions is Lalan Puraskar which she received in the year 2018.

CONCLUSION

The main objective of any research or survey is to get better knowledge. We must have knowledge about Nachni Nach as it is a part of the culture of Purulia. We learn a few new things about their lives. Most of the dancers came in this field to sustain themselves. It is very sad that none of them get any opportunity to get their elementary education. They all are socially deprived. They started their Nachni career to get rid of poverty, but eventually loved the dance. The steps used in Nachni Nach are not everybody's cup of tea as it takes more than two years to become a perfect Nachni artist. After their retirement they have to lead a miserable life. The irony is when they are not



entertainers, they are outcasts. But whatever may be those obstacles, they are very much passionate about their dance. They know that life means to be optimistic.

REFERENCES

1. Bajpai, L.M. (2017). "Survival and Continuity of Folk Culture Amidst Jain Remains in Purulia District of West Bengal, India." *Buddhism and Jainism in Early Historic Asia*.
2. Chaudhuri, Aneek. (2015). "Jhumura: Harnessing the essence of folklore". *IOSR Journal of Humanities and Social Science*, ISSN: 2279-0845, www.iosrjournals.org.
3. Devi, Mahasweta. (2007). "Fundamental Human Rights for the Nautch Girls of Purulia." *Council for Social Development*, www.csdindia.org.
4. Dey, Falguni. "Folk Culture of West Bengal." *Journal of Institute of Landscape Ecology and Ekistics*, ISSN 09714170.
5. Ghosh, Aritra & Sarkar, Rimi & Manna, Samita. (2016). *The 'Nachni' - Marginalised Second Sex: A Few Case Studies selected from Purulia District, West Bengal*.
6. Maiti, Vivekananda. (2015). "Chhuo Dance in Purulia: Preservation of Bengal Folk Culture in Respect of Historical Value." *Indian Journal of Applied Research*, ISSN-2249-555X.
7. Padhi, Itishree. (2016). *Gender Asymmetry in Controversial India*. Manglam Publications, ISBN – 978-93- 82983-68-2.



LOW BIRTH WEIGHT AMONG THE NEWBORN AT EL-OBIED MATERNITY AND GYNECOLOGICAL TEACHING HOSPITAL (2013-2015)

Dr. Kawther ALbashir Mohamed Adam¹

¹Department of Pediatric Nursing,
Faculty of Nursing Sciences,
University of Kordofan,
Sudan

Dr. Kubra Ali Ebrahim Hammad²

²Department of Epidemiology,
Faculty of Public and Environmental Health,
University of Kordofan,
Sudan

*Dr. Mohammed Ismail Humaida^{2,3}

²Department of Epidemiology,
Faculty of Public and Environmental Health,
University of Kordofan, Sudan
³Department of Public Health,
College of Public Health and Health Informatics,
University of Hail, Saudi Arabia.

*Corresponding Author: Dr. Mohammed Ismail Humaida

ABSTRACT

Introduction: Birth weight is a reliable index of intra uterine growth retardation (IUGR) and a major factor determining child survival, future physical growth and mental development. **Methods:** The design which used was Analytic- cross –sectional hospital- based study, was conducted (in the labor room) during one month from 5 Oct. to 5 Nov. 2015. Cover all new born (546) in Elobeid Maternity and Gynecological Teaching Hospital. The objectives were to determine LBW rate, to identify the health factors that contribute to low birth Weight, to find out distribution of low birth weight per gender and assess the Knowledge of the mothers regarding to LBW. Data was collected by using Structural questionnaire contains demographic, socio economic and environmental factors associated with low birth weight and weighing the new born using standardized weighing scale in the hospital measured between 0.5kg . Data was collected by researcher, sisters and midwives, and was analyzed by using computer program of (SPSS) statistical package for social science

Results: The incidence of low birth weight in ELobied Maternity &Gynecological Teaching Hospital was (11.5%). Male (57.1%) is more affect with low birth weight than female statistically insignificant ($X^2= 7.106, P =0.578$), that mean there was no relation ship between low birth weight and gender. Educational level of mothers (47.6%) statistically significant($X^2=23.754, P =0.000$) that mean there was relation ship between educational level of mothers and low birth weight. The study was shown that there was no relation ship between low birth and age of the mothers (less than 20years) (11.1%) statistically insignificant($X^2=2.57, p = 0.787$) . The nutritional status of the mothers during pregnancy was inadequate, (92.1%) had ordinary daily intake statistically significant($X^2= 7.9, p =0.001$). The majority of mothers delivering low birth weight from centre of the city (87.3%). Diseases among mothers during pregnancy (42.8%), and smoking (36.5%) , statistically significant($X^2=34.019, p =0.001$). their knowledge about low birth weight was poor (90.5%). **Conclusion:** The study recommends by control of the diseases during pregnancy, raising the level of education, and strengthening of maternal health care centre.

KEY WORDS: Low Birth, Weight, Newborn, EL-Obied



INTRODUCTION

Care of the child is most important all over the world especially in developing countries. The child must have many aspects of care, which is needed, physically, mentally, socially and psychologically from conception, intra uterine, during labor, newborn stage, infancy stage, early child hood, middle child hood, and late child hood.

The birth weight of an infant is the most important determinant having healthy growth and development. The weight of the child at birth in all developed countries is considered as most important because influence the child health (CDC. 2001).

The weight of the new born at birth [birth weight], have relationship with gestational age. The new born child in normal range is defined [Appropriate for gestational age], all new borns whose weight is above or under this range usually have complications.(Mayes 2005).

The new born child whose weight at birth is under the normal range [low birth weight], has been defined by the World Health Organization [WHO] as weight at birth less than 2,500gm.[5.5pound](WHO 2014).

The new born child whose weight above the normal range [large for gestational age] is defined as a weight above 4000gm.or 4500gm.[9 p150oz] regardless of gestational age.

Low birth weight incidence is world wide is 25 million. Of the 142 million infants born in 1990 as low birth weight, 19 million were born in developing countries.(Baird. et al 2002)

Globally this mean about one in every 6 infants has low birth weight. The incidence of low birth weight varies widely between regions of the world with level of 32% in southern Asia, 9% in Easter Asia, 11 to 16% in Africa and 10 to 12% in Latin America and Caribbean's (Park 2005).

Low birth weight in Omdurman maternity hospital is about 14.5% (Seham 2004).

In Kassala maternity hospital in the yeast of Sudan incidence of low birth weight is 14% in 2006(Osman 2006.)

In Khartoum state Capita of Sudan low birth weight incidence about 13% (Omar. et al 2012).

Prevalence of low birth weight in EL Fashir hospital in westrn of Sudan is about 14.9% (Abdearhuim et al 2008)

Many maternal risk factors have lead to LBW infants. These factors include low socioeconomic status, little or no maternal care and cultural behavior that related to taboos, diet, smoking and poor education.

1-2 Problem Statement:

Low birth weight is one of the major determinants of neonatal survival and postnatal morbidity (Mansour.et al 2005).

Infants of low birth weight are 5 times more likely to die in their first year. Their deaths account for 20% of all post- natal deaths there is relatively risk of congenital, especially those who are small for their gestational age , respiratory tract problems , particularly infections are more common (Boemera et al 1996).

Low birth weight continues to be significant public health problem globally and is associated with a range of both short – and long- term consequences .Over all, it is estimated that 15% to 20% of all births Worldwide are LBW, representing more than 20 million births a year. the goal to achieve a 30% reduction of the number of infants born with weight less than 2500 g by the year 2025. This would translate in to 3.9% relative reduction per year between 2012-2025 and a reduction from approximately 20 million to about 14 million infants with low birth weight at birth.

Preterm birth is the most common direct cause of neonatal mortality. Every year, 1.1 million babies die from complications of preterm birth (WHO 2014).

Low birth weight is not only a major predictor of prenatal mortality and morbidity, but recent studies have found that low birth weight also increases the risk for non communicable diseases such as diabetes and cardiovascular disease later in life.

There is considerable variation in the prevalence of low birth weight across regions and within countries however, the great majority of low birth weight births occur in low- and middle-income countries and especially in the most vulnerable population. Regional estimates of LBW include 28% in south Asia, 13% in sub-Saharan Africa and 9% in Latin America .It is worth noting that these rates are high, in spite of the fact that the data on LBW remain limited or unreliable, as many deliveries occur in homes or small health clinics and are not reported in official figures, which may result in an underestimation of the prevalence of LBW (WHO 2014).

An epidemiological survey on low birth weight infants in China and analysis out come of full term LBW infant out comes , the study showed that the incidence of LBW 6.1%(Cheiny. et al 2013).

In Japan, the study cared out in 2005 revealed that the incidence of LBW is about 10.9% the causes are increased rate of smoking and multiple births (Colin. et al 2005).

Prevalence and causes of low birth weight in India about 20% the study showed that males have less frequent of low birth weight than females (Baharati .et al 2011).

In Sudan, low birth weight is a major cause of infant mortality. Study carried out in EL obeid town, in the western part of the Sudan about the infant



mortality about 20% of deaths were due to low birth weight (Ali, 2000).

Two studies were conducted during 1989-1990 in central Sudan to determine the incidence of low birth weight and to ascertain the major risk factors, which influence birth weight. The incidence of low birth weight was 18.1% in the community and 8.2% in the hospital (Taha 2002).

Objectives: General objective: TO study low birth weight (LBW) among the new born at Elobeid Maternity and Gynological Teaching Hospital, 2015. Specific objectives: to determine low birth weight rate among delivered new –born at Elobeid Maternity and Gynological Teaching Hospital. To identify the health factors that contribute to low birth weight. To find out distribution of low birth weight per gender. To assess the knowledge of the mothers regarding to low birth weight.

METHODS & MATERIALS

Study design

This study is analytic- cross –sectional hospital-based study.

Study Area

North Kordofan State which is one of the 18 states of Sudan. (Wileyat). It is an area of 7474 km² which represent 8.3% of the total area of the country. Estimated population is 2,117,645.

Elobeid town is the capital of the state, lying in the west of Sudan and is about 623 kilometers from the Khartoum.

North Kordofan state lies in the middle of the Sudan surrounded by Khartoum State in the North, Blue Nile state in the East, South Kordofan state in the South and West Kordofan State and North Darfur in the West.

The total population of Elobeid town is 750,000 capita. Most of them are Muslims and Arabic is the main language there.

-Communication:

Highway roads connect Khartoum with south Kordofan and other states.

-Economic:

Traditional agriculture, animal rearing, Arabic gum and trade are the main economic activities. People with different groups, but homogenous in culture. Most of them are farmers, traders and government employee.

In Elobeid 40,000 household and 65000 families average 6 person per household.

Elobeid maternity and gynecological teaching hospital

Is located in the middle of the town, east of Elobeid main market and near faculty of medicine- Kordofan university.

The hospital serves about 750000 people. Children under 5 years in Sheikan locality are 90804.

-Hospital Units:

I.C.U department, Nursery Unit, labour room (2 delivery tables) and 6wards (consist of 119beds).

-Manpower in the hospital:

13 specialists, 19 Doctors, 7 chemists, nurses technician 43, ordinary nurses 19 , Matron , 29 Midwives , 12 statistic technician , 12 lap technician and 8 laboratory medical assistants.

Also 6 pharmacy medical assistant, 10 officers, 3 supervisors and 2 vaccinators.

Study population

The population of the study consists of mothers and their newborn attending Elobeid maternity & gynecological teaching hospital for delivery in the period of the study.

Sample Size

Total coverage, number of all newborn (546) in the period of the study 5 October - 5 November.

Data collection

Tool

Data was collected by using the following methods:

a. Structured Questionnaire and data for new born listed in a questionnaire and directed to mothers of the newborn.

The questionnaire consists of 3 parts:

- Part one for general information and identification of mother, file number, Tribe and date.

- Part two for information about demographic and socio-economic status of the family and mother age, education, family size, occupation, antenatal care, health problems and mothers knowledge and behavior.

Part three: for information about the new born, his weight, gender, order and outcome.

b. Weighing the new born immediately after birth using standardized weighting scale in the hospital measured between 0-5 kg .

c. Records.

Technique

Data was collected by researcher, sisters and midwives after training for 48hours 2 hours per day.

Data analysis

The collected data analyses by using computer program of (SPSS) statistical package.

Ethical considerations

- Approval from the appropriate management authorities obtained.

- Mothers of newborn provided informed consents.

RESULTS

Data was obtained from 546 delivered mothers at Elobeid maternity and gynecological teaching hospital in the period from 5 October to 5 of November2015.

The incidence of low birth was (11.5%), (63birth), and the normal birth weight (88.5%), (483birth) as shown in table (1).



Residence of mothers who delivered new born with low birth was; (25.4%) in suburban while (46%) in the centre of the city and (28.6%) were from out side North Kordofan State as shown in table (2).

Table (3) shows age of mothers who delivered at Elobied maternity & gynecological teaching hospital with low birth weight (11.1%) were less than 20years , (39.7%) were between 20- 25years , (17.5%) were between 26-29years , (20.6%) were between 30-35years and (11.1%) more than 35years old.

The education level of mothers delivered were presented in table (4) (47.6%) of mothers with low birth weight were illiterate, (27%) had basic school education, (8%) khalwa, (11.1%) had secondary school education and (6.3%) had a university education.

Occupation of mothers how delivered low birth weight shown in table (5) (88.9%) were house wife, while (3.2%) were student and (7.9%) were employee.

Family size (3-4persons) among mothers with low birth weight babies (31.7%) while (5- 10person) were (63.5) and with more than (10 persons) (4.8%) as showed in table (6).

Table (7) show that (87.3%) of parents have relation ships among mothers delivered low birth weight, while (12.7%) of parents haven't relation ship.

Table (8) show the period between pregnancies among mothers with low birth weight (30.2%) with interval less than one year, (36.5 %) with interval one to two years , (27 %) with interval of 2-3 years and (6.3%) more than 3years.

In table (9) the percentages of diseases among mothers delivered at ELOBeid maternity and gynaecological hospital with low birth weight (9.5%) have diabetes, while (6.3%) have hypertension,(1.6%) have heart diseases, (25.4 %) have anaemia and normal without diseases (55.6%).

Diseases during pregnancy shown in table (10), (9.5%) have diabetes, while (6.3%) have hypertension, (28.6%) have anaemia, (1.6%) have toosage and normal without diseases (54%).

Table (11) shows families income among mothers delivered at Elobeid maternity & gynaecological hospital with low birth weight, (15.9%) less than 300pounds, while (50.8%) 300 < 600pounds, (20,6%) from 600- 900pounds and (12.9%) more than 900pounds.

Nutrition during pregnancy in table (12) mothers who take normal diet (92.1%) and (7.9%) have special diet.

Presence of abortions among mothers delivered at Elobeid maternity & gynaecological hospital is shown in table (13) were (23.8 %) of mothers with low birth weight have abortion while (76.2%) have no abortion.

Table (14) show presence of dead new born among mothers delivered at Elobeid maternity & gynaecological hospital with low birth weight, (22.2%) have dead new born while (77.8 %) have no dead new born.

(36.5%) of mothers with low birth weight were smoking , (3.2%) were using tea and coffee, (25.3%) using tea only, (1.6%) using coffee only while (3.2%) were using alcohol , and(30.2%)not using any thing as in table (15).

Table (16) shows the health status of new born among mothers delivered at Elobeid maternity & gynaecological hospital with low birth weight (79.4%) with normal health status and (20.6%) have up normality.

In table (17) shows an order of new born with low birth weight, first (44,4%), while (31.7%) second ,(12.7) third and others (11.2%).

Sex of new born with low birth weight were (57.1 %) males while (42.9%) females as shown in table (18) .

In table (19) shows status of delivery of new born (8.2%) was single and (17.5%) were twins.

Table (20) shows type of delivery among studied mothers with low birth weight, (9.5%) by using scissors, (52.4%) by sections and (38.1%) have normal delivery

In table (21) the percentages of knowledge among mothers delivered at Elobeid maternity & gynaecological hospital with low birth weight (9.5%) have , while (6.3%) have hypertension,(1.6%) have

Table (1) : Low birth weight rate of new born in ELOBeid maternity & gynecological teaching hospital , 2015.(n- 546)

Birth weight	No	Percentage
Normal birth weight	483	88.5%
Low birth weight	63	11.5%
Total	546	100%



Table (2) : Residence of Mothers who delivered at El-Obeid maternity & gynecological teaching hospital , 2015 (n- 546)

Districts	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	NO	%
City sub urban	16	25.4	198	41.0	214	48.1
Centre of the city	29	46.0	95	19.7	124	39.4
Outside of the state	18	28.6	190	39.3	208	12.5
Total	63	11.5	483	88.5	546	100

$X^2 = 22.210$

$P = .001$ statistically significant

Table (3) Age of mothers who delivered at Elobeid maternity & gynecological teaching hospital, 2015. (n- 546)

Age	Low Birth Wight		Normal Birth Weight		Total	%
	NO	%	NO	%		
Less than 20 years	7	11.1	70	14.5	77	14.1
20-25 years	25	39.7	164	34.0	189	34.6
26-29 years	11	17.5	101	21.0	112	20.5
30-35 Years	13	20.6	113	23.4	126	23.1
More than 35 years	7	11.1	35	7.2	42	7.7
Total	63	11.5	483	88.5	546	100

$X^2 = 2.57$

$P = .787$ Insignificant

Table (4) : Type of education level among mothers who delivered at Elobeid maternity & gynecological teaching hospital , 2015.(n- 546)

Education level	Low Birth Weight		Normal Birth Weight		TOTAL	
	No	%	No	%	No	%
Illiterate	30	47.6	111	23.0	141	25.8
Khalwa	5	8.0	15	3.1	20	3.7
Primary (Basic)	17	27.0	223	49.2	240	44.0
Secondary	7	11.1	96	19.9	103	18.9
University	4	6.3	38	7.9	42	7.7
Total	63	11.5	483	88.5	546	100

$X^2 = 23.754$

$P = .000$ statistically significant

Table (5) : Occupation of mothers who delivered at Elobeid maternity & gynecological teaching hospital, 2015 .(n- 546)

Occupation of mothers	Low Birth Weight		Normal Birth Weight		TOTAL	
	No	%	No	%	No	%
House wife	56	88.9	433	89.6	489	89.6
Student	2	3.2	21	4.3	23	4.2
Employee	5	7.9	29	6.0	34	6.2
Total	63	11.5	483	88.5	546	100

$X^2 = .520$

$P = .824$ Insignificant

**Table (6) : Family size of mothers delivered at ELOBeid maternity &gynecological teaching hospital, 2015. (n- 546)**

Family size	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
3-4 persons	20	31.7	301	62.3	321	58.8
5-10 persons	40	63.5	165	34.2	205	37.5
More than 10 persons	3	4.8	17	3.5	20	3.7
Total	63	11.5	483	88.5	546	100

 $X^2 = 21.865$

P= .000 statistically significant

Table (7) : Husband relation ship among mothers who delivered at ELOBeid maternity &gynecological teaching hospital , 2015.(n:546)

Husband relationship	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Yes	55	87.3	200	41.4	255	46.7
No	8	12.7	283	58.6	291	53.3
Total	63	11.5	483	88.5	546	100%

 $X^2 = 47.158$

P= .000 statistically significant

Table(8) : Period of interval between pregnancies among mothers who delivered at ELOBeid maternity &gynecological teaching hospital , 2015. (n:546)

Interval	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Less than one year	19	30.2	49	10.1	68	12.5
1- < 2years	23	36.5	277	57.3	300	54.9
2-3years	17	27.0	129	26.7	146	26.7
More than 3years	4	6.3	28	5.8	32	5.9
Total	63	11.5	483	88.5	546	100

 $X^2 = 22.361$

P=0 .070

statistically Insignificant

Table(9) : type of diseases among mothers who delivered at ELOBeid maternity &gynecological teaching hospital , 2015. (n:546)

Diseases	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Normal (No diseases).	35	55.6	395	81.8	430	78.8
Diabetes	6	9.5	29	6.0	35	6.4
Hypertension	4	6.3	37	7.7	41	7.6
Heart diseases	1	1.6	6	1.2	6	1.3
Anaemia	16	25.4	16	3.3	32	5.9
Others	1	1.6	0	0	0	0
Total	63	11.5	483	88.5	546	100

 $X^2 = 60.167$

P=0 .000 statistically significant



**Table(10) : A antenatal care visits during pregnancies among mothers who delivered at ELobeid maternity &gynecological teaching hospital , 2015.
 (n:546)**

ANC	LBW		NBW		Total	
	No	%	No	%	No	%
No vists	3	4.8	29	6.0	32	5.9
Less than 3vists	17	27.5	138	28.6	155	28.4
3---10vists	38	60.3	285	59.6	323	59.2
More than 10 vists	5	7.9	31	6.4	36	6.6
Total	63	11.5	483	88.5	546	100

$X^2=0.407$

$P=0.544$ not significant.

**Table(11) : Families income / months among mothers who delivered at ELobeid maternity &gynecological teaching hospital , 2015.
 (n:546)**

Birth weight Families income/month	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Less than 300 pounds	10	15.9	111	23.0	121	22.2
300<600 pounds	32	50.8	203	42.0	235	43.0
600- 900 pounds	13	20.6	91	18.8	104	19.0
More than 900 pounds	8	12.7	78	16.1	86	15.8
Total	63	11.5	483	88.5	546	100

$X^2 = 2.781$

$P=0.743$ statistically In significant

**Table(12) : Nutrition during pregnancy of mothers delivered at ELobeid maternity &gynecological teaching hospital , 2015.
 (n:546)**

Nutrition during pregnancy	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Ordinary diet	58	92.1	323	66.9	381	69.8
Special diet(proteins minerals)	5	7.9	160	33.1	165	30.2
Total	63	11.5	483	88.5	546	100

$X^2 = 16.770$

$P=0.000$ statistically significant

**Table(13) : History of abortions among mothers delivered at ELobeid maternity & gynecological teaching hospital , 2015.
 (n:546)**

Abortion	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Yes	15	23.8	93	19.3	108	19.8
No	48	76.2	390	80.7	438	80.2
Total	63	11.5	483	88.5	546	100

$X^2= .729$

$P=0.394$ statistically Insignificant



Table(14) : History of deaths of new born among mothers delivered at ELOBeid maternity &gynecological teaching hospital , 2015. (n:546)

Birth weight	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Dead new born						
Yes	14	22.2	86	17.8	100	18.3
No	49	77.8	397	82.2	446	81.7
Total	63	11.5	483	88.5	546	100

$X^2 = .727$

$P=0.394$ statistically Insignificant

Table(15) : type of habits during pregnancies among mothers who delivered at ELOBeid maternity &gynecological teaching hospital , 2015. (n:546)

Birth weight	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Habits						
No used	19	30.2	188	38.9	207	37.9
Tea	16	25.3	208	43.1	224	41.0
Smoking	23	36.5	69	14.3	92	16.8
Alcohol	2	3.2	5	1.0	7	1.3
Coffee	1	1.6	4	0.8	5	0.9
Coffee and tea	2	3.2	1	0.2	3	0.5
Others	0	0	8	1.7	8	1.6
Total	63	11.5	483	88.5	546	100%

$X^2 = 34.019$

$P=0.001$ statistically significant

Table(16) : Health status of new born delivered at ELOBeid maternity &gynecological teaching hospital , 2015. (n:546)

Health status	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Normal	50	79.4	455	94.2	505	92.5
Abnormal	13	20.6	28	5.8	41	7.5
Total	63	11.5	483	88.5	546	100

$X^2 = 17.666$

$P=0.000$ statistically significant

Table(17) : Order of new born delivered at ELOBeid maternity &gynecological teaching hospital 2015.(n:546)

New born order	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
First	28	44.4	150	31.1	178	32.5
Second	20	31.7	131	27.1	151	27.7
Third	8	12.7	76	15.7	84	15.4
More than three	7	11.2	126	26.1	133	24.4
Total	63	11.5	483	88.5	546	100

$X^2 = 8.960$

$P=0.003$ statistically significant



Table(18) : Gender among new born delivered at ELOBeid maternity &gynecological teaching hospital , 2015.
(n:546)

Gender of new born	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Male	36	57.1	191	39.5	227	41.6
Female	27	42.9	292	60.5	319	58.4
Total	63	11.5	483	88.5	546	100

$X^2 = 7.106$

$P=0.578$ statistically In significant

Table(20) : Type of delivery among mothers who delivered at ELOBeid maternity &gynecological teaching hospital , 2015.
(n:546)

Types Of delivery	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Normal	24	38.1	162	33.5	186	34.1
By scissors	6	9.5	55	11.4	61	11.2
By section	33	52.4	266	55.1	299	54.7
Total	63	11.5	483	88.5	546	100

$X^2 = .586$

$P=0.578$ statistically Insignificant

Table (21): Knowledge of mothers about LBW delivered at ELOBeid maternity &gynecological teaching hospital, 2015.
(n:546)

Knowledge about LBW	Low Birth Weight		Normal Birth Weight		Total	
	No	%	No	%	No	%
Yes	6	9.5	87	18.0	93	17.0
No	57	90.5	396	82.0	453	83.0
Total	63	11.5	483	88.5	546	100

DISCUSSION

Low birth weight (LBW) is an important indicator of obstetric care and health status, it continue to remain major public health problem worldwide especially in developing countries.

Low birth weight is an important determinant of child – hood morbidity, associated with death during infancy. Low birth weight is a significant health problem contributing to infant mortality and long –term developmental problems. LBW is one of the major causes of the death of the infant during the first year of life . Study carried out in ELOBeid western part of Sudan about infant mortality by Ali 2000 was found that the infant mortality 20%, there were difference studies carried in Sudan in the different region about low birth weight, were showed different variations of prevalence of LBW, but in ELOBeid town there was no any research about LBW in the hospital or in the community.

This hospital based study carried out in ELOBeid maternity and gynecological teaching hospital in western Sudan, the study aimed to determine low birth weight rate among delivered new

born, to identify the health factors that associated with low birth weight, to find out disruption of low birth weight per gender and to asses the knowledge of the mothers regarding to low birth weight.

To determine low birth weight among delivered newborn in ELOBeid maternity and gynecological teaching hospital (Table 1):

The low birth weight in this study was found 11.5%, it was almost is the same as to what found in the previous studies done in Kassala (Sudan) (11.4%) , and in Khartoum (Sudan) (11%), Our finding of low birth weight rate it was higher than Nigeria (7.3%), China (6.1%), London(9.7), Texas (8.2%) and Saudia Arabia – Riyadh (7.3%) and it was lower than studies were carried out in ELfashir (Sudan) (14.9%), India (20%), Bangladesh (36%), Ethiopia (22.5), Egypt (12.1%), Omdurman (Sudan) (14%) ,Sir Lanka (17.6%), Tanzania (29%) and south Asia (27%). These wide disturbances of percentage of low birth weight in the different countries and the regions in the same country.

To identify the risk factors associated with low birth weight tables 2,3,4.5,6,7,9,10:



Regarding the residence of mothers, the results of this study revealed that the residence of mothers who delivered low birth weight from the urban area was 46.4%, while the mothers who delivered LBW in the sub urban was 25.4%, this agree with study carried out by Terma 2003 in Jimma Zone – Ethiopia, Our finding disagree with study carried out by Osman 2007 in Kassala (east Sudan), who reported that 17.9% of mothers who delivered LBW from the suburban while 9.5% from urban and also disagree by study carried out by WHO 2004 in Bangladesh revealed that the residence of mothers who delivered LBW in the suburban area about 37%, and 29% in the urban. In our study statistically significant ($\chi^2=22.210, p=0.001$).

There was correlation between residence of mothers and the low birth weight.

In table (4) the education level of mothers who delivered LBW were illiterate 47.6%, it was consistent with study carried out in Khartoum (Sudan) by Saeed et al 2013 reported that 42.3% of mothers who delivered LBW had lack of education, and also agree with study carried by Dehlui 2013 in Nigeria and this is one of the risk factors which associated LBW Statistically significant ($p=0.000$).

Table (3): In this study age of mothers who delivered LBW less than 20 years was low about 11.1%, than mothers age 20-25 years (39.7%), this was consistency by study carried out by ALhassan 2010 in Madani (Sudan) and it was also consistency with study carried out by Azzeh 2013 in Makkha (Arabia Saudia) were reported that no difference of mothers age and LBW. Our finding disagree by study carried by Siddhi 1998 in Tanzania reported that the low birth weight was higher in mothers age less than 20 years, the age of mothers less than 20 years was factor which affecting LBW, but In this study statistically not significant ($\chi^2=2.57, p=0.787$).

In table (5) show that there was no relation between mothers occupation and low birth weight. Our finding in this study the majority of mothers who gave LBW were house wife (88.9%), this was consistent with previous study carried by Azzeh et al 2013 in Saudia Arabia, and it was also consistency with study carried out by Ministry of Health Centre and Nutrition 2008 in SriLanka reported that 58.3% of mothers who gave LBW were unemployed. And disagree with previous study carried out by Mansour et al 2002 he was reported that there was significant between maternal work and low birth weight, in our study statistically not significant ($p=0.824$).

Small family size was found to be related to low birth weight in table (6) This consistent with written in Nelson text book 2005 which stated that if family size was small we got a normal newborn compared to large families, in our study was found that (5-10 person) (63.5%) of mothers had low birth weight statistically significant ($\chi^2=21.865, p=0.000$).

Table (8) show that there was no significant between births intervals and low birth weight $p=0.070$, in our study was found that the periods of intervals from 1<2 years was (36.5%), this was not confirm which written by Siddhi 1998 in Tanzania he was reported that there was significant correlation between births interval and low birth weight.

-Mothers delivered low birth weight babies had health problems during pregnancy like infections, Bleeding, diabetes, anaemia and hypertension. These health problems are considered as a major cause of low birth weight this agree with (Gorge, 2007) (19). It must be treated and controlled by regular visit to antenatal care centre statistically significant ($X=60.167, p=0.000$).

History of dead new born and abortions in this study had no affect low birth baby. Statistically not significant ($\chi^2=0.727, p=0.394$).

-Low birth weight was found to be related to substance abuse habits smoking or alcohol during pregnancy. It is an important factor, where 36.5% were smokers and 3.2% used alcohol. This result agree with what it is noticed that more than 50% of smokers had low birth weight, and also this finding agree with (Fundamental Concepts Skill for Nursing, 2007) (19) statistically significant ($\chi^2=34.019, p=0.000$).

-Nutrition during pregnancy is an important factor if the pregnant women not had taken important elements of nutrition can delivered low birth weight baby. In this study the mothers who have low birth weight had taken normal diet about (92.1%), special diet (7.9%). statistically significant ($X^2=16.770, p=0.000$).

Males with low birth weight were more than females (male 57.1%), (female 2.9%). This is agree with study in reference (Gorge, 2007) (19), which stated that males larger than females but the difference is slight at birth. Statistically significant ($\chi^2=34.019, p=0.000$).

Relatives or relationship between parents for new born with low birth weight was a factor that can lead to low birth weight (87.3% had relationship), (12.7 no relationship between them), statistically significant ($\chi^2=47.158, p=0.000$).

Age of the mothers, educational level, and residence, nutrition during pregnancy, family size, habits of smoking and alcohol consumption during pregnancy, diseases with pregnancy, order of newborn, and parent's consanguinity are the most factors associated with low birth weight.

Knowledge of mothers who delivered low birth weight (90.5%) not no about low birth weight.

CONCLUSION

Incidence of low birth weight was found to be 11.5%, in the studied population. Mothers delivered LBW were more illiterate this may influence their knowledge and hence lead to increase in low birth



weight among babies. The study revealed that most of mothers which delivered newborn with low birth weight were from the centre of the city. The study showed that substance abuse, (e.g. smoking and alcohol) during pregnancy was practised by some mothers. Those factors can affect newborn birth weight. The nutritional status of mothers was inadequate and poor (92.1%) during pregnancy. Males with low birth weight were more than females (57.1% males and 42.9% females). The study revealed that the majority of mothers (90.5%) had poor knowledge about low birth weight.

REFERENCES

1. CDC, Centre for Disease Control and prevention :International notes up date .Incidence of low birth weight, mortality and morbidity weekly paper (MMWRFeb.2001) WWW.CDC.
2. Mayes M, Tivan D: Mays mid wifery, 12th edition 1997:852-887.
3. <http://WWW.emro.who.int/> (2005)
4. World Health Organization . Global Target 2025.To improve Maternal, infant and young child Nutrition (<http://www.who.int/nutrition/global> targets 2025/en/accessed 17 October 2014).
5. Park K: Low birth weight, 18th edition, 2005:462.
6. Taha T: Distribution and determinant of low birth weight and prenatal Epidemiology: April 2002.
7. Mansour,E. (2005).Morbidity and Mortality of low birth weight infants in Egypt, East Mediterr Health .J 11 (4) :723-31.
8. Boerma .et al (1996)Data of birth weight in developing countries.
9. Colin,B.&Tomiko, H.(2012). R.P monitoring in health and diseases1561- 1571.Newyork: Springer.
10. Cheiny. Et al .(2013). An epidemiological Survey On L.B.W in .infants in China and analysis out come of full term L.B.W. infant outcomes.:13-242 Pup Med.
11. Ali,N.(2000). Infant mortality in ELObeid town.
12. Omer,A.et al.(2012).Study of prevalence of low birth weight in Khartoum state Capita of Sudan.
13. Dahlui M, Azhar N and Mansur 2016,Risk factors of low birth weight in Nigeria : Evidance from the 2013 Nigeria Demographic and health survey vol(9)
14. Terma,T. (2003) Prevalence and determinants of low birth weight in Ethiopia :East African Medical J 83(7): 366-77.
15. WHO 2004 National low birth weight survey of Bangladesh .
16. Siddhi,S.Bela,R (1999).Department of low birth weight :A community Based prospective cohort study.
17. Mansour,E.Eissa,A.N,&NofalL.M.(2002). Cohort study about incidence and factor leading to low birth weight in Egypt: International pediatrics / vol.17/No.4www.ijmr.com
18. Azzeh, F., 2013 risk factors associated with delivering low birth weight infants among pregnant women: Apreliminary study in western Saudia Arbia .
Journal of Biological Sciences ,13:417-427.
20. Abderahuim et al (2014), Anemia and low birth weight in western Sudan, *Transection of the Royal society of tropical and hygiene vol.104,issue 3- page 234-236.*
21. Taha TE, Distribution and Determinant of Low Birth Weight Pediatric and Prenatal Epidemiology; April 2002.



THE PROBLEM OF TEACHING RUSSIAN AS A FOREIGN LANGUAGE

Khalilova Luiza Adilovna

Senior lecturer of the Department of Russian Language and Literature Karshi State University, Uzbekistan

Milovanova Elena Valerievna

Senior lecturer of the Department of Russian Language and Literature Karshi State University, Uzbekistan

ANNOTATION

In this article, the authors consider issues related to teaching Russian in national groups

KEY WORDS AND PHRASES: *Russian language, subject, vocabulary, skills, abilities, grammatical structure of the language, principle, motivation.*

ПРОБЛЕМА ПРЕПОДАВАНИЯ РУССКОГО ЯЗЫКА КАК ИНОСТРАННОГО

Халилова Луиза Адиловна,

Милованова Елена Валерьевна -

Старшие преподаватели кафедры русского языка и литературы Каршинского государственного университета. Узбекистан.

Аннотация

В данной статье авторы рассматривают вопросы, связанные с преподаванием русского языка в национальных группах

Ключевые слова и фразы: *русский язык, предмет, словарный состав, навыки, умения, грамматический строй языка, принцип, мотивация.*

«Язык — душа любой национальности, ее святыня, ее самое ценное сокровище». Иван Огиенко

Термин русский язык как неродной многозначен: под ним подразумевается, с одной стороны, средство многонационального общения народов мира; с другой – учебный предмет как в

национальной, так и русскоязычной системе дошкольного, школьного, высшего образования.



Преподавание русского языка как неродного имеет много общего с изучением русского языка как родного. Их объединяет:

1. система русского языка как предмета изучения: владение на основе знаний фонетическими особенностями, словарным составом, грамматическим строем русского языка, владение навыками и умениями свободного пользования языком в его устной и письменной формах;

2. общие дидактические принципы и воспитательная направленность обучения, связанная с развитием всех сторон личности учащегося;

3. идентичность психологических процессов, психологической деятельности в условиях обучения у представителей разных национальностей, связанных с качественной трансформацией умственных операций и действий, с формированием мотивации, познавательных интересов, активности субъекта обучения.

Для изучения иностранного, неродного языка наиболее типичен путь сознательный и намеренный, когда ученику сообщаются необходимые для практического владения языком знания в виде правил, инструкций, предусматривается выполнение специальных упражнений, которые обеспечивают закрепление усвоенных знаний и образование на их основе речевых навыков и умений.

Большинство нерусских детей по-настоящему начинают усваивать русский язык в стенах школы либо дошкольного учреждения, попадая в условия учебного двуязычия (билингвизма), когда им параллельно дается знание двух языков – русского и родного (в полиэтнических школах или школах с этнокультурным компонентом обучения). Более успешно учатся дети, которые воспитаны в обстановке «удачного», «счастливого», «элитарного» двуязычия, т.е. в интеллектуально развитых семьях с высоким или средним социально-экономическим статусом. Вместе с тем речевое развитие билингва имеет свои особенности. Такие дети в среднем начинают говорить позже. Если в семье не выдерживается принцип «одно лицо – один язык», то дети не могут самостоятельно установить особенности употребления слов нового, неродного языка. Их словарный запас по каждому из языков в среднем меньше, чем у сверстников-монолингвов.

Общением на неродном языке можно овладеть более эффективно при условии, что обучение носит характер сотрудничества, адекватно возрасту обучающихся; учебный материал, его формальные и прагматические характеристики практико-ориентированы и

приспособлены к нуждам обучающихся; применяемые методики видоизменяются в зависимости от конкретных обстоятельств и больше значения придается ситуативному и визуальному контексту коммуникации.

Вместе с тем важно в обучении русскому языку как неродному достичь по возможности сбалансированного двуязычия. Недостаточный доступ к неродному языку порождает, в свою очередь, систему кризисов в овладении речью: первый кризис может проявиться при поступлении в школу, когда авторитет учителя и язык школьного обучения начинают играть существенную роль, а речь актуализируется через письменную форму выражения; второй кризис возможен в 12 – 14 лет, когда происходит осознание своей независимости и подросток решает сам, что для него важнее (в том числе – какой из языков); третий кризис может проявиться при вступлении во взрослую, самостоятельную жизнь, когда языковые приоритеты начинают определяться профессиональными интересами.

Обучение русскому языку как неродному – сложный, многоаспектный процесс передачи и усвоения знаний, навыков, умений, способов познавательной деятельности, формирования коммуникативной компетенции. Это двусторонний процесс, в котором в совместной деятельности участвуют преподаватель и обучающийся. Деятельность обучающегося и ее эффективность зависят от мотивации, интересов, потребностей, индивидуализации процесса обучения, максимального учета особенностей личности обучающегося, от собственной активности учащихся, гибкого, творческого подхода педагога к отбору материала, способам его введения и закрепления.

В задачу преподавателя русского языка как неродного входит:

- определение объема и содержания необходимого для усвоения материала и ориентиров (правил, инструкций) для оперирования им;

- организация учебных действий учащихся таким образом, чтобы они давали наилучший результат; - побуждение учеников к деятельности, ее мотивирование;

- осуществление контроля за эффективностью учебной деятельности обучающихся по усвоению неродного языка.

К особенностям таких уроков относятся следующие аспекты:

- общая направленность уроков, взаимосвязанное изучение языка и культуры;
- русский язык изучается в контексте русской культуры и в контексте диалога русской



и родной культуры учащихся, а также в сопоставлении с другими культурами.

Для учителей наших общеобразовательных школ является реальностью то, что ученик в любом классе может начинать учить язык с нуля и в этих же классах могут находиться продвинутые в языковом отношении дети: в таком классе бывают ученики с разным уровнем владения языком. Также эти дети, немного усвоившие русский язык, в любой день могут покинуть школу в связи с отъездом своих родителей. И самой главной проблемой, на наш взгляд, является обязательность выполнения учебной программы по предмету, в то время, как многие дети даже не понимают о чем говорит учитель. В наших школах лишь 20% от общего числа обучающихся являются носителями русского языка, остальные 80% составляют дети 15 разных национальностей (узбеки, таджики, киргизы, казахи, туркмены, уйгуры).

Конечно, проблема преподавания русского языка как иностранного (РКИ) для нас актуальна. В основном у нас возникает проблема в преподавании русского языка детям из дальних кишлаков. Если городские дети приходят к нам с неплохим знанием русского языка, то дети из дальних кишлаков порой только у нас впервые слышат русскую речь.

У нас на практике были дети, абсолютно не понимающие русского языка. На начальном этапе приходилось работать с ними с помощью «переводчиков» из числа учащихся, неплохо говорящих по-русски, или старших сестер или братьев. Но, как правило, это длится сравнительно недолго (7-8 занятий). Далее ребенок сам с помощью учителя овладевает русским языком. Прием учебного перевода показал свою эффективность и может быть рекомендован к использованию на уроке.

Как в таких условиях выполнить свою задачу в школе? Здесь надо понять, что обеспечит успех в приобщении учеников к русскому языку и к русской национальной культуре. Мы пришли к заключению, что следует учитывать особенности родных языков учеников. Сейчас у нас, в отличие от времен полувековой давности, имеются большие возможности для филологического знакомства с родными языками учащихся (залогом успеха в изучении по-прежнему является практика и наилучшим вариантом в этом случае остается общение с носителем языка; пользователь пишет текст на изучаемом языке, после чего за текст берется носитель соответствующего языка, вносящий в него соответствующие правки. Поскольку учеников, которые хотят изучать русский язык и впредь будет достаточно много, необходимо таким образом оптимизировать обучение РКИ.

Считаем, главное в нашем деле — пробудить искреннюю мотивацию у национальных детей при изучении РКИ. Обратимся к проблеме мотивации у школьников.

Литература

1. **Абдуллоева Т.М.** Коммуникативный метод обучения русскому языку в таджикских группах // Вестник Таджикского национального университета. 2014. № 3-7 (148). С. 299-302.
2. **Балыхина Т. М.** Методика преподавания русского языка как неродного (нового). 2-е изд., испр. М., 2010.
3. **Михеева Т. Б.** Обучение русскому языку в полиэтнической школе. М., 2008.
4. **Русский язык как неродной: новое в теории и методике IV международная научнометодическая конференция. Сборник научных статей Выпуск 4 Чебоксары – Москва 2015.**



TECHNOLOGIES PÉDAGOGIQUES MODERNES POUR L'ENSEIGNEMENT DE LA LANGUE FRANÇAISE POUR LA PRÉPARATION DANS LES UNIVERSITÉS ÉTRANGÈRES

Kushaeva Gulchekhra¹

¹ maître de conférences du département
Langue et littérature françaises,

Juraeva Ugiyoy²

² Direction des étudiants Français langue
et littérature de Karshi Université d'État.
Ouzbékistan.

ANNOTATION

L'objectif de ce travail est d'analyser les technologies pédagogiques modernes dans l'enseignement du français pour préparer les étudiants de l'Université d'État de Karshi à la mobilité académique vers les universités françaises.

Mots clés: *mobilité académique des étudiants, enseignement multi-niveaux, universités, français, éducation.*

СОВРЕМЕННЫЕ ПЕДАГОГИЧЕСКИЕ ТЕХНОЛОГИИ ОБУЧЕНИЯ ФРАНЦУЗСКОМУ ЯЗЫКУ ДЛЯ ПОДГОТОВКИ В ЗАРУБЕЖНЫХ ВУЗАХ

Кушаева Гулчехра¹, Жураева Угилой²

¹ Старший преподаватель кафедры
Французского языка и литературы,
² Студентка направления французского
языка и литературы Каршинского
государственного университета.
Узбекистан.

Аннотация

Целью данной работы является анализ современных педагогических технологий в преподавании французского языка для подготовки к академической мобильности студентов Каршинского государственного университета в зарубежные вузы.

Ключевые слова: *академическая мобильность студентов, разноуровневое обучение, университеты, французский язык, образование.*



Actuellement, la mobilité académique des étudiants vers les universités françaises ne cesse de se développer et le nombre d'étudiants étrangers ne cesse de croître, y compris les étudiants des universités d'Ouzbékistan.

Nos étudiants partent étudier en France dans diverses spécialités, et maintenant de plus en plus se tournent vers les spécialités techniques. Il est à noter que ces dernières années, l'Université d'État de Karshi a étendu ses activités internationales avec un certain nombre de pays européens, dont la France. Ayant fait leurs études dans les universités françaises, les étudiants retournent en Ouzbékistan et trouvent un emploi dans des entreprises, en appliquant leur expérience, leurs connaissances et leurs compétences. «Les étudiants étudient le français, car ils doivent mener une communication interculturelle à orientation professionnelle, interagir avec des locuteurs natifs d'une autre langue et culture, en tenant compte de la vision moderne de la vision du monde scientifique, des sciences techniques, des valeurs nationales» [1].

Matériel et méthodes de recherche

Afin que les étudiants soient bien préparés pour étudier dans les universités françaises, notre université organise des cours pratiques pour préparer la mobilité académique, où le système éducatif en France est couvert - ses avantages et ses inconvénients, il est comparé au système éducatif en Ouzbékistan, en français est étudié pour la communication professionnelle, y compris la terminologie et les concepts familiers aux étudiants dans la langue de leur spécialité, de nombreux exercices sont effectués, des textes en mathématiques, chimie, physique, etc. sont utilisés. Les élèves apprennent également à traduire des textes dans leur spécialité, à les redire, à faire des rapports, à rédiger des CV, à faire des présentations, à lire des formules mathématiques, des diagrammes et des tableaux en français, etc. Pendant les cours, les étudiants regardent des vidéos avec de courts extraits de conférences sur la chimie, la physique, les mathématiques et d'autres matières enseignées par des professeurs de français dans leurs universités. De plus, lorsque des enseignants et scientifiques français dans le domaine de la physique, de la chimie et de la pédagogie de l'ingénieur viennent dans notre université pour participer à des écoles scientifiques, des conférences et des master classes, ils sont invités à suivre des cours en préparation à la mobilité académique. Des professeurs et des scientifiques français expliquent aux étudiants comment se déroulent les cours pratiques et théoriques dans les universités françaises, les initient au système d'enseignement supérieur en France. Ils expliquent comment rédiger des articles scientifiques et des masters, parlent de stages industriels et scientifiques

dans des entreprises françaises. Ces cours présentent un grand intérêt pour les étudiants. Ainsi, les cours de préparation à la mobilité académique se déroulent selon un programme spécialement développé, ces cours motivent les étudiants à entrer dans les universités françaises et facilitent leurs études et leur vie quotidienne en France.

Parmi les difficultés que rencontrent souvent les étudiants en France, on peut citer: «culturelles et contextuelles dans les relations avec les autres étudiants, les enseignants, l'administration; spécialités linguistiques au niveau de la langue et diverses situations de communication universitaire (compréhension de la parole orale, des cours magistraux, compréhension de documents dans une discipline choisie, travaux écrits, etc.); problèmes méthodologiques (par exemple, enregistrement de conférences)» [2]. Ces difficultés sont explorées dans un cours de français pratique et comment les surmonter.

Pour confirmer le niveau de la langue française, vous devez réussir l'examen international DELF. Lors des cours de préparation à la mobilité académique, les étudiants se préparent à cet examen. Les étudiants de KSU réussissent cet examen et reçoivent un diplôme de niveau B2. Il est à noter que les étudiants n'ont le droit d'étudier dans les universités françaises que s'ils possèdent ce diplôme international. Le niveau de maîtrise du français B2 permet de comprendre les cours magistraux et pratiques, le système administratif et organisationnel de l'université, de maîtriser la parole écrite (prendre des notes lors des cours, rédiger des analyses, des commentaires, des essais, etc.). Lors de ses études en France, un étudiant «doit comprendre les conditions des examens, le contenu des travaux, comprendre les textes de sa spécialité et posséder les compétences du discours académique oral (rapport, présentation, soutenance, etc.)» [3].

Il est à noter que les principaux objectifs de l'enseignement de la langue française sont l'acquisition de compétences en communication par les étudiants et le développement de la capacité des étudiants à utiliser le français comme moyen de communication, c.-à-d. acquisition pratique du langage. La tâche de l'enseignant est de choisir de telles technologies pédagogiques d'enseignement qui permettraient à chaque élève de maîtriser la langue française. Lors des cours de français pour la mobilité académique, diverses technologies pédagogiques sont utilisées, parmi lesquelles une attention particulière est accordée aux éléments suivants: apprentissage à plusieurs niveaux, technologies d'apprentissage par problème, apprentissage en collaboration, technologies d'apprentissage par projet, technologies d'apprentissage de jeux, technologies de l'information et de l'informatique. Ci-dessous, nous nous attardons



brèvement sur ces technologies pour l'enseignement du français.

Résultats de recherche et discussion

Formation à plusieurs niveaux

Donnons une définition de cette technologie pédagogique. "L'éducation à plusieurs niveaux est une technologie pédagogique d'organisation du processus éducatif, dans laquelle on suppose un niveau d'assimilation différent du matériel éducatif, un niveau de formation différent, ce qui permet à chaque élève de maîtriser le matériel éducatif à un niveau dépendant de ses capacités, les capacités et les caractéristiques individuelles de la personnalité de chaque élève" [4]. «L'éducation à plusieurs niveaux est une technologie dans laquelle les efforts de l'étudiant pour maîtriser ce matériel sont considérés comme un critère d'évaluation de la performance de l'étudiant» [4].

Dans les classes de langue française, «des problèmes se posent concernant l'hétérogénéité de la composition des élèves d'un même groupe: capacités individuelles différentes, opportunités éducatives, intérêts» [6], le niveau initial de connaissance de la langue française. La solution de ces problèmes et de ces tâches est facilitée par la différenciation interne des groupes d'étudiants, qui est à la base de la technologie de l'éducation à plusieurs niveaux.

L'accent principal dans l'enseignement à plusieurs niveaux est mis sur la division des étudiants en fonction de leurs capacités ou de leur niveau de formation, ce problème est résolu par: 1) la sélection de matériel éducatif, dans lequel chaque niveau (initial, intermédiaire, avancé, avancé) est proposé en fonction de la capacité et aptitudes individuelles des étudiants; 2) offrir aux étudiants la possibilité de choisir indépendamment le «matériel pédagogique, la méthode de travail éducatif et le choix d'un niveau d'enseignement approprié pour eux-mêmes, c'est-à-dire. L'opportunité de devenir un sujet d'activité cognitive, morale et de communication» [3].

Voici un exemple d'apprentissage multi-niveaux pendant les cours pour préparer la mobilité académique. Le groupe est divisé en sous-groupes de 3-4 personnes de différents niveaux de formation. L'ensemble du groupe travaille sur un thème "Premier jour en France". Tous ensemble, ils développent un plan pour venir en France, obtenir un dortoir et faire connaissance avec une université française. Chaque sous-groupe se voit confier la tâche de préparer sa part: développer un itinéraire de sa ville natale à la ville où se trouve l'université française; développer un itinéraire vers l'auberge où les étudiants vivront; préparer tous les documents qui seront nécessaires pour entrer dans une auberge, développer un itinéraire de l'auberge à l'université; préparer tous les documents requis à l'université, etc. Pendant le travail, les sous-groupes communiquent

entre eux, se posent des questions, proposent leurs options. Tout le vocabulaire requis sur le sujet a été appris lors des leçons précédentes. Par conséquent, dans cette leçon, la pratique de la parole, des activités de communication sont effectuées.

Technologies d'apprentissage problématiques

L'idée de l'apprentissage par problèmes repose sur la volonté de renforcer le rôle de l'élève dans l'éducation, la prise de conscience de l'importance de son développement personnel. Aussi, "l'enseignant guide et dirige le processus de résolution des situations problématiques, et en augmentant l'indépendance et la personnalisation des connaissances acquises, ils sont plus assimilés par les étudiants, et le processus éducatif est activé en raison d'un plus grand intérêt de la part des étudiants" [2].

Ces technologies pédagogiques permettent aux étudiants d'appliquer leur créativité dans le processus de maîtrise de nouvelles connaissances, de former des intérêts cognitifs et de la motivation. L'apprentissage par problème est basé sur la création d'une situation problématique et sa solution. «Les principaux objectifs de l'apprentissage par problèmes: assimilation significative par les étudiants du système de connaissances et des méthodes d'activité mentale et pratique; développement de l'indépendance cognitive et des capacités créatives des élèves; la formation d'une vision du monde scientifique» [4].

L'apprentissage par problème est un type d'interaction dans lequel une difficulté consciente est réalisée, les moyens de la surmonter nécessitent la recherche de nouvelles voies d'action et de connaissances. «Il existe différentes manières de créer des situations problématiques: amener les élèves à une contradiction et leur demander de trouver eux-mêmes une solution; collision de contradictions dans les activités pratiques; présentation de différents points de vue; une proposition de considérer le phénomène sous différentes positions; motivation à faire des comparaisons, des généralisations, des conclusions» [5].

Dans le cadre de la préparation aux cours de mobilité académique, nous proposons aux étudiants diverses situations problématiques.

Donnons un exemple. Pour les étudiants internationaux des universités françaises, il existe des cours préparatoires en français tout en étudiant à l'université. Les étudiants se voient proposer une situation problématique - choisir un lieu et une méthode d'enseignement. Les lieux sont les suivants: Département des étudiants étrangers, Département des relations internationales, Centre linguistique, Centre de ressources en français. Méthodes d'apprentissage: sur site et à distance. Les étudiants doivent analyser ces lieux et modes d'apprentissage et



choisir le meilleur endroit pour eux pour étudier et justifier leur choix.

Technologies de projet pour l'enseignement d'une langue étrangère

Récemment, les technologies de conception ont trouvé une large application dans la pratique de l'enseignement des langues étrangères. Les technologies de conception prévoient l'utilisation de méthodes problématiques, de recherche et de recherche visant à résoudre des problèmes réels. L'utilisation de la technologie de conception aide les élèves à réfléchir à la signification de l'énoncé plutôt qu'à la forme du langage.

«Lors de la structuration d'un projet, on distingue les approches suivantes: définition des objectifs (définition d'un thème, d'un problème, d'hypothèses, d'objectifs de projet); planification (détermination des méthodes de recherche, des sources d'information, des critères d'évaluation); recherche (collecte d'informations, résolution de problèmes intermédiaires); présentation (soutenance) et évaluation des résultats (appréciation qualitative du travail effectué) »[6]. La protection des projets revêt une importance particulière, où une analyse des activités du projet est effectuée, y compris une auto-évaluation et une évaluation mutuelle. Les résultats du travail collectif des étudiants sont résumés, le bilan du travail effectué est donné. Les élèves recherchent des informations dans une langue étrangère et donnent un point de vue supplémentaire sur la résolution du problème. L'opportunité pour les étudiants de voir leur réelle maîtrise de la langue peut être une incitation importante à approfondir ou approfondir l'étude de la langue française.

Donnons un exemple de technologies de conception. Les étudiants se voient confier la tâche de rédiger un semestre dans le cadre du sujet de leur spécialité, car dans les universités françaises, les étudiants rédigent de nombreux travaux de session, et nos étudiants doivent être capables de rédiger correctement des travaux de session en français. Ensuite, le travail de cours est défendu devant tout le groupe (l'enseignant vérifie d'abord le travail, corrige les erreurs, fait des commentaires).

Ainsi, les technologies de conception sont l'un des moyens les plus efficaces pour développer et former des étudiants qui savent comment naviguer dans l'espace de l'information. Ces technologies révèlent le potentiel intellectuel, créatif et spirituel des étudiants, augmentent la motivation à apprendre une langue étrangère.

Technologies d'apprentissage de jeu

Dans le processus éducatif, un jeu éducatif est utilisé comme l'une des formes d'organisation d'une situation de discours. Le jeu est basé sur la

communication vocale des élèves en fonction de l'intrigue et des rôles répartis entre eux. «Le jeu est une activité spécialement organisée qui nécessite un effort émotionnel et mental» [4]. Dans les cours de langue étrangère, les jeux sont divisés en grammaire, lexical, orthographe, phonétique et créatif. Les jeux peuvent être utilisés lors de la consolidation initiale du matériel, lors de la répétition du matériel passé. Le jeu peut être introduit à différentes étapes de la leçon.

Les technologies d'apprentissage de jeu remplissent une fonction de motivation et d'incitation, car elles entraînent le besoin de communication dans une langue étrangère et sont un modèle de communication interpersonnelle. «Le jeu éducatif détermine le choix des moyens langagiers, favorise le développement des habiletés et capacités de parole, permet de simuler la communication des élèves dans diverses situations de parole, en d'autres termes, le jeu de rôle est un exercice de maîtrise des habiletés et capacités du discours dialogique »[3]. Dans ce cas, le jeu est une fonction pédagogique. Contrairement aux jeux simples, les jeux d'apprentissage ont un objectif d'apprentissage clairement défini et cohérent avec les résultats pédagogiques.

Il convient de noter que l'utilisation de différentes formes de jeu pendant une leçon ou l'utilisation d'une forme de jeu consécutive pendant plusieurs jours est irrationnelle, car elle peut réduire l'intérêt des élèves pour la leçon en particulier et pour le processus éducatif en général. Considérant que la langue française est étudiée par des étudiants, c'est-à-dire des adultes, les fonctions suivantes se distinguent dans les technologies de jeu de l'enseignement au cours de l'utilisation de technologies pédagogiques innovantes: communicative, ludique, ludothérapique, diagnostique, réalisation de soi, interethnique la communication.

Donnons un exemple d'utilisation des technologies d'apprentissage de jeu. Des jeux de rôle sont proposés aux étudiants. Le «candidat» doit passer un entretien pour être admis à la magistrature (dans les universités françaises, les ressortissants étrangers sont interrogés). Un groupe d'étudiants sont des «candidats», tandis que le second groupe d'étudiants est membre du comité. Les «candidats» doivent rédiger une lettre de motivation expliquant pourquoi ils souhaitent étudier dans cette université particulière et rédiger un CV. Ensuite, ils sont convoqués pour un entretien (une personne à la fois). Avant le début de l'entretien, les «membres de la commission» examinent les lettres de motivation et le curriculum vitae des «candidats». Les «membres de la commission» examinent des questions pour les «candidats». Ces derniers doivent utiliser des informations personnelles, être prêts à répondre aux questions et poser leurs propres questions concernant leurs études à l'université. À la fin du jeu,



l'enseignant analyse les actions avec les élèves et organise le travail pour corriger les erreurs typiques.

Technologies de l'information et de l'informatique

Les technologies de l'information et de l'informatique sont souvent utilisées dans l'enseignement du français. «Les technologies de l'information comprennent l'apprentissage programmé, l'apprentissage intelligent, le multimédia, l'apprentissage par simulation, les démonstrations» [6].

Ces technologies pédagogiques sont propices à un enseignement plus efficace des langues étrangères, dont la tâche est le côté interactif de la communication. Ces technologies ont fait de l'apprentissage des langues étrangères un processus vivant, amusant, créatif et naturel. L'enseignement d'une langue étrangère à l'aide d'un ordinateur présente également des avantages techniques. Les capacités graphiques de l'ordinateur rendent le processus d'apprentissage très visuel et vous permettent de montrer tous les types d'activités sous forme d'animation ou d'images. De plus, les images informatiques attirent l'intérêt des étudiants et créent la motivation nécessaire pour apprendre une langue étrangère. Cependant, l'information et la technologie informatique devraient se voir accorder un espace limité dans la salle de classe, car l'ordinateur ne peut pas remplacer la communication humaine nécessaire à de bonnes compétences linguistiques.

Voici un exemple d'utilisation des technologies de l'information et de l'informatique en classe pour préparer la mobilité académique. Pendant la formation, les étudiants regardent des vidéos avec des extraits de cours de professeurs de français en physique, mathématiques, chimie, etc. Les étudiants apprennent à prendre des notes de ces cours en français. Au début de la formation, les étudiants ne peuvent pas faire cela, mais, ayant compris les bases des notes de cours, à la fin de la formation de préparation à la mobilité académique, ils s'acquittent avec succès de cette tâche.

Ainsi, l'utilisation des technologies de l'information et de l'informatique augmente considérablement l'efficacité de l'apprentissage d'une langue étrangère, car les étudiants d'aujourd'hui ne peuvent pas imaginer la vie sans ordinateur et sans technologie informatique.

Conclusion

En conclusion, il faut noter que la mobilité académique des étudiants de l'Université d'État de Karshi vers les universités françaises contribue à une augmentation de l'efficacité et de la qualité de l'enseignement. De nombreux étudiants universitaires qui étudient le français, après avoir obtenu leur

licence, poursuivent leurs études en master dans les universités françaises. L'enseignement du français dans notre université se fait sur la base de cursus et de programmes créés pour préparer la mobilité académique. Lorsqu'il enseigne le français pour la mobilité académique, l'enseignant nécessite une approche créative et l'utilisation de technologies pédagogiques modernes, telles que l'enseignement à plusieurs niveaux, les technologies d'apprentissage par problème, les technologies d'apprentissage par projet, les technologies d'apprentissage de jeux, les technologies de l'information et de l'informatique. Dans le même temps, une attention considérable devrait être accordée au travail avec un public adulte, où les technologies pédagogiques interactives se distinguent par leur spécificité et la construction étape par étape du processus éducatif.

Littérature

1. **Kraisman N.V.** *Technologies pédagogiques modernes dans l'enseignement du français pour préparer la mobilité académique // Problèmes modernes de la science et de l'éducation.* - 2019. - N ° 6.; URL: <http://www.science-education.ru/ru/article/view?id=29284>
2. **Grossman O.L.** *Méthodologie pour l'enseignement du français dans une université non linguistique.* Tachkent, 1989.
3. **Kamolova H.K.** *Français. Didacticiel.* Tachkent, 2014.
4. **Schwartz G.** *Aspect linguoculturologique de la langue française.* Leningrad, 1989.
5. **J. Pompedu.** *Monographie française moderne.* Paris.1981.
6. **Cobols R.** *Particularités de la langue française // Bulletin de l'Université d'État de Moscou, n ° 2.1992.*



THE RESULTS OF PRACTICAL RESEARCH OF THE SEPARATOR IN AN EFFICIENT DESIGN THAT SEPARATES THE RAW COTTON FROM THE AIR

Ozod Rajabov¹

¹Associate Professor (PhD) of the Department of Technological Machinery and Equipment, Bukhara Engineering Technological Institute, Bukhara, Uzbekistan

Shukhrat Khayitov²

²Master student of the Bukhara Engineering Technological Institute, Bukhara, Uzbekistan

Mukhriddin Yokubov³

³Master student of the Bukhara Engineering Technological Institute, Bukhara, Uzbekistan

Article DOI: <https://doi.org/10.36713/epra6098>

ABSTRACT

The article provides information on the main disadvantages of separators currently used in ginneries. The results obtained by identifying ways to overcome the above-mentioned shortcomings and introducing into the production of separators of new efficient design are also presented. The analysis of the results shows that the improved SXM inertial separator allows to preserve the natural properties of cotton by 15-20% compared to the current SX separator, as well as to provide a stable and stable average of 15 t / h.

KEYWORDS: raw cotton, separator, seed, mesh surface, air flow, vacuum - valve.

INTRODUCTION

Improving the efficiency of existing equipment and facilities in ginneries, improving the quality of products in many respects to meet the technical requirements for these devices, the correct choice of technological regulations and the correct observance of aerodynamic standards in pneumatic transport systems depends. Analysis of existing technological and aerodynamic conditions, selection and introduction of alternatives into production, production efficiency, identification of factors affecting the natural properties of cotton and finding ways to eliminate it, air separation device for cotton is available in SS-15A and SX separators. The essence of this scientific work is the introduction of proposals for the elimination of deficiencies and the prevention of fiber loss and its application in production [1,2].

An analysis of this topic and finding a solution to the problem arising from it is a comprehensive analysis of the SS-15A and SX separators, which are widely used in ginneries today. This is due to the fact that cotton, which is widely used today, damages the fiber and seeds, which are the main products of cotton transportation. Therefore, the main goal of this work is to identify ways to overcome the above shortcomings and the introduction of new technologies in production [3,4].

METHODS AND MATERIALS

Currently, the SX separator is widely used in the ginning industry (Figure 1). The separator is designed as follows: separating chamber 1, return wall 2, inertial separation section 3, air inlet and outlet pipes 7, cylindrical mesh surface 6, separation shaft 8, scraper 9 and vacuum valve 5. Cylindrical mesh surface and the separation drum is mounted at a



specified distance (70-100 mm) from the separation chamber.

The fact that the scrapers in the separating drum are interconnected with the air separating cotton prevents the cotton from accumulating in the separating chamber.

The principle of operation of the separator brand SX is based on the principle of operation of the pneumatic separator.

The main part of the seed cotton, which enters the air-separating chamber 1, separates from the air flow as a result of hitting the return wall 2 and by its own inertia falls directly into the vacuum valve. A portion of the seed cotton is moved by the fan along with the air flow absorbed through the mesh surface, sticks to the cylindrical mesh surface, is cleaned with the scrapers of the separating drum and discharged into the vacuum valve.

Due to the use of SX separator, cotton seeds are not allowed to fall directly on the surface of the cylindrical mesh. As a result, a reduction in cotton entanglement and seed damage was achieved. In addition, the plane of the mesh surface is always clean, thus ensuring a constant aerodynamic resistance of the separator. Another advantage of the separator is that it consumes less energy.

Analysis of the SX separator shows that there is a partial loss of fiber during the separation of cotton from the air, which is 0.23 kg / h. As a result of the use of the separator, fiber loss is reduced by 0.17 kg / h for high varieties and 0.83 kg / h for low varieties [5,6].

Improvements to the SX separator have been made in two main areas:

The first direction is to preserve the natural properties of the cotton falling into the vacuum-valve by distributing the cotton layer evenly along the working lengths of the vacuum-valve at the inlet of the separators. In this direction, the cotton layer is concentrated in the middle of the pipe by the centrifugal force, so that the main mass falls on the central part of the vacuum valve. For this purpose, it is advisable to install distribution and guidance devices for the cotton gin.

The second direction is to minimize the mass of cotton moving on the mesh surface by directing the separator by the inertia of the cotton mass moving from the inlet to the vacuum valve. Due to this, the natural properties of cotton are preserved. To do this, improve the design of the inlet pipes of the SX separator and provide aerodynamic process control [7,8,9].

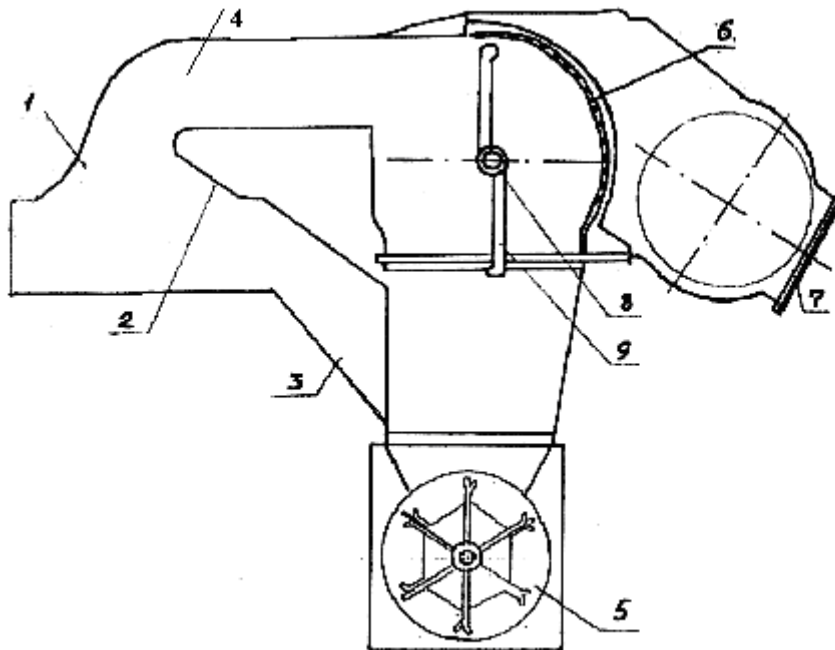


Figure 1. General view diagram of SX separator

1th separation chamber; 2th revolving wall; 3th inertial separation section; 4th seed cotton air inlet pipe; 5th vacuum-valve; 6th grid surface; 7th outlet pipe; 8th separation shaft; 9th scraper.

RESULTS AND DISCUSSION

During the introduction of the improved separator, it was found that the bulk of the cotton mass moving through the separator inlet pipe falls

into the vacuum valve by its own inertia (95-97%) and 3-5% of the seed cotton moves through the air. As a result, it was argued that there was no need to install a mesh drum on the separator [10,11,12]. With this in mind, a sample copy of the improved separator was created. The proposed separator is shown in Figure 1.



2 – rasmda keltirilgan SXM separatorida ishlab chiqarish jarayoni davomida sinov ishlari olib borildi.

Ishlab chiqarishda o'tkazilgan sinov natijalari, paxtaning ifloslik darajasi, namligi hamda chigitning mexanik shikastlanish darajalarini aniqlashga imkon berdi. Olingan natijalar 1 hamda 2 – jadvallarda keltirilgan.

The SXM separator shown in Figure 2 was tested during the manufacturing process.

The results of production tests allowed to determine the degree of contamination, moisture and mechanical damage to the cotton. The results are given in Tables 1 and 2.

Table 1.
Changes in the degree of mechanical damage to the seed

The number of times the cotton passes through the pipe	Depending on the change in the speed of the separator in the inlet pipe, the degree of mechanical damage to the seed,%				
	27,3 m/s	29,7 m/s	31,5 m/s	33,1 m/s	35,0 m/s
Preliminary indication of cotton	1,62				
1	1,62	1,63	1,65	1,64	1,65
2	1,62	1,67	1,64	1,65	1,67
3	1,63	1,69	1,71	1,70	1,68
4	1,68	1,72	1,74	1,72	1,76

Experimental results

Table 2.

Cotton sort	The number of times the cotton passes through the pipe	Degree of mechanical damage to the seed in the SX separator,%	Degree of mechanical damage to the seed in the SXM separator,%	Amount of waste,%
1	Preliminary indication of cotton	1,35	0,73	4,55
	1	1,46	0,74	3,82
	2	1,53	0,79	3,50
	3	1,63	0,81	3,32
	4	1,76	0,84	3,28
W, % 11.2	Preliminary indication of cotton	2,40	0,97	7,20
	1	2,51	1,02	5,94
	2	2,64	1,04	5,94
	3	2,80	1,07	5,21
	4	2,85	1,10	6,53
W, % 16.7	1	2,54	1,03	6,53
	2	2,71	1,07	6,19
	3	2,90	1,10	5,89
	4	2,97	1,15	5,67
	W, % 21.35	1	2,57	1,04
2		2,70	1,06	6,78
3		2,92	1,12	6,66
4		3,00	1,16	6,53
III		Preliminary indication of cotton	2,63	1,02
	1	2,76	1,05	5,76
	2	2,87	1,12	5,24
	3	3,02	1,17	5,08
	4	3,21	1,21	4,90



Figure 2. Side view of SXM separator.

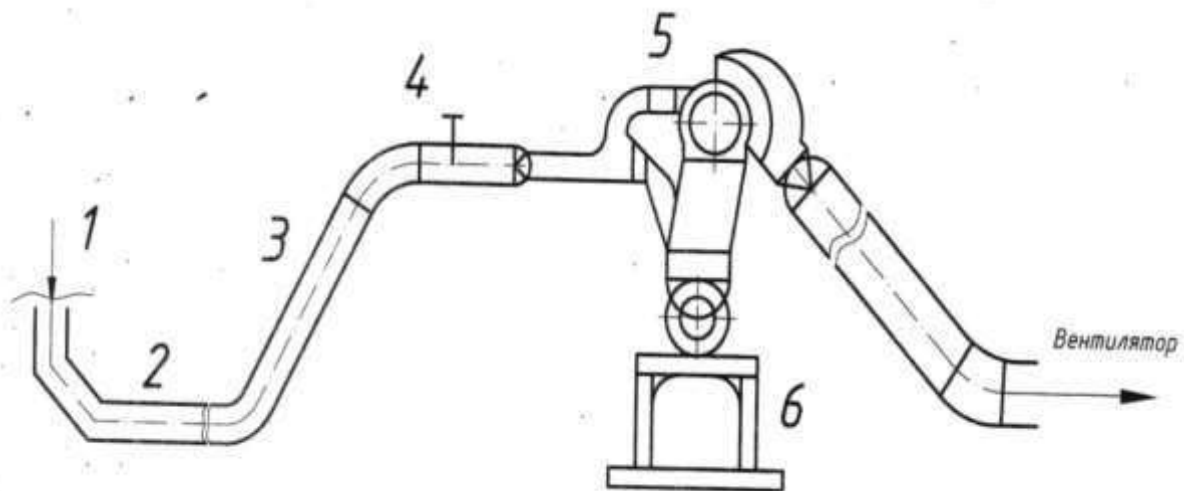


Figure 3. Experimental scheme of pneumatic transport device.

1th cotton transfer area; 2th horizontal section; 3th vertical section; 4th Prandtl pipeline; 5th separator; 6th hatch.

CONCLUSIONS

The analysis of the results in the tables shows that the improved SXM inertial separator allows to maintain the natural properties of cotton by 15-20% compared to the current SX separator, as well as to ensure a stable average of 15 t / h. The implementation of this separator will reduce fiber loss by 0.23 kg / h for high-grade cotton and by 1.83 kg / h for low-grade cotton.

REFERENCES

1. Shodiev Z. O. Creation of a system of equal distribution of cotton flow in the separator SX. Dissertation for the degree of Candidate of Technical Sciences. Tashkent - 2010, 120 pages
2. Juraev Anvar and Rajabov Ozod, Analysis of the interaction of Fibrous Material with a Multifaceted Grid of the cleaner, International Journal of Recent Technology and Engineering, vol. 8, No 1, (2019), pp. 2661-2666.
3. O. I. Rajabov, A. S. Abrorov, N. I. Mirzaqulova, G. B. Zaripov, Kh. S. Ziyodullaev, An experimental study of the location of the grid bars cells installed under spiked cylinders in a cotton cleaner from small waste,



- IOP Conference Series: Materials Science and Engineering*, (2020), 734(1) 012073.
4. O.I. Rajabov, F.A.Fazliddin, M. H. Gapparova and J. Shakhrillo, *The influence of the location of the cells on the allocation of weed impurities for cleaning raw cotton from fine waste*, *IOP Conference Series: Materials Science and Engineering*, (2020), 734(1) 012073.
 5. Rajabov O, Fazliddin K, and Salimov Sh., *Substantiation of Parameters of the Fibrous Material Cleaning Zone*, *International Journal of Engineering and Advanced Technology*, vol. 9, No 3, (2020), pp. 1052-1057.
 6. Jurayev A., and Rajabov O., *Experimental study of the interaction of multifaceted and cylindrical spiky cylinder in cotton cleaner from small waste*, *International Journal of Advanced Research in Science, Engineering and Technology*. Vol. 6, Issue 3, (2019), pp. 8376-8381.
 7. Rajabov Ozod Isroilovich, *The influence of the mode of movement of the pieces cotton when interacting with a cotton grid*, *International Journal of Advanced Research in Science, Engineering and Technology (India)*. Vol. 6, Issue 3, (2019), pp. 8455-8381.
 8. Ozod Rajabov and Ziyodullo Shodiyev, *Analysis of Small Fluctuations of a Multifaceted Mesh under the Influence of Technological Load from the Cleaned Cotton - Raw*, *International Journal of Advanced Research in Science, Engineering and Technology*, Vol. 6, Issue 10, (2019), pp. 11396-11399.
 9. Anvar Djuraev and Ozod Isroilovich Rajabov, *Substantiation of the main parameters of the cylinder with multifaceted spiked of the cotton cleaner from small waste*, *International scientific and practical conference Innovative ideas of modern youth in science*, (2019), USA. P. 149-151.
 10. Mavlyanov Aybek Palvanbaevich, Rajabov Ozod Isroilovich and Yakubova Aziza Vakil qizi, *Study of the influence of the parameters of the plastic grate on elastic supports with nonlinear stiffness on the oscillation frequency*, *International scientific and practical conference "Innovative ideas of modern youth in science"*, (2019), USA. P. 152-154.
 11. Z. Shodiyev, A. Shomurodov and O. Rajabov. *The results of the experimental nature of the vibrations of the grid cotton cleaner*, *IOP Conference Series: Materials Science and Engineering*, 2020, 883 012169 <https://doi.org/10.1088/1757-899X/883/1/012169>
 12. Ozod Rajabov, Ziyodullo Shodiyev, Ikrom Inoyatov, Mastura Gapparova. *Analysis of the Technological Process of Cleaning Raw Cotton from Small Trash*, *International Journal of Emerging Trends in Engineering Research*, Volume 8. No. 9, September 2020, pp. 6022-6029.



THE IMPACT OF SERVICE QUALITY ON USER SATISFACTION: A CASE STUDY OF SELECTED PUBLIC LIBRARIES IN BANGLADESH

Md. Amanullah^{1*}

¹Professor,
School of Business,
Ahsanullah University of Science and
Technology,
141-142 Love Road, Tejgaon,
Dhaka 1208,
Bangladesh.

Mahamudul Hasan²

²Assistant Professor,
Department of Marketing,
Faculty of Business Administration and
Management,
Patuakhali Science & Technology University,
Dumki, Patuakhali 8602,
Bangladesh

Md.Hafez³

³Assistant Professor,
School of Business,
Ahsanullah University of Science and Technology,
141-142 Love Road, Tejgaon,
Dhaka 1208,
Bangladesh.

Article DOI: <https://doi.org/10.36713/epra6218>

ABSTRACT

The objective of the study is to examine the impact of service quality dimensions on user satisfaction of the public library in Bangladesh. A structured questionnaire had been developed and distributed among 150 respondents who are taking public library services from Barisal and Patuakhali district. Convenience Sampling method was applied to collect primary data. Several hypotheses have been extracted from the conceptual framework and are tested using multiple regression analysis. Findings of the study showed that service quality dimensions have a certain degree of relationship with public library user satisfaction. It is also shown that tangibles are the most dominant predictors among five (5) significant predictors which mostly lead to public library user satisfaction. Besides, results also show empathy, and the assurance dimension plays a significant role in user satisfaction. Therefore, these findings will be beneficial for those who are solely responsible for public library management and can get an idea to improve the overall service quality of public libraries to provide a high degree of satisfaction.

KEYWORDS: *SERVQUAL, Tangibles, Responsiveness, Reliability, Assurance, Empathy, Satisfaction*



1.0 INTRODUCTION

The modern age is the age of information. It plays a critical role in the overall development of human beings (Terhile & Anthanusis, 2013). Public libraries are service-oriented institutions that contribute to society by delivering sources of knowledge and updated information for the readers. The primary goal of the public library is to satisfy the users through quality library services. Thakuria (2007) said that service quality is a matchmaker of expectations and perceptions of the library users. Service quality is the extent of delivery the excellence in the resources and library services to the users to gain a higher level of satisfaction (Partap, 2019). The public library is diverse from the academic library such as an academic library in terms of the services that provide information to the general public. In Bangladesh, every district has public libraries but in our study, we just focus on the public library in Barisal and Patuakhali region. The public library in Barisal and Patuakhali delivers different educational services such as books, articles, journals, and other relevant connected to reading activities. Many studies have been conducted to investigate the impact of service quality on user satisfaction in the context of university academic libraries in Bangladesh by Alam, 2020; Hossain & Islam, 2012. Unfortunately, very few studies have been conducted in Bangladesh related to public library user satisfaction. Therefore, this study is an endeavor to examine the impact of service quality on public library user satisfaction.

Specifically, the current study aims to accomplish these objectives by answering the following research questions:

1. How do service quality dimensions (Tangibles, Responsiveness, Reliability, Assurance, Empathy) influence user satisfaction of public libraries in Bangladesh?
2. Which dimensions have more impact on the user satisfaction of public libraries in Bangladesh?
3. What will be the strategies to enhance the user satisfaction of public libraries in Bangladesh?

This study has been organized as follows: the first part includes a review of literature and hypotheses development. The second part explains the methodology and conceptual framework for this study. The third part shows the data analysis and the results of the study. Finally, the study concludes with a discussion of the theoretical and managerial implications along with the conclusion.

2.0 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT Measuring Service Quality of Public Libraries in Bangladesh

Service quality can be defined as the overall assessment of the services by the users. Service quality depends on how much a service is to meet up the consumer's expectations. Wang & Shieh (2006) stated that service quality is the difference between customers' hope and actual services provided by the service firms. Hernon and Altman (2010) stated that users' assessment of library services is a well-known concept and recommended eleven questions for evaluating library services: how much, how many, how economical, how prompt, how accurate, how responsive, how well, how valuable, how reliable, how courteous, and how satisfied. Service quality can be measured in various ways: SERVQUAL, WebQUAL, SiteQUAL, Post Service Rating, Customer Effort Score (CES), and Documentation Analysis. Library professionals should be conscious of users' beliefs in providing quality services (Shoeb, 2011).

Traditionally the quality of a library has been defined in terms of its collection of books or assessed by the size of the library's holdings and various counts of its usage (Shoeb, 2011). But now a day's it has been considered the obsolete idea of measurement. "SERVQUAL," can be an alternative approach to measure the service quality of library services (Hossain, 2012). Kiran (2010) asserted that SERVQUAL consists of five dimensions that have been reliably categorized by users for measuring the service quality irrespective of the service industry. This model has been widely used to evaluate library service quality among academic, public, and special libraries (Hernon, 2002). Thus, SERVQUAL dimensions are selected to measure public libraries' service quality associated with the user's satisfaction with its services.

Parasuraman et al. (1988) developed SERVQUAL for assessing the service quality based on the disconfirmation paradigm known as the gap model. In the beginning, the SERVQUAL scale had ten dimensions and then redefined it into five dimensions (Parasuraman et al. 1988). Reliability - The ability to accurate service delivery, Assurance - the knowledge and courtesy of employees, Tangibles - the appearance of the building, website, equipment, and employees; Empathy - the employee's caring attitude and individualized attention, Responsiveness - ability to provide quick service speedy service.

Ahmed and Shoeb (2009) applied SERVQUAL instruments for evaluating the service quality of academic libraries in Bangladesh. Likewise, Hossain &



Islam (2012) used SERVQUAL instruments for understanding the perceived service quality and satisfaction of the Dhaka University public Library.

Relationship between Service Quality and User Satisfaction

Excellent service quality provides a high level of customer satisfaction (Nadiri et al., 2009). Zeithman et al. (2018) defined that user satisfaction derives from a product or service's capability to satisfy necessary needs and expectations. Marshall et al. (1998) stated that service quality could be accomplished by critically thinking about complete services that satisfy users' needs. The public library users are high when the service delivered is of prodigious value, improving quality of life and gratifying a crucial need for most library users. (Usherwood and Sobczyk, 1997).

Hoyer and MacInnis (2001) affirmed that satisfaction is connected with feelings of recognition, pleasure, aid, joy, and happiness. Mairaj and Naseer (2013) identified that users were satisfied with the services and resources provided by the Punjab Institute of Cardiology Library, especially library assortment and its arrangement, reference and exchange services, staff assertiveness, as well as the cooling and heating structure of the library. On the other hand, Ahmed (2017) said that four SERVQUAL dimensions, namely empathy, responsiveness, assurance, and reliability, can significantly influence user's satisfaction with library services.

Alam (2020) revealed that tangible facilities and staff responsiveness of the library significantly influenced user satisfaction. Twum et al. (2020) stated that all the service quality dimensions positively correlate with library user satisfaction. Moses et al. (2016) showed that service quality has a significant positive impact on library user satisfaction. Suki & Suki (2013) affirmed that public library and service quality user satisfaction is highly correlated. Based on the discussion, the following hypotheses are proposed:

- H1. Tangibles of the public library have a significant impact on user satisfaction.
- H2. Responsiveness of library staff has a significant impact on user satisfaction.
- H3. Reliability of library services has a significant impact on user satisfaction.
- H4. Assurance of library staff has a significant impact on user satisfaction.
- H5. Empathy of Liberians has a significant impact on user satisfaction.

METHODS

This study is descriptive and quantitative research because the user's attitude and perception of tangibles, Responsiveness, reliability, Assurance, and empathy, and their impact on user satisfaction are measured in this study.

Sampling Design

This research is covered by the library services used by the library users. The sampling unit contains both male and female students who use library services. The sampling area comprises Patuakhali Science and Technology University's central library, University of Barisal's central library, Divisional public library in Barisal. In this study, the sample size was 150. Non-probabilistic convenience sampling technique was used to collect primary data in this research because it is an easy and convenient approach to collect data (Malhotra, 2017).

Questionnaire Design and Data Collection

To accomplish the purposes of this study both primary and secondary data have been used. Secondary data has been collected from journals and books. Primary data is collected from the library users through a self-administered questionnaire. Considering the study's nature, 5-point Likert Scale was applied where Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, and Strongly agree=5 are used to collect data about the impact of service quality on library user satisfaction. A structured questionnaire was designed in two parts. Part-I, to pinpoint respondents' specific demographic information, including gender, age, education, frequency of visit, and part-II- contains 26 influential variables of service quality and library users' user satisfaction.

Data Analysis

The data were analyzed using the Statistical Package of Social Science (SPSS, 16.0). In this study, both the descriptive and inferential analysis techniques, including reliability statistics (Cronbach Alpha), Mean, Standard Deviation, and Multiple Regression Analysis were used to achieve these research objectives.

Conceptual Model

A conceptual model has been recommended based on previous literature discussed above. SERVQUAL dimensions for measuring service quality namely tangibles, Responsiveness, reliability, Assurance, and empathy are independent variables and library user satisfaction is a dependent variable for this research.

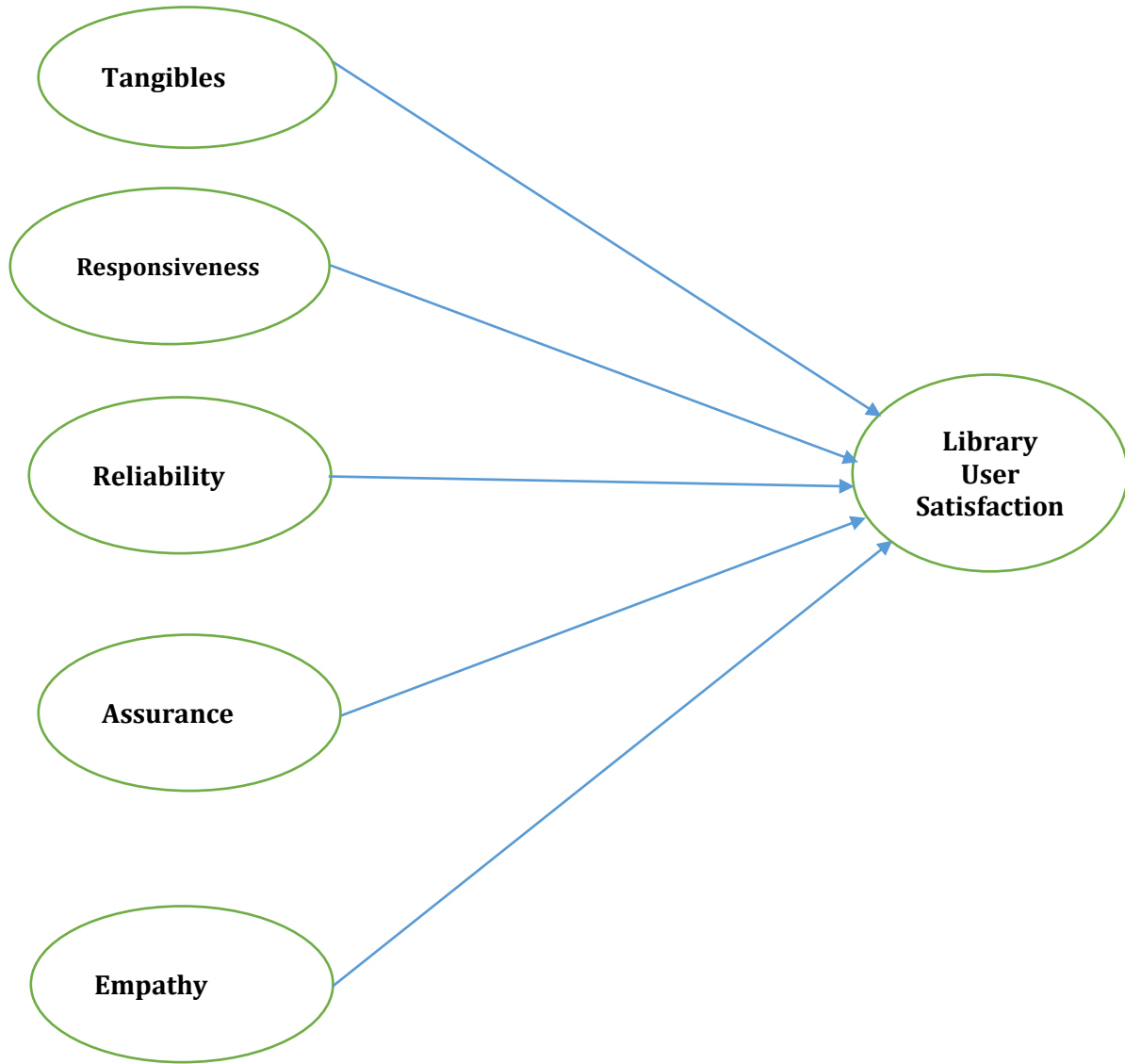


Figure 1. Conceptual Model

RESULTS

Reliability of Scale : To determine the scale reliability of the questionnaire, Cronbach's Alpha was

calculated for all the constructs. The results of the Cronbach's Alpha is presented as follows:



Table 1. Reliability Statistics

Name	No of Items	Statements	Cronbach's Alpha
Tangibles	8	<ol style="list-style-type: none">1. There is a sufficient number of periodicals.2. There is a sufficient number of books.3. The environment is clean.4. There is a sufficient number of study rooms.5. There is a sufficient number of computers6. Study areas are comfortable.7. The lighting quality is fine.8. The overall reading atmosphere is good.	.804
Reliability	4	<ol style="list-style-type: none">1. The collections are timely.2. The collections are shelved accurately.3. The loan and return records are accurate.4. The staff can answer questions accurately.	.568
Responsiveness	3	<ol style="list-style-type: none">1. Library staff tries their best to answers.2. Library staff actively and aggressively provides services.3. Library staff helps users to locate and retrieve information.	.793
Assurance	4	<ol style="list-style-type: none">1. The classifications fit in with all subjects.2. Library staffs are approachable and welcoming.3. The library staff is friendly and courteous.4. Library staff is aware of every service item.	.664
Empathy	4	<ol style="list-style-type: none">1. Library staffs provide individual attention to users.2. Library staffs provide general help to students for research.3. Library staffs listen to the query quietly.4. Deal with users in a caring fashion	.502
User satisfaction	3	<ol style="list-style-type: none">1. I am satisfied with the service quality of the library.2. I am satisfied with the service of the library staff.3. I am satisfied with the library facilities.	.761.



Table 2. Demographic Profile of the Respondents

Variable	Category	Frequency	Percentage
Gender	Male	86	57%
	Female	64	43%
Level of Education	Bachelor	118	79%
	Master	21	14%
	PhD	0	0%
	Others	11	7%
Frequency of Visit	Daily	49	33%
	Weekly	69	46%
	Monthly	32	21%

Table -2 shows the public library user's demographics profile, which encompasses gender, level of education, and frequency of visit. From these results, it has been shown that male library users are dominant (59%) compared to female users (43%). In education,

more than two-thirds of library users have bachelor's degree whereas library users with a master's degree are 14%. Moreover, the weekly visit of library users is prominent (46%) compared to daily (33%) and monthly (21%) visitors of public libraries.

Table 3. Regression Analysis and Hypothesis Testing

Model	F	Standardized Coefficients Beta	t-value	R2	Adjusted R2	p value
Overall service quality → Library user satisfaction				.629	.616	.000
Tangibles → Library user Satisfaction (H1)	159.458	.947	12.628	.524	.520	.000
Responsiveness → Library user Satisfaction (H2)	159.458	.608	9.850	.401	.397	.000
Reliability → Library user Satisfaction (H3)	159.458	.745	7.325	.270	.265	.000
Assurance → Library user Satisfaction (H4)	159.458	.827	10.471	.431	.427	.000
Empathy → Library user Satisfaction (H5)	159.458	.864	8.094	.311	.306	.000



From the above table 3, It is shown that the coefficient of multiple determination is $R^2=.629$. This means that 62.9 percent variations in the dependent variable i.e. library user satisfaction are described by independent variables that include tangibles, reliability, Responsiveness, Assurance, empathy and the remaining 37.1% can be attributed to other factors that are not studied. The value of adjusted R^2 (61.6%) is very close to R^2 (62.9) which indicates the addition of more independent variables contributes to explaining the level of library user satisfaction.

Table 3 also illustrates that showed that tangibles, reliability, Responsiveness, Assurance, empathy are significant predictors to measure library user satisfaction. Therefore, Hypotheses 1, Hypotheses 2, Hypotheses 3, Hypotheses 4 Hypotheses 5 are supported because all P-value is less than .05 ($.000<.05$). Among all predictors, tangibles have the most significant impact on library user satisfaction where the Beta value for tangibles is .947.

DISCUSSION

The main objective of this study was to investigate the impact of service quality on public library user satisfaction. Results showed that tangibles, reliability, Responsiveness, Assurance, empathy have a significant positive relationship with library user satisfaction which is consistent with the previous findings (Ahmed, 2017; Alam, 2020; Ahmed, 2017; Podbrežnik, 2015; Hossain & Islam, 2012; Manjunatha, & Shivalingaiah, 2004). Tangibles are ranked as the most important dimension in this study (See Table 3) which is supported by Alam, 2020. This result indicates that library user satisfaction largely depends on the sufficient number of periodicals, books, and computers. Besides clean, well-furnished, and comfortable reading atmosphere contributes to public library user satisfaction. Empathy and Assurance are also ranked the second and third most important dimension in this study (See Table 5) which is supported by Ahmed, 2017; Suki & Suki, 2013. These findings have also suggested that public library users feel satisfied when they get an individualized caring attitude from the librarian along with approachable, welcoming, friendly, and courteous behavior from library staff.

CONCLUSION

The prime objective of this research is to examine the impact of service quality dimensions on public library user satisfaction in Bangladesh. The data is collected from the public library user in Patuakhali Science and Technology University's central library, University of Barisal's central library, Divisional public

library in Barisal. The sample size was 150 in this study. The results have shown that tangibles, empathy, and Assurance are the most significant predictors in determining public library user satisfaction. Based on the findings, the government and the library authorities should focus on state-of-the-art tangible facilities in the library as well as ensure welcoming and individualized caring and friendly behavior for the public library users.

REFERENCES

1. Ahmed, S. (2017). *Service quality satisfaction: a comparative cross-sectional study of public and private university librarians in Pakistan*. *Libri*, 67(4), 313-325. <https://doi.org/10.1515/libri-2017-0011>
2. Ahmed, S. Z., & Shoeb, Z. H. (2009). *Measuring service quality of a public university library in Bangladesh using SERVQUAL*. *Performance measurement and metrics*, 10 (1), 17-32. <https://doi.org/10.1108/14678040910949666>
3. Alam, M. J. (2020). *Effects of service quality on satisfaction in Eastern University Library, Bangladesh*. *IFLA Journal*, 0340035220959099. <https://doi.org/10.1177/0340035220959099>
4. Herson, P. (2002). *Quality: new directions in the research*. *The journal of academic librarianship*, 28(4), 224-231. [https://doi.org/10.1016/S0099-1333\(02\)00286-0](https://doi.org/10.1016/S0099-1333(02)00286-0)
5. Herson, P., & Altman, E. (2010). *Assessing service quality: Satisfying the expectations of library customers*. *American Library Association*.
6. Hossain, M. J., & Islam, A. (2012). *Understanding perceived service quality and satisfaction*. *Performance Measurement and Metrics*, 13(3), 169-182. <https://doi.org/10.1108/14678041211284713>
7. Hoyer, W. D. and D. J. MacInnis (2001), "Consumer Behavior", 2nd Edition, Houghton-Mifflin, Boston, MA.
8. Kiran, K. (2010). *Service quality and customer satisfaction in academic libraries*. *Library Review*, 59 (4), pp. 261-273. <https://doi.org/10.1108/00242531011038578>
9. Mairaj, M. I., & Naseer, M. M. (2013). *Library services and user satisfaction in developing countries: a case study*. *Health Information & Libraries Journal*, 30(4), 318-326. <https://doi.org/10.1111/hir.12038>
10. Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing research: An applied approach*. Pearson Education Limited.
11. Manjunatha, K., & Shivalingaiah, D. (2004). *Customer's perception of service quality in libraries*. *Annals of library and information studies*, 51(4), 145-151.
12. Marshall, G. W., Baker, J., & Finn, D. W. (1998). *Exploring internal customer service quality*. *Journal of Business & Industrial Marketing*, 13



- (4/5), 381-392.
<https://doi.org/10.1108/08858629810226681>
13. Moses, C., Olaleke, O., Akinbode, M., Agboola, M. G., Olokundun, A. M., & Aka, D. (2016). Perceived service quality and user satisfaction in library environment. *Asian Journal of Information Technology*, 15(1), 18-25.
14. Nadiri, H., Kandampully, J., & Hussain, K. (2009). Zone of tolerance for banks: a diagnostic model of service quality. *The Service Industries Journal*, 29(11), 1547-1564.
<https://doi.org/10.1080/02642060902793425>
15. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of retailing*, 64(1), 12.
16. Partap, B. (2019). A Review of Service Quality Assessment of Library and Information Centres. *Library Philosophy and Practice*, 1-17.
17. Podbrežnik, I. (2015). Using Servqual for public Library Service Quality Assessment. *Zbornik Radova—Asocijacija informacijskih stručnjaka, bibliotekara, arhivista i muzeologa (BAM)*, (08), 51-63.
18. Shoeb, Z. H. (2011). Identifying service superiority, zone of tolerance and underlying dimensions. *Library Review*, 60(4), 293-311.
<https://doi.org/10.1108/00242531111127857>
19. Suki, N., & Suki, N.M. (2013). Service Quality vs. Customer Satisfaction: Perspectives of Visitors to a Public University Library. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 7, 338-342.
20. Terhile, B. F., & Anthonisus, Y. A. (2013). A comparative study on user satisfaction with the management of library services in three academic libraries in Benue State-Nigeria. *Journal of Studies in Social Sciences*, 6(1), 23-30
21. Thakuria, P. K. (2007). Concept of quality in library services: an overview. Accessed November, 2020. <http://hdl.handle.net/1944/1370>.
22. Twum, K. K., Adams, M., Budu, S., & Budu, R. A. A. (2020). Achieving university libraries user loyalty through user satisfaction: the role of service quality. *Journal of Marketing for Higher Education*, 1-19.
<https://doi.org/10.1080/08841241.2020.1825030>
23. Usherwood, R. P. B., & Sobczyk, G. (1997). What happens when a public library service closes down? *Library Management*, 18(1), 59-64.
<https://doi.org/10.1108/01435129710157752>
24. Wang, I. M., & Shieh, C. J. (2006). The relationship between service quality and customer satisfaction: the example of CJCUC library. *Journal of Information and Optimization Sciences*, 27(1), 193-209.
<https://doi.org/10.1080/02522667.2006.10699686>
25. Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2018). *Services marketing: Integrating customer focus across the firm*. McGraw-Hill Education.



ASSESSMENT OBESITY AMONG CHILDREN IN LIKONI SUBCOUNTY, MOMBASA COUNTY

Kailong J. M.¹

¹ Assistant lecturer,

Department of medical sciences,
School of pure and health sciences,
Technical University of Mombasa,
Kenya.

Adem A.²

² Lecturer,

Department of mathematics and Physics,
School of pure and health sciences,
Technical University of Mombasa,
Kenya.

Article DOI: <https://doi.org/10.36713/epra5836>

ABSTRACT

Obesity is now becoming a global problem, causing many life threatening lifestyle diseases. The burden is even more worrying among the young children in the developing countries like Kenya because few studies have been done. The purpose of the study was undertake an assessment of Obesity prevalence and precipitating factors among lower primary school children in Likoni Sub County, Mombasa County, Kenya. The study employed a descriptive cross sectional study and the school children of between grade 1-4 in both private and public schools being the target population. Sample sizes of 384 participants were recruited using Cochran's (2010) formula. Structured questionnaire was used to collect quantitative data, observational checklist and anthropometric measurements were used to collect qualitative data. Data was analyzed using SPSS version 20 and interpreted using tables and pie charts. The study findings show that obesity stands at 23% among respondents. According to BMI interpretations there were 2% under weight, 69.1% normal in public schools, while over weight (28.1) and obesity (32.6%) was high in private school children. There was a significant association between means of transport ($p=0.000$), leisure time ($p=0.000$), Grade (0.000), residence (0.000) occupation (0.000) and income ($p=0.000$). The determinants to obesity in children were residence (AOR 29.46; CI 10.054, 86.34) and between break meals (AOR 4.647; CI 1.958, 11.025).

INTRODUCTION

About 1 billion people were classified overweight and 300 million being obese (WHO, 2002) Globally, nearly 1 billion people are classified as overweight, 300 million of them being clinically obese (WHO, 2002). Nearly one third of the adult American population is obese, while in South Africa, more than one in two adult women are overweight or obese. In Morocco, 40% of the population is overweight (Bertone, Staneck and Cohen, 2003).

Overweight and obesity in developing countries, has been neglected as most attention is concentrated on famine and under nutrition or malnutrition of children (Malla, 2004 and Kamau 2008). If preventive measures

are not put in place, the problem may escalate and overburden the health care system in these areas (Caroli and Burniat, 2002). Hence there is need to put measures in place to arrest the problem of overweight and obesity and prevent the negative consequences

OBJECTIVES

General objectives

Assessment of obesity among lower primary school children in Likoni sub county, Mombasa County

Specific objectives

- To determine the proportion of obesity among children in primary schools



- b) To establish the primary school children learning environment in relation to obesity
- c) To determine parents influence on obesity in primary school children

METHODOLOGY

This study descriptive cross-sectional to with aim to collect both qualitative and quantitative data related to overweight and obesity among school going children in public and private schools in Likoni sub county, Mombasa County

The design was appropriate in the study of prevalence of overweight and obesity among children. The study was useful in determining the associated factors to overweight and obesity and how to minimize them

Sampling

The study was carried out among ten primary schools (5 private and 5 public) all found in Likoni. The target population was Grade 1, 2, 3 & 4 children as well as their parents. Systematic random sampling was used to recruit the children in the specific school at an interval of five until required sample size was realized. Every recruited child was given a questionnaire and a consent form to take to his/her parent. The parent could go through the questions at home and voluntary sign the consent and fill the questionnaires. The next day, all returned questionnaires by children and consent form were collected and particular child with the help of the teacher taken through anthropometric measurements. The recruitment continued in every school until desired sample size achieved. All subjects were taken through the study objectives, benefits and risks before consenting. Confidentiality was assured at every stage of this study

The collected data was edited then entered into SPSS software (version 21) for analysis based on the study variables. The study results was presented using tables and pie charts

Sample size

The study sample size was calculated using the Cochran’s formula (Cochran’s, 2010)

$$n = \frac{z^2 p(1 - p)}{\alpha^2}$$

Where:

n = Minimum required sample size

z = Reliability coefficient (1.96 at 95% confidence interval)

p = Estimated proportion of PLHIV who have disclosed their HIV status taken to be 49%.

α = Maximum likely error (5%)

Therefore, the minimum sample size will be given as;

$$n = \frac{1.96^2 \times 0.49 \times (1 - 0.49)}{0.05^2} = 384$$

Study Area

The study was undertaken among primary schools in Likoni Sub County, Likoni constituency, Mombasa County. Likoni Sub County is the main land after crossing the ferry from Mombasa town. It borders Kwale County in the north and Indian Ocean to the south the main economic activities that are carried in this region are fishing, tourism and business at the busiest Likoni ferry which is the largest in Kenya (MOE, 2019).

RESULTS

Figures

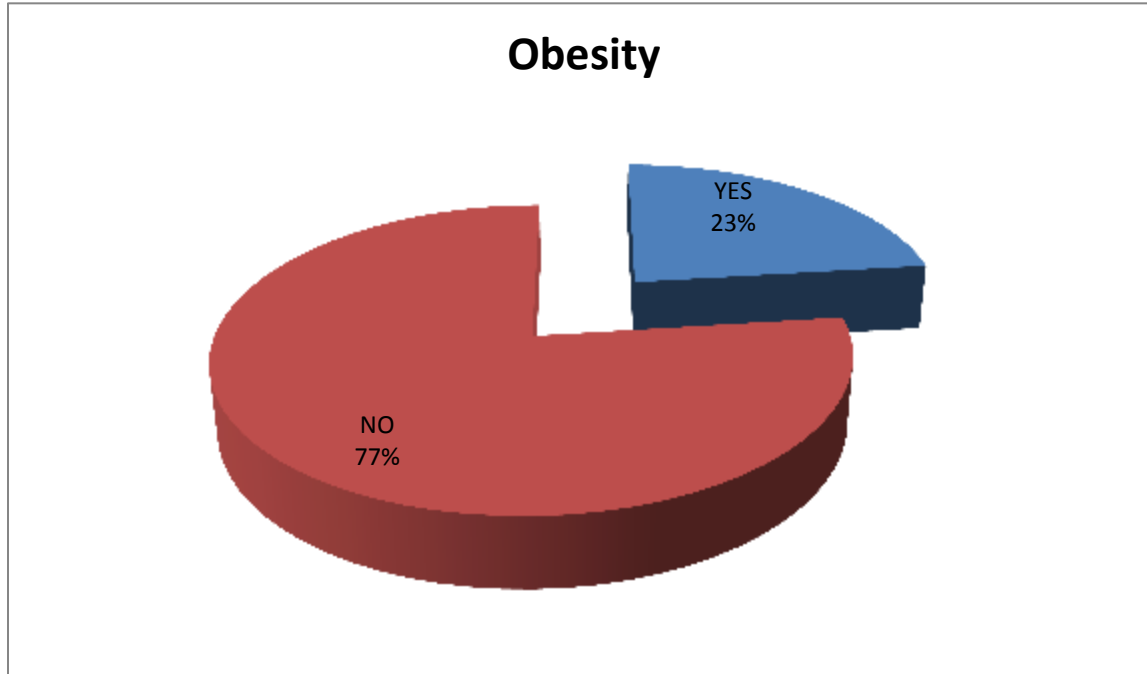


Figure 1: Extent of obesity among the respondents

Tables

Table 1: Socio demographic factors of the respondents

Variable	Category	Frequency % (N=196)	Schools	
			Public (n=107)	Private (n=89)
Children				
Gender	Male	101(51.5)	52(48.6)	49(55.1)
	Female	95(48.5)	55(51.4)	40(44.9)
Daily Pocket money (Ksh.)	0-100	18(9.2)	11(10.3)	7(7.8)
	100-200	107(54.6)	53(49.5)	54(60.7)
	>200	71(36.2)	43(40.2)	28(31.5)
Means of transport	School van	135(68.9)	65(60.7)	70(78.7)
	Walking	24(12.2)	22(20.6)	2(2.2)
	Others	37(18.9)	20(18.7)	17(19.1)
Leisure time	Video games	152(77.6)	70(65.4)	82(92.2)
	Watch TV	14(7.1)	12(11.2)	2(2.2)
	Playing sports	8(4.1)	5(4.7)	3(3.4)
	Sleeping	22(11.2)	20(18.7)	2(2.2)
Grade	1	40(20.4)	18(17.1)	22(24.7)
	2	32(16.3)	12(11.2)	20(22.5)
	3	58(29.6)	29(27.1)	29(32.6)
	4	66(33.7)	48(44.6)	18(20.2)
Parents				
Residence	Rental house	65(33.2)	61(57)	4(4.5)



	Personal house	131(66.8)	46(43)	85(95.5)
Occupation	Employed	145(74)	59(55.1)	86(96.6)
	Unemployed	51(26)	48(44.9)	3(3.4)
Income (Ksh.)	<10,000	2(1)	2(1.9)	0(0)
	10,000 – 20,000	42(21.4)	36(33.6)	6(6.7)
	>20,000	152(77.6)	69(64.5)	83(93.3)
Marital status	Married	158(80.6)	75(70.1)	75(84.3)
	Single / divorced	38(19.4)	24(29.9)	14(15.7)

Table 2: School environment

Variable	Category	Frequency (N=196)	Schools	
			Public (n=107)	Private (n=89)
Physical activities	Sports equipments	89(45.4%)	29(27.1%)	60(67.4%)
	Sport lessons	45(23%)	42(39.3%)	3(3.8%)
	Sport activities	62(31.6%)	36(33.6%)	26(29.2%)
Eating habits	Food shops	33(16.8%)	20(18.7%)	13(14.6%)
	Food from outside	45(23%)	2(1.95)	43(48.3%)
	Food hawkers	32(16.3%)	24(22.4%)	8(9%)
	Food served in school	86(43.9%)	61(57%)	25(28.1%)
School location	Residential area	124(63.3%)	53(49.5%)	71(79.8%)
	Has play ground	72(36.7%)	54(50.5%)	18(20.2%)
Food served				
Main meal	Rice+beans	64(32.7%)	42(39.3%)	22(24.7%)
	Beans+ chapati	94(48%)	37(34.6%)	57(64%)
	Ugali+vegetables	38(19.3%)	28(26.2%)	10(11.2%)
Between Break meals	Tea + mahamri	94(48%)	82(76.6%)	12(13.5%)
	Tea + cake	102(52%)	25(23.4%)	77(86.5%)
Servings	Once	97(49.5%)	94(87.9%)	3(3.4%)
	Twice	77(39.3%)	13(12.1%)	64(71.9%)
	>twice	22(11.2%)	0(0)	22(24.7%)
Snacks	Chocolate	56(28.5%)	27(25.2%)	29(32.6%)
	Chips	43(22%)	19(17.8%)	24(27%)
	Juice	36(18.4%)	27(25.2%)	9(10.1%)
	Biscuits	14(7.1%)	4(3.7%)	10(11.2%)
	Crisps	13(6.6%)	6(5.6%)	7(7.9%)
	Ice cream	25(12.8%)	17(15.9%)	8(9%)
	Sweets	9(4.6%)	7(6.5%)	2(2.2%)

Table 3: Anthropometric measures

BMI	School		Frequency
	Public	Private	Total
Underweight	2(1.9)	2(2.2)	4(2%)
Normal	74(69.1)	33(37.1)	107(54.6%)
Over weight	15(14)	25(28.1)	40(20.4%)
Obese	16(15)	29(32.6)	45(23%)

Table 4: Schools anthropometric measurements

Public	Underweight	Normal	Overweight	Obesity
Mrima primary school	1(25%)	18(16.85)	2(5%)	2(4.4%)
Likoni muslim primary school	0	22(20.6%)	3(7.5%)	2(4.4%)



Likoni primary school	1(25%)	9(8.4%)	2(5%)	3(6.8%)
Puma primary school	0	14(13.1%)	4(10%)	5(11.1%)
Maji safi primary school	0	11(10.3%)	4(10%)	4(8.9%)
Private	0			
Alnoor integrated school	0	7(6.55%)	8(20%)	10(22.2%)
Kenya excellent academy	1(25%)	3(2.8%)	3(7.5%)	2(4.4%)
Al Miraj integrated academy	0	6(5.6%)	6(15%)	8(17.8%)
Oceania academy	0	8(7.5%)	4(10%)	5(11.1%)
Sitra integrated academy	1(25%)	9(8.4%)	4(10%)	4(8.9%)
Total	2(100%)	107(100%)	40(100%)	45(100%)

Table 5: Bivariate analysis on socio demographic factors in relation to Obesity

Variable	Category	Frequency % (N=196)	Schools		Df	Chi square	P value	OR
			Public (n=107)	Private (n=89)				
Children								
Gender	Male	101(51.5)	52(48.6)	49(55.1)	1	0.811	0.368	0.772, (0.439,1.357)
	Female	95(48.5)	55(51.4)	40(44.9)				
Daily Pocket money (Ksh.)	0-100	18(9.2)	11(10.3)	7(7.8)	2	2.435	0.296	-
	100-200	107(54.6)	53(49.5)	54(60.7)				
	>200	71(36.2)	43(40.2)	28(31.5)				
Means of transport	School van	135(68.9)	65(60.7)	70(78.7)	2	15.573	0.000	-
	Walking	24(12.2)	22(20.6)	2(2.2)				
	Others	37(18.9)	20(18.7)	17(19.1)				
Leisure time	Video games	152(77.6)	70(65.4)	82(92.2)	3	28.480	0.000	-
	Watch TV	14(7.1)	12(11.2)	2(2.2)				
	Playing sports	8(4.1)	5(4.7)	3(3.4)				
	Sleeping	22(11.2)	20(18.7)	2(2.2)				
Grade	1	40(20.4)	18(17.1)	22(24.7)	3	57.919	0.000	
	2	32(16.3)	12(11.2)	20(22.5)				
	3	58(29.6)	29(27.1)	29(32.6)				
	4	66(33.7)	48(44.6)	18(20.2)				
Parents								
Residence	Rental house	65(33.2)	61(57)	4(4.5)	1	62.119	0.000	29.46, (10.054, 86.34)
	Personal house	131(66.8)	46(43)	85(95.5)				
Occupation	Employed	145(74)	59(55.1)	86(96.6)	1	43.447	0.000	0.043, (0.013,0.144)
	Unemployed	51(26)	48(44.9)	3(3.4)				
Income (Ksh.)	<10,000	2(1)	2(1.9)	0(0)	2	38.632	0.000	-
	10,000 – 20,000	42(21.4)	36(33.6)	6(6.7)				
	>20,000	152(77.6)	69(64.5)	83(93.3)				
Marital status	Married	158(80.6)	75(70.1)	75(84.3)	1	2.106	0.147	0.583, (0.280,1.218)
	Single / divorced	38(19.4)	24(29.9)	14(15.7)				



Table 6: School environment

Variable	Category	Frequency (N=196)	Schools		Df	Chi square	P value	OR
			Public (n=107)	Private (n=89)				
Physical activities	Sports equipments	89(45.4%)	29(27.1%)	60(67.4%)	2	44.937	0.000	
	Sport lessons	45(23%)	42(39.3%)	3(3.8%)				
	Sport activities	62(31.6%)	36(33.6%)	26(29.2%)				
Eating habits	Food shops	33(16.8%)	20(18.7%)	13(14.6%)	3	124.198	0.000	
	Food from outside	45(23%)	2(1.95)	43(48.3%)				
	Food hawkers	32(16.3%)	24(22.4%)	8(9%)				
	Food served in school	86(43.9%)	61(57%)	25(28.1%)				
School location	Residential area	124(63.3%)	53(49.5%)	71(79.8%)	1	19.121	0.000	0.249, (0.131,0.472)
	Has play ground	72(36.7%)	54(50.5%)	18(20.2%)				
Food served								
Main meal	Rice+beans	64(32.7%)	42(39.3%)	22(24.7%)	2	17.526	0.000	
	Beans+ chapati	94(48%)	37(34.6%)	57(64%)				
	Ugali+vegetables	38(19.3%)	28(26.2%)	10(11.2%)				
Between Break meals	Tea + mahamri	94(48%)	82(76.6%)	12(13.5%)	1	13.287	0.000	4.647, (1.958, 11.025)
	Tea + cake	102(52%)	25(23.4%)	77(86.5%)				
Servings	Once	97(49.5%)	94(87.9%)	3(3.4%)	2	139..734	0.000	
	Twice	77(39.3%)	13(12.1%)	64(71.9%)				
	>twice	22(11.2%)	0(0)	22(24.7%)				
Snacks	Chocolate	56(28.5%)	27(25.2%)	29(32.6%)	6	16.808	0.010	
	Chips	43(22%)	19(17.8%)	24(27%)				
	Juice	36(18.4%)	27(25.2%)	9(10.1%)				
	Biscuits	14(7.1%)	4(3.7%)	10(11.2%)				
	Crisps	13(6.6%)	6(5.6%)	7(7.9%)				
	Ice cream	25(12.8%)	17(15.9%)	8(9%)				
	Sweets	9(4.6%)	7(6.5%)	2(2.2%)				

DISCUSSION

The study findings show that from 196 respondents who took part, 51.5% were male and 48.6% were from public schools. Most of the respondents received a daily pocket money of between Ksh. 100-200 (54.6%) and about 60.7% were from private schools. The common means of transport was school van (68.9%), where 78.9% used it in private schools. About 77.6% of the respondents could spend their leisure time watching video games, where 91.2% from private schools and majority of the respondents (33.7%) were in grade four. Study findings from Lilian (2010) show 31% of the children spend their leisure time watching television, playing (30%) and

38.2% of the respondents used school bus to school. While according to O'Loughin (2001), Multivariate studies have found that television viewing and playing video games for longer periods of time promotes obesity

The socio demographic factors of their parents or guardians show that 95.5% of private school parents were living in their personal houses compared to 57% of those in public schools. Majority (96.6%) parents with children in private schools were employed and get a monthly income of over ksh. 20,000 (93.3%) compared to 55.1% and 64.5% consecutively for those in public schools. About 80.6% of the parents were married

Based on school environment; study found out that 67.4% of the private schools had sport equipments. However, public school participated most in sport activities (33.6%) and were having sport lessons regularly (39.3%). About 79.8% of private schools were located within residential areas with only 20.2% having a play ground for children. Similar study by Lilian (2010) show that 98.3% of children have a positive attitude towards physical activity being enjoyment of the activities they indulged in during the



lessons while others it gave a break to that monotony of being in class for long hours.

Up to 43.9% of the respondents were served food in school, 48.3% of the respondents in private schools could still receive food from outside school. The common main food served were rice with chapati (64%) in private school and rice with beans (32.7%) in public school, tea with cake (86.5%) in private schools and tea with mahamri (76.6%) in public school consecutively during tea break. The number of servings being once (87.9%) in public schools and twice (71.9%) in private schools. The common snack by majority of the respondents was chocolate (28.5%). Other studies show increased intake of sugary diet is a risk factor to obesity by 66% (Wilson, 2000), chocolate is a common (62%) snack in school going children very rich in fats consumed by children (Lilian, 2010) and persons with frequent snack intake are prone to obesity (Jahnsl, Siega and Popkin, 2001). Food sourced from outside school school by hawkers or vendors do not meet requirement of nutrition and health (Westanhoefer, 2001). Different study findings by Gibson (2000) show pre-school children to be more prone to obesity than school going due to carbohydrate intake.

The children anthropometric measurements of the respondents found out that there were 2% underweight (one in private and one in public school), 69.1% had a normal BMI in public schools, 28.1% were found to be over weight in private schools, 32.6% were obese in private schools.

Based on bivariate analysis, the following were found to be statistical significant; physical activities ($p=0.000$), eating habits ($p=0.000$), school location ($p=0.000$), food served either main or tea break meals ($p=0.000$) and snacks eaten by children ($p=0.010$). While the logistic regression analysis found out residence with AOR of 29.46, (10.054, 86.34) and food served between break with AOR of 4.647, (1.958, 11.025)

CONCLUSION

The proportion of obesity in lower primary school children stands at 23%. The private school children being more vulnerable with 32% obesity and overweight 28.1%

The school learning environment contributes majorly to the reported cases of obesity in children. This was visible by looking at physical activities children undertake in school, eating habits, school location, food and snacks children get in school

The parent's occupation, level of income, how children spend their leisure time at home as well means

of transport to school being a contributor to childhood obesity.

RECOMMENDATIONS

The study recommends on the following;

1. The ministry of education to embark on sensitization of schools and parents the importance of child in school and home in order to reduce chances of lifestyle diseases
2. The government should be strict on the items required to be put in place by existing and upcoming schools in order to ensure learning environment is conducive to children
3. The parents should play their role to ensure children always take appropriate diet in their meals and assist children choose the best leisure activity for themselves

REFERENCES

1. Bertone E.R, Staneck E.s, & Cohen N.L. (2003). Association between eating patterns and obesity in a free living US adult population. *American Journal of Epidemiology*, 158:85-92
2. Caroli M, Burniat W. (2002). *Dietary management In: Childhood and adolescent obesity causes consequences, prevention and management*. Cambridge University Press, pp, 282-306
3. Cochran, J.J. (2010). *Statistics Without Borders Assists with Haitian Data Collection Project*. *Amstat News*, 8 (395), 18-19.
4. Jahhns L, Siega-Riz A.M. & Popkin B.M. (2001). The increasing prevalence of snacking among US children. *Journal of Pediatrics*: 138:493-498
5. Kamau W. Jane (2008). *Prevalence, intervention and management of overweight and obesity among primary school children in Nairobi Province*. Post graduate thesis, Kenyatta University
6. Lilian Adhiambo Aballa (2010). *Prevalence and risk factors for obesity among school aged children in Nairobi Province, Kenya*. Master thesis, Kenyatta University
7. Malla J. (2004). *Obesity and factors that contribute to obesity among Pre-adolescent attending day private primary schools in Nairobi*. Masters thesis, Kenyatta University
8. Ministry of Education Science and Technology (MOEST) (2018). *Registered schools in Mombasa County*. (Department of Statistics) Nairobi, Kenya
9. Mugenda O.M. and Mugenda A.G. (1999). *Research Methods. Quantitative and Qualitative approaches*, ACT press Nairobi Kenya
10. O'loughlin, J. 7 & Gray -Donald, K. (2000). One and two year predictors of excess weight gain among elementary school children in multiethnic, low-income. *Inner-city neighborhoods*. *American Journal of Epidemiology*; 152:739-746



11. Westtonnoefer J. (2001). *Establishing good dietary habits in capturing the minds of children*, *Public Health Nutrition*; 4:125-129
12. Wilson J.F. (2000). *Lunch eating behavior of pre-school children: effects of age, gender and type of beverage served*. *Physiological Behaviour*; 70:27-33



PREVALENCE OF CONTRACEPTIVE USE AMONG KENYA COAST NATIONAL POLYTECHNIC STUDENTS

Kailong J. M.¹

¹Assistant lecturer,

Department of medical sciences,
School of pure and health sciences,
Technical University of Mombasa,
Kenya

Adem A.²

² Lecturer,

Department of mathematics and Physics,
School of pure and health sciences,
Technical University of Mombasa,
Kenya.

Article DOI: <https://doi.org/10.36713/epra5664>

ABSTRACT

The study purpose of the study was to determine the prevalence of emergency contraceptive use among the Kenya Coast National Polytechnic. The objective of the study was to establish the level of contraceptive use, student knowledge on contraceptives and accessibility of contraceptives. A descriptive cross sectional study design was employ to collect both qualitative and quantitative data. Data was collected from sample size of 196 calculated using Fisher's formula. Data was collected using both structured questionnaires and interviews. The collected data was analyzed using SPSS version 20 and presented using tables and pie charts. About 32% of the respondents were using contraceptive, 99% had knowledge on contraceptives and 77% could access contraceptives within their neighborhood. Bivariate analysis findings show that residence ($p=0.000$), course ($P=0.000$), usage of contraceptive ($p=0.000$) and availability at a nearby facility ($p=0.009$) to statistically significant in contraceptive use. The study recommends that the respondents need more knowledge on various contraceptive options, support from both institution of learning as well as parents on safe sex practices and reliable provision of contraceptives

KEY WORDS: Contraceptives, teenagers, accessibility

INTRODUCTION

Emergency contraceptives are medicines taken to reduce the risk of pregnancy within a few days after sexual intercourse during which contraceptives fail or were not used (WHO, 2012). Emergence contraceptives pills are taken after unprotected sexual intercourse or breakage of condom (Sedgh *et al*; 2007). The common forms of emergency contraceptive are levonorgestrel and Birth control pills (WHO, 2004). Globally, emergency contraceptives can prevent up to over 95% of pregnancies when taken within five days after intercourse (WHO, 2012).

In Africa 24% women of reproductive age have the highest unmet need for contraception rates (WHO, 2004). In Uganda, NGOs are trying to make contraceptives more available in rural areas. According to study that was done by Nwachukwu and Obese in

Nigeria 2008, modern birth control method were used by 30% respondents in Sub-Saharan Africa (Obi *et al*; 2008).

In Kenya, the prevalence of contraceptive use has increased since 1970s, at which time only 7% of married women of reproductive age used any method of family planning (Raymond *et al*; 2011). By 1988, this figure has grown to nearly 40% as contraceptives use had increased, Kenya's total fertility rate has dropped from more than eight children (Singhs *et al*; 2010).

The purpose of this study was to systematically review the prevalence of emergency contraceptive use among college students. Kenya coast national polytechnic is a national polytechnic with over 5000 student population.



OBJECTIVES

Broad objective

To determine the prevalence of emergency contraceptive use among Kenya Coast National Polytechnic students

Specific objectives

- a) To establish the level of emergence contraceptive use
- b) To know the knowledge of students on contraceptives
- c) To determine the accessibility of contraceptives

METHODOLOGY

The study employed a descriptive cross sectional study design to collect both quantitative and qualitative data from the respondents. The target populations were female students who are bonafide students of the college with college identity card

STUDY SITE

The study was conducted at Kenya coast national polytechnic. The college is located in *Majengo* Kisauni road, Mombasa County, Mvita Sub County. The institutions offer variety of courses ranging from certificate, diploma and higher national diploma. The is made up of ten departments, namely; Business management, Secretarial and language, Medical science, Journalism, Catering, Fashion and design, Information technology, Hospitality, Applied science, Mechanical, building and electrical engineering

SAMPLING

The study employed cluster random sampling was used to come up with a sample frame from the ten departments. Then simple random sampling was used to recruit the subjects into the study. Structured questionnaires were administered to the respondents as well as interviews conducted on two selected subjects from each department. All study subjects were taken through the purpose of the study and signed a written informed consent before taking part

SAMPLE SIZE

The sample size was determined using Fisher’s formula (Mugenda, 1999)

$$n = \frac{z^2 qp}{d^2}$$

n= desire sample size
 z= standard normal deviation (1.96)
 p= anticipated population proportion
 (15%)
 q= 1 – p
 d= allowable error
 $n = \frac{(1.92)^2(0.15)(0.85)}{(0.05)^2}$
 =196

DATA MANAGEMENT

The collected data was edited, transcript, coded and entered into SPSS version 21 software for analysis. The study findings were presented using tables and pie charts

RESULTS

Figures

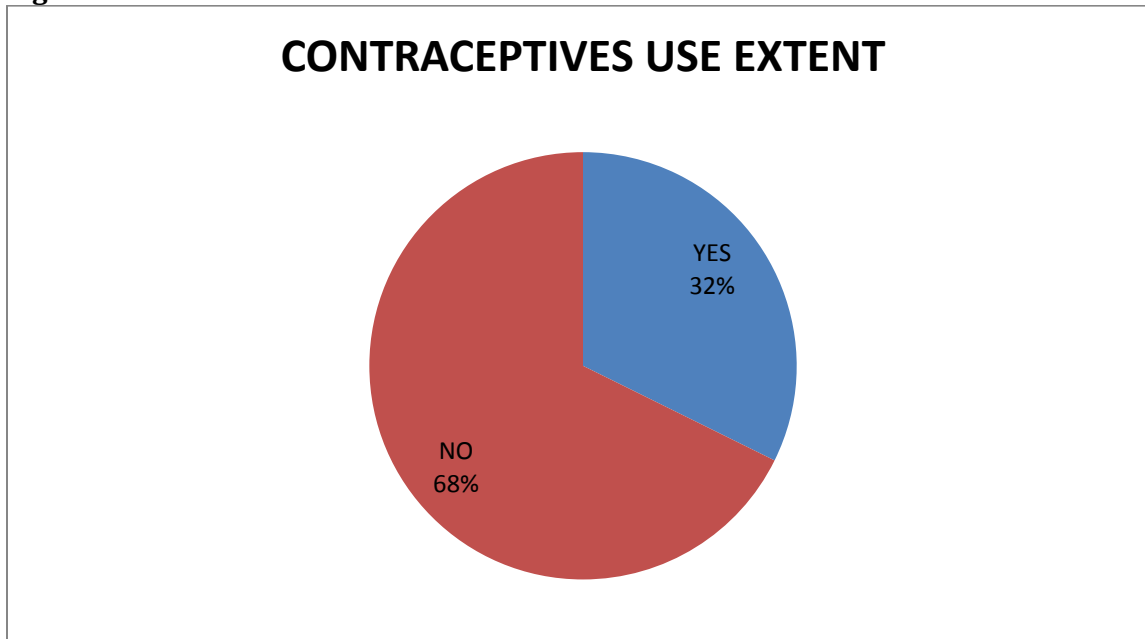


Figure 1: Prevalence of contraceptive use among KCNP students

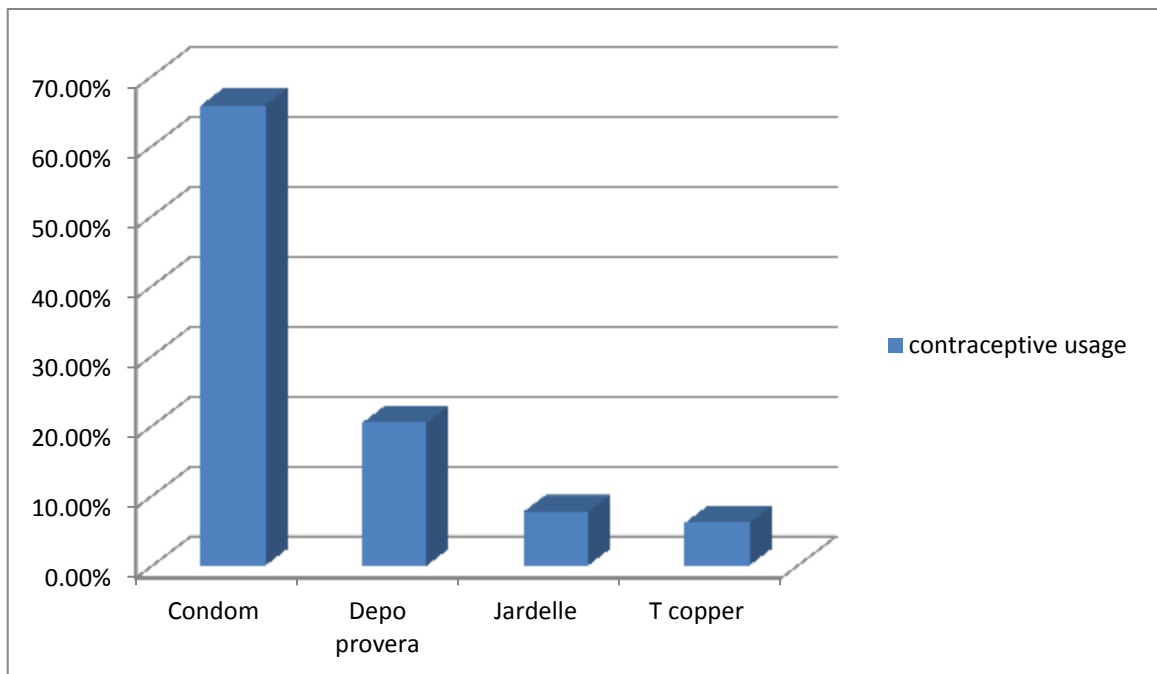


Figure 2: Preferred contraceptive among KCNP students



TABLES

Table 1: Bivariate analysis on socio demographic factors

Variable	Category	Frequency N=196	Contraceptive use		Df	Chi	P= value
			On (n=124)	Not (n=72)			
Age	18-20 years	142 (72.4%)	94(75.8%)	48(66.7%)	1	1.906	0.167
	21-24 years	54 (27.6%)	30(24.2%)	24(33.3)			
Religion	Christian	144 (73.5%)	95(76.6%)	49(68.1%)	1	2.422	0.120
	Muslim	52 (26.5%)	29(23.4%)	23(31.9%)			
Course	Certificate	68 (34.7%)	60(48.4%)	8(11.1%)	1	35.403	0.000
	Diploma	118 (60.2%)	55(44.4%)	63(87.5%)			
	Higher diploma	10 (5.1%)	9(7.2%)	1(1.4%)			
Level of pocket money (Ksh.)	<2000	34 (17.3%)	20(16.1%)	14(19.4%)	2	6.738	0.034
	2000 - 5000	94 (48%)	68(54.8%)	26(36.1%)			
	>5000	68 (34.7%)	36(29.1%)	32(44.5%)			
Residence	College hostels	45 (23%)	37(29.8%)	8(11.1%)	2	99.521	0.000
	Home with relatives	62 (31.6%)	8(6.5%)	54(75%)			
	Rentals	89 (45.4%)	79(63.7%)	10(13.9%)			

Table 2: Bivariate analysis on student knowledge on contraceptive

Variable	Category (N=196)		Contraceptives use		Df	Chi square	P= value
	Yes	No	On (n=124)	Not (n=72)			
Aware of contraceptive	Yes	194 (99%)	123(99.2%)	71(98.6%)	1	0.153	0.696
	No	2 (1%)	1(0.8%)	1(1.4%)			
Mode of action	Yes	3 (1.5%)	1(0.8%)	2(2.8%)	1	1.174	0.278
	No	193 (98.5%)	123(99.2%)	70(97.2%)			
Indications	Yes	194 (99%)	122(98.4%)	72(100%)	1	1.173	0.279
	No	2 (1%)	2(1.6%)	0(0%)			
Side effects	Yes	80 (40.8%)	52(41.9%)	28(38.9%)	1	0.175	0.676
	No	116 (59.2%)	72(58.1%)	44(61.1%)			
Usage	Yes	112 (57.1%)	94(75.8%)	18(25%)	1	48.012	0.000
	No	84 (42.9%)	30(24.2%)	54(75%)			
Storage	Yes	68 (34.7%)	50(40.3%)	18(25%)	1	4.720	0.030
	No	128 (65.3%)	74(59.7%)	54(75%)			
Effectiveness	Yes	172 (87.8%)	109(87.9%)	63(87.5%)	1	0.007	0.974
	No	24 (12.2%)	15(12.1%)	9(12.5%)			



Table 3: Bivariate analysis on accessibility of contraceptive

Variable	Category	Frequency (N=196)	Contraceptive use		Df	Chi square	P= value
			Yes (n=124)	No (n=72)			
Available at nearby facility	Yes	151 (77%)	103(83.1%)	48(66.7%)	1	6.925	0.009
	No	45 (23%)	21(16.9%)	24(33.3%)			
Issued at college	Yes	65 (33.2%)	35(28.2%)	30(41.7%)	1	3.713	0.054
	No	131 (66.8%)	89(71.8%)	42(58.3%)			
Availability at any time	Yes	58 (29.6%)	37(29.8%)	21(29.2%)	1	0.010	0.921
	No	138 (70.4)	87(70.2%)	51(70.8%)			
Parents support on contraceptive use	Yes	24 (12.2%)	13(10.5%)	11(15.3%)	1	0.974	0.324
	No	172 (87.8%)	111(89.5%)	61(84.7%)			

CONCLUSION

Most college students at KCNP fall at an age range of 18-20 years, at this age most are sexually active and they need support from parents and institution on contraceptive choices. Their residence in college plays a role in sexual and contraceptive use practices

Majority of the respondents can access contraceptive products at a nearby health facility and which is significant to contraceptive uptake

The level of knowledge of on contraceptive use was satisfactory. However, uptake of contraceptive products was low despite the sexually active life by the students

DISCUSSION

The study findings shows that from a sample size of 196 respondents; about 142 (72.4%) to be from an age range of 18-24 years, Christians were the dominant group with 144 (73.5%) respondents and about 48% receive a monthly pocket money of Ksh. 2000 to 5000. About 75% of the respondents are sexually active while prevalence of contraceptive use among the students was 32% and the preferred contraceptive being condom (62%). Bivariate analysis findings shows that residence (p=0.000) of the respondents was statistically significant to contraceptive use

Based on the student knowledge on contraceptives; about 144 (99%) of the respondents are aware of contraceptives and 172(87.8%) understand their effectiveness. However, there was decline in knowledge on side effects (40.8%), storage (34.7%) and mode of action of oral contraceptives (1.5%). Bivariate analysis findings show that the knowledge on storage of contraceptives was statistically significant. Similar study findings have shown increased level of knowledge on use of emergence contraception are those with higher levels of education (Obi SN *et al*,

2008) those living in urban regions (Keeshury *et al*; 2011, Mbizhos and Zaid, 2010 and Chin Quee and Engle, 2000).

About 151(77%) of the respondents access their contraceptives within a nearby facility like a hospital or community pharmacies, 65 (33.2%) receive the contraceptives in college (condoms) and 172(87.8%) of the respondents are using contraceptives without the knowledge of their parents. The bivariate analysis findings show that availability of contraceptives within a nearby facility (p=0.009) was significant to contraceptive use. Other studies show that it is becoming a trend where emergency contraceptives are moving from prescription to over the counter product easily available in a community pharmacy (Raymond *et al*; 2011, Coetaux and Pillsbury, 2000), and sold by pharmacists and pharmaceutical technologists (Brieger WR *et al*; 2004).

RECOMMENDATIONS

The study recommends on the following;

1. The institutions of higher learning and the parents need to support their children on sexual health in order to arrive at an equilibrium between sexual activity and contraceptive use which stands at 75% to 32%
2. Despite the level of knowledge of contraceptives being high (99%), there was need to educate the students on variety of contraceptive products, mode of action and safety
3. Institutions of higher learning should employ an health care worker who can ensure that there is always sustainable contraceptive commodities to students all times



REFERENCES

1. Brieger WR, Osmor PE, Salami KK, Oladepo O, Otusanya SA (2004). Interaction between patent medicine vendors and customers in urban and rural Nigeria. *Health policy plan*; 19(3):77-82
2. Chin-Quee DS and Engle KL (2012). Frequency and context of EC use in urban Kenya and Nigeria, paper presented at EC Jambore 2012, New York, Oct 5, 2012.
3. Coeytaux F and Pillsbury B, (2000). Bridging emergency contraception to American women: the history and remaining challenges, *Women's Health issues*, 11(2):80-86
4. Keesbury J, Morgan G and Owino B (2011). Is repeat use of emergency contraception among pharmacy clients? Evidence from Kenya, *contraception*, 83(4):346-351.
5. Mbizho MT, Zaidi (2010). Addressing critical gaps in achieving universal access to sexual and reproductive health (SRH). The case for improving adolescent SRH, preventing unsafe abortion, and enhancing linkages between SRH and HIV interventions. *Int J Gynecol obstet*, 110(0):S3-6.
6. Mugenda O. M & Mugenda A. G (1999), "Research Methods; Quantitative and Qualitative Approaches," Africa Center for Technology Studies (ACTS) press, Nairobi Kenya
7. Obi SN and Ozumba BC (2008). Emergency contraceptive knowledge and practice among unmarried women in Enugu, southeast Nigeria, *Nigerian journal of clinical practice*, 11(4):296-299
8. Raymond E Westley E and Trusell J (2011). Repeat use of emergency contraception in Kenya letter to the editor, *contraception*, 84(6):658-656
9. Sedgh G, Henshaw S, Singh S, Ahman E, Shah IH (2007). Induced abortion: estimated rates and trends worldwide. *Lancet*, 370(9595):1338-45.
10. Singh S, Sedgh G, Hussain R (2010). Unintended pregnancy: worldwide levels, trends, and outcomes. *Stud Fam plan*, 41(4):241-50.
11. WHO (2004). Maternal Mortality in 2000: Estimates developed by WHO, UNICEF, and UNFPA. Geneva World Health organization; 2004
12. WHO (2012). From evidence to policy: Expanding Access to family planning optimizing the health work force for effective family planning services. Geneva: World health organization; 2012.



COMMUNITY PHARMACY ROLE IN UNIVERSAL HEALTH COVERAGE IN MOMBASA COUNTY

Kailong J. M.¹

¹Assistant lecturer,
Department of Medical Sciences,
School of pure and Health Sciences,
Technical University of Mombasa,
Kenya

Aggrey A.²

²Lecturer,
Department of Mathematics and Physics,
School of Pure and Health Sciences,
Technical University of Mombasa,
Kenya

Mulinya S.³

³Pharmaceutical Technologist,
Department of Medical Sciences,
School of Pure and Applied Sciences,
Technical University of Mombasa,
Kenya

Article DOI: <https://doi.org/10.36713/epra5722>

ABSTRACT

Community pharmacy role in universal health coverage was a qualitative study that entailed close contact to the role played by community pharmacies in healthcare provision. As a "small healthcare" in provision of pharmaceutical services, community pharmacies are required to be included in realization of Universal Health Coverage in Mombasa since it is among the Big 4 Agenda of the national government (MOH, 2013). The objective of the study was to determine community pharmacy role in universal health coverage. A descriptive cross sectional study design was used to collect both qualitative and quantitative data and the design estimate the prevalence of the outcome of interest commonly for the purpose of public health planning. A sample size of 196 was calculated using fishers formula. Data was collected using in-depth interviews and structured questionnaire were administered on a target population of community pharmacies health providers and clients seeking services respectively. The collected data was analysed using SPSS version 20 and interpreted using tables and pie charts. On community pharmacy practitioners respondents; 58% were male, 90.3% diploma holders in pharmacy, 39.8% registered with PPB and 65% had practised for less than two years. 78% of the respondents agree that community pharmacy has a role in UHC and there was 74% affordability of community pharmacy medicines. Bivariate analysis findings show that training and inspection on UHC ($P=0.003$) Covid 19 ($p=0.000$) and inspection fee ($p=0.000$). Accessibility; location of community pharmacies ($p=0.000$) and doctors attitudes ($p=0.000$). Essential medicines; acyclovir 200mg tablets ($p=0.000$), chlorpromazine 100mg tablets ($p=0.000$) and tetanus toxoid vaccine ($p=0.000$). Key determinants of community pharmacy role in UHC were diploma (AOR 666.7; CI 129.6-3429.5), Erythromycin 125mg suspension (AOR 120.3; CI 15.4-940.8), Acyclovir 200mg tablets (AOR 46.823; CI 17.7-124.1) and Occupation (AOR 45.271; CI 15.363-133.404). The study recommends reduction of tax on essential medicines, MOH revise the UHC policy to incorporate community pharmacies and empowerment on management of controlled drugs and vaccines in order to realize effective and efficient UHC in Kenya



INTRODUCTION

Universal Health Coverage may be defined as ensuring all people use the promotive, curative, rehabilitative and palliative health services they need of sufficient quality and effective, while ensuring the use of such services does not expose the user to any financial hardship which has continued to dominate healthcare (Robertson *et al*, 2015). The goal of UHC is to ensure that all people obtain the health services they need without suffering financial destitution when paying for them.

WHO identifies FOUR elements which are necessary towards the realization of universal health coverage. The elements are; strong, efficient, well-run health system, system of financing health services, access to essential medicines and technologies and sufficient capacity of well-trained motivated health workers (WHO, 2010).

Roles of a community pharmacy include provision of over the counter and prescriptions medicines, give pharmaceutical information, compounding which is small scale manufacture of drugs to meet the patients demand, checking and dispensing of prescription drugs with care, accuracy and legality, procurement that is, purchasing of medicines, storage, documentation of prescriptions and medicines, guiding and counseling patients on drug adherence and compliance and engaging in health promoting programs such as vaccination, identification of number of births and deaths. Through all this a community pharmacy becomes so essential in provision of health services nationwide (Lore, 2008).

The vision of health services in Kenya is to provide equitable and affordable service to all Kenyans via both preventive and curative care (MOH, 2013). A community pharmacy is a retail shop which provides prescription drugs, over the counter drugs, among other products but basically pharmaceutical related services (Bhise & Yadav, 2006). Services are provided by trained professional who have gone through a full training and approved by the Pharmacy and Poison Board (PPB). The PPB is the Drug regulatory authority established under the Pharmacy and Poison Act, Chapter 244 of the laws of Kenya (PPB, 2012). The Board regulates the practice of pharmacy, the manufacture and the trade in drugs and poisons (Lore, 2008)

Pharmacists and Pharmaceutical technologists are expert in pharmaceutical care, pharmacotherapy and health promotion. Therefore, Community Pharmacy play a great role in health of individuals hence making it a means to Universal Health Coverage. UHC is a health care system in which all residents of a particular country or region are assured access to health care. It is

generally organized around providing either all residents or only those who cannot afford on their own with either health services or the means to acquire them, with the end goal of improving health outcomes (WHO, 2010).

The purpose of this study was to determine the role of the community pharmacy in UHC being one of the BIG 4 agenda of the National Government through the Ministry of Health (GOK, 2018).

OBJECTIVES

General Objective

To determine Community Pharmacy role in Universal Health Coverage in Kenya

Specific Objectives

- To determine factors to be considered by the government in promoting universal health coverage and health equity.
- To establish the affordability of health services in community pharmacies.
- To determine the accessibility of health care services in community pharmacy.
- To evaluate the available essential medicines in community pharmacy.

METHODOLOGY

A descriptive Cross sectional study design was used in the study. The design is able to estimate the prevalence of the outcome of interest for a given population, commonly for the purpose of public health planning (Levin, 2006). Both qualitative and quantitative data was collected from clients seeking health services at the community pharmacy as well as pharmacy practitioners working at the community pharmacy. All respondents above 18 years of age and were willing to participate via consenting were recruited

Study Site

The study was carried out in Mombasa town in Mombasa County 001 located at the coastal region of Kenya. It has an approximate of 1000 community pharmacies which provide the community with pharmaceutical services (PPB, 2019).

Sample Size Determination

The sample size was calculated using Fisher's formula (Mugenda, 2006)

$$\text{Where; } n = \frac{Z^2pq}{d^2}$$

n = Desired sample size

Z = Standard normal deviation (1.96)

p = Anticipated population proportion (15%)

q = (1 - p)

d = Allowable error (5%)

$$n = \frac{(1.92)^2(0.15)(0.85)}{(0.05)^2} = 196$$

SAMPLING METHOD

A snow ball random sampling was used to recruit subjects into the study among various community pharmacies in Mombasa County. Data collection process was done daily from Monday to Friday at 8am to 5pm until the desired sample size was obtained.

DATA MANAGEMENT

The collected data was edited, transcribed and coded before entry into the SPSS computer software for analysis. All filled questionnaires were kept safe in a lockable cupboard and keys kept by researcher only. The collected data was analyzed based on the study variables, then presented by the use of tables, bar graphs and pie charts

RESULTS

Figures

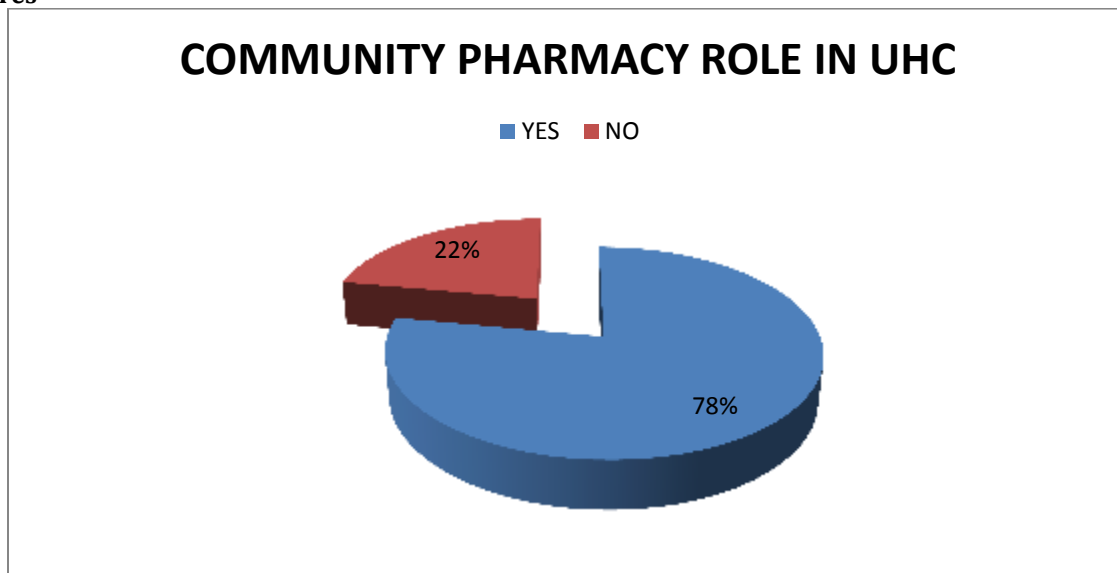


Figure 1: Community pharmacy role in UHC

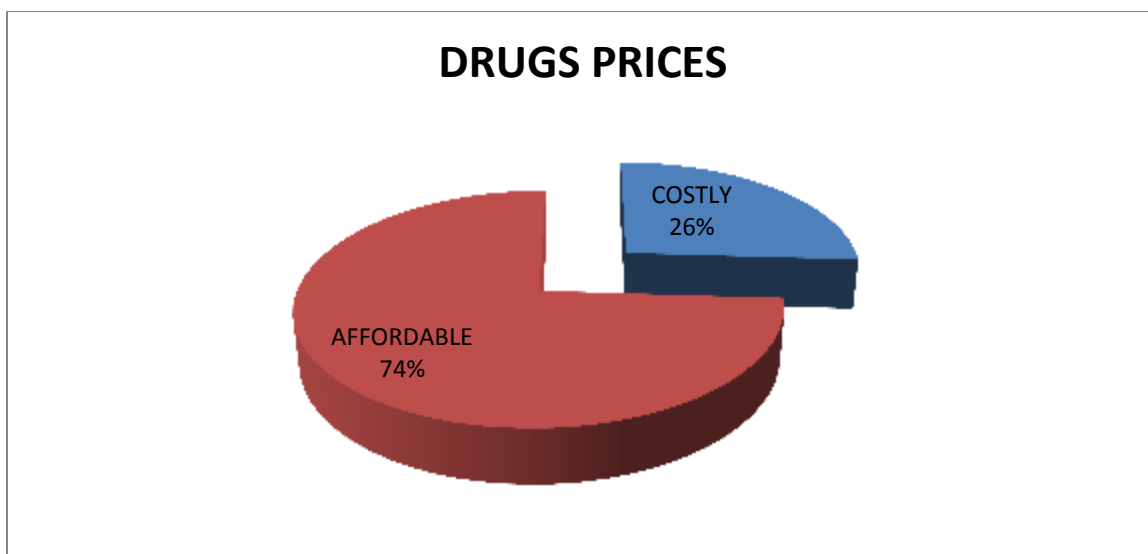


Figure 2: Drugs affordability Tables



Table 1: Socio-demographic factors of the respondents

Variable	Category	Frequency (N=196)	Community pharmacy role in UHC	
			Yes (n=153)	No (n=43)
Gender	Male	114(58%)	78(51%)	36(83.7%)
	Female	82(42%)	75(49%)	7(16.3%)
Education	Diploma	177(90.3%)	150(93%)	3(7%)
	Degree	19(9.7%)	3(7%)	40(93%)
Registration with PPB	Yes	78(39.8%)	76(49.7%)	2(4.7%)
	No	118(60.2%)	77(50.3%)	41(95.3%)
Practicing duration	<2 years	128(65.3%)	86(56.2%)	42(97.7%)
	>2 years	68(34.7%)	67(43.8%)	1(2.3%)
Occupation	Employed	165(85.1%)	148(96.7%)	17(39.5%)
	Student / intern	31(14.9%)	5(3.3%)	26(60.5%)

Table 2: Promotion of health equity

Variable	Category	Frequency (N=196)	Community pharmacy role in UHC	
			Yes (n=153)	No (n=43)
Training				
UHC	Yes	79(40.3%)	70(45.8%)	9(20.9%)
	No	117(59.7%)	83(54.2%)	34(79.1%)
ADR	Yes	78(39.8%)	72(47.1%)	6(14%)
	No	118(60.2%)	81(52.9%)	37(86%)
Malaria management	Yes	137(69.9%)	108(70.6%)	29(67.4%)
	No	59(30.1%)	45(29.4%)	14(32.6%)
Covid 19	Yes	98(50%)	98(64.1%)	0(0%)
	No	98(50%)	55(35.9%)	43(100%)
TB/HIV	Yes	138(70.4%)	121(79.1%)	17(39.5%)
	No	58(29.6%)	32(20.9%)	26(60.5%)
Inspection (PPB)				
Premise	Yes	196(100%)	153(100%)	43(100%)
	No	0(0%)	0(0%)	0(0%)
Inspection fee	Charged	39(19.9%)	39(25.5%)	0(0%)
	Not charged	157(80.1%)	114(74.5%)	43(100%)
Frequency	Often	117(59.7%)	100(65.4%)	17(39.5%)
	Rarely	79(40.3%)	53(34.6%)	26(60.5%)
Inspectors attitude	Very good	20(10.2%)	20(13.1%)	0(0%)
	Good	98(50%)	65(42.5%)	33(76.7%)
	Bad	78(39.8)	68(44.4%)	10(23.3%)
Guidelines provision	Yes	158(80.6%)	153(100%)	5(11.6%)
	No	38(19.4%)	0(0%)	38(88.4%)
GOK commodities (free)				
Condoms	Yes	0(0%)	0(0%)	0(0%)
	No	196(100%)	153(100%)	43(100%)
HIV test kits	Yes	20(10.2%)	20(13.1%)	0(0%)
	No	176(89.8%)	133(86.9%)	43(100%)
Family planning	Yes	0(0%)	0(0%)	0(0%)
	No	196(100%)	153(100%)	43(100%)
PEP	Yes	0(0%)	0(0%)	0(0%)
	No	196(100%)	153(100%)	43(100%)



Pre - EP	Yes	0(0%)	0(0%)	0(0%)
	No	196(100%)	153(100%)	43(100%)

Table 3: Accessibility to community pharmacy and Affordability of drugs

Variable	Category	Frequency (N=196)	Affordability of drugs	
			Affordable (n=145)	Costly (n=51)
Distance	<1km	160(81.6%)	140(96.6%)	20(39.2%)
	>1km	36(18.4%)	5(3.4%)	31(60.8%)
Operation time	Reliable	136(69.4%)	136(93.8%)	0(0%)
	Unreliable	60(30.4%)	9(6.2%)	51(100%)
Client health needs	Met	158(80.6%)	145(100%)	13(25.5%)
	Unmet	38(19.4%)	0(0%)	38(74.5%)
Quality of services	Very good	135(68.9%)	60(41.8%)	1(2%)
	Good	61(31.1%)	85(58.2%)	50(98%)
Doctors attitudes	Satisfactory	158(80.6%)	143(98.6%)	15(29.4%)
	Unsatisfactory	38(19.4%)	2(1.4%)	36(70.6%)

Table 4: Bivariate analysis on socio demographic factors of the respondents

Variable	Category	Community pharmacy role in UHC		Df	Chi square	P - value
		Yes (n=153)	No (n=43)			
Gender	Male	78(51%)	36(83.7%)	1	14.787	0.000
	Female	75(49%)	7(16.3%)			
Education	Diploma	150(93%)	3(7%)	1	162.531	0.000
	Degree	3(7%)	40(93%)			
Registration with PPB	Yes	76(49.7%)	2(4.7%)	1	28.398	0.000
	No	77(50.3%)	41(95.3%)			
Practicing duration	<2 years	86(56.2%)	42(97.7%)	1	25.472	0.000
	>2 years	67(43.8%)	1(2.3%)			
Occupation	Employed	148(96.7%)	17(39.5%)	1	82.474	0.000
	Student / intern	5(3.3%)	26(60.5%)			

Table 5: Bivariate analysis health promotion in equity

Variable	Category	Community pharmacy has a role in UHC		Df	Chi square	P - value
		Yes (n=153)	No (n=43)			
Training UHC	Yes	70(45.8%)	9(20.9%)	1	8.595	0.003
	No	83(54.2%)	34(79.1%)			
ADR	Yes	72(47.1%)	6(14%)	1	15.354	0.000
	No	81(52.9%)	37(86%)			
Malaria management	Yes	108(70.6%)	29(67.4%)	1	0.158	0.691
	No	45(29.4%)	14(32.6%)			
Covid 19	Yes	98(64.1%)	0(0%)	1	55.085	0.000
	No	55(35.9%)	43(100%)			
TB/HIV	Yes	121(79.1%)	17(39.5%)	1	25.2	0.000
	No	32(20.9%)	26(60.5%)			
Inspection (PPB)						



Premise	Yes	153(100%)	43(100%)	1	-	-
	No	0(0%)	0(0%)			
Inspection fee	Charged	39(25.5%)	0(0%)	1	13.684	0.000
	Not charged	114(74.5%)	43(100%)			
Frequency	Often	100(65.4%)	17(39.5%)	1	9.304	0.002
	Rarely	53(34.6%)	26(60.5%)			
Inspectors attitude	Very good	20(13.1%)	0(0%)	2	17.288	0.000
	Good	65(42.5%)	33(76.7%)			
	Bad	68(44.4%)	10(23.3%)			
Guidelines provision	Yes	153(100%)	5(11.6%)	1	167.728	0.000
	No	0(0%)	38(88.4%)			
GOK commodities (free)						
Condoms	Yes	0(0%)	0(0%)	1	-	-
	No	153(100%)	43(100%)			
HIV test kits	Yes	20(13.1%)	0(0%)	1	6.26	0.012
	No	133(86.9%)	43(100%)			
Family planning	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
PEP	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
Pre - EP	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			

Table 6: Bivariate analysis on community pharmacy and Affordability of drugs

Variable	Category	Affordability of drugs		Df	Chi square	P - value
		Affordable (n=145)	Costly (n=51)			
Distance	<1km	140(96.6%)	20(39.2%)	1	82.723	0.000
	>1km	5(3.4%)	31(60.8%)			
Operation time	Reliable	136(93.8%)	0(0%)	1	156.259	0.000
	Unreliable	9(6.2%)	51(100%)			
Client health needs	Met	145(100%)	13(25.5%)	1	134.023	0.000
	Unmet	0(0%)	38(74.5%)			
Quality of services	Very good	60(41.8%)	1(2%)	2	27.348	0.000
	Good	85(58.2%)	50(98%)			
Doctors attitudes	Satisfactory	143(98.6%)	15(29.4%)	1	115.632	0.000
	Unsatisfactory	2(1.4%)	36(70.6%)			



Table 7: Bivariate analysis on essential drugs

Variable	Category	Affordability of drugs		Df	Chi square	P - value
		Affordable (n=145)	Costly (n=51)			
Paracetamol 500mg tablets	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Chlorpheniramine 2mg suspension	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Multivitamin tablets	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Metoclopramide 10 mg tablets	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Activated charcoal tablets	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Albendazole 200mg suspension	Yes	196(100%)	153(100%)	-	-	-
	No	0(0%)	0(0%)			
Metronidazole 400mg tablets	Yes	153(100%)	43(100%)	-	-	-
	No	0(0%)	0(0%)			
Erythromycin 125mg suspension	Yes	152(99.3%)	24(55.8%)	1	69.422	0.000
	No	1(0.7%)	19(44.2%)			
Fluconazole 200mg tablets	Yes	153(100%)	43(100%)	-	-	-
	No	0(0%)	0(0%)			
Acyclovir 200mg tablets	Yes	145(94.8%)	12(27.9%)	1	94.154	0.000
	No	8(5.2%)	31(72.1%)			
Doxycycline 100mg capsules	Yes	153(100%)	43(100%)	-	-	-
	No	0(0%)	0(0%)			
Nifedipine 20mg tablets	Yes	153(100%)	43(100%)	-	-	-
	No	0(0%)	0(0%)			
Metformin 500mg tablets	Yes	153(100%)	43(100%)	-	-	-
	No	0(0%)	0(0%)			
Chlorpromazine 100mg tablets	Yes	92(60.1%)	6(14%)	1	28.630	0.000
	No	61(39.9%)	37(86%)			
Phenobarbitone 30mg tablets	Yes	88(57.5%)	10(23.4%)	1	15.760	0.000
	No	65(42.5%)	33(76.7%)			
Antirabies vaccine	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
Oral typhoid vaccine	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
Hepatitis B vaccine	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
Pentavalent vaccine	Yes	0(0%)	0(0%)	-	-	-
	No	153(100%)	43(100%)			
Tetanus toxoid (T.T) vaccine	Yes	58(39.9%)	0(0%)	1	23.152	0.000
	No	95(60.1%)	43(100%)			



Table 8: Multivariate logistic regression on community pharmacy role in UHC

Variable	Category	Community pharmacy role in UHC		AOR (CI 95%)	P - value
		Yes (n=153)	No (n=43)		
Gender	Male	78(51%)	36(83.7%)	0.202,(0.085,0.482)	0.000
	Female	75(49%)	7(16.3%)		
Education	Diploma	150(93%)	3(7%)	666.7(129.6,3429.5)	0.000
	Degree	3(7%)	40(93%)		
Registration with PPB	Yes	76(49.7%)	2(4.7%)	20.234,(4.726,86.627)	0.000
	No	77(50.3%)	41(95.3%)		
Practicing duration	<2 years	86(56.2%)	42(97.7%)	0.031,(0.004,0.228)	0.000
	>2 years	67(43.8%)	1(2.3%)		
Occupation	Employed	148(96.7%)	17(39.5%)	45.271(15.363,133.404)	0.000
	Student / intern	5(3.3%)	26(60.5%)		
UHC	Yes	70(45.8%)	9(20.9%)	3.186(1.431,7.096)	0.003
	No	83(54.2%)	34(79.1%)		
ADR	Yes	72(47.1%)	6(14%)	5.786(2.311,14.484)	0.000
	No	81(52.9%)	37(86%)		
Covid 19	Yes	98(64.1%)	0(0%)	-	0.000
	No	55(35.9%)	43(100%)		
TB/HIV	Yes	121(79.1%)	17(39.5%)	5.8,(2.8,11.9)	0.000
	No	32(20.9%)	26(60.5%)		
Inspection fee	Charged	39(25.5%)	0(0%)	-	0.000
	Not charged	114(74.5%)	43(100%)		
Frequency	Often	100(65.4%)	17(39.5%)	2.9,(1.4,5.8)	0.002
	Rarely	53(34.6%)	26(60.5%)		
Inspectors attitude	Very good	20(13.1%)	0(0%)	-	0.000
	Good	65(42.5%)	33(76.7%)		
	Bad	68(44.4%)	10(23.3%)		
Guidelines provision	Yes	153(100%)	5(11.6%)	-	0.000
	No	0(0%)	38(88.4%)		
Erythromycin 125mg suspension	Yes	152(99.3%)	24(55.8%)	120.3,(15.4,940.8)	0.000
	No	1(0.7%)	19(44.2%)		
Acyclovir 200mg tablets	Yes	145(94.8%)	12(27.9%)	46.823,(17.7,124.1)	0.000
	No	8(5.2%)	31(72.1%)		
Chlorpromazine 100mg tablets	Yes	92(60.1%)	6(14%)	9.3(3.7,23.4)	0.000
	No	61(39.9%)	37(86%)		
Phenobarbitone 30mg tablets	Yes	88(57.5%)	10(23.4%)	4.5(2.6,9.7)	0.000
	No	65(42.5%)	33(76.7%)		
Tetanus toxoid (T.T) vaccine	Yes	58(39.9%)	0(0%)	-	0.000
	No	95(60.1%)	43(100%)		

DISCUSSION

The findings show that 58% of the respondents were male, 90.3% had a diploma in pharmacy qualification (pharmaceutical technologist), 39.8% were enrolled or registered with the pharmacy and poisons board to practice and there were 14.9% students and interns being trained. About 78% of the respondents agree that community pharmacy has a role to play in the UHC provision in Kenya. Bivariate analysis findings show that gender (p=0.000), education level (p=0.000), registration with PPB (p=0.000), practising age (p=0.000) and occupation

(p=0.000) were statistical significant to community pharmacy role in UHC. The study findings concur with the PPB guidelines that no one should be allowed to practice a community pharmacy without registration or enrolment with the board (PPB, 2012).

The fourth element of UHC is health workers training and the study was to focus on training of new skills to health workers working in the community pharmacy. The study found out that 40.3% had been on UHC, 39.8% ADR, 69.9% Malaria management, 50% Covid 19 and 70.4% TB/HIV. Bivariate analysis found out that respondent training in UHC (p=0.003), ADR



(0.000), Covid 19 ($p=0.000$) and TB/HIV ($p=0.000$) were statistically significant to community pharmacy role in UHC. Therefore, based on the study findings all community pharmacies practitioners should benefit from the MOH skill training to be able to render better health outcomes to Kenyans. Other studies by (Mwangi *et al*; 2015 and Kibui *et al*; 2015) demonstrates how health workers in private practice must receive training offered by the MOH in order to empower their service delivery to Kenyans.

On the part of government (PPB) role, the study found out that 100% of the community pharmacies had undergone inspection process, 19.9% claim they were charged premise inspection fee yet the process should be free of charge (PPB, 2012), 59.7% agree that inspection process has been done on regular basis, 60.2% agree the inspectors do their work with good attitude and 80.6% of the respondents were provided with inspection guidelines by the PPB inspectors. Bivariate analysis finding show that inspection fee ($p=0.000$), frequency of the inspection exercise ($p=0.002$), attitudes of inspectors ($p=0.000$) and provision of inspection guidelines ($p=0.000$) to be statistical significant to community pharmacy role in UHC

Study was also interested to identify the government role in partnering with the community pharmacies to enhance healthcare reach to the community with certain commodities offered for free to the public by the public hospitals. The study found out that the supply of condoms (0%), family planning commodities (0%), HIV test kits (10.2%), post exposure prophylaxis to HIV (0%), and Pre exposure prophylaxis to HIV (0%). The bivariate analysis found out that HIV test commodities ($p=0.012$) to be statistically significant to community pharmacy role in UHC

The other element of UHC is access to essential medicines and the study was interested to identify availability of essential medicines at the community pharmacy. The study found out that for general drugs; paracetamol 500mg tablets (100%), Chlorpheniramine 2mg suspension (100%), multivitamin tablets (100%), Metoclopramide 10mg tablets (100%), activated charcoal tablets (100%) and Albendazole 200mg suspension (100%). Antimicrobial drugs; metronidazole 400mg tablets (100%), erythromycin 125mg suspension (99.3%), fluconazole 200mg tablets (100%), acyclovir 200mg tablets (94.8%) and doxycycline 100mg capsules (100%). Special drugs; nifedipine 20mg tablets (100%), metformin 500mg tablets (100%), chlorpromazine 100mg tablets (60.1%) and phenobarbitone 30 mg tablets (57.5%). Vaccines; oral typhoid vaccine (0%), hepatitis B vaccine (0%),

pentavalent vaccine (0%) and tetanus toxoid vaccine (39.9%). Based on bivariate analysis, erythromycin 125mg suspension ($p=0.000$), Acyclovir 200mg tablets ($p=0.000$), chlorpromazine 100mg tablets ($p=0.000$) and Phenobarbitone 30mg tablets ($p=0.000$). The UHC is very clear on accessibility of essential medicines and technologies (WHO, 2012). The Kenyan constitution 2010, state that it is the right of every Kenyan to access quality health care (Constitution of Kenya, 2010). Key determinants of community pharmacy role in UHC were diploma (AOR 666.7; CI 129.6-3429.5), Erythromycin 125mg suspension (AOR 120.3; CI 15.4-940.8), Acyclovir 200mg tablets (AOR 46.823; CI 17.7-124.1) and Occupation (AOR 45.271; CI 15.363-133.404).

The study also found out that 74% of the essential medicines were affordable. About 96.6% of the respondents access community pharmacies in a short distance of less than one kilometre from their residence, the community pharmacy meets their healthy needs (100%), 41.8% of the respondents find community pharmacies to offer good and quality health services and 98.6% agree that doctors at the community pharmacy have satisfactory attitudes on patient care. The bivariate findings show that distance ($p=0.000$), operation time ($p=0.000$), client needs ($p=0.000$), quality of service ($p=0.000$) and doctors attitude ($p=0.000$) to statistically significant to community pharmacy role in UHC. The findings agree with the study by Beringer & Remington (2006) whose findings show how community pharmacies are crucial in society needs with drugs and pharmaceutical services.

In Kenya, the government chose National Hospital Insurance Fund (NHIF) as an official vehicle for successful implementation of universal health coverage for the country and it covers treatment of the insurance beneficiaries at both public and private hospitals (Munge *et al*; 2015). This means NHIF beneficiaries are not covered when they take their medications at the community pharmacies.

In Australia, Medicare is a universal health insurance scheme that covers all Australian citizens and permanent residents, with other programs covering specific groups, such as veterans or Indigenous Australians, and various compulsory insurance schemes cover personal injury resulting from workplace or vehicle incidents (Australian institute of health and welfare, 2018). Since 1990, the remuneration that pharmacists receive for dispensing Pharmaceutical Benefits Scheme (PBS) medicines and the regulations regarding the location of pharmacies have been governed by a series of agreements between the Australian Government and the Pharmacy Guild of Australia. The Sixth Community Pharmacy Agreement



(6CPA) between the Australian Government and the Guild provides approximately \$18.9 billion to over 5000 community pharmacies for dispensing PBS medicines, providing pharmacy programs and services and for the Community Service Obligation arrangements with pharmaceutical wholesalers. This provides financial support to pharmaceutical wholesalers, supplying the full range of PBS medicines regardless of pharmacy location and the relative cost of supply. The CSO Funding Pool helps ensure that low volume PBS medicines are delivered to community pharmacies anywhere in Australia and that all PBS medicines are delivered to rural and remote community pharmacies (Vitry *et al*, 2015).

In England, NHS commits almost £13 billion to community pharmacy through its contractual framework, with a commitment to spend £2.592 billion over five years from 2019-2024. This significant investment recognises the contribution that community pharmacy has committed to making towards the delivery of the NHS Long Term Plan (Davies, 2013). Thus, learning from these two countries will enhance country health service delivery

CONCLUSION

UHC elements focus on strong, efficient and well runned health system, financing of health system, access to essential medicines and sufficient capacity of well trained motivated health workers. The community pharmacies have a role in UHC and this can be played through stocking essential pharmaceutical commodities that are effective and meets quality standards prescribed by the regulator (PPB). The community pharmacies require government support in order to get pharmaceutical products and establishment of their retail shop at affordable costs. It is always the government role to empower the all health workers with relevant training in order to ensure that they also render quality health care to the people

RECOMMENDATIONS

The study recommends the following based on it's study findings;

1. The community pharmacies should be empowered by the PPB to stock and manage controlled drugs and vaccines which are essential medicines in UHC
2. The government should consider either to reduce or withdraw tax on essential medicines and technologies as well give support young qualified persons put up a community pharmacy
3. The UHC policy in Kenya should be revised so that the community pharmacies becomes a

stakeholder in provision affordable health services to the people given that they are accessible to many people

REFERENCES

1. Australian Institute of Health and Welfare (2018). *Australia's Health 2018*. Australia's Health. 16. AIHW
2. Ayugi, M. E. (2013). *Uptake of community health strategy on service delivery and utilization in Kenya*. *European Scientific Journal*, 9(23), 102-111.
3. Babar, Z. (2015). *Pharmacy practice research methods*.
4. Beringer, P., & Remington, J. P. (2006). *Remington: The science and practice of pharmacy. Beyond UHC: monitoring health and social protection coverage in the context of tuberculosis care and prevention*. *PLoS medicine*, 11(9), e100169
5. Bhise, S. B., & Yadav, A. V. (2006). *A text book of health education and community pharmacy*. New Delhi, India: Nirali Prakashan
6. Boshoff, C. and Gray, B. (2004). *The Relationship between service quality, customer satisfaction and buying intentions in the private hospital industry*. *South African Journal of Business Management*, 35(4), 27-37.
7. Buong', J. A., Adhiambo, G. C., Kaseje, D. O. Mumbo, H. M., Odera O. and Carrin, G., James, C., Adelhardt, M., Doetinchem, O., Eriki, P., Hassan, M., & Krech, R. (2007). *Health financing reform in Kenya-assessing the social health insurance proposal*. *South African medical journal*, 97(2), 130-135.
8. Davies, J. E. (2013). *Community pharmacy businesses and community pharmacists (Doctoral dissertation, UCL (University College London))*
9. De Leeuw, E. (2001). *Global and local (glocal) health: the WHO healthy cities programme*. *Global Change and Human Health*, 2(1), 34-45.
10. Feng Jing, F., Avery, G. C., & Bergsteiner, H. (2011). *Organizational climate and performance in retail pharmacies*. *Leadership & Organization Development Journal*, 32(3), 224-242.
11. Glickman, S. W., Baggett, K. A., Krubert, C. G., Peterson, E. D. and Schulman, K. A. (2007).
12. *Promoting quality: The health care organization from a management perspective*. *International Journal of Quality Health Care*, 19(6):341-348
13. GOK (2018). *Big four agenda implementation status report*
14. Houtkoop-Steenstra, H., & Houtkoop-Steenstra, J. P. (2000). *Interaction and the standardized survey interview: The living questionnaire*. Cambridge University Press. Philadelphia: Lippincott Williams & Wilkins.
15. Kibui A.W., Ruth K.M., Grace N., Ngesu N., Mwaniki I.N., Benard M. (2015). *Health Policies in Kenya and*



- the New Constitution for Vision 2030', *International Journal of Scientific Research and Innovative Technology* 2(1):127.
16. Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in health care*, 15(3), 261-266.
 17. Lambert, A. A., & Lambert, A. A. (2014). Advanced pharmacy practice.
 18. Leah Kimathi (2017). Challenges of the Devolved Health Sector in Kenya: Teething Problems or Systemic Contradictions? *Africa Development*, XLII, (1), 55-77
 19. Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based dentistry*, 7(1), 24-25.
 20. Lore, B. (2008). Optimising role of drugs in patient care. *East African medical journal*, 85(9), 417-418
 21. Lönnroth, K., Glaziou, P., Weil, D., Floyd, K., Uplekar, M., & Raviglione, M. (2014).
 22. MOH. (2013b). *Human Resources for Health and Health Infrastructure Norm and Standards*. Nairobi, Kenya: MOH.
 23. MOH. (2013a). *Kenya Service Availability and Readiness Assessment Mapping (SARAM) Report*. Nairobi, Kenya: World Health Organization.
 24. Mselle, L. T., Moland, K. M., Mvungi, A., Olsen, B. E., and Kohi, T. W. (2013). Why give birth in health facility? Users' and providers' accounts of poor quality of birth care in Kenya. *BMC Health Services Research*, 13, 174-184
 25. Munge, K., Mulupi, S., & Chuma, J. (2015). A critical analysis of the purchasing arrangements in Kenya: the case of the National Hospital Insurance Fund, Private and Community-based health insurance. London: RESYST.
 26. Mwaniki, D.L. & Dulo, C. (2008). "Migration of Health Workers in Kenya: The Impact on Health Service Delivery." *Regional Network for Equity in Health in East and Southern Africa. Discussion Paper no. 55*,
 27. Mwangi, C., 2013, 'Accessibility to the Kenyan Healthcare System: Barriers to Accessing Proper Healthcare', unpublished PhD thesis, Arcada University.
 28. Noor, A. M., A. A. Amin, P. W. Gething, P. M. Atkinson, S. I. Hay, and R.W. Snow. 2006. "Modelling Distances Travelled to Government Health Services in Kenya." *Tropical Medicine & International Health* 11(2): 188-196.
 29. Quick, J. D., Canavan, C. R., & Jay, J. (2014). People-centered health systems for UHC. *Southern African Journal of Public Health (incorporating Strengthening Health Systems)*.
 30. Regeru, R. N., Chikaphupha, K., Bruce Kumar, M., Otiso, L., & Taegtmeier, M. (2020). 'Do you trust those data?'—a mixed-methods study assessing the quality of data reported by community health workers in Kenya and Malawi. *Health policy and planning*, 35(3), 334-345.
 31. Robertson, J., Magrini, N., Barr, R., Forte, G., & Ondari, C. (2015). Medicines for cancers in children: the WHO model for selection of essential medicines. *Pediatric blood & cancer*, 62(10), 1689-1693.
 32. Vitry, A. I., Thai, L., & Roughead, E. E. (2015). Pharmaceutical pricing policies in Australia. In *Pharmaceutical prices in the 21st century* (pp. 1-23). Adis, Cham
 33. Wamai, R. (2009). The Kenya health system: analysis of the situation and enduring challenges. *JMAJ*, 52(2), 134-140.
 34. WHO (2002). *The selection of essential medicine* (NO. WHO/2002.2). Geneva: World Health Organization
 35. WHO (2010). *Monitoring the building blocks of health systems: a handbook of indicator and their measurement strategies*. World Health Organization



ASSESSMENT OF CHILD MORTALITY IN CHILDREN UNDER FIVE YEARS AT THE COAST GENERAL TEACHING AND REFERRAL HOSPITAL, KENYA

Kailong J. M.¹

¹ Assistant lecturer,

Department of medical sciences,
School of pure and health sciences,
Technical University of Mombasa,
Kenya.

Adem A.²

² Lecturer,

Department of mathematics and Physics,
School of pure and health sciences,
Technical University of Mombasa,
Kenya.

Article DOI: <https://doi.org/10.36713/epra5744>

ABSTRACT

According to World Health Organization, children in Sub-Saharan Africa are more affected where the cases of deaths are 15 times more than the children in high income countries (WHO 2019). The carried out an assessment of child mortality at the Coast General teaching and Referral Hospital by looking at the prevalence, risk factors associated and utilization of Maternal Child Health services at the hospital. The study used a cross sectional study design where the target populations were children delivered as well as those seeking health services at the hospital. The study recruited a sample size of 384 participants. Structured questionnaire was used to collect quantitative data and interview for qualitative data then data was analyzed using SPSS version 20. The study results were presented using tables and pie charts. The study findings show that child mortality rate stands at 31%, 54.9% of the mothers had given birth to children with more than 2.5kg and 50.8% developed pregnancy or delivery complication. Bivariate analysis finding show that age during the first birth ($p=0.036$), placenta and umbilical cord complication ($p=0.007$), hospital delivery ($p=0.000$) to be statistically significant to child mortality.

KEY WORDS: *child mortality, hospital delivery, maternal and health care*

INTRODUCTION

Infant and child mortality refers to the number of deaths that occurs to children below five years and below one year respectively (Hill, 2001). The main causes of infant mortality have been identified as malaria, pneumonia, birth defects, malnutrition, low birth weight, pregnancy complications and diarrhea (Elmahdi, 2008 and WHO, 2019)

About 6.6 million children die per annually, 546,000 monthly, 125,000 weekly, 180,000 daily and 12 per minute (USAID, 2012, WHO, 2015). Currently, it's estimated that globally, 2.5 million children died in the first month of life in 2018. There are approximately 7000 new born deaths every day amounting to 47% of all child deaths under the age of 5-years up from 40% in 1990. The same number of babies were born stillbirth in 2015 (UNICEF, 2019)

In this project main focus is on below five and below one year. Infant mortality rate is important to monitor progress since it represents an important component of under-five mortality. Infant mortality rates are also important because they reflect the social, economic and environmental conditions which children and others in society live including the quality and accessibility of health care.

Poverty has also been a key factor in several cases child infant mortality. All these factors have to be worked on in order to ensure infant and child mortality cases are reduced.

Objectives

General objective

Assessment of child mortality at the Coast General Teaching and Referral Hospital



Specific objectives

1. To determine the prevalence of child mortality in Coast General Teaching and Referral Hospital
2. To establish the risk factors of child mortality in Coast General Teaching and Referral Hospital
3. To determine the level of maternal and child health care services in Coast General Teaching and Referral Hospital

METHODOLOGY

This study descriptive cross-sectional to with aim to collect both qualitative and quantitative data in regards to child mortality and its associated risk factors in Coast General Teaching and Referral Hospital

This design was chosen because it will give room for assessment of the prevalence of under-five mortality in the population that visits the institution. This design will also help in finding out the risk factors that are associated with less than five mortality and the correct measures to be implemented to reduce this deaths.

Sampling

The study carried out three interview sessions with health workers (nurses, nutritionist, doctors, pediatricians and gynecologist) working at the hospital. The face to face questionnaires were administered to mothers and children guardians at the hospital (maternity ward, children wards and MCH clinic). Systematic random sampling was used to recruit the subjects at an interval of five until required sample size was realized. The recruitment was carried out between Monday to Friday (8am-5pm) for the entire study period. All subjects were taken through the study objectives, benefits and risks before consenting. Confidentiality was assured at every stage of this study

The collected data was edited then entered into SPSS software (version 21) for analysis based on the study variables. The study results was presented using tables and pie charts

Sample size

The study sample size was calculated using the Cochran's formula (Cochran's, 2010)

$$n = \frac{z^2 P(1 - P)}{\alpha^2}$$

Where:

n = Minimum required sample size

z = Reliability coefficient (1.96 at 95% confidence interval)

p = Estimated proportion of PLHIV who have disclosed their HIV status taken to be 49%.

α = Maximum likely error (5%)

Therefore, the minimum sample size will be given as;

$$n = \frac{1.96^2 \times 0.49 \times (1 - 0.49)}{0.05^2} = 384$$

SYUDY AREA

The study was undertaken in Coast General Teaching and Referral Hospital located in Mvita constituency, Tononoka ward in Mombasa County. The hospital is former Coast Provincial General Hospital (CPGH). The hospital is located in Mvita constituency which currently has a population of 143,128 and sits in an area of approximately 14.80 Sq.km (KNBS, 2019).

The main economic activities that are carried in this region are fishing, petroleum refining, tourism and import and export business due to the largest seaport at the Kilindini Harbour.

RESULTS
Figures

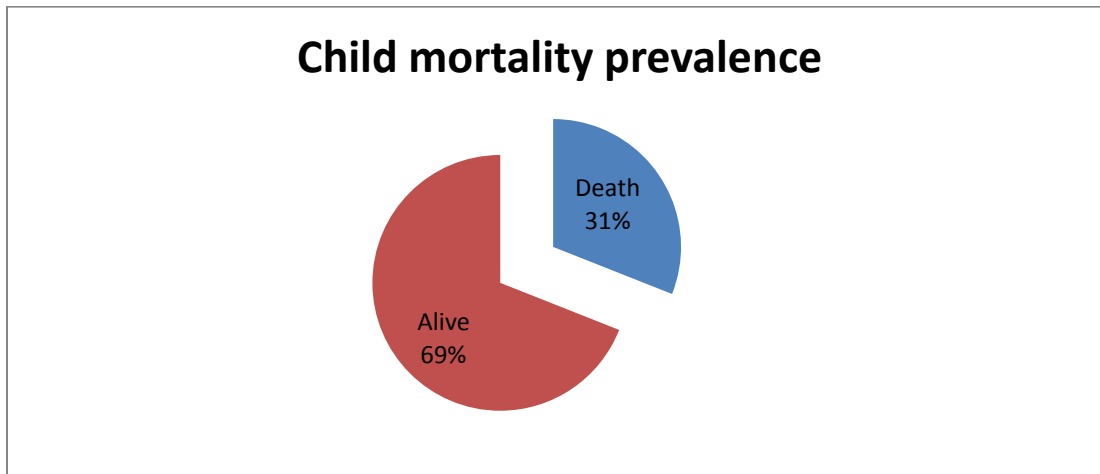


Figure 1: Prevalence of child mortality in CGTRH

TABLES

Table 1: Socio demographic factors

Variable	Category	Frequency (N=384)	Child mortality Death (n=120)	Alive (n=264)	
Children					
	Gender				
	Male	227(59.1%)	71(59%)	156(59.1%)	
	Female	157(40.9%)	49(41%)	108(40.9%)	
Mothers					
	Occupation	Employed	254(68.7%)	80(77%)	174(65.9%)
		Unemployed	130(31.3%)	40(33%)	90(34.1%)
	Education level	Non	83(21.6%)	26(21%)	57(21.6%)
		Primary	122(31.8%)	38(32%)	84(31.8%)
		Post primary	179(46.6%)	56(47%)	123(46.6%)
Age in first birth	<18 years	128 (33.3%)	49(40.8%)	79(29.9%)	
	>18 years	256 (66.7%)	71(59.2%)	185(70.1%)	

Table 2: Child mortality as per the age range

Age range	Frequency (N=384)	Child mortality Death (n=120)	Alive (n=264)
0-1 years	96(25.5%)	31(25.8%)	65(25.4%)
1-2 years	89(23.2%)	28(23.3%)	61(23.1%)
2-3 years	72(18.8%)	22(18.4%)	50(18.9%)
3-4 years	57(14.8%)	18(15%)	39(14.8%)
4-5 years	68(17.7%)	21(17.5%)	47(17.8%)



Table 3: Risk factors to child mortality

Variable	Category	Frequency (N=384)	Child mortality	
			Death (n=120)	Alive (n=264)
Children				
Birth weight	<2.5kg	157(40.8%)	49(41%)	108(40.9%)
	>2.5kg	227(59.2%)	71(51%)	156(59.1%)
Injuries or accident	Yes	137(35.7%)	43(36%)	94(35.6%)
	No	246(64.3%)	77(64%)	169(64%)
Placenta or umbilical cord complications	Yes	176(45.8%)	65(54%)	111(42%)
	No	208(54.2%)	55(46%)	153(58%)
Pregnancy or delivery complication	Yes	195(50.8%)	61(51%)	134(50.8%)
	No	163(49.2%)	59(49%)	104(39.4%)
Infant infections (respiratory distress, bacterial sepsis, neonatal hemorrhage)	Yes	211(54.9%)	66(55%)	145(54.9%)
	No	117(45.1%)	54(45%)	63(23.9%)
Mother				
Preceding birth interval	<2 years	224(58.3%)	70(58%)	154(58.3%)
	>2 years	160(41.7%)	50(42%)	110(41.7%)
Hospital delivery facilities	Adequate	218(56.8%)	68(56%)	150(56.8%)
	Not adequate	166(43.2%)	52(44%)	114(43.2%)
Cultural or religion influence on maternal health	Yes	227(59.1%)	71(59%)	156(59.1%)
	No	157(40.9%)	49(40%)	108(40.9%)

Table 4: Utilization of maternal and child health services

Variable	Category	Frequency (N=384)	Child mortality	
			Death (n=120)	Alive (n=264)
Hospital delivery	Yes	306(79.7%)	52(33%)	254(96.2%)
	No	178(20.3%)	68(57%)	110(41.7%)
Perception on Health care services (public hospitals)	Satisfactory	166(43.2%)	50(41.8%)	116(43.9%)
	Unsatisfactory	218(58.8%)	70(58.3%)	148(56%)
Access to free mosquito nets	Yes	128(33.3%)	40(33%)	88(33.3%)
	No	256(66.7%)	80(67%)	176(66.7%)
Post or antenatal clinic	Yes	192(50%)	60(50%)	132(50%)
	No	192(50%)	60(50%)	132(50%)
Free maternity services	Yes	208(54.2%)	65(54%)	143(54.2%)
	No	176(45.8%)	55(46%)	121(45.8%)
Referral system	Yes	195(50.8%)	61(50.8%)	134(50.8%)
	No	189(49.2%)	59(49.2%)	130(49.2%)



Table 5: Bivariate analysis on socio demographic factors

Variable	Category	Child mortality		Df	Chi square	P - value
		Death (n=120)	Alive (n=264)			
Child gender	Male	71(59%)	156(59.1%)	1	0.000	0.989
	Female	49(41%)	108(40.9%)			
Mothers Occupation	Employed	80(77%)	174(65.9%)	1	0.021	0.884
	Unemployed	40(33%)	90(34.1%)			
Education level	Non	26(21%)	57(21.6%)	2	0.24	0.884
	Primary	38(32%)	84(31.8%)			
	Post primary	56(47%)	123(46.6%)			
Age in the first birth	<18 years	49(40.8%)	79(29.9%)	1	4.418	0.036
	>18 years	71(59.2%)	185(70.1%)			

Table 6: Bivariate analysis on the risk factors in child mortality

Variable	Category	Child mortality		Df	Chi square	P - value
		Death (n=120)	Alive (n=264)			
Children						
Birth weight	<2.5kg	49(41%)	108(40.9%)	1	0.000	0.989
	>2.5kg	71(59%)	156(59.1%)			
Injuries or accident	Yes	43(36%)	94(35.6%)	1	0.000	0.986
	No	77(64%)	169(64%)			
Placenta or umbilical cord complications	Yes	65(54%)	111(42%)	1	4.882	0.027
	No	55(46%)	153(58%)			
Pregnancy or delivery complication	Yes	61(51%)	134(50.8%)	1	0.962	0.327
	No	59(49%)	104(39.4%)			
Infant infections (respiratory distress, bacterial sepsis, neonatal hemorrhage)	Yes	66(55%)	145(54.9%)	1	7.177	0.007
	No	54(45%)	63(23.9%)			
Mother						
Preceding birth interval	<2 years	70(58%)	154(58.3%)	1	0.000	1
	>2 years	50(42%)	110(41.7%)			
Hospital delivery facilities	Adequate	68(56%)	150(56.8%)	1	0.001	0.978
	Not adequate	52(44%)	114(43.2%)			
Cultural or religion influence on maternal health	Yes	71(59%)	156(59.1%)	1	0.000	0.989
	No	49(40%)	108(40.9%)			

Table 7: Bivariate analysis as per the child age

Age range	Child mortality		Df	Chi square	P - value
	Death (n=120)	Alive (n=264)			
0-1 years	31(25.8%)	65(25.4%)	4	0.069	0.999
1-2 years	28(23.3%)	61(23.1%)			
2-3 years	22(18.4%)	50(18.9%)			
3-4 years	18(15%)	39(14.8%)			
4-5 years	21(17.5%)	47(17.8%)			



Table 8: Bivariate analysis on utilization of maternal and child health services

Variable	Category	Child mortality		Df	Chi square	P = value
		Death (n=120)	Alive (n=264)			
Hospital delivery	Yes	52(33%)	254(96.2%)	1	27.148	0.000
	No	68(57%)	110(41.7%)			
Perception on health care services (public hospitals)	Satisfactory	50(41.8%)	116(43.9%)	1	0.174	0.677
	Unsatisfactory	70(58.3%)	148(56%)			
Access to free mosquito nets	Yes	40(33%)	88(33.3%)	1	0.000	1
	No	80(67%)	176(66.7%)			
Post or antenatal clinic	Yes	60(50%)	132(50%)	1	0.000	1
	No	60(50%)	132(50%)			
Free maternity services	Yes	65(54%)	143(54.2%)	1	0.000	1
	No	55(46%)	121(45.8%)			
Referral system	Yes	61(50.8%)	134(50.8%)	1	0.000	1
	No	59(49.2%)	130(49.2%)			

DISCUSSION

Among the 384 respondents that participated in the study, there were about 227 (59.1%) male children and about 176 (46.6%) of the mothers had post secondary education. The bivariate analysis on socio demographic factors found out that age of the mother during first birth ($p=0.036$) was significant. Child mortality vary on different age groups but predominant in 0-1 years with 196 (25.5%) cases. Similar findings by Michael NK, Babayara and Bright Addo (2019) found out that factors like maternal age at time of birth of the child, maternal education, family size, birth intervals, access to health care and factors surrounding the prenatal and postnatal periods, sex of the child, household socioeconomic status, and residence contribute greatly to child mortality. The child mortality prevalence was found to be 31%, a study WHO data analysis show child mortality of 31 in 1000 live birth in 2018 while world data analysis report on Sab Saharan Africa show 100 in 1000 live births (WHO, 2015)

Child mortality was found to result from many risk factors that were grouped into three. On the side of the child; about 59.2% had a birth weight above 2.5kg, 195 (50.8%) had pregnancy or delivery complication and 211 (54.9%) developed infant infections like respiratory distress, bacterial sepsis and neonatal hemorrhage. On the side of the mother; about 224 (58.3%) had a preceding birth interval of below 2 years, 227 (59.1%) had the influence of cultural and religion practices and 218 (56.8%) utilize hospital delivery. While the bivariate analysis found out that placenta or umbilical cord complication ($p=0.0021$) and infant infection ($p=0.0007$) were statistical significant. A study by Mwangi and Murrithi (2015) show the

determinant risk factors to infant and child mortality to be birth spacing ($p=0.007$), mothers age ($p=0.006$), mothers with more than three children ($p=0.002$) and delivery complications ($p=0.002$)

The study objective was to look at the utilization of Maternal and Child health (MCH) services among the respondents. The findings show that 306 (79.7%) deliver in the hospital, 218 (58.8%) had unsatisfactory perception on health care services in public hospitals. About 192 (50%) of the respondents utilize post and antenatal clinics, 208 (54.2%) utilize free maternity services offered by the government and 195 (50.8%) utilize services of available hospital referral systems. The bivariate analysis findings show that hospital delivery ($p=0.000$) to be statistically significant. A study by Chuma and Maina (2014) found 81% uptake of hospital delivery after introduction of free maternity services by the government at all public hospitals.

CONCLUSION

Every mother carrying a pregnancy has expectation to give birth to alive baby and the child grows up well. However, this dream is still robbed by mortality to a ratio of 3:7. Kenyan constitution in the bill of rights entitles every citizen a right to quality, effective and efficient health care. The government also rolled out free maternity services in 2013 with the objective to enhance hospital delivery and utilization of health services (Bourbannais, 2013). The common visible risk factors to child mortality are respiratory distress, bacterial sepsis and neonatal hemorrhage



RECOMMENDATIONS

Based on the study findings, the study recommends the following;

1. The ministry of health need to boost up child mortality surveillance in order to improve on early diagnosis and treatment of childhood infections
2. There should a continuous empowerment of women to utilize free maternity services provided by the government in all public hospitals in Kenya
3. The ministry of health should its infrastructure in order to provide both FREE delivery, pre and postnatal clinics and any health disorder to children under five years of age

REFERENCE

1. Bourbannais N (2013). *Implementing free maternal health care in Kenya: challenges, strategies and recommendations*. Nairobi: Kenya National Commission on Human Rights
2. Chuma J, Maina T (2014). *Free maternal care and removal of user fees at primary-level facilities in Kenya. Monitoring the implementation and impact: baseline report*.
3. Elmahdi, H. (2008), "Socioeconomic determinants of infant mortality in Kenya: Analysis of Kenya DHS 2003" *Journal of humanities & social sciences*, 2(2):4-14
4. Hill, K., Bicego, G., & Mahy, M. (2001). *Childhood mortality in Kenya: An examination of trends and determinants in the late 1980s to mid 1990s*. Johns Hopkins Population Center Working Paper.
5. Issa N. Abu, Ignatius A. Madu, Chukwuedozie K. Ajaero (2015). "The prevalence and determinants of under-five mortality in Benue State Nigeria"
6. Lang'at E, Mwanri L. (2015). *Healthcare service providers' and facility administrators' perspectives of the free maternal healthcare services policy in Malindi District, Kenya: a qualitative study*. *Reprod Health*; 12:59
7. Michael N.K.Babayara and Bright Addo (2018) "Risk Factors for Child Mortality in the Kassena-Nankana District of Northern Ghana"
8. Mwangi D. and Murrithi D (2015) "Determination of infant and child mortality in Kenya using Cox-proportional hazard mode" *American Journal of Theoretical and Applied Statistics* 4(5):404-413
9. World Health Organization (2015) "MDG4: Reduce Child Mortality"
10. World Health Organization (2019) "Global Health Observatory Data."
11. World Health Organization (2019) "Reducing Children Mortality"
12. UNICEF (2019) "Under Five Mortality", *Neonatal Mortality*
13. USAID 2012 "African Leadership for Child Survival"



REGIONAL AND ECONOMIC INTEGRATION OF SOUTH ASIA (SAPTA AND SAFTA): THE CHALLENGES AHEAD

Amitava Dey
Research Scholar,
Department of Economics,
CCSU, Meerut, UP,
India

ABSTRACT

Regional integration is an idea of deepening of networking among the member countries of a particular region, mostly exemplified through a regional organization. The idea of regional integration is exemplified through various stages of development of networking of which the most basic and important stage is economic integration and the last being the political integration of a region. The model for any regional integration study is the European Union (EU) model which tries to propagate the idea of steady and gradual phase wise regional integration from economic integration to political integration, the former exemplified in a common market and common currency while the later is exemplified in a regional legislature or Parliament. South Asia has started off its regional organization in 1985 and in the last thirty odd years have started to step in a preliminary stage of regional integration which is within the second stage of economic integration, i.e. a free trade area. The South Asian transformation from a preferential trade area to a free trade area have been completed between 1991 and 2006 which according to scholars is a considerably long period and the reason for such delay was the animosity between Indian and Pakistan. Even due to this very reason the development of free trade area in South Asia is also very slow. Thus the status of regional integration in South Asia is relatively low compared to the happenings in Europe and South East Asian regions. This paper will try to focus on the nature of regional integration theoretically and practically in other parts of the world and then in a comparative perspective assess the situation in South Asia.

KEYWORDS-Regionalism, Economic Integration, South Asia, SAPTA, SAFTA

INTRODUCTION

Regional integration refers to growth of societal integration within a region. Contemporary analysts refer to this a soft regionalism which is a process of higher level of economic interdependence within a region than with the rest of the world. Human interpenetration, trans-border growth triangles lies at the core of such transnational regionalism that is conceptualized in terms of flows, complexes, mosaics or networks. An important strategy of regional integration concerns regional economic integration. Specific policy designs are formulated to remove or reduce barriers to mutual exchange of goods, services, capital and people. This variety of regionalism is dominated by the European model. Regional integration aims at regional cohesion which refers to the possibility of the emergence of a cohesive and consolidated regional unit. Cohesion makes regionalism of particular interest to the study of international relations. When the region plays a

defining role in its integrationist form in the relations between states and when the region form the organizing basis for policy within the region, cohesion can be understood better.

OBJECTIVES

1. To understand the meaning and nature of regional integration
2. To identify the various stages of regional integration
3. To assess the importance of regional integration in South Asia
4. To appreciate the developments through SAPTA and SAFTA
5. To analyse the problems and prospects for regional integration in South Asia

METHODOLOGY

As the study is merely descriptive in nature the investigator has made an honest attempt to study the



various relevant books/Journals/ website for the information regarding the regional integration. The investigator has tried his utmost to make the study as objective as possible by employing different previous studies and information available on internet.

Evolution of the Idea

The problem of defining regions and regionalisms attracted a good deal of academic attention in the late 1960s and early 1970s. Joseph Nye in an edited book on International Regionalism: Readings imprints that particular attention during the time was given to the idea of regional interdependence. The regionalist challenge of 1960s fell far short of expectations as there were few places outside Europe where the regionalist experiments have produced tangible results. The impetus to a new wave of regionalism came from European Union through the completion of a Single European Market through the signing of Maastricht Treaty in 1993. The contemporary development of regional integration has occurred against the background of a powerful parallel trend towards globalization. The newness of regional integration is that the theme of interdependence started to be applied beyond Europe in nonwestern regions.

The Various Stages

Regional integration can be achieved fully only when the various stages of regional integration are successfully passed through step by step. The first of this stage is to form a regional trade bloc (RTB) which can be achieved through two sub-stages – preferential trade agreement through which the member-countries by preference open up their goods and services for the co-member countries of the region. The second sub stage is to have a free trade area (FTA) by which goods and services are fully opened up among the member-countries of a particular regional organization. The next important step is to form a Customs Union (CU) in which a common regional institution is set up to look after the regulations and laws guiding the free movement of goods and services across the region. The next step is to have a Common Market (CM) in which the regional goods and services are placed to other region and countries of the world in a concerted way thereby creating an idea of a common market. The next step is to have a common currency for exchanges of goods and services of the region taken together. With the completion of the economic integration the next step is to have a political integration exemplified in the creation of an integrated legislature which synchronizes the laws and regulations formulated at the legislatures of member-countries. Thus from economic to political – the entire spectrum comes up under the various stages

of regional integration of which European Union is the classic model.

THE SOUTH ASIAN SCENARIO

South Asia is at a turning point. Powered by the dynamic growth of the Indian economy, it is the fastest-growing region in the world. South Asia can be propelled faster to find its rightful place in the world if its member states develop as an integrated economy. While countries in the region seek economic integration of South Asia, their agenda is shaped more by the “pre- state needs for capital, labor, infrastructure development and transport and civilization imperatives than post- state democratic needs such as human security, environmental protection, social justice and peaceful resolution of conflict. Economic integration has the highest transformative effect and thus economic impact in the lagging and peripheral areas of the region. When economic integration transforms the region and spreads new infrastructures, institutions and approaches that lower frictions, and alleviate coordination and information failures, the benefits from stronger regional cooperation and integration tend to be highest for the peripheral regions and in this case for the poor in South Asia. First Sri Lanka in the 1970s and then India, Bangladesh, and Pakistan in the early 1990s abandoned trade protectionism in favor of openness as the strategy for development and poverty alleviation. India’s greater openness was prompted by the foreign exchange crisis in 1991 and the prodding of the IMF, which had developed a new approach, subsumed by most commentators under the term “the Washington Consensus.” Fiscal austerity, privatization, and market liberalization were the three pillars of this program of economic adjustment. There are only two functional institutions (the Bay of Bengal Programme Inter-Governmental Organization and South Asia Cooperative Environment Programme). An example of a regional facilitating institution is the newly established South Asian Association for Regional Cooperation (SAARC) Development Fund. In the energy sector, an intergovernmental framework agreement on energy cooperation facilitates a phased development of a regional energy market. South Asia’s diversity provides huge opportunities for trade, investment, and economic growth. The region’s remarkable success in recent decades demonstrates this. Geographically, the South Asia region is very wide and heterogeneous. It links Central and West Asia with Southeast and East Asia. Some of the South Asian countries are also members of many forward-looking regional and sub regional initiatives such as ECO, SAARC, BIMSTEC and EAS. There are, however, challenges to the South Asian countries to maintain the



regional competitiveness and complementarity. One of the best solutions to such challenges is to strengthen regional connectivity and trade facilitation which would further support the regional economic integration.

SAPTA

The international economic environment is changing fast. Liberalization, globalization and rationalization are taking place rapidly in the world economy, in which so far South Asia is lagging behind. In this context, SAPTA may be considered as a landmark in the process of trade cooperation among the SAARC countries. It on the one hand silenced the critics that SAARC is only for resolutions and recommendations and on the other hand, it paved the way for intensive trade cooperation. SAPTA, using Rostow's terminology, can be considered as a 'take off stage' in the process of trade cooperation. It will gradually and smoothly lead not only to a free trade area but beginning with a free trade area and moving to a common market, it will ultimately result in the forming of a South Asian Economic Union.

Origin

While regional governments were reducing protection, some also took steps to encourage intraregional trade. The SAARC was stalled because of continuing hostility between India and Pakistan, so India concluded bilateral agreements with its smaller neighbors to increase trade. As a consequence, the total value of regional trade increased rapidly in the late 1980s and most of 1990s but not the shares of regional trade in total trade. This was principally because of unilateral trade liberalization by countries on India's borders and large appreciations of the exchange rates of the peripheral countries relative to the Indian rupee. Most of the increased trade was one way, with large increases in exports from India, especially to Bangladesh and Sri Lanka. The sixth summit was held in Sri Lanka on 21 December 1991 and was famous for the launch of South Asian Preferential Trade Area (SAPTA). SAPTA was ratified by all the members and as per the provisions of the Article 22 Entry into force, the SAPTA agreement entered into force with effect from December 1995, on the eve of the Completion of First Decade of SAARC.

Basic Features

The basic principles and objectives of SAPTA are given in the Agreement. The Preamble of the Agreement rightly points out, "... that the expansion of trade could act as a powerful stimulus to the development of their national economies by expanding

investment and production, providing greater opportunities of employment and help, securing higher living standard for their population Bearing in mind the urgent need to promote the intra-regional trade, which presently constitutes a negligible share in the total volume of the South Asian Trade, [it was rightly recognized in the Summit that] preferential Trading Arrangements is the first step towards higher levels of trade and economic cooperation in the region." Article 3 of the Agreement states the basic principles- 'SAPTA shall be based and applied on the principles of overall reciprocity and mutuality of advantages in such a way as to benefit equitably all contracting State'. (3a). SAPTA shall be negotiated step by step, improved and *extended* in successive stages with periodic reviews'. (3b). SAPTA has taken care of the special problems of least developed members of the SAARC also. Articles 4 and 6 are important in the Agreement as they contain 'component' (Article 4) and 'Additional Measures' (Article 6) for the preferential agreement. SAPTA will include arrangements relating to tariffs, para-tariffs, non-tariff measures and direct trade measures. It is obvious that the inclusion of all these aspects in the preferential agreement will give a boost to trade expansion and trade may become a leading sector in the South Asian economies. In addition to these, as is clear from Article 6 (1), 'the adoption of trade facilitation and other measures to support and complement SAPTA to mutual benefit' will further help in expanding trade. Tariff Negotiations are the most important as liberalization of trade will open up vast opportunities for developmental cooperation in the SAARC region. Article 5 deals with negotiations for the preferential arrangement among the SAARC countries. The Agreement has left the option to member countries to follow any one or a combination of the following approaches and procedures. There are four alternative approaches, namely: Product-by-Product basis, Across-the-Board tariff reductions, Sectoral basis and Direct Trade Measures. It was agreed upon by the South Asian Countries to negotiate tariff preferences initially on a Product-by-Product basis. *Rules of Origin* are important and significant as the determining factor for the success of the Preferential Agreement. Article 16 deals with the rules of origin, which are set out in Annex III of the Agreement. Products can either be wholly-produced or Not wholly-produced. The real issue is about 'Not wholly-produced or obtained products'. The basic rule is that 50% of the Free on Board (F.O.B) value of the products, is added within the territory of the exporting member countries.

Towards the close of the last century, SAARC members have taken a momentous decision, which will



show results in the new century. Thus, the SAPTA must be considered as an outstanding achievement of the South Asian countries. It is neither a transitional approach nor a historical necessity- transitional approach in the sense of tiding over certain problems and historical necessity as there is trend towards regionalism. It is however a means to an end. The end is rapid economic development. A Preferential agreement will increase the overall efficacy and productivity in South Asia on the one hand, and will enable these countries to face external competition, on the other. Technically speaking, keeping in the mind the different stages of Trade Cooperation, it comes very close to the formation of a free trade area. In a free trade area, goods and commodities move freely within the area and in this case preferential treatment will be given to the South Asian products to increase intra regional trade. Three rounds of tariff negotiations have taken place and the Fourth Round is almost complete and may be announced any day. Regarding the Fourth Round, it has been decided that the negotiations would, as far as possible be conducted on a Chapter-wise, Sectoral and Across the- Board basis. The Tenth Summit (Colombo 1998) decided in favour of deeper tariff cuts for products, which are being actively traded or are likely to be traded among members. In the First Round, 226 commodities were taken up for concession, in the Second and Third Round, tariffs were reduced on 1868 and 3456 commodities, totalling to 5550. While making concessions, SAARC has taken care of the needs of the least developed countries (LDCs). The progress of SAPTA in tariff concessions is harmonious and equitable. Following SAPTA's establishment, three rounds of preferential tariff reductions were implemented. Concluded in 1995, SAPTA-1 covered only 6 percent of traded goods (about 226 products at the 6-digit level of the Harmonized System of Tariffs). The important issue of nontariff barriers was deferred. SAPTA-2, concluded in 1997, was more ambitious; it covered 1,800 6-digit HS items and incorporated provisions about easing some nontariff barriers. SAPTA- 3, signed in 1998, was the most ambitious, covering 2,700 items. Work on SAPTA-4 was initiated in 1999 but was put on hold after the military takeover in Pakistan on October 12, 1999. Politics once again halted the advance of regional integration.

SAFTA

South Asian countries have tried to improve regional trade. Formal agreements have been less effective than changes in macroeconomic policies, such as the adoption of market exchange rates. In the South Asian Association for Regional Cooperation (SAARC), trade facilitation was addressed under both the South

Asian Preferential Trading Arrangement (SAPTA) and the South Asian Free Trade Area (SAFTA) agreement. Under Article 6 (Additional Measures) of SAPTA, the contracting parties agreed to consider trade facilitation measures to support and complement the reduction of tariffs, para-tariffs and liberalization of trade. In SAFTA, the member states agree to consider trade facilitation measures outlined under Article 8. Although trade facilitation is not addressed in a binding form, the intention of the countries to harmonize and simplify standards, customs procedures, business visa procedures and so on is highlighted. The move to create SAFTA, therefore, represents a major development in the region. Properly implemented, SAFTA could bring both economic development and peace to the region.

The Origin

The 12th SAARC Summit held in January 2004 in Islamabad made a significant achievement by signing the South Asian Free Trade Agreement (SAFTA) with an aim to reduce the barriers between South Asian countries. SAFTA is only the second phase of regional trading bloc preceded by South Asian Preferential Trading Agreement (SAPTA) which unfortunately didn't yield desired result. South Asian leaders went ahead and SAFTA became operationalised from July 2006 with its impact likely to be felt by 2013 when tariffs in the region expectedly would come down to between five to zero per cent. The member countries agreed for simplifying the procedures for intra-region banning, removal of restrictions on investment by member countries within the region, lifting of foreign exchange restrictions for the member countries, simplification of procedures for visa for intra regional movement. In short, SAFTA would mean free movement of people within the region, free movement of goods and services, development of connecting physical infrastructure, harmonizing the general forms of financing, banking and foreign exchange and regional agreement for investment promotion and protection. Within three years of its operation, SAFTA has not struck a balancing chord in regard to the regional trade imbalances. Tariff free items have not increased for trading purpose across borders in the region. Intra regional investment is also very meager. The less developed countries of the region are yet to see the benefits from it. Simply signing the SAFTA agreement will not get us far, there has to be genuine long term commitment to a free trade area. However, progress under SAFTA, juxtaposed with the developments under WTO, will also have consequences not only for international and intraregional trade in the coming years, but will also



have interesting fallouts in the regional economic and political fields.

In 1997, SAARC leaders had agreed to launch the SAFTA by 2001. The five-year delay was caused by deteriorating relations between India and Pakistan after nuclear tests by the two countries in May 1998, the military takeover in Pakistan in October 1999, and the near-war in 2001 and 2002 when more than a million soldiers massed along the India–Pakistan border. Tensions began eased in April 2004 when Atal Bihari Vajpayee, then prime minister of India, pledged to work toward creating a peaceful South Asian region. The SAFTA agreement is a traditional trade agreement in that it does not include some of the non-trade issues incorporated in RTAs elsewhere. In that sense, South Asia is playing catch-up with other developing regions. The framers of SAFTA—mostly government officials representing the Ministries of Foreign Affairs and Commerce in the SAARC countries—could learn from the experience of other RTAs.

Basic Features

The SAFTA tariff reduction program stipulates average weighted tariffs of no more than 20 percent by the region's more developed economies—India, Pakistan, and Sri Lanka—within two years of the entry into force of the agreement. Within five years after the completion of the first phase, India and Pakistan will adjust their tariffs to the 0 to 5 percent range. The region's least developed countries—Bangladesh, Bhutan, Maldives, and Nepal—are required to have average weighted tariffs of no more than 30 percent within two years, but would be allowed longer periods for the second downward adjustment: Sri Lanka in six years and Bangladesh, Bhutan, Maldives and Nepal in eight years. India, Pakistan, and Sri Lanka will reduce their tariffs to the agreed low levels on imports from other countries. The agreement also calls for eliminating quantitative restrictions for products on the tariff liberalization list. While member states have been allowed to develop lists of sensitive items that would not be subjected fully to the stipulated tariff cuts, the number of products to be included in the country lists would be subject to review every four years. The Islamabad Declaration established some institutional devices to oversee the implementation of SAFTA. A Ministerial Council will be the highest decision-making authority while a Committee of Experts (COE) will monitor implementation of the agreement and resolve disputes.

Article 3 of SAFTA Agreement elaborates the Objectives of this Agreement are to promote and enhance mutual trade and economic cooperation among Contracting States by, inter-alia:

1. eliminating barriers to trade in, and facilitating the cross-border movement of goods between the territories of the Contracting States;
2. promoting conditions of fair competition in the free trade area, and ensuring equitable benefits to all Contracting States, taking into account their respective levels and pattern of economic development;
3. creating effective mechanism for the implementation and application of this Agreement, for its joint administration and for the resolution of disputes; and
4. establishing a framework for further regional cooperation to expand and enhance the mutual benefits of this Agreement.

SAFTA shall be governed in accordance with the following principles:

1. SAFTA will be governed by the provisions of this Agreement and also by the rules, regulations, decisions, understandings and protocols to be agreed upon within its framework by the Contracting States;
2. The Contracting States affirm their existing rights and obligations with respect to each other under Marrakesh Agreement Establishing the World Trade Organization and other Treaties/Agreements to which such Contracting States are signatories;
3. SAFTA shall be based and applied on the principles of overall reciprocity and mutuality of advantages in such a way as to benefit equitably all Contracting States, taking into account their respective levels of economic and industrial development, the pattern of their external trade and tariff policies and systems;
4. SAFTA shall involve the free movement of goods, between countries through, inter alia, the elimination of tariffs, para tariffs and non-tariff restrictions on the movement of goods, and any other equivalent measures;
5. SAFTA shall entail adoption of trade facilitation and other measures, and the progressive harmonization of legislations by the Contracting States in the relevant areas;

Article – 12 talks about Special Provision for Maldives which Notwithstanding the potential or actual graduation of Maldives from the status of a Least Developed Country, it shall be accorded in this Agreement and in any subsequent contractual undertakings thereof treatment no less favourable than that provided for the Least Developed Contracting States.



REGIONAL INTEGRATION IN SOUTH ASIA: THE WAY AHEAD

As South Asia is presently coping up with the preliminary stages of economic regional integration so one must understand the complexities attached with that phenomenon. Economic integration depends heavily on the density and quality of connectivity or so to say regional infrastructure. A stronger connectivity not only strengthens the intra- and inter- regional trade but also generates higher income and prosperity. In the South Asia, the maritime and aviation sectors are relatively well connected to their respective global networks. There is also a higher degree of private sector involvement in developing and managing infrastructures in these sectors. From a regional perspective, therefore, the priority should be given to the development and upgrading of land-based transport infrastructure. Governments in South Asia can attract more ships, and a wider range of ships, by investing and maintaining their maritime ports. They may also improve competitiveness by improving the efficiency of land transport, particularly through road and railways. The major challenge facing South Asia in its quest for regional integration and increasing competitiveness is the poor quality and inefficient infrastructure services, both hardware and software, which raise costs of transportation and production and constrain the capacity of the South Asian economies to gain from a liberal trading environment. South Asian region, with its geographical contiguity, has great potential for cooperation in connectivity sector. The importance of tariffs as barriers to trade has gradually come down, however, high-tariffs still exist for certain sensitive products, and there is a strong presence of Non-Tariff Barriers (NTBs) including high border transaction costs in the region. High transportation costs, poor institutions, inadequate cross-border infrastructure, and absence of a regional transit trade are some major factors penalizing the region's trade and integration

From a trade perspective, and in order to forge greater regional integration in South Asia, there is a need to reduce the elements of trade costs. Despite falling tariffs, geographical proximity, and economic and cultural similarities, trade in South Asia has not grown as a result of higher trade costs. The cost of trade transportation increases if the country is landlocked (e.g., Nepal). The land border in South Asia is overcrowded and needs special attention in order to reduce time delays and transaction costs. Progress in transportation links and trade facilitation in Asia so far has been made through several sub regional initiatives. Although some sub regions such as the GMS have successfully implemented cross-border corridors and

progressed much further in strengthening connectivity, or ECO which has introduced regional transit arrangement, few others (such as the SAARC) have yet to make any major breakthroughs. The sub regional transport corridors like the GMS transport and trade facilitation program have created a demonstration effect in Asia and have become a role model for other sub regions in Asia. Unlocking the region's trade potential is a daunting task. Costs for not having uninterrupted road or railway connectivity across the region or facilitation of border trade can offset gains appearing from trade preferences as proposed under several free trade agreements and other arrangements such as SAFTA. Therefore, the need for a better enabling environment for trade that offers lower trade costs has gained momentum in entire Asia. At the same time, a regional transit arrangement would help South Asia to better integrate the region and also to strengthen the globalization process. Use of improved technology to manage the transportation and security would help reduce trade costs through higher efficiency and take care additional traffic. A stronger regional cooperation with other regions and countries is thus imminent in order to secure the technology to manage the transportation corridors, trade and security.

CONCLUSION

In recent times regional economic co-operation has emerged as an effective instrument to enhance the welfare of the people of a particular region. Exploitation of economic complementarities among geographical proximate countries has been the prime force responsible for its re-emergence. A Similar wave was witnessed during 1930s and again during 1960s when there was a wide spread attempts to create regional economic cooperation, but the success achieved by such arrangements, then, was limited. To achieve the objectives SAARC succeeded to set up two important bodies namely, South Asian Preferential Trade Arrangement (SAPTA) and South Asian Free Trade Agreement (SAFTA) in the year 1995 and 2006 respectively. The targets had been assigned to these bodies for the promotion of social, cultural, political and economic integration among the member countries of SAARC since its inception. Number of studies had been carried out to evaluate the regional economic integration at the global level as well as at regional level. The present study is also in the same direction to study the dynamics of regional economic integration among SAARC countries over the period.



BIBLIOGRAPHY

1. Aggarwal, MangalRam and PoshRaj Pandey (1992), 'Prospects of Trade Expansion in the SAARC Region', *The Developing Economies*, 30(1), March, 3-21.
2. Aggarwal, MangalRam (1979), *Regional Co-operation in South Asia*, (New Delhi: S. Chand & Co).
3. Anderson, J.E. (1979), 'A Theoretical Foundation for the Gravity Equation' *American Economic Review*, 69, 106-116.
4. Ahuja, Shobha and Rina Bhattacharya (1988), 'Trade Complementarities and Prospects for Regional Import Substitution among SAARC and ASEAN Countries', *Foreign Trade Review*, 23(2), July-September, 19
5. Das, D. K. (ed.) (1992), *SAARC; Regional Cooperation And Development* (New Delhi: Deep And Deep Publications).
6. Davendra, Kumar Madaan (1997), *SAARC Origin development and Programmes* (New Delhi: Deep And Deep Publicatio
7. Johnson, H.G. (1960), 'The Economy Theory of Custom Union', *Pakistan Economic Journal*, 10, 14-32.
8. Krauss, M.B. (1972), 'Recent Development in Custom Union Theory an Interpretive Survey', *The Journal of Economic Literature*, 10, June, 413-436.
9. T, Nirmala Devi (1994), *Socio-Economic Profile of SAARC Countries* (New Delhi: South Asian Publisher).
10. Tan, Gerald (1982), *Trade Liberalization in ASEAN; An Empirical Study of the PTA*, Research Notes and Discussion Paper No. 32 (Singapore: Institute of South East Asian Studies, ASEAN Economic Research Unit).
11. Venkatsubblu, T. (1996), *India's Trade with SAARC Countries* (New Delhi: Discovery Publishing House).



IDENTIFICATION INDIGENOUS KNOWLEDGE FOR SUSTAINABLE DEVELOPMENT-A STUDY ON SANTHAL COMMUNITY

¹**Chinmoy Singh**

¹Assistant Professor (SACT) Department of Education,
BandwanMahavidyalay,
Baundwan,Purulia (W.B),

²**Shaktipada Mahato**

²Former Student,
Department of Education,
Sidho-Kanho-Birsha University,
Purulia (W.B),

³**Dr. Laxmiram Gope**

Assistant Professor,
Department of Education,
Sidho-Kanho-Birsha University,
Purulia (W.B)

ABSTRACT

Santhal community is a backward and marginalized community. Even today they deprived in many ways. Whereas their Informal education, culture, livelihood etc are also too primitive to present society and they transmitted it generation to generation, present modernization society are not too effect to their culture or education etc. In this researcher Researchers try to find out that the indigenous knowledge components particularly important for the sustainable development. Research is a systematic investigation resulting in some formal record of procedures and the report of conclusions and result. Research has been defined as "a formal systematic and scientific methods of analysis". The secret of cultural development has been research, pushing back the area of discovering new truths, which in turn led to better ways of doing thinking and better products and conveniences to live and enjoy life at large. Finally researcher express and explore the findings in a tabular form. Researcher also express the Santhal community indigenous knowledge components which has important for the sustainable development and attain the 2030 SDGs Agenda.

KEYWORDS: *Santhal, Community, Indigenous Knowledge; Education*

1.0. INTRODUCTION

The age we live in is known, as knowledge era. In this era, knowledge power is much essential for human resource development and to meet the need of Millennium Development Goals (MDGs) as well sustainable development Goals 2030 (SDGs). These goals can be achieved through the utilization of grassroots level knowledge or traditional wisdom (community-centered knowledge) which is essential for mankind. To fulfill these goals we have to reconstruct the existing knowledge system and generate new strategies for knowledge creation and knowledge documentation with a view to promote such knowledge for enriching the developmental process in tune with MDG. So incorporation of indigenous knowledge became common phenomena for the inclusive development and upliftment of various societies.

For example, at present, it is essential to revive the traditional medicinal practices for the enrichment of the health system. **National Knowledge Commission (NKC, 2005)** - extended much emphasis for revival of our traditional medicine, since many nations and societies are unable to utilize the modern medical facilities and in such situations, the traditional medicinal practices stands as the only options. Our common goal of life is to generate, promote, enhance and utilize the existing knowledge. To fulfil our individual as well as social needs, we have to promote such traditional wisdom among the masses, so that they can utilize those to meet the immediate needs. These sorts of knowledge often strongly accorded with a particular land and by the help of such knowledge they can tackle various risks and the common people may meet their livelihood too. To manage various risks, the commoners may codify such community-centered



knowledge, which has beneficial impacts for managing the basic needs without damaging any natural resources. Such knowledge preserves our mother earth from various challenges. Therefore, it is the high time to look into the community practices, promote their ways of living, and include such knowledge, which has cultural values and traditional supports in relation to particular place and cultural acclaim. A keen view over our community reveals that there are number of knowledge components, which spontaneously flow within the community and community-members depend upon those knowledge.

There are different types of Indigenous knowledge-components viz. community centered knowledge, situational knowledge, local knowledge, traditional knowledge, folk cultural knowledge and knowledge in the form of survival strategies. This knowledge can be utilized by the communities in various spheres of human activities such as health care, food preservation, child-rearing practices, education, natural resource management and risks management. Such knowledge is also considered as 'social capital' for the poor people. This indigenous knowledge usually percolates from previous generations over the ages and those possess geographical peculiarities since those are nurtured and grow in a particular situation or place. Now a day scientists recognize these sorts of knowledge because it has many practicability in various dimensions, particularly of risks management, and often promote social capital as leads to sustainable development.

Previous studies reveal that indigenous knowledge has deep connectivity with nature, man and land. Therefore, indigenous knowledge possesses potentiality that helps us to tackle the various hazards regarding environment, economy and social problems.

In holistic perspective, indigenous knowledge is completely separate from the western knowledge system. In modern era, if societies truly utilize indigenous knowledge in appropriate ways and incorporate those in the formal education system, the national goal for development will be easily achieved and indigenous societies will be able to achieve the millennium developmental goals. Development would be easily possible through the collaboration with scientific and Indigenous knowledge. Therefore, now a day it is essential to develop a collaborative approach for development. We can proceed further for development through convergence between Indigenous Knowledge with modern Knowledge. Hence, it will be able to preserve, promote and enhance of the traditional spirit (Hammer, S. and Jerome, A. (2007). As defined by Merriam Webster-Dictionary - Knowledge is the fact or condition of knowing something with familiarity gained through experience. According to Collins English Dictionary- knowledge is association or awareness, consciousness or familiarity gained by

experience or learning. Nonaka, (2006) asserted that knowledge is a *dynamic human process of justifying personal beliefs towards the truth*. He opined that there are two types of knowledge namely, *explicit* and *tacit* knowledge. Explicit knowledge can be expressed in the formal and systematic language and shared in the form of data, scientific formula, specifications-manuals and others. On the other hand, tacit knowledge is *highly personal and hard to formalize, as it is deeply rooted incaution, procedures, routines, commitments, ideas, value and emotions (Mladkova)*.

Indigenous denotes native, inborn, aboriginal people, those who has common pattern of life in their geographical areas. In this aspect, indigenous-knowledge refers to the traditional-knowledge, native people's knowledge, spiritual knowledge, verbal spiritual knowledge, common knowledge, poor peoples' knowledge, practical knowledge, cultural knowledge as well as situational knowledge, which are based on community practices. This community-centered knowledge is relevant for various kinds of risk management like health care, agriculture, animal husbandry, fishery, education, child-rearing practices and so on.

As defined by World Bank in 1998 -*Indigenous Knowledge is situational knowledge that is unique to every culture of society.*

According to Masango, (2010) - Indigenous knowledge as the totality of all knowledge and practices established on past experiences and observations that are held and used by people.

Ascher, (2002)-opined that Indigenous people have had their own ways of looking at and relating to the world, the Universe, and to each other. Their traditional education process were carefully constructed around observing natural processes, adapting modes of survival, obtaining sustenance from human and animal world, and using natural material to make their tools and implements. Indigenous knowledge is an emerging area of study that focuses on the ways of knowing, seeing and thinking that are passed down orally from generation to generation. These ways of understanding reflect thousands of years of experimentation and innovation in topics like agriculture, animal husbandry, child rearing practices, education systems, medicine and natural resource-management among many other categories. These methods of knowing are particularly important in the era of globalization, a time in which indigenous knowledge is accepted as intellectual property and is taking new significance in the search of answers to world's most vexing problems, such as disease, famine, ethical conflicts and poverty. Indigenous knowledge has value, for not only the culture, in which it develops, but also extends solutions to the scientists and planners, seeking solutions to community problems. Development professionals treasure this local



knowledge, found it extremely useful in solving complex problems of health, agriculture, education and the environment in developed, developing and under developed countries.

1.1. Sustainable Development

Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generation to meet their own needs. the concept of Sustainable development does imply limits- not absolute limits but limitation imposed by the present state of Technology and Social Organisation on environmental sources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth. The commission (WCED, 1984) believe that widespread poverty is no longer inevitable. Poverty is not only an evil in itself, but sustainable development requests meeting the basic needs of all and extending to all the opportunity to fulfil their Aspirations for a better life. a world in which poverty is endemic will always be prone to ecological and other catastrophes.

1.2. Santhal And Their Origin

The Santhals, a proto - australoid racial group, are the largest tribe in West Bengal accounting for more than 50% of the states tribal population. Other than West Bengal, Jharkhand, Odisha and Tripura. In Assam, they are not tribes of Assam, "there is also a sizeable Santhal community in neighboring Bangladesh, and a smaller group in Nepal".

Although they reside in several districts of West Bengal, the majority of Santhals are found in Paschim Mednipur District. Their primary occupation today is daily agricultural and manual labor, though there is an increasing move among the youth towards better education and self-sustenance.

The origin of the Santhals is a matter of some dispute. Referred to as the kherwar tribe in ancient time, some believe that they migrated to the Indian subcontinent from south east Asia around 1500BC long before the Aryans entered the Indian subcontinent and most likely reached their homeland, the Chhota Nagpur plateau.

Through Assam and Bengal what is accepted is that they come from an area which was extremely hilly and forest covered, and that they had practised shifting cultivation well before their move to their heartland- the Chhota Nagpur plateau. Their traditional occupation was cultivation along with hunting, gathering and fishing. Santals prefer to call themselves Hor, meaning man.

2. RATIONAL OF THE STUDY

Indigenous knowledge is an important area of study. From the very beginning, indigenous knowledge

played a crucial role for development of human civilization and gave direction in various dimensions like healthcare, environment, education, public relationship, agriculture and so on. Studies on Sustainable Development bear a high relevance in social as well as individual and global perspectives. Through these studies, societies try to understand the usefulness of indigenous knowledge for sustainable development. Now we live in knowledge society, where knowledge is considered synonymous with power. With the help of Indigenous Knowledge, societies can invent something new and reconstruct old heritage. Each community has their unique knowledge system, however due to excessive emphasis over the westernization; the community-groups are becoming de-rooted from their indigenous knowledge systems, which are also putting adverse impact over their life style, family patterns and quality of life (Roy, 2007). So it is essential to identify and explore those knowledge-components and incorporate those in the modern curricula with a view to enhance the developmental process by the help of such knowledge to ensure sustainable impact over the community life (Roy, 2009). This establishes the relevance of Indigenous Knowledge in the present era. Indigenous societies bear dynamic ancient epistemology, wisdom, knowledge, skill, technologies, indigenous or cosmological beliefs, folklore, customs, and oral traditions associated with nature, earth, biodiversity, and natural resources (Sherpa, 2005). India is rich in both ethnic and biological diversity. Pesticides in agriculture, soil fertility management, improve local breeds, and so forth is some of the traditional knowledge (Sherpa, 2005) which indigenous people possessed and are still practicing in different corners of the country.

Human survival is absolutely depended upon the biological resources derived from the nature for instances, food, medicines, and industrial raw materials (Shrestha & Chettri, 2011). If these resources are lost or extinct from the world then it will ultimately adversely affect the human beings. Moreover, people living in rural parts of the country have subsistence relation with these biodiversity. Indigenous knowledge is part of cultures, and is associated with language (L.D. Awasthi, Personal Communication, and April 22, 2011). It helps to understand the biodiversity of particular society and culture.

Therefore, it is apparent that when societies lose indigenous knowledge, they actually lose their languages, tradition, heritage as well as their identity. This further leads to loss of way of conserving diverse biological resources and the life of younger generations would be difficult, if these unique knowledge components are not transformed over generations and actually lose their identity and will be unable to struggle for survival.



Other point of views on indigenous knowledge has relevance for the controlling natural hazards, climate change and deforestations. Indigenous knowledge has unique value to protect ecosystem and natural climates. Therefore, our planners and developers must be aware about the utility of indigenous knowledge and skills because it has situational value and it promote the long terms solution of particular problem(s). Indigenous knowledge has relevance to save the mother earth holistically and naturally, because indigenous knowledge is such knowledge, which grows, nurture and is being cultivated through natural laws. Indigenous people love to live in nature; they interact with nature by the natural reality. They do not influence or change the nature, which does not permit it. Therefore, it is the high time to pay required attention on part of planners, developers, educationalists and scientists for protecting and preserving indigenous knowledge, which is the key factor for enhancing growth and development without compromising with the need of the future generations. Indigenous or traditional knowledge has high relevant for achieving sustainable development and promote sustainable growth. Traditional knowledge is much crucial for the protection of biodiversity and for achievement of sustainable development, which is slowly being recognized internationally (*Gadgil et.al, 1993*). Indigenous knowledge is helpful to preserve and maintains knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity (*United nation 1992*).

From the forgoing discussion, it is clear that Indigenous knowledge has high relevance for social welfare as well as individual betterment and enhancement of the development process. This creates the justification to preserve, promote and transformed indigenous knowledge from society-to-society and generation to generation. As a diversified nation, India do possess numerous indigenous communities with massive diversities, however they possess their own indigenous knowledge system, which are under threat from modernization and therefore needs preservation. Since most of these communities follow a pattern of oral culture, hence the wave of modernization already washed out good many indigenous knowledge components, which would have been preserved. The proposed study aims in context considering two ethnic community groups from east and northeast India. It is a proven fact that Indigenous knowledge helps the societies in varied ways. It helps solve various problems of education, health, environment, agriculture and so on.

Indigenous knowledge helps to reconstruct education system and help to build community centered education. Indigenous knowledge possesses high relevance in all aspect of life in living being. It enhances the community integrity. IK also put a check over the domination of western thought on Indian thought (culture) on indigenous way of living by virtue of developing awareness among individuals for sustainable development. Therefore, Indigenous knowledge is the social capital for the poor people and its helps to reconstruct curriculum according to the needs of the community. Indigenous knowledge is also essential for the poor people because it helps eliminate poverty, unemployment from indigenous societies. From teaching learning perspective, indigenous knowledge has special value because it possesses community specific pedagogical implications. Indigenous pedagogy has enough space for integrating present teaching learning process. Indigenous knowledge is strongly and deeply involved in socio-cultural circumstances. Therefore, if societies are capable to codifying this knowledge then it will generate new strategies for the knowledge creation and thereby will enrich the content of education. In the teaching learning context, indigenous ways of knowing possess implication since it promotes the diversity of learning and celebrates the individual differences. Apart, Indigenous knowledge possesses potential scope of indigenous risk management strategies, which helps to tackle the various risks like environmental, economic, social and public health

2.0. Objective of the study

To find out the indigenous knowledge practice for sustainable development practiced by the Santhal community.

3.0. METHODOLOGY OF THE STUDY

Research is a systematic investigation resulting in some formal record of procedures and the report of conclusions and result. Through the Ethnographic study researcher find out the ethnocentricpedagogy. Researcher applies both centric approaches Etic and Emic Pedagogical approaches. Research has been fine out many unique practices of indigenous pedagogy which has many authenticity and application to attaining the sustainable development goals.

Analysis and Findings of the study

Researcher analysis the study deeply and find out the indigenous knowledge practice for sustainable development practiced by the Santhal community are below.



Indigenous knowledge practiced by the Santhal community for S.D.	Used for sustainable development.
Karam festival	Socio-environmental sustainability.
Soharai festival	socio-environmental sustainability
Mah more festival	socio-environmental sustainability
Marriage system	Social sustainability
Dowry system	Social sustainability
Family structure	Social sustainability
Bhandangeriyo(death of a family member)	Social sustainability
Land fertilizer	Environmental & economical sustainability
Santhal medicine	Environmental & economical sustainability
Medicine prepare	Economical sustainability
Utilization of natural resource	Environmental & economical sustainability
Local culture	Social sustainability
Language	Social sustainability
Join family	Social sustainability
Women's education & their social status.	Social sustainability
Religion(Sari-dharam)	Social sustainability
Social relationship	Social sustainability
Santhal judicial system & law	Social sustainability
Child rearing	Social, economical & environmental sustainability
House building	Economical & environmental sustainability
wood work	Economical sustainability
cultivation system	Economical sustainability
their life style	Social sustainability
Food preservation	Environmental & economical sustainability
Indigenous techniques	Social, economical & environmental sustainability
Tree plantation	Environmental & economical sustainability

4.0. CONCLUSION

“Indigenous knowledge is an integral part of the culture and history of a local community. We need to learn communities to enrich the development process”.

-James D.

Wolfensohn, President of the World Bank.

Through this study researcher, explore that Indigenous knowledge has many advantages in many dimension. The Santhal community process deep indignity and their all dimension of life reflect the indignity. This indigenous knowledge has many advantages in many sector health care, natural resource management, child rearing process, animal husbandry, nature study, agriculture, housing, art and craft and so on. This indigenous knowledge comes from the time being and the tasted generation over by various experiments. Through this study researcher also explore the indigenous knowledge and its practices .Indigenous knowledge at present century has many advantages for the risk management particularly in environment, social and economic. However, at present this knowledge is rapidly, missing from our society and indigenous knowledge disappear from your society .indigenous knowledge considered as social capital for the poor people and

indigenous knowledge is vital information, which, sadly, is diminishing at an alarming rate. There is urgent need to collect it before it is irretrievably lost. Indigenous knowledge should be approached in exactly the same way a management consultant approaches the indigenous or expert knowledge. Indigenous expert hold many knowledge and this knowledge imbibe and shape their behavioural pattern. This knowledge is largely ephemeral, context-specific, and the property of the business organization. This indigenous knowledge research create a new data databases aim at the exploitation of initiatives and activities, that promote the integration of Indigenous Knowledge in development, such as to capture, store and disseminate information with cost-effective and sustainable strategies to promote integration of knowledge in development planning and to develop mechanisms to sensitize information seekers with a professional interest in development and development planning. To make a meaningful use of scientific or technical Indigenous Knowledge the developing countries should practice international standards. Although at first sight it seems legitimate criticism, it must be admitted that the work of Indigenous Knowledge is costly and does not produce the IK urgently needed. Most information organizations do theoretical and methodological



work, which is not tailored to the stage of development of IK databases and systems. It may be added that some organizations do similar work regarding the IK, which does not encourage the IK collection. While the IK industry has to grow and become globally relevant, there is a need to nature, help develop some of the potential databases and facilitate their increased access.

We can say the Santhal community indigenous knowledge practice has high essence for sustainable development as well as environmental risk management strategies. This study shows that various type of indigenous practices of the Santhal community such as indigenous health care, Indigenous culture, festivals, rituals, folklore and traditional laws, song indigenous resource management and so on has special value in this challenging and changing era. This study also shows that indigenous knowledge has many utilization for controlling environmental hazardous, bio-diversity and bio-piracy.

REFERENCE

1. Barasa, D. W. (2001). *Indigenous knowledge systems and sustainable development in Africa, a case study on Kenya*.
2. Behra, S. (2004). *Indigenous knowledge system and livelihood: A comparative study of selected*

village of Raya District of Odisha, school of social sciences J.N.U. New Delhi.

3. Bhatt, N. (2013). *Toward an indigenous early childhood education curriculum: on Indian thought, university of Baroda, Vadodara.*
4. Boddind, P. O. (1925). *Santhal Folk Tales, Cambridge, mass :H.Aschehong Harvard University Press.*
5. Boddind, P. O. (1925). *Traditions and institutions of Santhals, New Delhi, Gyan Publishing House.*
6. Boddind, P. O. (1929). *A Santal Dictionary (5 volumes), 1933-36, Oslo; J. Dybwad.*
7. Bompas, Cecil Henry and Boddind P. O. (1909). *Folklore of the Santal Parganas. London, D. Nutt.*
8. Best, J. W. (1989). *Research in Education New Delhi: Prentice Hall of India PVT. Ltd.*
9. Das, G. D. (2008). *Environmental Awareness and Education, Agro bios (India) Agro House, Behind Nasrani Cinema Chopasani Road, Jodhpur 342002.*
10. Dash, G. A. (2011). *Dose indigenous knowledge possesses anything to deal with sustainable development. Research scholar, department of anthropology, University of North Bengal,*
11. Dube, A. M. & Musi, P, J. (2002). *Analysis of indigenous knowledge in Swaziland: Implications for sustainable agricultural development, publishing by the African technology policy studies network P.O.Box 10081, 00100 General posts.*



APPENDICES





IMPLICATION OF PERFORMANCE RELATED PAY (PRP) MODEL IN STEEL INDUSTRY

Dr.Himanshu Saxena
Associate Professor,
Department of Management,
Apex Institute of Management & Science,
Jaipur, Rajasthan,
India.

Article DOI: <https://doi.org/10.36713/epra6223>

ABSTRACT

Performance Related Pay (PRP) refers to the variable part of pay which is awarded each year (or on any other periodic basis) depending on the performance. Performance Related Pay may be paid to an individual or a team or group. PRP relates to payment linked to a measure of individual, group or organizational performance. PRP could also be expressed with relevant organization performance objectives in several ways. The primary aim of this paper is to assess the implication of PRP in companies. This paper uses secondary data to empirically examine the impact of PRP in Steel Industry. Since Steel Authority of India Ltd. (SAIL) occupies an important place in the public sector undertakings, therefore this undertaking has been selected in order to bring to light the current practices prevailing in the steel industry. This study uses PRP Analysis to test its effectivity and simultaneously aims to assess the applicability of this analysis in the Steel sector.

KEYWORDS: Performance Related Pay, PRP; Performance, Appraisal, Salary, Steel Industry

INTRODUCTION

Performance appraisal is an essential technique to measure the performance of the employees of an organisation and it acts as a benchmark to decide about the career advancement of the employees as well as their monetary and non monetary incentives. The performance appraisal has been referred to as a tool of management and an important part in human resources allocation. Performance appraisal can be defined as an organizational system comprising deliberate processes for determining staff accomplishments to improve staff effectiveness (Cawley,1998). Applications of performance appraisal includes equal employment, promotions, and increased earnings. Primarily performance appraisal has been thought as an overall system for improving the efficiency of an entity.

Performance appraisal could also be expressed as a structured formal interaction between a subordinate and supervisor, that typically takes the shape of a periodic interview (annual or semi-annual), during which the work performance of the subordinate is examined and mentioned. In

Performance Appraisal, there is a mention of distinctive weaknesses and strengths as well as opportunities for improvement and skills development. Appraisal is very essential and of uniform nature, and in the absence of a carefully structured system of appraisal, people tend to judge the work performance of others, including subordinates, naturally, informally and arbitrarily (Dorfman et al, 1986). Performance appraisal has its positive and negative effect on the workers as Performance Appraisal is always perceived by the employees as a tool for testing their effectiveness. Many researchers have indicated that reactions to performance appraisal by employees plays an important role in employees appraisal process because they are very vital for the organizational acceptance and application of the appraisal system (Bernardin & Beatty, 1984)

METHODOLOGY OF PERFORMANCE RELATED PAY (PRP)

Performance is defined as the process of performing a task or a function by the employee.



Performance could be a representation of the employee's inputs and outputs. Performance within the context of public sector enterprises can be defined as the ability to get key resources (cost and quality) and to place these resources to their most effective use. Performance conjointly incorporates the concept of effectively utilizing the resources to realize the required outputs and outcome goals. Performance for the general public sector enterprises (PSE) is sometimes measured in terms of profit since they are business organizations. Performance related pay (PRP) refers to the variable part of pay that is awarded annually (or on the other periodic basis) reckoning on the performance of the employees. PRP could also be paid on an individual or a team. The definition of PRP excludes:

- i) Any automatic pay increase by for instance, grade promotion or service based increments.
- ii) Various types of allowances and reimbursements

PRP relates to payment in context with the performance of individual or team performance. PRP could also be articulated with relevance to organisation performance objectives in several ways. Significantly in recent times, as several public organizations have planned to become additional responsible, there has been an additional stress on targets and performance agreements for individual employees. PRP is one of the aspects of a wider movement towards higher pay flexibility (variable pay), and recognition and reward of a personal effort. It denotes an attempt to base an employee's salary on the precise difficulties of the job (post) and also the level of the responsibilities. PRP depends on a great degree of ex-post analysis of performance on the job measured against predetermined specified and agreed goals for a given amount of assessment and PRP is definitely not a priority based payment associated with the character of job. It is non additive, non cumulative and Performance Related Pay is not a default incentive.

Types of PRP

There are various types of PRP starting from individual to group performance schemes, from those based on the objective performance criteria. PRP is also based on judgemental appraisals and planning is going on in some organisations to implement PRP as occurrence bonus. Discussions are going on in several organisations to incorporate PRP into basic pay. These completely different types of PRP could also be used on their own in accordance with predetermined objectives. Some popular types of PRP are:

1. Piece work: Payment is calculated by considering each unit of output and Piece work is probably the oldest type of performance incentive.
2. Payment by Results: In this approach, bonus earnings rely on measured quantities or

values of output for employees or groups, typically based on work studied time units and covers a good range of bonus schemes

3. Plant or Organization wide Incentives: In Plant or Organization wide Incentives Incentives levels are based on measured quantities or values for the whole organization.
4. Merit based Payment: In Merit based Payment, Payment levels are devised on a general assessment of an employee's contribution to performance.
5. Objectives related payment: They are based on assessment or appraisal of an employee's (or team's) performance against set objectives, typically a part of a performance management system. This is often a reasonably recent development and is growing at a good pace within the non-public and public sector.
6. Competence based incentive: In these types of Incentives, Reward and training are connected to competency frameworks, based on the skills displayed by the employees (e.g. higher cognitive process, leadership, decision making, problem solving, client service, coping with differing views) or achieving certain qualifications.
7. Profit related payment: Bonus or share options are planned according to the organization's profit performance. This is often most prevailing within private sector, wherever share options are usually a very important element of senior management incentive.

Hypothesis: The null hypothesis is that the PRP Model is not effectively applied in steel industry.

Desirability of PRP in SAIL

In SAIL staff used to be paid according to their performance in their service – incremental salary scales and there was hardly any performance for pay incentive available to them. Their salaries used to be solely a composite basis pay and certain allowances (variable) that were admissible depending upon the nature of jobs and duties related working conditions. Some organizations did have a very small part of the salary within the type of production incentives linked indiscriminately to volume of production. However, no part of their salary was related to their on-the-job performance aligned to business priorities. This results in a scenario wherever the employees did not explore their potential fully and did not exert themselves for a better level of on-the-job performance and achievements, therefore depriving the organization of potential productivity gains and development. There is no motivation in Public Sector Enterprises for risk taking and delivering a better level of performance,



because though risk taking is punished if things go in the wrong direction, it was not rewarded duly if there were gains for the organization.

Promotion seems to be the only incentive that employees have to improve their performance. However, since promotional avenues are very few, stagnation creeps in after some years of service and there is very little direct incentive for worker to perform. In this case, PRP comes into picture and can play a positive role by rewarding the employees and thus motivating them for their performance. PRP is set to be a game changer in taking the performance of the employees to a new level. It's a signal of change for the employees and the way of indicating that performance are going to be often assessed and monitored. PRP serves as an extrinsic reward in the form of additional incentive and intrinsic reward through the recognition of effort and achievement. There are some other valuable aspects also of PRP for the organization. Processes and systems needed for PRP implementation act as a catalyst for introducing structure changes like transparent executive performance management system, scientific and systematic goal setting processes, clarification of tasks, role clarity, acquisition of skills, increased team work and inflated flexibility and higher service delivery. In fact, PRP may be considered as a strategic tool within the hands of management to induce lots of method re-engineering in their organizations. It accords organizations a chance to revisit their traditional processes and mechanisms and update them in light of current social, economic and technological advancement. This may eventually

prove to be a bigger advantage of implementing PRP than simply being a tool for allocating extra payment to staff. The advantages of re-engineering will be available to entire organization over a long term. So PRP is a long term asset for the organization. However, the PRP Structure can rewards recent priorities and to implement changes that are presently vital and demanding for the organization. The pace of modification within an organization may be accelerated if the PRP system can be tightly aligned and paired with new structural objectives and priorities. In fact, if the organization identifies a specific area where it has to keep its priority in, it will design its PRP systems consequently to create incentive for workers to induce desired modification. PRP systems should continuously be updated and modified with changes within the organization structure, processes, nature of work, priorities and should be in accordance with the changes in the External setting (economic, social, technological changes etc.) Department of Public Enterprises (DPE), the nodal department that regulates the Central Public Sector Enterprises (CPSE), issued guidelines for implementation of Performance Related pay for executives vide O.M. No. 2 (70)/DPE(WC).

Salient options of DPE guidelines for PRP are summarized below:

- i) PRP directly linked to the profits of Central Public Sector Enterprises (CPSE) and performance of executives.
- ii) Percentage of ceiling of PRP as share of basic pay for different level of executives is shown in the following Table

Table 1 : Variability of PRP with Hierarchy

Hierarchical Level/Grade	Linkage to % of Basic Pay
E-0 to E-1	40%
E-2 to E-3	40%
E-4 to E-5	50%
E-6 to E-7	60%
E-8 to E-9	70%
Director	150%
CMD	200%

iii) Eligibility levels of PRP also linked to Memorandum of Understanding (MoU) rating is shown in table below:

Table 2: Linkage of PRP with Company Performance

MOU rating of CPSE	PRP eligibility levels (% of Basic Pay)
Excellent	100%
Very Good	80%
Good	60%
Fair	40%
Poor	Nil

iv) No PRP for Central Public Sector Enterprises rated as poor. Every CPSE would be required to sign Memorandum of Understanding

(MoU) with its parent Ministry / Deptt. / Holding Company. MoU rating will form the basis of PRP with all the Key Result Areas identified within the



MoU. CPSEs not signing the MoU will not be eligible for PRP.

v) PRP would be based on physical and financial performance. PRP will be deduced from the profits of the organizations. 60% of the Performance Related Pay will be given with the ceiling of 3% of profit before taxes (PBT) and 40% of PRP will be deduced from 10% of incremental profits i.e. increase in profit compared to previous year's profit. The overall PRP will have a ceiling of 5% of the year's PBT which will be available for executives and non-unionized supervisors.

vi) There shall be no incremental profit for the base year because that will be the first year of introduction of PRP and this portion shall be available for the subsequent years.

vii) PRP for the year shall be calculated latest by December of the subsequent year based on the Central Public Sector Enterprises (CPSE) performance as per audited accounts. The planned PRP theme shall begin thereafter.

viii) CPSE has to constitute a Remuneration Committee which should be headed by Independent Director. This Remuneration Committee will decide the performance related pay.

ix) Central Public Sector Enterprises like SAIL, GAIL have to devise Employees Stock Option Plan and around of 10% to 25% of the PRP should be paid as Employees Stock Option Plan.

INTRODUCTION OF PRP IN SAIL

In terms of Department of Public Enterprises (DPE) on Salary Revision of executives that inter-alia contained provision for implementation of Performance related pay for executives, it had been incumbent upon CPSEs to constitute a Remuneration Committee headed by a Director who might decide the annual PRP/variable pay pool and policy for its distribution across executives, inside prescribed limits. A Remuneration Committee headed by the independent Director had been constituted by SAIL Board. The other members of the aforesaid Committee were Director (finance), Director (Personnel) and Managing Director. Subsequently,

A)	<i>Company Performance</i>	=	77.5%
B)	<i>Plant/ Unit's performance i.e. Annual Production Plan (APP) (fulfillment%) :</i>		
•	Linked to production (Saleable Steel APP fulfillment) =		2.5%
•	Linked to Specific Energy Consumption =		2.5%
•	Linked to yield from Crude Steel to Saleable Steel =		2.5%
•	Linked to Plant's Actual PBT v/s Budgeted PBT =		7.5%
•	Total =		15%
C)	<i>Individual's Performance</i>	=	7.5%
	Total A+B+C	=	100%

5) Performance Related Pay (PRP) Model

$$PRP = (0.60 * \text{Annual Basic Pay} * \text{MoU Rating} * 77.5\% (\text{Company Performance Factor}) \\ + (2.5\% * \text{Plant's Saleable Steel Annual fulfillment\%}) \\ + (2.5\% * \text{Plant's Specific Energy Consumption Annual fulfillment\%}) \\ + (7.5\% * \text{Plant's Budgeted PBT fulfillment\%})$$

DPE issued guidelines on the subject of Corporate Governance for Central Public Sector Enterprises that stipulates that " every CPSE shall represent a remuneration committee comprising of a minimum of 3 Directors, all of whom ought to be part time Directors (i.e. nominee Directors). The Committee ought to be headed by Independent Director. CPSE won't be eligible for PRP unless the independent administrators are on its Board. Accordingly, in terms of the aforesaid Government pointers on company Governance, Remuneration Committee was re-constituted with the incorporated features and new framework for implementation of PRP for executives in SAIL. Director (Finance) and Director (Personnel) were co-opted as permanent invitees within the conferences for facilitating the method for completion of PRP. The Remuneration Committee finalized the formula for PRP for executives of SAIL keeping in consideration the broad framework for PRP contained in DPEs guidelines on PRP. It also gave opportunity to Steel Executive Federation of India (SEFI), the apex body of association of executives for industry to present their viewpoint on the issue.

FEATURES OF PRP IN SAIL

Salient features of the PRP scheme of SAIL are mentioned below:

1. MoU rating of SAIL had been excellent thereby making the organization eligible for obtaining PRP payment.
2. PRP payment has linkage with Organization's performance (i.e. MoU rating) Plant Performance (Physical and Techno-economic parameters) and Individual performance (appraisal ratings).
3. Methodology for deciding PRP in SAIL mentions a significant linkage with Company's performance, Plant performance, factors and individual performance.
4. Weightage for the above mentioned 3 performance elements are described below:



$+ (7.5\% * \text{Individual Performance rating}) * \text{Grade Incentive} * \text{ratio of available to required amount}$
 – Adjustment of Performance Related Payments i.e., Incentive/Reward

6) Percentage of PRP linked to Individual Executive appraisal rating is as under:

Table 3: Variability of PRP linked to Individual Performance rating

Individual Performance rating	O	A	B	C	C-
% of PRP Payable	100%	80%	60%	40%	Nil

Company performance rating as per the MoU rating for the respective year to be taken as performance rating for Chairman and Directors.

Executive Performance Management System (EPMS) has been introduced. The indicative distribution pattern of executives on different grades is shown below.

7) Bell Curve Approach or Forced Distribution has not been enforced strictly. In SAIL, a new

Table 4 : Distribution of Executives under EPMS

Performance rating	Distribution pattern envisaged under EPMS	Indicative Distribution Pattern
O	10%	5%
A	20%	30%
B	45-55%	50-55%
C	15-25%	10-15%
C-(Non promotable)	Negligible	Negligible

8) There is variability in payment linked to hierarchy ranging from 40% of Annual Basic for lowest category of executive to 200% of Annual Basic for CEO. Percentage of ceiling of PRP as percentage of basic pay

for different level of executives (Grade Incentive) as under;

Table 5: Linkage of PRP to Levels

Grade	% of Annual Basic Pay
E-0 to E-3	40
E-4 to E-5	50
E-6 to E-7	60
E-8 to E9	70
Director	150
CMD	200

Source: Annual Reports of SAIL

9) Adjustment of amount towards production linked Incentive/Reward paid for respective year was carried out based on grade wise weighted average incentive. The said methodology has helped in maintaining a gradient across grades as also it has

maintained the differentiation that exists on account of monthly incentive schemes between Plant to plant and between works and Non works.

10) Indicative financial of PRP in SAIL are given in following tables

Table 6: Financial Implication of PRP in SAIL

PBT for the year	Rs. 11469 crore
3% of PBT	Rs. 345 crore
Financial Implication of PRP (Amount Required for PRP)	Rs. 254 crore
Payments already made (incentives etc.)	Rs. 67 crore
Balance amount available for PRP	Rs. 187 crore

Source: Annual Reports of SAIL



Analysis of PRP scheme in the Wake of DPE guidelines on PRP for executives in CPSEs, progressive CPSEs with good performance, affordability to pay and having a robust and transparent performance system have implemented scheme of PRP. The said schemes have a common motive i.e. to implant performance orientation and

reward employees based on their performance. The basic essence of schemes in all these undertakings is that Differential performance will earn differential rewards. In the succeeding table, various attributes/parameters of PRP schemes implemented in SAIL and different Organizations and undertakings of the industry are compared.

Table 7 : Comparative Analysis of SAIL and INDUSTRY in PRP

Attributes	SAIL	INDUSTRY																																							
PRP Deciding Authority	Remuneration Committee headed by Independent Director	Remuneration Committee headed by Independent Director																																							
Basis of PRP	Scheme incorporates linkage with physical and financial performance of Company, Plants and individual executive	Scheme incorporates linkage with Overall Company performance and individual executive's performance																																							
Linkage of PRP with Company's MoU rating	Company's MoU rating was excellent : hence eligibility for PRP % is 100%	Industry's MoU rating for was good: hence eligibility for PRP % is 60%																																							
Differentiation in Payment linked to hierarchy	Level/Grade wise differentiation followed as per guideline. It ranged from a low of 40% of basic at lowest level of executive to 200% for CEO.	Level/Grade wise differentiation followed as per guideline. It ranged from a low of 40% of basic at lowest level of executive to 200% for CEO.																																							
Total Pool available for PRP	3% of PBT 3% of PBT 3% of PBT	3% of PBT 3% of PBT 3% of PBT																																							
Linkage of EPMS with PRP	<p>Distribution of Executives as per Appraisal ratings obtained under Executive Performance Management System.</p> <p>Distribution was as under</p> <table border="1"> <thead> <tr> <th>Grade</th> <th>Current</th> <th>Previous</th> </tr> </thead> <tbody> <tr> <td>O</td> <td>8.5%</td> <td>8.4%</td> </tr> <tr> <td>A</td> <td>32.0%</td> <td>63.1%</td> </tr> <tr> <td>B</td> <td>54.1%</td> <td>27.8%</td> </tr> <tr> <td>C</td> <td>5.3%</td> <td>0.53%</td> </tr> <tr> <td>C-</td> <td>NIL</td> <td>Nil</td> </tr> </tbody> </table> <p>Forced distribution system is not in place, but the distribution of executives in outstanding category is well within the DPE norms. However, C-numbers are negligible. It forms more or less Bell curve.</p>	Grade	Current	Previous	O	8.5%	8.4%	A	32.0%	63.1%	B	54.1%	27.8%	C	5.3%	0.53%	C-	NIL	Nil	<p>Performance rating of individual MAP ratings using MAP normalization process. % Distribution of employees in five categories A,B,C,D, and E will be in relation to Company performance.</p> <table border="1"> <thead> <tr> <th>MAP</th> <th>V. good</th> <th>Excellent</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>15%</td> <td>20%</td> </tr> <tr> <td>B</td> <td>25%</td> <td>30%</td> </tr> <tr> <td>C</td> <td>35%</td> <td>35%</td> </tr> <tr> <td>D</td> <td>15%</td> <td>10%</td> </tr> <tr> <td>E</td> <td>10%</td> <td>5%</td> </tr> <tr> <td></td> <td>100%</td> <td>100%</td> </tr> </tbody> </table> <p>MoU rating Excellent (1.0) and Good(0.6)</p> <p>System of forced ranking is in place. Further, the system of forced ranking of executives has robust linkage with Company's performance in the respective year.</p>	MAP	V. good	Excellent	A	15%	20%	B	25%	30%	C	35%	35%	D	15%	10%	E	10%	5%		100%	100%
Grade	Current	Previous																																							
O	8.5%	8.4%																																							
A	32.0%	63.1%																																							
B	54.1%	27.8%																																							
C	5.3%	0.53%																																							
C-	NIL	Nil																																							
MAP	V. good	Excellent																																							
A	15%	20%																																							
B	25%	30%																																							
C	35%	35%																																							
D	15%	10%																																							
E	10%	5%																																							
	100%	100%																																							
Linkage to PRP to individuals Appraisal rating	<p>5 Categories and corresponding weightages</p> <table border="1"> <thead> <tr> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>O</td> <td>100</td> </tr> <tr> <td>A</td> <td>80</td> </tr> <tr> <td>B</td> <td>60</td> </tr> <tr> <td>C</td> <td>40</td> </tr> <tr> <td>C-</td> <td>0</td> </tr> </tbody> </table>			O	100	A	80	B	60	C	40	C-	0	<table border="1"> <thead> <tr> <th>Individual</th> <th>%PRP</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>100% (1.0)</td> </tr> <tr> <td>B</td> <td>90% (0.9)</td> </tr> <tr> <td>C</td> <td>80%(0.8)</td> </tr> <tr> <td>D</td> <td>70%(0.7)</td> </tr> <tr> <td>E*</td> <td>60% (0.6)</td> </tr> </tbody> </table> <p>Nil PRP in case rating in E & pre-normalised MAP score <3</p>	Individual	%PRP	A	100% (1.0)	B	90% (0.9)	C	80%(0.8)	D	70%(0.7)	E*	60% (0.6)															
O	100																																								
A	80																																								
B	60																																								
C	40																																								
C-	0																																								
Individual	%PRP																																								
A	100% (1.0)																																								
B	90% (0.9)																																								
C	80%(0.8)																																								
D	70%(0.7)																																								
E*	60% (0.6)																																								
Linkage of PRP with Unit/ Differentiation of PRP	Each Plant of SAIL is having different product mix & technology. Therefore, the	PRP linked to performance and not differentiated on basis of differed units.																																							



Attributes	SAIL	INDUSTRY
based on Inter-Unit/plant performance	performance varies. Company: Plant performance weightage has been kept at 77.5; 15;7.5	Appraisal carries a weightage of 100% in the formula.
PRP formula	0.6 X Annual Basic X Grade Incentive X (0.775 X Company perf. + 0.15 X Plant Performance Factor + 0.075 X Exec. Performance rating X Ratio of available to Regd. Amount –Monthly Incentive adjustment (Grade wise wt. avg.)	Followed the DPE formula in letter and spirit and has not customized it.
Analysis of PRP Formula	Straight line formula of DPE has been customized. Executive performance rating factor split into three components viz., Company performance, Plant Performance and individual performance rating ratio 77.5:15;7.5. Maximum impact of appraisal rating on PRP amount for an individual becomes limited to 7.5%. DPE formula customized in view of different levels of performance of plants in SAIL and integrated operations of Steel Plants and team working.	DPE formula wherein the individual performance rating directly impacts the PRP payment.

Source: SAIL ANNUAL REPORTS

Testing of Hypothesis:

In a sample of 50 executives from various Steel Manufacturing companies, 16 said PRP Model is applied in their companies. Out of those ,14 said that PRP Model is effective in steel industry.

Amongst those who said that PRP Model is not applied in their companies ,32 said PRP Model is effective in increasing the productivity in steel industry. We represent the data in the form of the given table

Table 8.1: Classification of Data collected

Particulars	Effective (X)	Not effective(Y)	Total
Applied(A)	14	2	16
Not applied(B)	32	2	34
Total	46	4	50

The null hypothesis is that the PRP Model is not effectively applied in steel industry. The alternate hypothesis is that the PRP Model is effectively applied in steel industry.

about the distribution of populations, non parametric tests like Chi square tests are applied. No assumption about the parametric of the population is made. Karl Pearson of England , a professor of Applied Mathematics ,introduced it in 1900.

Now we apply Chi square test for the above data. When any rigid assumptions could not be made

Table 8.2: Table showing calculations of Observed Frequencies and Expected Frequencies

Particulars	Observed Frequency(O)	Expected Frequency(E)	O-E	(O-E) ²	(O-E) ² /E
AX	14	14.72	-.72	.5184	.0352
AY	2	1.28	.72	.5184	.405
BX	32	31.28	.72	.5184	.0166
BY	2	2.72	-.72	.5184	.1906
TOTAL	50	50			.6474



The calculated value of chi-square value is .6474. The critical value of chi-square at 1 degree of freedom [(r-1)(c-1)] i.e. (2-1)(2-1)=1.1=1] when the level of significance is 5%=3.841.

Since the calculated value is less than critical value, therefore the null hypothesis is accepted and we can conclude that the PRP Model is not effectively applied in steel industry, although PRP Model carries a huge potential of increasing the satisfaction level of employees.

FINDINGS

The finding are as follows:-

1. The Performance Related Pay (PRP) system of SAIL is fair, and follows performance system policies and procedures. This increases the confidence of objectivity into the minds of the employees. This finding might not be applicable for another organization but with our representation of SAIL, every organisation needs adequate performance appraisal.
2. The whole theme of PRP has brought changes in the attitude of employees towards work and the organization as a whole, as a result of the introduction of PRP. These changes are evident in work quality, job specialization, meeting deadlines. All these are noticeable in our research.
3. PRP system should be encouraged as it has been observed that performance appraisal has more positive impacts on employees than negative effects
4. Although most Employees were not oriented and acquainted regarding the PRP system initially as such they did not know what exactly to expect.

CONCLUSION

On analyzing the Performance Related Pay (PRP) Model and programs of Steel Authority of India Ltd., it is concluded that the Management practices are very effective and properly executed in the company Steel Authority of India Ltd, but as far as the other players and sectors are concerned, there's a lot of work to be done for the implementation of PRP. Although PRP Model is not effectively applied in steel industry as a whole, despite the fact that PRP Model carries a huge potential of increasing the satisfaction level of employees. It should be noted that Performance related payment systems, like all systems are organic and should evolve with time, otherwise they are going to become redundant and mismatched to the setting because the context during which they are applied changes rapidly due to the dynamic nature of social, economic and technological changes. If PRP system does not keep up with these modifications they are going to become irrelevant, redundant and should even cause a

downward spiral organizational performance if goals of the organization change. Performance Related Pay (PRP) Model is a game changer and it has also been observed that with the emergence of PRP Model, it has taken the Organization's Policies and employee's motivation to a new level.

REFERENCES

1. *Annual Reports of Steel Authority of India(SAIL)*
2. Aguinis, H. (2009). *An expanded view of performance management*. In J. W. Smither, & M. London (Eds.). *Performance management: Putting research into action* (pp. 1–44). Palgrave Macmillan.
3. Bernardin, H.J. and Beatty, R.W.(1984)*Performance Appraisal Assessing Human Performance at Work*
4. Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology*. *Qual. Res. Psychol.* 3, 77–101.
5. Cawley, B. D., Keeping, L. M., & Levy, P. E. (1998). *Participation in the performance appraisal process and employee reactions: A meta-analytic review of field investigations*. *Journal of Applied Psychology*, 83, 615–633.
6. Chang, S.-J., Witteloostuijn, A. V., & Eden, L. (2010). *From the editors: Common method variance in international business research*. *Journal of International Business Studies*, 41, 178–184.
7. Cook, J., & Crossman, A. (2004). *Satisfaction with performance appraisal systems: A study of role perceptions*. *Journal of Managerial Psychology*, 19, 526–541.
8. Dobbins, G. H., Cardy, R. L., & Platz-Vieno, S. J. (1990). *A contingency approach to appraisal satisfaction: An initial investigation of the joint effects of organizational variables and appraisal characteristics*. *Journal of Management*, 16, 619–632.
9. Dorfman, P. W., Stephan, W. G., & Loveland, J. (1986). *Performance appraisal behaviors: Supervisor perceptions and subordinate reactions*. *Personnel Psychology*, 39, 579–597.
10. Duarte, N. T., Goodson, J. R., & Klich, N. R. (1994). *Effects of dyadic quality and duration on performance appraisal*. *Academy of Management Journal*, 37, 499–521.
11. Geddes, D., & Konrad, A. M. (2003). *Demographic differences and reactions to performance feedback*. *Human Relations*, 56, 1485–1513.
12. Greenberg, J. (2009). *Promote procedural and interactional justice to enhance individual and organizational outcomes*. In E. A. Locke (Ed.). *Handbook of principles of organizational behavior: Indispensable knowledge for evidence-based management* (pp. 255– 271). (2nd ed.). West Sussex, UK
13. Jacobs, R., Kafry, D., & Zedeck, S. (1980). *Expectations of behaviorally anchored rating scales*. *Personnel Psychology*, 33, 595–640.
14. Jawahar, I. M. (2007). *The influence of perceptions of fairness on performance appraisal*



- reactions. *Journal of Labor Research*, 28, 735–754.
15. Performance appraisal satisfaction and employee outcomes: Mediating and moderating roles of work motivation. *The International Journal of Human Resource Management*, 17, 504–522.
 16. Lennox, R. D., & Wolfe, R. N. (1984). Revision of the self-monitoring scale. *Journal of Personality and Social Psychology*, 46, 1349–1364.
 17. Levy, P. E., & Williams, J. R. (2004). The social context of performance appraisal: A review and framework for the future. *Journal of Management*, 30, 881–905.
 18. Longenecker, C. O., Liverpool, P. R., & Wilson, K. Y. (1988). An assessment of manager/subordinate perceptions of performance appraisal effectiveness. *Journal of Business and Psychology*, 2, 311–320.
 19. McFarlin, D. B., & Sweeney, P. D. (1992). Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. *Academy of Management Journal*, 35, 626–637.
 20. Routledge. Murphy, K. R., & Cleveland, J. N. (1995). *Understanding performance appraisal: Social, organizational and goal-based perspectives*. Thousand Oaks, CA:
 21. Reports (Annual) of Steel Authority of India Ltd.
 22. Sweeney, P. D., & McFarlin, D. B. (1993). Workers' evaluations of the "ends" and the "means": An examination of four models of distributive and procedural justice. *Organizational Behavior and Human Decision Processes*, 55, 23–40.
 23. Taylor, M. S., Tracy, K. B., Renard, M. K., Harrison, J. K., & Carroll, S. J. (1995). Due process in performance appraisal: A quasi-experiment in procedural justice. *Administrative Science Quarterly*, 40, 495–523.
 24. Tharenou, P. (1995). The impact of a developmental performance appraisal program on employee perceptions in an Australian federal agency. *Group & Organization Management*, 20, 245–271.
 25. Vroom, V. H. (2005). On the origins of expectancy theory. In K. G. Smith, & M. A. Hitt (Eds.). *Great minds in management: The process of theory development* (pp. 239–260). New York: Oxford University Press.
 26. Williams, J. R., & Levy, P. E. (2000). Investigating some neglected criteria: The influence of organizational level and perceived system knowledge on appraisal reactions. *Journal of Business and Psychology*, 14, 501–513.
 27. Youngcourt, S. S., Leiva, P. I., & Jones, R. G. (2007). Perceived purposes of performance appraisal: Correlates of individual- and position-focused purposes on attitudinal outcomes. *Human Resource Development Quarterly*, 18, 315–343.



Isolation and Identification of Bacteria Responsible for the Spoilage of Fluted Pumpkin (*Telfaria occidentalis*) and Bitter Leaf (*Vernonia amygdalina*) in Sokoto Metropolis

¹A.S. Muhammad*

¹Department of Crop Science,
Usmanu Danfodiyo University Sokoto

²S.A. Ani

²Department of Crop Science,
Usmanu Danfodiyo University Sokoto

³A.M. Nasiru

³Department of Forestry and Environment,
Usmanu Danfodiyo University Sokoto

Article DOI: <https://doi.org/10.36713/epra4997>

ABSTRACT

The research was conducted in 2016 at the Microbiology Laboratory in the Department of Microbiology in Usmanu Danfodiyo University Sokoto. The main objective was to isolate and identify those bacteria responsible for the spoilage of bitter leaf (*Vernonia amygdalina*) and fluted pumpkin (*Telfaria occidentalis*). This approach presented extracting these bacteria from the vegetables and then culture them on agar plates, colonies were formed and subcultures on different plates, pure cultures were obtained and cultured in slant bottles containing nutrient agar for identification through biochemical test bacterial utilization of substrates which include Triple sugar ion, Methyl red and Vogues prosturer test, starch hydrolysis, Indole, citrate, catalase, urease test and recorded. Gram stain was carried out to identify the gram reaction and viewed under microscope for cell morphology. Bacteria species of the stock culture were identified using Atlas Book of Bacteria using the biochemical test results and gram stain reactions, the bacteria isolated were identified as gram negative rod bacteria. Percentage distribution of occurrence showed that *E. coli* had had the highest frequency of occurrence with percentage distribution of 42.8% in bitter leaf, followed by *Proteus mirabilis*, and *B. cereus* both having 28.6% respectively. *Proteus mirabilis* had 50% in fluted pumpkin, *Klebsiella* 33.3%, *E. coli* 16.7%. From the result, it was concluded that *E. coli* and *Proteus* had the highest occurrence of bacterial contamination of spoilt bitter leaf and fluted pumpkin sold in Sokoto metropolis and recommended sensitization proper hygienic measure during post-harvest handling of these vegetables.

KEYWORDS: Isolation, Identification, Bacteria, Vegetables, Food Spoilage, Hygiene

INTRODUCTION

Vegetables are among the major dietary intake in our everyday life. They are succulent herbaceous plants that are eaten in parts, whole, raw or cooked as a part of our main dish or in salad. They are characterized by high moisture content being of the order of 75% moisture or more and 25% or less dry matter. Leafy vegetables are an important feature of Nigeria diet that a traditional meal without it is

assumed to be incomplete. In developing countries, the consumption of vegetables is generally lower than the FAO (2004) recommended of 75Kg per year in habitat (206g per day per capita) (Badmus and Yekini, 2011).

One of the factors that impacts negatively on the economic value of vegetables is that they have a short shelf life. This is a result of many factors, prominent among which is the activity of pathogens. It has been reported (Droby, 2006) that about 20-25% of



harvested vegetables are lost through the activities of pathogens during the post-harvest chain. Growing vegetables may be exposed to many sources of contamination this include microbes through contact with soil, dust and water by handling harvest. This makes them to harbor a wide range of microorganisms including both plant and human pathogens (Eni *et al.*, 2010).

In developing countries such as Nigeria continued use of untreated waste water and manure as fertilizer for the production of vegetables is a major contributing factor. Effect of the microbial activities of these vegetables has resulted in an increase in disease spread. Also generally supplements of vitamins and minerals gotten from these vegetables have been reduced drastically, losses of farmers' income are pronounced, loss of vegetables is on the rise, vegetables not fresh are hardly consumed also malnutrition generally is encouraged. All these are detrimental to the inhabitants of these locations and also affect Nigeria at large, stretching its negativity affecting the economy of the nation as a whole.

These vegetables are being sold into our homes, offices, restaurants, canteen, on the street where we buy our suya, in our markets and our neighborhoods. Providing an increasing chance of disease infection, malnutrition, vitamin deficiency in children and adults, vegetables spoilages dump on the street polluting the environments but the key bacteriology safe vegetables are essential to maximize the health benefit promised by adequate consumption of good and clean vegetables. Proper washing of fruit and vegetables is essential for decontamination and safe consumption of these products as they are eaten mostly raw or minimally cooked.

Therefore, the objective of this study is:

To isolate and identify the major bacteria species associated with the spoilage of bitter leaf (*Vernonia amygdalina*) and fluted pumpkin (*Telfairia occidentalis*) in Sokoto Metropolis.

MATERIALS AND METHODS

Study Area

The study was conducted in 2016 at the Microbiology Laboratory in the Department of Microbiology in Usmanu Danfodiyo University Sokoto. Sokoto metropolis comprises Sokoto North, Sokoto South Local Government and some part of Kware and Wamako Local Government Area and located at 13.08° N, 5.250° E of the equator. It is located in the extreme Northwest of Nigeria, near the confluence of Sokoto River and Rima River and falls within the Sudan Savannah ecological zone. It is populated with vicarious categories of people, some of which are peasant farmers, traders and artisans. The

dominant ethnic group is Hausa. As of the 2006 national population census, it has a population of 427, 760.

Samples Collection

Two species of vegetables were randomly purchased for three different markets in Sokoto metropolis; the samples include only spoiled vegetables. The vegetables are fluted pumpkin (ugwu, Kabewa (*Telfairia occidentalis*)), Bitter leaf (onugbu, efo, shuawaka (*Vernonia amygdalina*)). These vegetables were collected into different sterile, labelled polythene bags and transported to the Microbiology Laboratory, in the Department of Microbiology Usmanu Danfodiyo University, Sokoto immediately after collection for processing.

Materials and Reagents

The materials and reagents used in the laboratory investigation include; spoiled vegetables, microscope, distilled water, nutrient agar, saline, Petri dishes, test tubes, pipettes, and Gram staining reagents etc.

Materials Sterilization

All the glassware were properly washed, dried and sterilized in the oven at 160°C for one hour and were allowed to cool down to room temperature before utilization. The entire working surfaces were also disinfected with ethanol to reduce contaminants.

Nutrient Agar

Nutrient Agar was used as a basal media for bacterial culture. It was prepared according to the manufacturer's instructions. 28g of the dehydrated powder was weighed and dissolved in 1000mls (1 litre) of distilled water inside a conical flask. It was corked with cotton wool and covered with aluminum foil and heated to dissolve the agar. The suspension was then autoclaved at 121°C for 15 minutes; it was left to cool down at room temperature for another 15 minutes before dispensing. 20mls of the prepared media was dispensed into Petri dishes.

TSA Preparation

Nutrient Agar was used as a basal media for bacterial culture. It was prepared according to the manufacturer's instructions. 38g of the dehydrated powder was weighed and dissolved in 1000mls (1 litre) of distilled water inside a conical flask. It was corked with cotton wool and covered with aluminum foil and heated to dissolve the agar. The suspension was then autoclaved at 121°C for 15 minutes; it was left to cool down at room temperature for another 15 minutes before dispensing. 20mls of the prepared media was dispensed into Petri dishes



Isolation and Identification of Bacteria

The spoiled vegetables were soaked and serial dilution was carried out by weighing 1g of the sample in 10ml of distilled water. The samples were left to soak for 10 minutes before transferring 1ml of the diluents into another 9ml of distilled water. The transfer of the 1ml continues until it reaches 10⁵ diluents. 0.1ml was withdrawn from the last diluents using 5ml syringe and placed in a triplicate plate of TSA. Sterile glass rod was then used to spread the inoculums of the suspension on the entire surface of the TSA plate. The inoculated plates were incubated at 37°C for 24 hours.

Emerging colonies on the plates were counted and counted as colony forming units per millilitre (CFU/ml). Some of the distinct colonies will be subcultured severally until pure cultures are obtained. The pure cultures were subjected to gram staining, catalase and oxidase tests.

Gram Stain

A smear of the bacterial cell was made on a slide and stained, using the Gram stain procedure. The slides were thereafter viewed under the microscope for the presence of gram positive bacterial cells. A drop of distilled water was placed on a grease fire glass slide and a colony in the nutrient agar plate was picked with a heated wire loop (after allowing it to cool) and emulsified. The glass slide was passed through flame three times to heat fix. The smear was flooded with crystal violet for 30 seconds and rinsed with distilled water. Lugol's iodine then was added to the smear for 30 seconds and then rinsed with distilled water. The smear was counterstained with safranin for 1-2 minutes and rinsed with distilled water. After air dried, oil immersions were added and viewed under microscopic using x100 objective lens. The isolates were identified and confirmed with the morphological characteristic (Cheesbrough, 2000).

Urease Test

This test was to detect the organism's ability to produce enzyme urease that hydrolysis urea into ammonia and carbon dioxide. With the release of ammonia the pale yellow of urea changes to pink-red, this signified the positive for urea. Colony from the stock culture was sub-cultured into nutrient agar to obtain a fresh culture. Heavy inoculums were fetched from the nutrient agar using sterile wire loop and streaked on the slant surface of the urea medium. It was incubated for 24 hours at 37°C. The development of a pink-red signifies the presence of urease, if the color remained unchanged (yellow or orange) it signifies negative (Cheesbrough, 2000).

Indole Test

This test was used in the determination of the ability of bacteria to produce indole from tryptophan. Indole production is detected by Kovac's reagent, which contains 4(p)-dimethylaminobenzaldehyde. The reaction of the reagent with indole produces a red colored compound. The isolates were grown for 48 hours in a test tube containing 5ml peptone water; 0.5ml Kovac's reagent was added and shaken gently. The presence of a red or pink layer indicated the presence of indole while absence of red color indicates negative (Cheesbrough, 2000).

Citrate Test

This was one of the several techniques used to assist in the identification of some bacteria. The test is based on the ability of an organism to use citrate as its source of carbon. Simmon citrate agar was inoculated with the isolate and incubated at 37°C for 48 hours. The presence of a bright blue color indicated positive for citrate while a bright blue color indicates negative (Cheesbrough, 2000).

Catalase Test

This test was used to differentiate those bacteria that produce the enzyme catalase from non-catalase producing ones. Catalase acts as a catalyst in the breakdown of hydrogen peroxide to oxygen and water. A drop of hydrogen peroxide was placed on a clean slide, colonies from the nutrient slant which was fetched and emulsified in the H₂O₂ and observed immediately for gas bubbles. The presence of active bubbles indicates positive for catalase while no bubbles indicates negative for catalase (Cheesbrough, 2000).

Methyl Red and Voges Proskauer Test

This test was used to differentiate bacteria that ferment glucose with the production of acetyl methyl acetate (acetone). The media contains peptone salt and glucose. Colonies from the stock culture were inoculated into methyl red medium and incubated at 37°C for 48 hours. 2 drops of a methyl red solution were added and shaken. The presence of a red color indicates positive while a yellow color indicates negative (Cheesbrough, 2000).

Triple Sugar Iron Agar Test

This medium contains three sugars; glucose, sucrose and lactose. Some organisms can ferment all the three sugars present and produce acid which changes the color of the indicator from red to yellow. The sugar and protein were attacked oxidatively to release ammonia. Through this media, the production of H₂S can be detected by the presence of a black color in the media along the area being stabbed by the wire



loop. Gas production can be detected by the presence of gas bubbles or cracks on the agar in the test tube or complete disruption of the medium. Colonies from the sub-cultured plate were picked with a sterile straight wire loop and stabbed on the cut, streaked on the surface of the slope. This was incubated at 37°C for 24 hours (Cheesbrough, 2000).

Starch Hydrolysis

This test shows whether an isolate is capable of utilizing starch or not. Each isolate will be inoculated into a starch hydrolysis medium (nutrient agar + starch) and incubated for 24 hours. After incubation, iodine solution will be added to each growth and blue black color was observed. Development of blue black indicates the presence of starch, that is, the isolate could not utilize starch and so by failure to develop

blue black coloration indicates a positive for starch utilizing bacteria (Cheesbrough, 2000).

RESULTS

Frequency Bacterial Contamination of Bitter leaf and fluted pumpkin

A total of three species of bacteria were isolated from the sample of fluted pumpkin used. These bacteria were identified as *Klebsiella*, *Proteus mirabilis* and *E. coli* as shown in Table 1. From the table, out of the six (6) bacteria isolated, *P. mirabilis* presented the highest frequency of occurrence with the percentage occurrence of 50%. 33.3% was also recorded for *Klebsiella* while *E. coli* had the least frequency of occurrence with a percentage of 16.7%.

Table: Percentage Distribution of Organisms identified in Fluted Pumpkin

S/N	Organisms Identified	No of Occurrences	Percentage Occurrence (%)
1.	<i>Klebsiella</i>	2	33.3
2.	<i>P. mirabilis</i>	3	50
3.	<i>E. coli</i>	1	16.7
	Total	6	100

Frequency Bacterial Contamination of Bitter Leaf

A total of seven (7) bacteria belonging to three species of bacteria were isolated and identified from the bitter leaf used in the present investigation. These species include *Proteus mirabilis*, *E. coli* and *B. cereus*.

Out of the bacteria isolated, the highest frequency of occurrence was noted for *E. coli* with a percentage occurrence of 42.8%. Both *P. mirabilis* and *B. cereus* had percentages of 28.5% and 28.6% respectively as shown in Table 2.

Table: Percentage Distribution of Organisms identified in Bitter Leaf

S/N	Organisms Identified	No of Occurrences	Percentage Occurrence (%)
1.	<i>P. mirabilis</i>	2	28.6
2.	<i>E. coli</i>	3	42.8
3.	<i>B. cereus</i>	2	28.6
	Total	7	100

The comparison between the fluted pumpkin and bitter leaf in relation to the bacterial isolate is presented in chart 1. From the chart, *P. mirabilis* was observed to have the highest frequency of occurrence in the fluted pumpkin while the highest percentage

occurrence for the bitter leaf was recorded for the *E. coli*. All the bacteria isolated were found in both the bitter leaf and fluted pumpkin except for *B. cereus* which was absent in fluted pumpkin and *Klebsiella* which was also absent in bitter leaf.

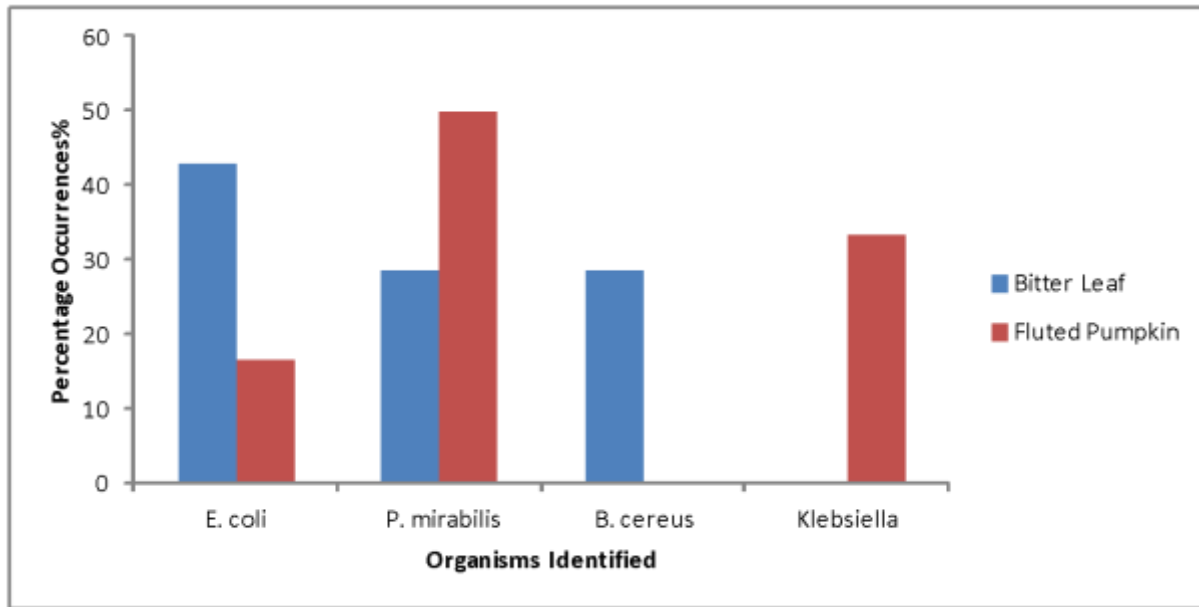


Figure 1: Species of Bacteria Isolated from Bitter Leaf and Fluted Pumpkin in Sokoto Metropolis.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Discussion

Fresh vegetables fruits including bitter leaf and fluted pumpkin have naturally effective immunity against most pathogenic microorganisms and plant spoilage. But this protection or immunity however could be hindered and eventually leading to the contamination of these vegetables. There are several factors that promote the contamination and post-harvest deterioration of vegetables by bacteria; these include contamination during field cultivation, harvesting, post-harvest handling and distribution (Beuchat, 2002). The result of the isolation and identification of bacteria presented in table 1 and 2 revealed that bacteria were the major organisms responsible for the post-harvest spoilage of both bitter leaf and fluted pumpkin. From the present study, both the bitter leaf and the fluted pumpkin had the same number of bacterial isolates, with the highest frequency of occurrence from bitter leaf and fluted pumpkin observed to be 42.8% and 50% respectively. This result is in line with the observation of (Mathew, 2011) who reported that bacteria were the major sources of contamination and post-harvest spoilage of vegetables.

Earlier works such as Chuku *et al.* (2008) isolated various strains of bacteria from vegetables and observed *Bacillus megaterium* and *Bacillus laterosporus* as the major contaminants and agents of post-harvest deterioration of vegetables. Other work like the works of (Chuku *et al.*, 2008; Ofor *et al.*, 2009; Okafo, 1997) found that *Bacillus subtilis*, *B. cereus*, *B.*

aureus, *Lactobacillus fermenti*, *Pseudomonas stutzeri*, *Leuconostoc spp* and *Rothia spp*. As well as fungi *A. flavus*, *A. fumigates*, *Penicillium expansum*, *P. notatum*, *E. coli*, *Mucor mucedo*, *Monilia spp*, *Klebsiella* from vegetables. Similar report was observed in sweet orange fruit damage (Tafinta *et al.*, 2013).

Figure I indicate that between the bitter leaf and fluted pumpkin samples collected from Sokoto metropolis, *P. mirabilis* had the highest frequency of occurrence (50%) for the fluted pumpkin followed by 42.8% for the bitter leaf. This indicated that fluted pumpkin sold in Sokoto metropolis market had the higher cases of microbial contamination when compared with the bitter leaf.

CONCLUSION

The research showed that bacteria are still a health problem among vegetable consumers in Sokoto metropolis, the presence of the bacteria isolated from both bitter leaf and fluted pumpkin could pose a serious threat to the health of consumers of these vegetables as they are pathogenic and are harmful when consumed. It has been identified by recent study that some independent variables that demonstrated significant correlation with bacterial infection are personal hygiene, environment hygiene, consumption of unhygienic vegetables, age, gender and use of contaminated manure and water to plants. The study therefore concludes that a proper personal and environmental hygiene, washing and proper cooking of



these vegetables will greatly reduce the population density of the bacteria.

Recommendations

There is a serious need for sensitization on good personal and environmental hygiene as means of preventing the persistence of bacterial contamination of vegetables in developing countries. This should be achieved through proper education, treatment of manure before application, especially faecal manure, proper washing and cooking of root vegetables before consumption.

REFERENCES

1. Akoroda, M. O. and Adejoro, M. A. (1989). Patterns of vegetative and sexual development of *Telfairia occidentalis* Hook. f. *Tropical Agriculture (Trinidad)* 67(3): 243–247.
2. Akwaowo, E. U., Ndon, D. A. and Etuk, E. U. (2000). Minerals and antinutrients in fluted pumpkin (*Telfairia occidentalis* Hook. f.). *Food Chemistry* 70(2): 235–240.
3. Awor, A. M. (2005). Post-harvest handling of indigenous fruits and vegetables: status, problems and prospects. Paper presented at the Meeting of Experts on Indigenous Crops and Animal Research and Development, Nigeria.
4. Badmus, M. A. and Yekinni, O. T. (2011). "Economic Analysis of Exotic Vegetable Production among Urban Fadama Women Farmers in Akinyele Local Government Area Oyo State, Nigeria". *International Journal of Agricultural Economics and Rural development* 4 (1) 2011.
5. Beuchat L. R. (2002). Ecological factors influencing survival and growth of human pathogens on raw fruits and vegetables. *Microbes and Infection*, 4: 413-423.
6. Bezabih, S. N. and Hadera, N. (2007). Activity of four plant extracts against three fungal pathogens of rice. *Trop. Agric.(Trinidad)*. 68. Pp 373 – 375
7. Booth, R. H. (1974). Postharvest Deterioration of Tropical Root Crops: losses and their control. *Journal of Tropical Science*. 16:49-63.
8. Burkill, H. M. (1985). *The useful plants of West Tropical Africa*. 2nd Edition. Volume 1, Families A–D. Royal Botanic Gardens, Kew, Richmond, United Kingdom. 960 pp.
9. Byczynski, S. L. (1997). "Growing for Market", *Handbook of crop storage*, Vol. 1 No, pp. 4-5.
10. Cheesebrough, M. J. (2000). *Medical laboratory manual for tropical countries*, Microbiology. *Tropical Health Technology and Butterworth Scientific Publication*, 11:167-214.
11. Chuku, E. C., Ogbonna, D. N., Onuegbu, B. A. and Adeleke, M. T. V. (2008). Comparative studies on the fungi and biochemical characteristics of snake gourd (*Trichosanthes cucumerina* linn) and Tomato (*Lycopersicon esculentum* Mill) in River State, Nigeria. *Journal of Applied Sciences*, 8(1): 168-172.
12. Dhanze, H., Khurana, S. K. and Mane, B. G. (2013). Effect of seabuckthorn leaf extract on microbiological quality of raw chicken during extended periods of storage. *Journal of Food Quality*, 36(1): 59-66.
13. Droby, S. (2006). Improving quality and Safety of Fresh Fruits and Vegetables After Harvest by the use of Biocontrol Agents and Natural Materials. *Acta Horticult.* 709: 45–51.
14. Egbekan, M. K., Nda-Suleiman, E. O. and Akinyeye, O. (1998). Utilization of fluted pumpkin fruit (*Telfairia occidentalis*) in marmalade manufacturing. *Plant Foods for Human Nutrition* 52(2): 171–176.
15. Ellah, O. C. (2004): Toxin in pathogenesis. *Annual Review of Phytopathology*. (18): 103-129.
16. Eni, A. O., Oluwawemitan, T. O. and Solomon, O. U. (2010). Microbial Quality of Fruits and Vegetables Sold in Sango Ota, Ogun State, Nigeria. *African Journal of Food Science*, 4(5): 291-296.
17. F.A.O. (2004). "Food Loss Prevention in Perishable Crops", Corporate Document Repository, pp. 220-231.
18. FAO/WHO: Report of a Joint FAO/WHO Expert Consultation Bangkok, Thailand (2008). Expert consultation on human vitamin and mineral requirements. pp. 223-229.
19. Fejokwu, J. O. (1992). Report of the nationally coordinated research project on fruits and vegetables in Nigeria. *Proc.Nat. Workshop on Improved Packaging and Storage Systems for Fruits and Vegetables in Nigeria*. Ilorin, Nigeria.
20. George, C., Gavini, F., Vaugien, L., Butel, M. J. and Doucet-Popularie, F. (2010). Antimicrobial susceptibility of *Bifidobacteria*. *Journal of Antimicrobial Chemotherapy*, 55:38-44.
21. Ghebremeskel, A. N. (2007). A model to predict damage to horticultural produce during transport. *Journal of Agricultural Engineering Research* 50: 259-72.
22. Harris, J. C., Cottrell, S. L., Plummer, S. and Lloyd, D. (2003). Antimicrobial properties of *Allium sativum*(garlic). *Applied Microbiology and Biotechnology*, 57:282-286.
23. Maliku, J. M. (2005), "Reduction of losses in fresh market fruits and vegetables", *Annual review of phytopathology*, Vol. 16 No. 1, pp. 321-341.
24. Mashav (2010). "Postharvest Losses of Fruits and Vegetables", Available at: <http://www.mashav.mfa.Document ID=42327> (Viewed March, 2012).
25. Mathew, F. A. (2011). "Handbook of Fruits and Vegetables", National publishers, Ibadan.
26. Mofeke, F., Clavin, M. L., Weber, D., Ranea, F., Anke, T. and Martino, V. (2005). Antimicrobial isoflavonoids from *Erythrina crista galli* infected with *Phomopsis* sp. *Z. Naturforsch.* 62(3-4): 164-168.
27. Obiagwu, C. J. and Odiaka, N. I. (1995). Fertilizer schedule for yield of fresh fluted pumpkin (*Telfairia*



- occidentalis*) grown in the lower Benue river basin of Nigeria. *Indian Journal of Agricultural Sciences*, 65(2): 98–101.
28. Odiaka, N. I. (2001). Survey on the production and supply of *Telfairia occidentalis* in Makurdi, Benue State Nigeria. Crop Production Department, University of Agriculture, Makurdi, Nigeria.
29. Ofor, M. O., Okorie, V. C., Ibeawuchi, I. I., Ihejirika, G. O., Obilo, O. P., and Dialoke, S. A. (2009). Microbial Contaminants in Fresh Tomato Wash Water and Food Safety Considerations in South-Eastern Nigeria. *Life Science Journal*, 1:80-82.
30. Okafor, J.C., (1997). Conservation and use of traditional vegetables from woody forest species in southeastern Nigeria. In: Guarino, L. (Editor). *Traditional African vegetables. Proceedings of the IPGRI international workshop on genetic resources of traditional vegetables in Africa: conservation and use, 29–31 August 1995, ICRAF, Nairobi, Kenya. Promoting the conservation and use of underutilized and neglected crops 16. pp. 31–38.*
31. Oke, O. L. (1973). Leaf protein research in Nigeria. *Tropical Science* 15: 139–155.
32. Okigbo, R. N. (2009). Variation in phytochemical properties of selected fungicidal aqueous extract of some plant leaves in Kogi State, Nigeria. *American European Journal of Sustainable Agriculture*, 3 (3): 407- 409.
33. Olaofe, O., Adeyemi, F. O. and Adediran, G. O. (1994). Amino acid and mineral compositions and functional properties of some oilseeds. *Journal of Agricultural and Food Chemistry*, 42(4): 878–881.
34. Prakash, A., Mathur, K., Vishwakarma, A., Vuppu, S. and Mishr, B. (2013). Comparative assay of antioxidant and antibacterial properties of Indian culinary seasonal fruit peel extracts obtained from Vellore, Tamilnadu. *International Journal of Pharmaceutical Sciences Review and Research*, 19(1): 131-135.
35. Ray, J. M. and Bhuria, R. E. (2007). “The commercial storage of Fruits and Vegetables and Florist and Nursery Stock”, *Agricultural Handbook NO.66 US Department of agricultural research services, New York.*
36. Roundsa, L., Havensa, C. M., Feinsteinb, Y., Friedmanc, M. and Ravishankar, S. (2013). Concentration-dependent inhibition of *Escherichia coli* O157:H7 and heterocyclic amines in heated ground beef patties by apple and olive extracts, onion powder and clove bud oil. *Meat Science*, 94(4): 461-467.
37. Sabo, E. and Zura, Y. D. (2009). “Awareness and effectiveness of vegetable technology information packages by vegetable farmers in Adamawa State, Nigeria”. *African Journal of Agricultural Research* Vol. 4 (2), pp. 065-070.
38. Tafinta, I. Y., Shehu, K., Abdulganiyyu, h., Rabe, A. M. and Usman, A. (2013). Isolation and Identification of Fungi associated with the Spoilage of Sweet Orange (*Citrus sinensis*) fruits in Sokoto State. *Nigerian Journal of Basic and Applied Science* 21(3): 193-196.
39. Tiwari, B. K., Valdramidis, V. P., O’ Donnell, C. P., Muthukumarappan, K., Bourke, P. and Cullen, P. J. (2009). Application of natural antimicrobials for food preservation. *Journal of Agricultural and Food Chemistry*, 57(14): 5987-6000.



EFFECTIVE WAYS TO INCREASE STUDENTS' THINKING ACTIVITY

Baxtixon Qurbonova
An Associate Professor,
Fergana State University,
Uzbekistan

SHaxnozaxon Nazirova
A student,
Fergana State University,
Uzbekistan

ABSTRACT

Developing children's thinking skills is getting one of the most characteristic features of modern civilization as well as in our country there is a greater need than ever for self-confident, creative, enterprising, highly qualified specialists. The role of subjects in the formation of personal qualities of children is invaluable. In this scientific article, the authors clearly explain education, in particular, mother language has a great responsibility to shape independent thinking in children's feature.

KEY WORDS: *independent thinking, independent work, independent living, independent person, mental cognition.*

1. INTRODUCTION

The renewal of education is not only about imparting new knowledge to students, but also about changing the system of attitudes towards society, the state, nature and labor. The development of thinking ability as a way of perceiving being, reality, is the product of the process of thinking — the highest result. It is activity-related and is formed in the process of independent work. The existence of things and events is related. Understanding, proving, explaining, and thinking are gradual stages in the formation of thinking that when communication doesn't work, change also takes place in existence. Thinking is a life-giving force. That is, man is alive through independent thinking. A mindless person becomes a dead body incapable of creating and hanging. Only focusing on the content of knowledge in education leads to low learning effectiveness. Only a student who has developed the ability to think firmly absorbs knowledge. This is why it is so important to teach students to think.

2. LITERARY REVIEW

The problem of raising students' thinking, creative organization and activation of the educational process is covered in detail in the research of A. Gulomov, M. Haqberdiyev, T. Ziyodova, S. Yaminova, M. Saidov, B. Adizov, Ya. Rakhmonov. K. Yoldashev's research has developed ways to organize literature lessons on the basis of pedagogical cooperation. M. Makhmutov, V. Okon, R. Ibragimov studied ways to create problematic situations in the learning process and on this basis to increase the effectiveness of students' learning activities. A. Choriyev philosophically analyzed the

activity of independent thinking as a key component of personal independence. E. Goziyev, V. Karimova, Z. Nishonova revealed the psychological bases of thinking in their research. The analysis of the research shows that the means of teaching primary school students to think independently have been studied separately.

The formation of thinking skills in primary school students, the ability to solve problems independently is an important factor in increasing the effectiveness of education. Therefore, the learning process should be organized in such a way that students not only become the object of the learning process, but also become equal partners of the teacher in the learning process and acquire the skills of independent thinking.

3. METHODOLOGY

The founder of democratic pedagogy, the famous Czech pedagogue Jan Amos Comenius, advanced the dogmatic method of teaching based on scholasticism of his time with advanced ideas, scientifically substantiating the place of enlightenment on the path from emotional to mental cognition. In his book *The Great Didactics*, the great scientist says that a person spends his entire youth, up to 24 years, to acquire knowledge. Dividing this period into four parts shows that each period should be a school suitable for the minority. "First of all," he says, "few things are known through external senses, because things directly affect the senses. Afterwards, in turn, activates the inner senses and reflects, integrates, and expresses the reflection of what is learned through the external senses, using memory, as well as gestures and speech. The mind then begins



to work and, in detail, weighs and compares all the objects in order to carefully organize their interrelationships. This allows you to understand things and thoughts about them correctly. Finally, in all of this, the will must demonstrate the legitimate power of the minority because the will unites and directs all human actions. "Thus, by showing the stages of cognition that begin with the senses, the scientist shows that the mind regulates independent thinking, and only as a result can correct ideas be understood" Philosopher A. explains his opinion.

Choriev philosophically analyzes the concept of "independent person", noting that it combines at least three components: independent thinking, independent work, independent living, and says about the impact of independent thinking on human activity as a key component: "... the independence of a person depends, first of all, on his way of thinking, his ability to think. Because of this ability, a person determines the essence of the events, happenings, processes that he sees, knows, hears, and what is happening around him, whether they are right or wrong, true or false. To be more precise, because of this ability, a person finds solutions to problems that arise in our daily lives". Observations show that independent thinking is manifested first in the ability to see a new question, a new problem, and then to solve it with little effort. In other words, independent thinking is an activity in which students demonstrate maximum activity, creativity, independent judgment, and initiative. As a result, they are in this process: - to apply knowledge independently in a new situation; - be able to see a new problem in the organization of topics; - it is clear that a problem can have several (alternative) solutions; - a combination of previously known problem-solving methods; - acquire the skills to find original ways to solve the problem. The degree of conscious independence in the student's activity during the performance of the above and other similar activities is manifested in the following: knowing, thinking, remembering or bringing new facts, events, happenings on the basis of known concepts. Student actions in completing similar tasks according to the content of the work are not independent because they are performed on a sample basis. The activity of primary school students in their mother tongue classes is also elementary. Because it is in the form of simple processing that actions based on basic concepts have little effect on the way of thinking. Insufficient development of thinking, as M. Saidov points out, leads to "the poverty of words that often occur in the activities of students, the inability to express ideas logically, the ability to express ideas in an independent sequence, the inability to divide ideas into logical children, deviate from the requirements of the subject." will come. This shows the urgency of the issue. Z.Nishonova cites the following as criteria for the development of independent thought:

1. The person's experience in critically evaluating the opinion of oneself and "others", the ability to understand the opinion of another person, to understand the logic of one's opinion, to compare the opinion of the interlocutor with his own opinion and to come to a definite conclusion;
2. External and internal agreement with the content of the person's opinion;
3. Be able to feel contradictions;
4. The ratio of theoretical and practical generalizations in thinking;
5. Voluntary control of mental functions manifested in attention;
6. The level of development of mental initiative.

4. RESULTS AND DISCUSSIONS

Doctor of Psychological Sciences E. Goziyev and Doctor of Pedagogical Sciences J. Ikramova, analyzing the process of independent thinking and its impact on perfection, note that the movement of independent thinking can consist of the following stages:

1. The emergence of the problem.
2. Understand the essence of the problem, problem, task.
3. The emergence of similar data or images.
4. Decrease in imagination and memory materials, the birth of assumptions (hypotheses).
5. Verify assumptions or confirm their validity.
6. The emergence of a new assumption.
7. Secondary test of hypotheses.
8. Problem, task, problem solving (solution).
9. Continuation of involuntary mental actions (relative duration of thinking), etc.

The development of students' thinking is one of the necessary conditions for solving the problems associated with the education of the individual in front of the system of continuing education. The less a person acts and thinks independently during his activity, the broader his understanding and the higher his intellect. Given that thought is expressed through speech, it is not difficult to understand how responsible the task of mother tongue education is. As criteria for the development of thinking skills in primary school students, we can show the following:

1. The ability to independently analyze the material being organized;
2. Ability to solve the problem;
3. Comparison, generalization, generalization of signs in events and processes;
4. Logical substantiation of ideas and concepts, fluent expression of ideas;
5. Be able to apply the acquired knowledge in practice.

Exercises that teach independent thinking in the primary grades regulate children's knowledge of things and the environment and teach them ways to think correctly. The task of independent thinking



exercises is to teach children to distinguish important and general from objects and events, to express them in words, to enrich their knowledge materially and mentally by teaching them a system of logical methods.

Exercises that teach independent thinking play an important role in children's vocabulary and overall language development, and are linked to vocabulary work and other language activities. For example:

1. Create a group of items related to the topic: outerwear (shirt, suit) and shoes (boots, shoes); such as pets and wild animals. The children ask, "What is this?" is asked to answer the question: *What is this? – A bus. What is a bus? Machine.*

2. List things of the same type and name them with a generalizing word. For example, how to name a table, chair, wardrobe in one word? (Furniture) 3. Separate those that do not belong to a group from the given items. For example, a pen, a pen, a ruler, an eraser, a chair is shown, students separate the learning tools, say that the chair is not included in the learning tool, it is furniture. Such an exercise can also be conducted as a month: given certain words, it is necessary to find the excess and explain why it is superfluous: swallow, sparrow, cat, music.

4. Divide subject names and words denoting symbols into groups. In this case, the words are given a mixture of teapot, ax, bowl, saw, plate. Students group and name dishes: teapot, bowl, ...; the name of the working tools: bowl, ax, ... The words denoting the sign of the object are also given mixed, the children divide the cake into groups (color, taste, shape, feature).

5. Generalization by contrast: swallows, sparrows, nightingales - birds, chickens, roosters, turkeys? (Birds.) These exercises should be meaningful, relate to students' experiences, teach them to think correctly, clarify and organize their knowledge.

Language is divided into lexical (word), syntactic (word combination and speech) and related speech levels. In this sense, the word combination is considered as a link from the lexical level to the syntactic level. A phrase is a lexical-grammatical unit that does not express a complete idea and thus differs from a sentence. The phrase is used in speech. Teaching children vocabulary is about working on an element of thought. The following types of exercises can be used to work on word combinations in elementary school:

1. Questioning the following word from the main word, determining the relationship of words. For example, Anvarjon reads well. Who (reads)? - Anvarjon. What does (Anvarjon) do? - reads. How (reads)? - Reads well - a phrase.

2. Compose phrases related to the study of word groups. When the word noun is used, with a noun and an adjective (my dear homeland), with a noun and another horse (school garden); when a verb is passed,

word combinations are formed with the noun and the verb (went to the movies, went to school, came home, read a book). A mistake made in composing a phrase also leads to a mistake in composing a sentence, so it should be avoided. Collecting phrases that allow children to make more mistakes allows them to create exercises to prevent mistakes. Working on word combinations helps to perform grammar, spelling and other exercises correctly. Therefore, it is necessary to move on to speech exercises related to the construction of speech and connected speech by working on the word combination in accordance with the purpose.

The "Grammar, Spelling, and Speech Development" section of the elementary school program clearly outlines the knowledge of syntax. In the amount of syntactic materials provided in the primary grades, the child is taught to compose, analyze and reconstruct speech not only in the native language classes, but also in other classes and in all school activities. Speech work exercises are very diverse and are classified according to the predominance of analysis and synthesis as well as the level of independence of the learners.

Exercises to work on speech over the superiority of analysis or synthesis are divided into two:

- 1) Analytical exercises, i.e analysis of a sentence taken from a ready-made text;
- 2) Synthetic exercises, i.e exercises aimed at creating independent speech.

Analytical exercises prepare the ground for synthetic exercises, which are performed in parallel or after synthetic exercises. Depending on the level of independence of students and the level of activity of the cognitive process, the exercises on speech are divided into three:

- 1) sample-based exercises;
- 2) Constructive exercises;
- 3) Creative exercises.

Sample-based exercises involve the practical acquisition of clear, well-structured syntactic devices, their internal connections, and their understanding of content. Among such exercises, analytical exercises, observation and listening to the speech, its flow is given an important place. Sample-based exercises include:

1. The simplest, most basic, but also the most necessary form of work on a sentence is reading (writing), working on intonation, expressiveness, explaining the basis and content of the sentence, and sometimes memorizing the sentence. Reading and observing a sentence can help you to improve your speech. Working on speech intonation helps to understand the content and connection of speech, to look at the pattern, to minimize and memorize it, to better understand the structure of speech. In this process it is necessary to pay attention to the separation of speech from speech according to



intonation, to express intonation completeness, intonation of intransitive, intransitive and emotional sentences, counting tone in compound sentences and unconnected compound sentences, connected compound intonation.

2. Question-based speech. In this case, the question is the basis for the answer (sentence construction) and serves as a "sample". The question gives not only its main content, but also a diagram of all its words and syntactic structure. For example: What did the children sweat in the garden? (Children pick apples in the garden). The questions are gradually complicated: if the children first made up a sentence by adding a word instead of a question, then they are forced to add a little more: What did the children do in the garden? (The children picked apples in the garden. The children picked apples in the garden and put them in baskets). Or "Where have the kids been? What did they do?" (The children were in the garden. They picked apples and put them in baskets). What do you know about hedgehogs? Why not break the bird's nest? such as.

Constructive exercises include exercises aimed at constructing a sentence and reconstructing it. Such exercises are based on grammatical understanding and rule. Types of constructive exercises are:

1. Make sentences from mixed words or text from random words. In this case, words can be given in three variants, depending on the structure of the grammatical material:

a) words are given in a ready-made form: fruit, in the garden, gardeners, sweats (Gardeners picked fruit in the garden);

b) Given the organized grammatical material, some words are given in the main form, others in the ready form. For example, the theme "Unity and multiplicity in horses" can be given in the form of cotton, field, child, sweat;

c) all words are given in the main form: ball, yard, child, play.

2. Separate the boundaries of sentences from the text without dots and capital letters. This exercise teaches children to distinguish the boundaries of sentences in their speech, to read and write sentences correctly.

3. Step-by-step spreading exercise with the help of questionnaires. For example: The birds came flying. Where did it fly from? The birds came flying from cold countries. Where did it fly to? Birds flew from cold countries to their little nests.

In creative exercises, students are less likely to speak freely. The following types of creative exercises are used in primary school:

1. A topic is given to compose a sentence, and students compose a sentence appropriate to the topic: "On a Sunny Day," "Our House," or "The Rabbit and the Hedgehog."

2. A picture of a thing or a picture with a plot is given, and students make one or more sentences based on the picture.

3. Two or three "base" words are given, and students form a sentence using these words. The key words are the words that need to be turned into an active children's dictionary.

5. CONCLUSION

In short, teaching students to develop thinking skills is especially relevant in the current era of radical changes in society because in our country there is a greater need than ever for highly confident, independent-minded, enterprising, highly qualified specialists. The role of subjects in the formation of personal qualities of students is invaluable. In this regard, especially mother language education has a great responsibility. Having the ability to develop students' thinking skills has a positive impact on their learning skills and competencies. Exercises that teach independent thinking in the primary grades regulate children's knowledge of things and the environment and teach them ways to think creatively.

REFERENCES

1. Baratov Sh. *Methods of studying the student's personality*. Tashkent Teacher's Publishing House 1995, 52.
2. Matchonov S., Gulomova H. *Organization of primary school lessons on the basis of pedagogical technologies*. Tashkent, Yangiyul Publishing House, 2008, 224.
3. Kasimova K., Matchonov S. *Methods of teaching the native language*. Tashkent Publishing House, 2009, 351.
4. Koziev F. *Management of students' learning activities*. Tashkent Teacher's Publishing House. 1988, 100.
5. Roziqov O., Mahmudov M. *Didactics of the native language*. Tashkent "Yangi asr avlodi", 2005, 387.
6. Azizkhoyayeva N.N. *Pedagogical technology and pedagogical skills*. - T.: TDPU. 2003. 174 p. p.92.
7. Aliyev A. *Creativity of students*. -Tashkent: Teacher, 1991. - 40 pages.
8. Amonashvili Sh.A. *Vospitatelnaya i obrazovatel'naya funktsiya otsenki i ucheniya shkolnikov*. - Moscow: Pedagogy, 1984.
9. Baratov Sh. *Ways to learn about a student*. - Tashkent: Teacher, 1992. - 62 pages.
10. Inogamova S. *Logical thinking // J. Primary education*. 2000. №2. - Pages 20-21.
11. Ishmuhamedov R.J. *Innovative technology education increase efficiency*. -TDPU, 2004. -35 p.
12. Kazanskiy N.G., Nazarova T.S. *Didactics*. - Moscow: Prosveshchenie, 1978.
13. Karimova V. *Psychology*. Tashkent: People's Heritage named after Qodiri Publishing House, 2002. -203 p.
14. Karimova V., Sunnatova R., Tadjibayeva R. *Independent thinking*. Tashkent: Sharq, 2000. 112 p.



INVESTIGATING THE FACTORS INFLUENCING INCIDENCE AND FATALITY OF COVID-19 IN INDIA

Ashi Lama¹

¹Assistant Professor,
Department of Economics,
Rajiv Gandhi University,
Itanagar (Arunachal Pradesh)

Amitava Mitra²

²Pro Vice-Chancellor
and Professor of Economics,
Rajiv Gandhi University,
Itanagar (Arunachal Pradesh)

ABSTRACT

This paper examines the factors influencing inter-State variation in incidence and fatality of Covid-19 in India. The study is based on State level cross-sectional data as on 30 April, 2020. The ordinary least square method of regression analysis was applied to obtain the results. The analysis showed that at the global level incidence was the highest in Spain, Italy and United States of America and fatality was the highest in France, United Kingdoms and Italy. India was found to have low incidence of the disease so far. But exponential growth rate of cases, despite lockdown, was 10.80 % during March 5, 2020 to April 30, 2020. The western region of the country was found to be the most affected by the Covid-19 pandemic. Among the States, incidence was the highest in Delhi and Maharashtra. Whereas the fatality was the highest in Meghalaya, Punjab and Madhya Pradesh. The results of regression analysis showed that incidence was positively affected by population density and international exposure and fatality was found to be negatively influenced by health care infrastructure. The study suggests that there is need to adopt stringent population control policy and reduce international exposure to minimise the incidence of Covid-19. The government should focus on strengthening of healthcare infrastructure to reduce the fatality of Covid-19.

KEYWORDS: Covid-19 pandemic, lockdown, incidence, fatality, regression analysis

INTRODUCTION

The novel coronavirus (Covid-19) which was first reported in Wuhan city of China in November, 2019 spread across the world to become a global pandemic. It has threatened the human population in the entire world. The virus named as SARS-Cov-2 causes respiratory diseases in human beings from common cold to more rare and serious diseases such as the Severe Acute Respiratory Syndrome (SARS) and the Middle East Respiratory Syndrome (MERS), both of which have high mortality rates (WHO 2020). The disease is one of most dangerous diseases in the world. The UN Secretary General described it as the worst crisis being faced by mankind since World War-II. It may lead to enhanced instability, unrest and enhanced conflict (The Economic Times, April 1, 2020). In fact, it is the greatest pandemic after the Great Influenza (popularly known as Spanish flu) of 1918, in which millions of global population were affected within a very short span of time (India Today, April 30, 2020). There is a high risk associated with this disease as it is

highly fatal and contagious. The infection of Covid-19 was first detected in Wuhan, the capital of Hubei province of China in November 2019 when the Wuhan hospital reported that there was a cluster of unknown pneumonic cases related to Huanan Seafood Market. It is believed to have been transmitted from wild animal (bat) to human being but its zoonotic source is unknown (WHO, March 2020). A 55-year old from Hubei province could be the first person to have contacted the viral infections on November 17, 2019. Subsequently, Wuhan became the epicenter and it spread rapidly in china and abroad (The Economic Times, March 13, 2020). On January 8, 2020, a new coronavirus was identified as the cause of the pneumonia by the National Health Commission of China.

The disease rapidly spread to most of the countries of the world and became a global pandemic. The lightning spread of the disease across the world is due to very high degree of global economic integration and boon in the international movement of people



(Harilal 2020). The global Covid-19 cases exceeded 2.6 million with over 1.84 lakh fatalities across over 200 countries which continue to be wretched by its havoc (Kant 2020). The most affected regions in the world are the European Region (47.84 %) followed by the Regions of the Americas (39 %) (Situation Report, WHO, 2020). The countries which have a high incidence of disease are Spain, Italy, United States of America (USA), United Kingdom, Germany, France, Turkey and Russia. The Covid-19 pandemic has ruptured the world system. The economic impact of the pandemic would be enormous as it has stopped the engines of the world economy at once leading to loss in production, income and employment (Harilal 2020). According to the International Monetary Fund (IMF) projections the global economic growth in 2020 is likely to be -3 % (Gopinath 2020). The world trade in goods is projected to decline by 13 % to 32 % in 2020 (WTO 2020). Thus, the pandemic is going to inflict a deep impact on the world economy, if it is not contained soon.

India has also been facing the problem of Covid-19 since January 2020. The first case of Covid-19 in the country was reported in Kerala on 30th January, 2020. The number of cases in the country has been increasing with the passage of time. However, the growth in the number of cases in India was checked to some extent due to one-day voluntary public curfew (*Janta* curfew) on March 22, 2020 and the implementation of the 21-day nationwide lockdown by the Government of India from the mid night of March 24, 2020. The lockdown was further extended by another 14 days till May 3, 2020, in view of the growing number of infections. It is argued that nationwide lockdown has helped the country to reduce the incidence of the disease. The lockdown had slowed the rate of transmission and increased doubling time (The Hindu, April 25, 2020). Further, the infection rate in India so far, is reported to be 1.7 which is significantly much lower than that in other affected countries. This could be due to India's climatic conditions; high temperature and high relative humidity. SARS virus viability was found to be rapidly lost at higher temperatures and higher relative humidity (Chan *et al* 2011). The increase in cases during the lockdown period can be attributed to violation of lockdown by the people in certain areas (The Hindustan Times, April, 15). It is reported that India has responded more stringently to tackle the pandemic than other countries. However, despite the measures taken by the government, the country is yet to flatten the curve of Covid-19 infections. Since the number of cases was not going down continuously and following a zigzag pattern, the government extended the lockdown

for a further period by two weeks till May 17, 2020 to contain the coronavirus outbreak in India (The Economic Times, May 4, 2020). In India, the most affected States are Maharashtra, Gujarat and Delhi. The number of cases has been fluctuating with the passage of time. Hence, there is a high uncertainty about the trend in cases and the shape of the curve, incidence and fatality of Covid-19. Since the country is still battling with the problem of Covid-19, there is a need to identify the factors which are affecting the incidence and fatality of Covid-19 in the country. Keeping this in view, the present paper is an attempt towards a statistical analysis of the determinants of incidence and fatality rate of Covid-19 in India by using the cross-sectional data of Indian States. The study is expected to help the Government in formulating policy and adopting suitable strategy to combat the Covid-19 pandemic and similar type of epidemics in future. The study is based on the following objectives: to analyse the incidence, recovery and fatality rate of Covid-19 in various States of India and to examine the determinants of incidence and fatality rate of Covid-19 in the country.

DATA SOURCE AND METHODOLOGY

The study was mainly based on secondary data. The data were collected from various sources like the website of the Ministry of Health and Family Welfare, Government of India, RBI; Census of India 2011; Indian Tourism Statistics, 2019. The data on Covid-19 cases, recovery rate and deceased rate were collected from the the website of World Health Organisation and mygov.in. The data on population density, literacy rate were collected from the Census of India 2011. The data on health infrastructure were collected from the Health and Family Welfare Statistics of India 2017. The study used cross-sectional data of Indian States to examine the determinants of inter-State variations in incidence and fatality rate of Covid-19. The data were analysed by applying various statistical techniques. The data were processed by using *MSEXCEL* the *STATA*.

The growth in Covid-19 cases was computed by fitting the exponential growth function which is given as follows.

$$Y = ae^{rt}$$

Where, Y is the Covid-19 cases and r is the exponential growth and t is the time.

Taking log on both side, r can be estimated as

$$\text{Log}Y = \text{log}a + rt$$

The incidence of Covid-19 was calculated as the number cases per lakh of population.

$$\text{Incidence} = \frac{\text{Number of cases}}{\text{Total Population}} \times 100000$$



The Fatality was calculated as the number of deceased per 1000 confirmed cases.

$$Fatality = \frac{\text{Number of deceased}}{\text{Total confirmed cases}} \times 1000$$

In order to examine the determinants of incidence and fatality, a linear regression model was applied.

The incidence of Covid-19 was taken to be a function of public awareness, population concentration and international exposure. It was difficult to get exact data of the indicators. Hence, the study had to take proxy indicators. For example, literacy rate (LR) was taken to be an indicator of public awareness and population density (PD) and percentage of urban population (URP) were taken as indicators of population concentration. The respective State's percentage share in total foreign tourist (FT) arrivals in the country was taken as the proxy variable of its international exposure. This can be expressed as follows:

$$Incidence (IR) = f(LR, PD, URP, FT) \dots\dots (1)$$

The above function was estimated by applying the Ordinary Least Square method. The model is specified as below.

$$Incidence (IR) = \beta_0 + \beta_1 LR + \beta_2 PD + \beta_3 URP + \beta_4 FT + \epsilon \dots\dots (2)$$

Where ϵ is the error term

The variable literacy rate is expected to negatively influence the incidence. The variables population density, urbanization and international exposure are expected to positively influence the incidence.

The fatality of Covid-19 was taken to be a function of public awareness, ability to spend in treatment and health care facilities (health workers and health infrastructure). The literacy rate (LR) was again taken as an indicator of public awareness while ability to spend was measured in terms of per capita income (PCI) of a State. The health worker was measured in terms of number of doctors and nurses per lakh of population (HW) and health infrastructure was measured in terms of number of hospitals per lakh of population (HSP). The variable per capita income is likely to negatively influence the fatality as people with

higher income are expected to have greater ability to spend in better health care. However, the initial regression showed that PCI was not having the expected sign. The high fatality rate of Covid-19 in developed countries also showed that income level was not an influencing factor. Hence, this variable was dropped and regression was done with three variables. In functional form, it can be expressed as follows:

$$Fatality (FR) = f(LR, HW, HSP) \dots\dots (3)$$

The above function was estimated by applying the Ordinary Least Square method. The model is specified as below.

$$Fatality (FR) = \beta_0 + \beta_1 LR + \beta_2 HW + \beta_3 HSP + \epsilon \dots\dots (4)$$

Where ϵ is the error term

The variable literacy rate is expected to negatively influence the fatality, as educated people are more likely to take proper precautions and avail health care facilities. The variable number of health worker is also likely to negatively affect the fatality rate. Finally, the variable number of hospital is also expected to negatively influence the fatality rate.

INCIDENCE AND FATALITY OF COVID-19: A GLOBAL ANALYSIS

The Covid-19 has affected most of the countries in the world. The most affected country is the United States of America which has highest number of confirmed cases followed by Spain and Italy (table 1). India has registered 33050 cases as on April 30, 2020 till 10.00 AM (WHO 2020). However, the actual number of cases does not properly reflect the incidence of the disease as the countries vary in population size. Hence, incidence of disease was measured in terms of number of cases per lakh of population. The incidence of disease was found to be the highest in Spain (459 cases per lakh of population) followed by Italy (344 per lakh of population) (Figure 1).



Table 1: Incidence and Fatality of Covid-19 in Selected Countries (As on 30th April up to 10.00 AM)

Countries	Confirmed cases	Deceased	Incidence (cases per lakh population)	Fatality (deceased per 1000 population)
United States of America	1003974	52428	311.62	52.22
Spain	212917	24275	459.39	114.01
Italy	203591	27682	342.57	135.97
United Kingdom	165225	26097	251.14	157.95
Germany	159119	6288	194.25	39.52
France	127066	24054	196.33	189.30
Russian Federation	106498	1073	73.97	10.08
China	84373	4643	5.98	55.03
India	33050	1074	2.50	32.50

Source: Situation Reports-101, World Health Organisation

The incidence of Covid-19 in the United States of America was 311.62 and United Kingdom had the incidence of 251.14 per lakh of population. The incidence of Covid-19 in India was 2.50 persons per lakh of population which was very low compared to the USA and European countries. This shows that so far the country has been able to contain the spread of Covid-19. This can be attributed to the stringent measure of 21-day nationwide lockdown implemented in the country from the mid-night of March 24, 2020 (The Hindu, March 24, 2020). The lockdown was necessitated as the death toll had risen to 12 on March

24, 2020. The lockdown was extended by another 19 days till May 3, 2020 as the number of cases in the country surged past the ten thousand mark (The Economic Times, April 1, 2020). The lockdown is likely to have a huge adverse impact on the economy. However, it has helped the country to minimize the rate of infections. As a result, India is still having lower incidence of Covid-19. On the other hand, the number of cases are gradually rising with the passage of time. Hence, there is a need to strictly implement the various guidelines of lockdown to save the people from the deadly disease. ‘

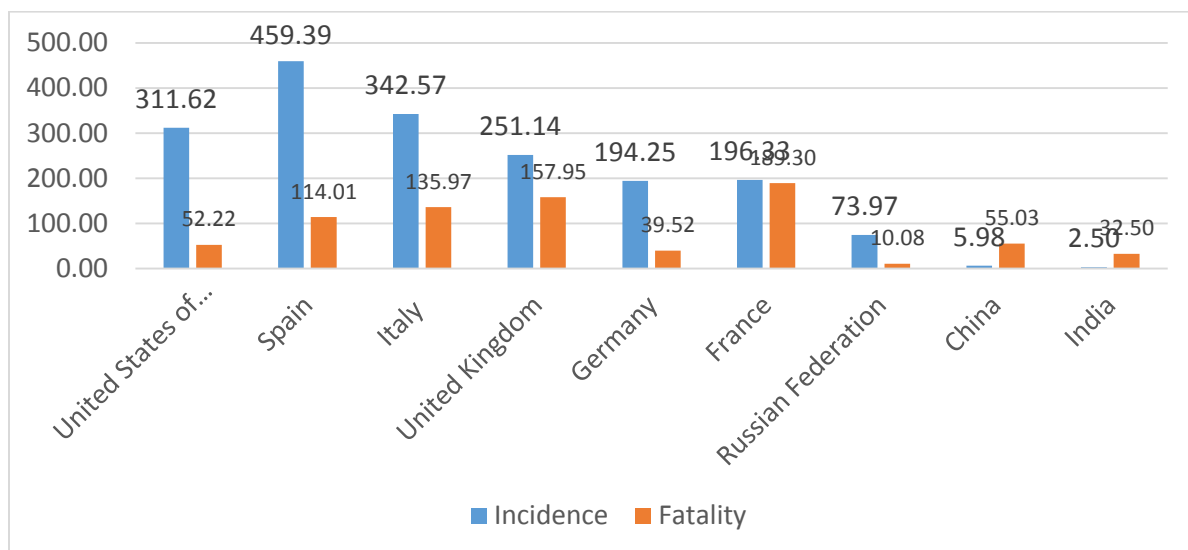


Figure 1: Incidence and fatality of Covid-19 in selected countries.



Among the selected countries, the fatality was the highest in France (189 per 1000 cases) followed by United Kingdom (157.95 per 1000 cases) and Italy (135.97 per 1000 cases) (Figure 1). The fatality was the lowest in Russian Federation (10 per 1000 cases) followed by India (32.50) and Germany (39.52). The table 1 shows that there is a wide variation in fatality across the countries which could be due to differences in measures adopted to contain the pandemic, differential immunity of population, population composition and variations in health care facilities.

The analysis shows that the developed countries which are opened to a greater extent for international trade, movement of tangible goods and tourism are deeply affected by the Covid-19. On the other hand, the the small and less developed countries like, Bhutan, Nepal, Myanmar, Somalia etc. with limited international exposure were the least affected countries.

TREND AND GROWTH IN COVID-19 CASES IN INDIA: AN INTER-STATE ANALYSIS

The Covid-19 pandemic came to India relatively late. When China was fighting a battle against the disease in

December 2019, India had no case of Covid-19 and the country seemed to be safe from it. Since the country is opened to external sector for trade and tourism, it was difficult for it to remain unaffected without stringent measures. The country got the first case of Covid-19 on January 30, 2020 when a person in Kerala was tested positive. In terms of number of cases, Maharashtra is now the worst affected, followed by Tamil Nadu. The day-wise number of confirmed cases and cumulative cases are shown in figures 2 and 3.

The number of cases detected on March 15, 2020 was 26. During the period March 15, 2020 to March 30, 2020, the lowest number of case was detected on March 7, 2020 (4 cases) and the highest on April 29, 2020 (1975 cases). Figure 2 shows the rising trend in the number of confirmed cases each day with some fluctuations during the period under consideration. The exponential growth of confirmed cases during the period March 15, 2020 to March 30, 2020, was 10.80 %. This implies that confirmed cases were growing at double digit everyday on an average, which is an alarming sign for the country. The growth in cases, despite lockdown, indicates that there is a high risk of witnessing community level transmission, if guidelines are not adhered to by the people.

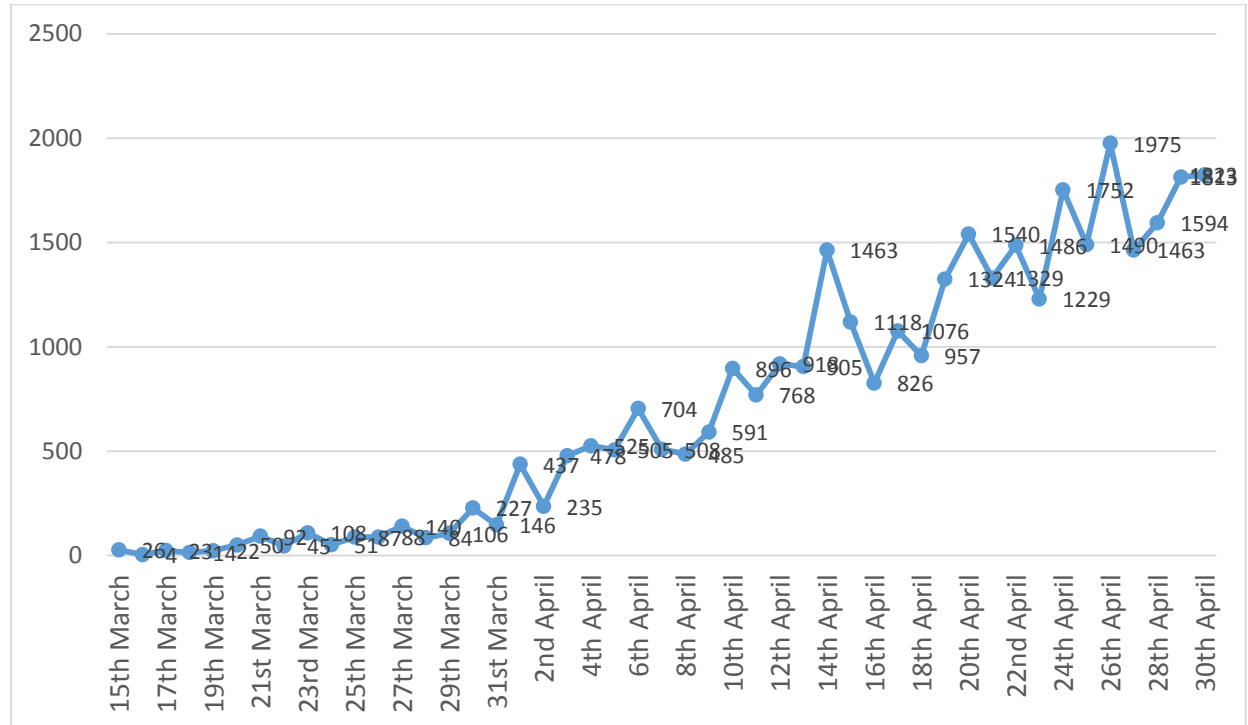


Figure 2: Day-wise confirmed cases in India

Source: mygov.in/covid-19

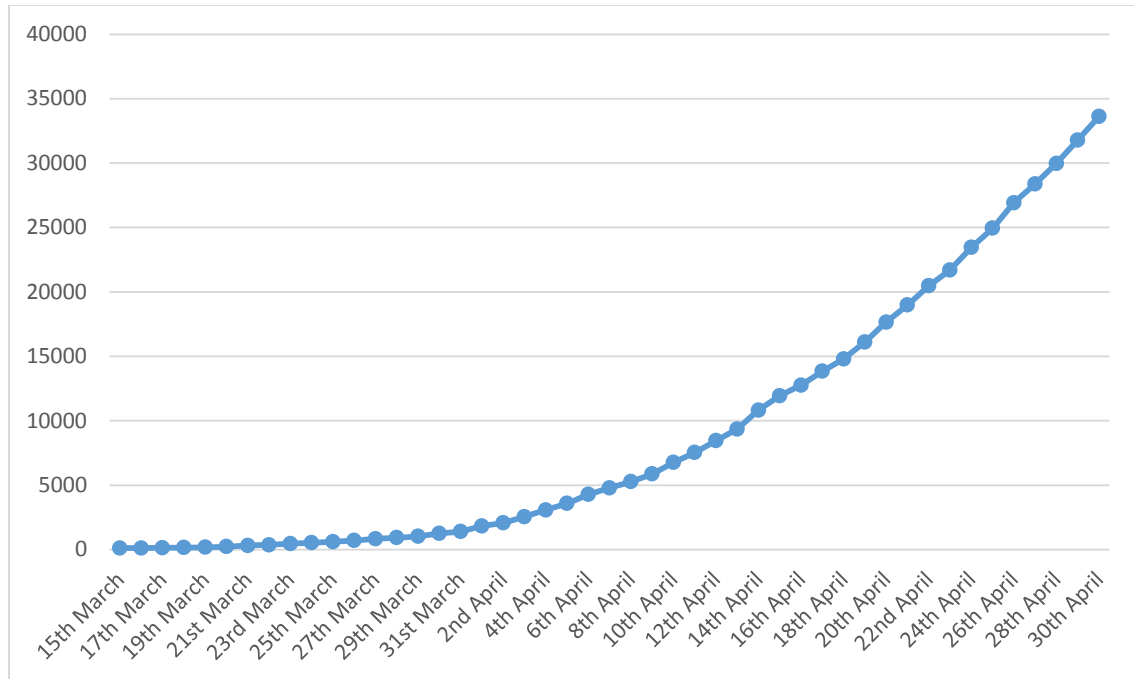


Figure 3: Trend in Covid-19 Cases in India (Cumulative number of cases).

Source: mygov.in/covid-19

Figure 3 shows the rising cumulative number of cases in India. The cumulative number of case increased from 110 on March 15, 2020 to 3360 cases on April 30, 2020. The cumulative curve has an upward bend from March 31, 2020 which shows that the number of cases has increased faster. During the whole of April 2020, the curve has an upward trend. This implies that though lockdown has reduced the rate of infections, it could not fully contain the spread of Covid-19. This indicates

that there are many socio-economic factors which are affecting the spread of Covid-19 in the country.

The incidence, recovery rate and fatality of Covid-19 across States and Union territories shows that the incidence of the disease was the highest in Delhi (20.53 cases per lakh population) followed by Maharashtra (8.82 cases per lakh population) and Andaman and Nicobar (8.69 cases per lakh population). The details are given in table 2.

Table 2: Incidence, Recovery Rate and Fatality of Covid-19 across States/Union Territories in India (As on 30th April, 2020 up to 5.00 PM)

States/UTs	Incidence (cases per lakh population)	Recovery Rate (%)	Fatality (per 1000 cases)
Delhi	20.53	31.75	16.28
Maharashtra	8.82	16.07	43.57
Andaman and Nicobar	8.69	45.45	0.00
Gujarat	6.76	12.91	48.26
Chandigarh	5.31	30.36	0.00
Jammu and Kashmir	4.63	33.05	13.77
Madhya Pradesh	3.66	17.33	48.87
Rajasthan	3.55	31.50	20.92
Tamil Nadu	3.00	55.97	12.49



Andhra Pradesh	1.66	22.88	22.10
Kerala	1.48	74.55	8.08
Punjab	1.29	25.21	53.22
Haryana	1.22	67.42	9.68
Uttar Pradesh	1.10	23.29	17.70
Karnataka	0.91	40.04	37.70
West Bengal	0.83	16.36	29.02
Puducherry	0.64	62.50	0.00
Himachal Pradesh	0.58	62.50	25.00
Uttarakhand	0.54	65.45	0.00
Goa	0.48	100.00	0.00
Meghalaya	0.40	0.00	83.33
Bihar	0.39	16.13	4.96
Jharkhand	0.32	17.76	28.04
Odisha	0.31	30.47	7.81
Chhattisgarh	0.15	89.47	0.00
Assam	0.13	69.05	23.81
Mizoram	0.09	0.00	0.00
Manipur	0.07	100.00	0.00
Arunachal Pradesh	0.07	100.00	0.00
Tripura	0.05	100.00	0.00
Ladakh	NA	72.73	0.00
Telangana	NA	36.26	25.69
All India	2.78	24.91	31.38

Source: Ministry of Health and Family Welfare, Government of India

Figure 4 clearly depicts the incidence of Covid-19 in different States and Union Territories of India. The incidence of Covid-19 was found to be the lowest in hilly States of North East India, like Arunachal Pradesh, Mizoram and Manipur. In fact, Sikkim and Nagaland have not reported any case so far. The inter-State variation in incidence of Covid-19 shows that

densely populated and highly exposed States/Union territories were greatly affected by the disease and least densely populated and isolated States of India remained more or less unaffected by the disease. This implies that isolation and remoteness have acted as a boon and a shield against Covid-19.

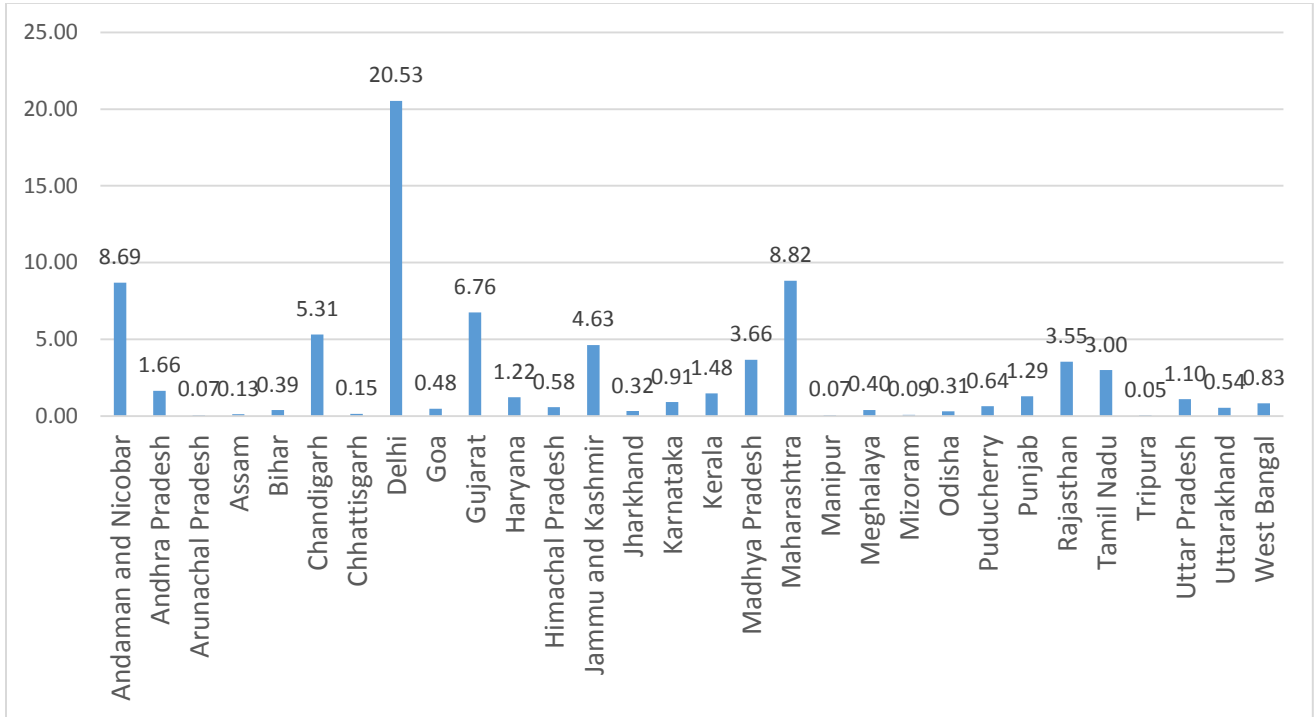


Figure 4: Incidence of Covid-19 in various States/Union Territories of India (As on 30th April, 2020)

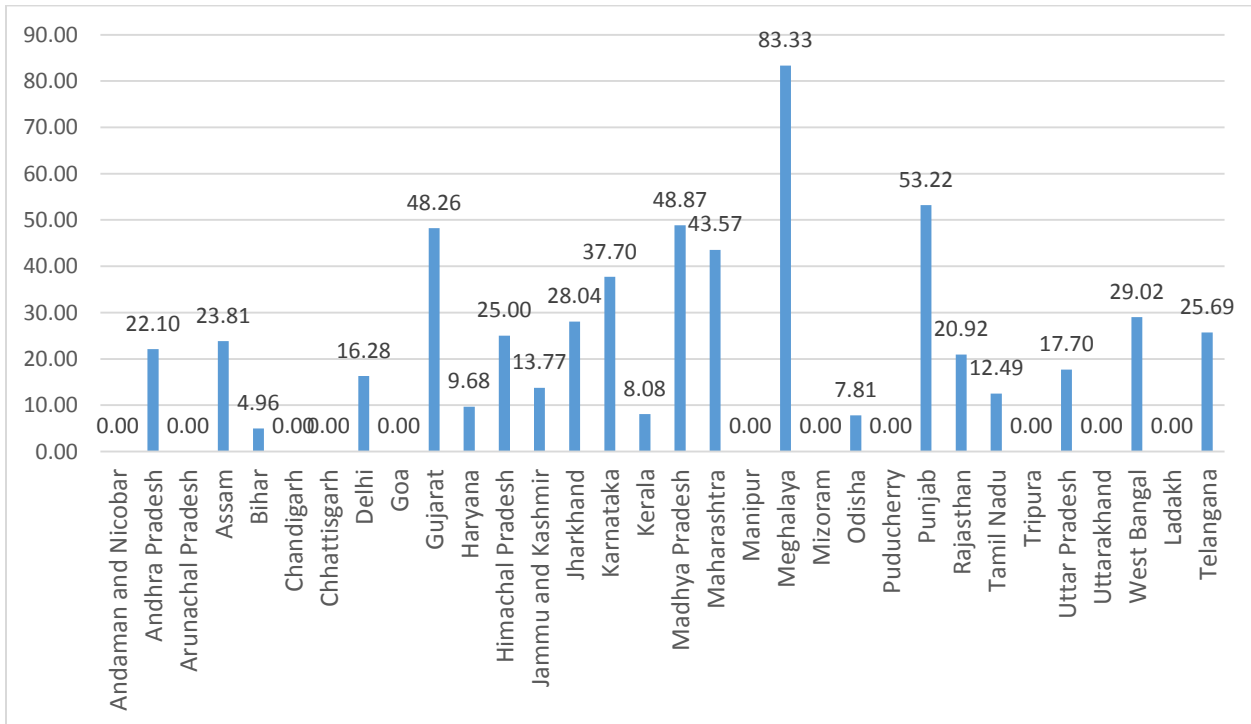


Figure 5: Fatality of Covid-19 in various States/Union Territories of India (As on 30th April 2020)



The recovery rate from Covid-19 was found to be 100 % in Goa, Arunachal Pradesh, Manipur and Tripura. It was 89.47 % in Chhattisgarh and 72.73 % in Ladakh. The most affected areas Delhi and Maharashtra showed the recovery rate to be 31.75 % and 16.07 % respectively (Table 2).

The fatality rate is a measure of the severity of a disease. It is measured as the proportion of deaths from a certain disease per 1000 confirmed cases for a certain period of time. In order to examine the severity of Covid-19 in various States of India, fatality rate was computed. The fatality rate in different States are depicted in figure 5. The fatality rate was found to be the highest in Meghalaya (83.33 per 1000 confirmed cases) followed by Punjab (53.22), Madhya Pradesh (48.87), Gujarat (48.26) and Maharashtra (43.57). It is quite encouraging to note that there was no fatality of Covid-19 till April 30, 2020 in Andaman and Nicobar Islands, Arunachal Pradesh, Chandigarh, Chhattisgarh,

Goa, Manipur, Mizoram, Ladakh, Tripura, Puducherry and Uttarakhand (Table 2).

INCIDENCE AND FATALITY OF COVID-19: A REGIONAL ANALYSIS

The regional analysis was done to identify the regions which are more vulnerable to the disease. The analysis shows that incidence of Covid-19 in India is the highest in Western region (6.75 persons per lakh population) followed by the Northern region (5.32 persons per lakh population). This could be due to greater international exposure and high population density of these regions. For instance, Maharashtra, Delhi and Rajasthan had very high share in foreign tourist arrivals in the country (GoI, 2019). While Delhi and Chandigarh had the highest density of population in the country (GoI, 2011). The details are given in table 3.

Table 3: Region-wise Incidence and Fatality in India (As on 30th April 2020 up to 5.00 PM)

Regions	Incidence (no. of cases per lakh population)	Recovery rate (%)	Fatality (no. of deceased per 1000 cases)
Western Region	6.75	17.61	41.36
Northern Region	5.32	34.15	18.11
Southern Region	2.23	44.26	19.34
Central Region	1.61	21.07	34.10
Eastern Region	0.52	19.85	22.90
North Eastern Region	0.13	56.67	33.33
All India	2.78	24.91	31.98

Source: Ministry of Health and Family Welfare, Government of India

The incidence of Covid-19 was the lowest in North Eastern region of India. This can be attributed to the fact that region has relatively less accessibility and less exposure to the outside world. At the same time, the density of population is also quite low in the region. The recovery rate was also found to be the highest in North Eastern region (56.67 %) which is a remarkable achievement, despite being poor in health infrastructure. This may be due to its pollution free and ecofriendly climatic conditions as well as better immunity of the people owing to consumption of organic food. But it needs to be verified through a proper scientific research. The Southern region had the recovery rate of 44.26 % which can be ascribed to its better health care infrastructure. Kerala, Puducherry and Tamil Nadu had the recovery rate of 74%, 62% and 56% respectively (Table 2). The high recovery rate in

Kerala is ascribed to its highly advanced social indicators and participatory governance (Roy and Dave 2020). The recovery rate was found to be the lowest in Western region (17.61 %).

The fatality of Covid-19 was the highest in Western Region (41.36 deceased per 1000 cases) followed by Central region (34.10 deceased per 1000 cases). It was the lowest in Northern region (18.11 deceased per 1000 cases) (table 3). The relatively low fatality in Northern region could be because of better health care facilities and public awareness. For instance, Delhi and Chandigarh had the highest number of health worker per lakh of population (GoI, 2017). At the same, literacy rate is quite high in the States of this region.

The regional analysis revealed that Western region of India had both the higher incidence and



fatality. At the same time, the same region had lower recovery rate. This implies that Western region of India is at a greater risk from Covid-19. There is a need to identify the factors responsible for these in the Western region through more micro level study.

DETERMINANTS OF INTER-STATE VARIATIONS IN INCIDENCE AND FATALITY OF COVID-19

The analysis of data shows that the cases of Covid-19 has been gradually rising in India, despite adopting stringent measures of a nationwide lockdown and social distancing. Though the incidence is low at the national level as compared to other affected countries, there has been a wide inter-State variation in both incidence and fatality of the disease. The variations could be attributed to different socio-economic conditions and health care facilities. The identification of factors affecting incidence and fatality of the disease can help the decision makers in making better strategy to combat the disease in different States and regions of

the country. In this regard, an attempt is made to examine the socio-economic variables which are determining the inter-State variations of incidence and fatality of Covid-19 in the country.

As mentioned in the methodology, four variables namely, literacy rate, population density, percentage of urban population and percentage share in foreign tourists have been taken as factors influencing the incidence of Covid-19. The test for multicollinearity showed a strong correlation between the variables population density (PD) and percentage of urban population (URP). Hence, the variable percentage of urban population (URP) was dropped and the regression was run with three explanatory variables; literacy rate (LR), population density (PD) and percentage share in foreign tourist (FT). The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity indicated presence of this problem (Table 4). Hence, the regression was run with robust standard error to remove this problem.

Table 4: Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

Ho: Constant Variance

Variables: fitted values of Incidence

Chi2	8.18***
Prob>Chi2	0.0042

Note: ***denotes significant at 1 % level.

The result of the regression for the determinants of Covid-19 in India is given in the table 5.

Table 5: Regression result for determinants of Incidence of Covid-19.

Variables	Coefficient	Robust Std. Error	t-value	p-value
Literacy rate (LR)	0.026	0.05899	0.46	0.648
Population Density (PD)	0.0007*	0.000385	1.86	0.079
Foreign Tourist (FT)	0.176*	0.09859	1.79	0.086
Constant	-1.37	4.15794	-0.33	0.744
Number of Obs.	30			
F-Statistic	2.99**			
Prob>F	0.0494			
R-Square	0.44			

Note: * and ** denote significant at 10 % and 5 % level respectively.

The result in table 5 shows that F-Statistic is significant at 0.05 level which indicated a good fit of the model. The R-square is 44 % which is fairly high in this situation where the disease incidence depends on a number of factors. The variables, population density and share in foreign tourist had the expected signs. The analysis showed that out of three variables, two

variables i.e. population density (PD) and percentage share in foreign tourist arrivals (FT) were found to be statistically significant. Both the variables were found to be positively affecting the incidence of the disease and were significant at 0.10 level. The concentration of population and international exposure were significant variables in determining the inter-State variations in



incidence of Covid-19 on the basis of availability of secondary data at State level. This implies that densely populated areas of the country are likely to suffer more from Covid-19. At the same time, the States and areas which are internationally more exposed, are likely to have more incidence of the disease. The variable, literacy rate was expected to have a negative sign as educated people are likely to take proper precautions to prevent the infection. However, it was found to be positive but it was not significant.

The fatality of a disease depends on a number of factors. In this study, the fatality of Covid-19 was taken to be a function of literacy rate, health workers per lakh population and hospitals per lakh population. The VIF test for multicollinearity showed that there was no such problem (Table 6). The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity indicated the presence of this problem (Table 7). Hence, the regression was run with robust standard error to remove this problem.

Table 6: VIF Test for Multicollinearity

Variables	VIF	1/VIF
Literacy rate (LR)	1.73	0.577
Health Workers (HW)	1.68	0.594
Hospitals (HSP)	1.04	0.963
Mean VIF	1.48	

Table 7: Breusch-Pagan/ Cook-Weisberg Test for Heteroskedasticity

Ho: Constant Variance

Variables: fitted values of Fatality

Chi2	3.58**
Prob>Chi2	0.054

Note: **indicates significant at 5 % level.

The result of the regression for determinants of fatality of Covid-19 in India is presented in table 8. All the explanatory variables were found to have expected signs.

Table 8: Regression result for determinants of Fatality of Covid-19

Variables	Coefficient	Robust Std. Error	t-value	p-value
Literacy rate (LR)	-0.577	0.4417	-1.31	0.203
Health Workers (HW)	-0.038	0.3156	-1.22	0.233
Hospitals (HSP)	-1.662**	0.6904	-2.41	0.023
Constant	76.69**	32.899	2.33	0.028
Number of obs.	30			
F-Statistic	3.34**			
Prob>F	0.034			
R-Square	0.23			

Note: ** denote significant at 5 % level.

The result of regression analysis in table 8 shows that the model is a good fit as indicated by the F-Statistic which is significant at 0.05 level. The R-square is 23 %. The low value of R-square indicates that there are many other factors which influence the fatality of

the disease. The result showed that out of three variables only one variable i.e. number of hospitals per lakh population (HSP) was found to be statistically significant. The variable was found to be negatively affecting the fatality of Covid-19 and it was significant



at 0.05 level. This implies that the States having better health care infrastructure would have lower fatality rate. Hence, there is a need to invest more in strengthening health care facilities and improve the density of hospitals to mitigate the fatality of such pandemic in future. The variables, literacy rate (LR) and health workers per lakh population (HW) were also found to be negatively affecting the fatality of Covid-19. But they were not significant at any level. However, since these variables had negative influence on fatality, improvement in these indicators are also likely to help in reducing the fatality rate in future.

SUGGESTIONS

On the basis of the findings of the study, the following policy suggestions can be made for combating the pandemic in the country.

1. There is a need to strictly implement the government guidelines by the implementing authority. The growing number of cases, despite two phases of lockdown, indicates that there had been a violation of lockdown in some pockets of the country.
2. The region-wise analysis of the pandemic showed that Western region of the country is the worst affected one. The region has both high incidence and high fatality compared to other regions. At the same time, recovery rate was also low. Hence, there is need to give additional attention to this region.
3. The incidence of the pandemic was positively linked with population density. This calls for adopting more stringent population policy to control population growth and reduce population concentration. As Malthus (1798), a renowned political economist in his theory population stated that people need to control their numbers otherwise nature would control them.
4. International exposure was also found to be positively affecting the incidence of Covid-19. Hence, there is a need to adopt a suitable policy to minimize international exposure for a certain period.
5. The fatality of the pandemic was found to have negative relationship with health care facilities. Hence, there is a need to invest more in building health care facilities in various States of the country. India spent around 5 % on its GDP of health sector (4.7 % in 2014 as per WHO Statistics) which is much lower than that in other countries. In fact, it is high time to entrance investment on public health for

making the people healthy and fight against the deadly diseases.

CONCLUSION

The Covid-19 pandemic has emerged as a great threat to the existence of mankind on the planet earth. The disease which was first detected in Wuhan, China in November 2019 engulfed almost the entire world within a short span of time, killing lakhs of people. It did not spare even the most powerful and highly developed countries. India came under its grip in January end, and since then the number of cases has been growing everyday. Despite lockdown and social distancing measures, the curve is yet to be flattened. The exponential growth of confirmed cases in India during March 15, 2020 to April 30, 2020 was 10.80 %. The analysis of the incidence and fatality at global level showed that incidence of the pandemic in the highest in Spain, Italy and USA. Incidence of the pandemic in India so far is low which is a remarkable achievement. The fatality of the pandemic was the highest in France, United Kingdom, Italy and Spain. The high fatality rate in developed countries, with improved health care facilities and high levels of income indicates that there are other factors which determine the fatality of Covid-19 at the global level. The differences in immunity level of population of different countries could be one such factor but needs scientific investigation. The analysis of the inter-State variations in incidence and fatality rate in India revealed that the densely populated and urbanized States like Delhi, Maharashtra and Gujarat. The fatality rate was high in Meghalaya, Punjab, Madhya Pradesh, Gujarat and Maharashtra. The Western region of the country was found to be more severely affected as it had both high incidence and high fatality.

The result of the regression analysis showed that inter-State variations in incidence of the Covid-19 was explained by the literacy rate as a proxy of public awareness, population concentration and international exposure. The incidence was positively linked with population concentration and international exposure. The fatality rate was found to be negatively linked with public awareness, health workers and health infrastructure (hospitals). The number of hospitals was found to be statistically significant. The findings of the study indicate that there is a need to strengthen the health care infrastructure in all the States which have inadequate health care facilities. It is also important to improve awareness among the people about the pandemic and strictly implement the guidelines to win the battle against the invisible enemy of mankind.

Thus, the present study raises a number of vital issues which can be answered more satisfactorily



with the help of further research, preferably at micro level.

REFERENCES

1. Chan, K H, Malik, J S, Peiris, Lam S Y, Poon, L L M, Yuen, K Y and Seto, W H (2011). *The Effects of Temperature and Relative Humidity on the Viability of the SARS Coronavirus*, *Advances in Viorology*, 2011.
2. Gopinath, Gita (2020). *The Great Lockdown: Worst Economic Downturn since the Great Depression*, 14 April, <http://blogs.imf.org/2020/04/14>.
3. Government of India (2011). *Census of India 2011*, Ministry of Home Affairs, Government of India.
4. Government of India (2017). *Health and Family Welfare Statistics of India 2017*, Ministry of Health and Family Welfare, Government of India, New Delhi.
5. Government of India (2019). *Indian Tourism Statistics 2019*, Ministry of Tourism, Government of India.
6. Harilal, K N (2020). *World Economy and Nation States Post Covid-19*, *Economic and Political Weekly*, 55 (18).
7. India Today (April 30, 2020): *Covid-19 and Forgotten Lesson from Spanish Flu that Killed Four Crore People*, www.indiatoday.in
8. Kant, Amitabh (2020). *Covid-19: Trend in India and the World*, Report of NITI AYO, April, 2020.
9. Malthus, T Robert (1798). *An Essay on the Principle of Population*, J. Johnson, London.
10. RBI (2019). *Handbook of Statistics on Indian Economy 2019*, Reserve bank of India.
11. Roy, Aruna and Kohli, D S (2020). *When People and Government come Together: Analysing Kerala's Response to the Covid-19 Pandemic*, *Economic and Political Weekly*, Vol. 55 (18).
12. *The Economic Times* (April, 1, 2020). *The covid-19 Pandemic most Challenging Crisis since Second World War: UN Chief*, www.economicstimes.com
13. *The Economic Times* (March 13, 2020). *First Covid-19 Case can be Traced Back to November 17 in China's Hubei Province*, www.economicstimes.com
14. *The Economic Times* (May 4, 2020). *Lockdown Extended by Two Weeks, India Split into Red, Green and Orange Zones*, www.economicstimes.com
15. *The Hindu* (April 25, 2020). *No New Covid-19 Cases after May 16*, www.thehindu.com
16. *The Hindustan Times* (April 15, 2020). *New Covid-19 Count Hints Delhi Close to Turning a Corner on Tablighi Jamaat Cases*, www.thehindustantimes.com
17. WHO (2020). *Origin of SARS-CoV-2*, World Health Organisation, March 26, 2020.
18. WHO (2020). *Situation Report-101*, World Health Organisation, April 30, 2020.
19. WTO (2020). *Trade Set to Plunge as Covid-19 Pandemic Upends Global Economy*, *Trade Forecast 2020*, World Trade Organisation.
20. Websites
21. <https://www.mohfw.gov.in>
22. <https://www.mygov.in/covid-19>
23. <https://www.who.int>



CARBONACEOUS NANOMATERIALS FOR WATER POLLUTION REMEDIATION: AN OVERVIEW

Dr. Shweta Vyas

Department of Pure & Applied Chemistry,
University of Kota, Kota,
Rajasthan, India

Article DOI: <https://doi.org/10.36713/epra6185>

ABSTRACT

Any Material, having structure in nanometer scale with at least one dimension is recognized as Nanomaterial (NM). These Nanomaterial (NMs) have vast variations in their elemental composition; which may be formed by single element viz. Gold, Silver, Iron, Carbon etc. or by the combination with Oxygen or Sulphur as Oxides & Sulphides viz. Iron oxide (Fe_2O_3), Copper Oxide (CuO) or Cadmium Sulphide (CdS), etc. Among the single elemental forms, the Carbonaceous Nanomaterials (CNMs) are identified as nanosized allotropic forms of Carbon having different structures like Nano rods, Nano tubes, Nano ring, Nano sphere, and Nano sheets mostly with sp^2 carbon atoms. In past decades, Carbonaceous Nanomaterials (CNMs) have gain interest of researchers due to their biocompatibility, non-toxicity and unique surface to volume properties, etc. their easy tunable features are found advantageous for their utilization in wide range of applications. Further, owing to their specific mechanical strength, conductivity, surface activity and many more beneficial features, they have vast range of applicability in electronic, biomedical, energy storage & conversion, catalysis and remediation of environmental pollution. Present paper briefly describes about the types of Carbonaceous Nanomaterials (CNMs) with emphasizing their use in the remediation of Water Pollution. With the growing development of Nanotechnologies, use of CNMs may play a significant role in remediation of Water Pollution.

KEYWORDS: Carbonaceous Nanomaterials (CNMs), Water Pollution, Remediation of Pollution.

1. INTRODUCTION

Water, the most valuable resource available on our planet for the survival of all living beings is depleting continuously with growing population and getting contaminated by industrial or anthropogenic activities. The adverse effect of environmental pollution is observed not only on human health but it also affects the overall economy of the country [1]. Around the globe, more than four billion people are facing water scarcity which may be seen as baseline water stress presented in Figure 1 [2] -

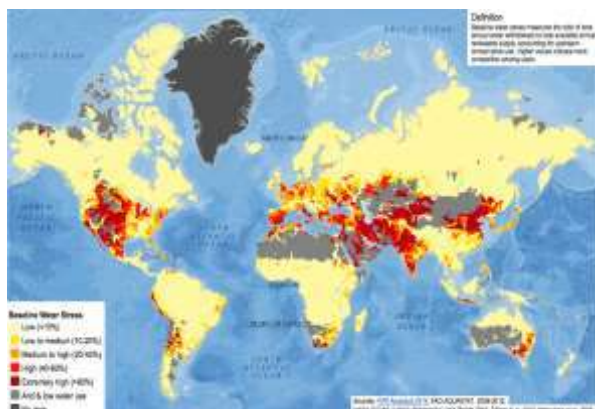


Figure 1 Baseline Water Stress [2]

Thus, it is an urgent need to look for some advance technologies which can effectively remove various pollutants from water with ease of bulk availability of the raw material used. Many researchers choose Carbon as raw material, since it is the sixth most abundantly found element on our earth with unique power of self catenation; capable of giving numerous allotropic forms. Among all the allotropic forms, Graphite and Diamond are the historically well known famous forms while many other modern forms viz. Grapheme, Fullerene, Carbon Nanotubes etc. are recognized later on. Carbonaceous Nanomaterials (CNMs) may be defined as any allotropic form of Carbon, having any structural unit with at least one dimension in nanoscale range. The shape and size of these CNMs may be fibrous, tubular, flat sheet, highly porous, or some other types, which may vary significantly with the preparative method adopted. The large surface to volume ratio with unique mechanical, physical and chemical properties make them useful for wide range of applications viz. Environmental Pollution, Super capacitor, Energy storage, etc. In present study, we will discuss about the environmental remediation by CNMs through various processes as given in Fig 1.

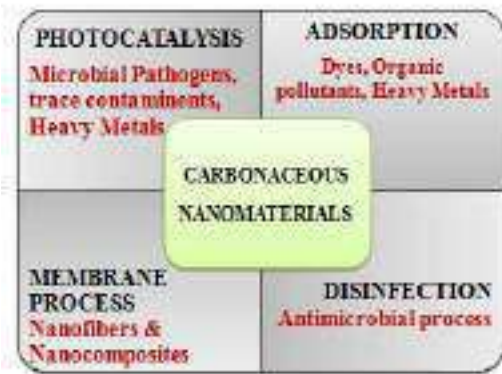


Figure 2 Application of Carbonaceous Nanomaterials in water treatment

2. CLASSIFICATION OF CNMs & MECHANISM OF ACTION

Nanomaterials may be classified on the basis of shapes, size, structure and dimensions. Most broadly accepted classification is on the basis of dimensional characteristics viz. 0D, 1D, 2D, 3D, here the D-Dimension refer to the number of dimensions where any material is not within the size limit of 0.1–100 nm [3], on this basis CNMs may be classified as shown in Figure 3-

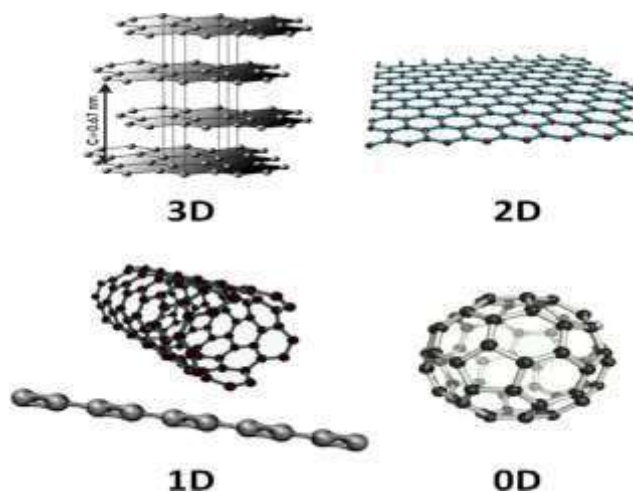


Figure 3 Fullerene (0D), CNT (1D), Graphene (2D) and Graphite (3D) Various Dimensions of CNMs [4]

There are numerous methods available for purification of water like coagulation, extraction, ion exchange, reverse osmosis, filtration, precipitation and adsorption etc. Adsorption [5] is considered as the best method because it is comparatively cost-effective, highly efficient and easy method. Carbonaceous Materials at nanoscale dimensions are found to be very effective Nanosorbents [6] due to

their high porosity, large surface area and biocompatibility. However, surface modification is commonly performed by researchers to increase their solubility, reactivity and adsorptive capacity of these materials. Generally chemical treatment by acid, base, oxidizing agents, reducing agents, metals, metal oxides etc. is carried out for this purpose [7]. Mechanism of adsorptive action of CNMs is extremely complex and depends upon the individual interaction of adsorbent-adsorbate interactions i.e. targeted pollutant and surface active functional groups available on CNMs, the action may be ionic, covalent, weak inter-atomic attractions or combination of any of these. Thus, individual type of CNM surface and pollutant interactions control the mode of action of targeted molecule to be removed from matrix that is briefly discussed with each type of CNM-

2.1. Fullerenes

Fullerenes are recognized as the hollow spherical cage shaped zero dimensional (0D) allotropic form of Carbon having a fixed number of hexagonal & pentagonal arrangements of SP^2 carbon atoms in extremely symmetrical manner known as “Buckyballs” with varying numbers of carbon atoms from as low as 20 upto highest 300 atoms. Fullerenes are discovered in 1985 by Harold W. Kroto, Robert F. Curl and Richard E. Smalley, for which they received Nobel Prize in Chemistry for the year 1996 [8]. The unique structure of Fullerene is described in the form of C_{60} which is the most common form of fullerene termed as Buckminsterfullerene having 12 pentagons and 20 hexagonal rings of carbon looking like a soccer ball [9].



Figure 4 C_{60} Buckminster Fullerene [25].

Fullerene is slightly soluble in water, however nanoscale



water soluble aggregates of fullerene derivatives were



reported by encapsulating it with some hydrophilic molecules to develop it as an antibacterial for the disinfection and microbial control [10] It is reported elsewhere that derivatization or modification of Fullerene surface by suitable molecules can create many active sites Figure 5 Mechanism of action of Fullerene nanocomposite material.

on fullerenes for the removal of toxic heavy metal ions from waste water [11]. Fullerene ternary nanocomposites have been used as efficient photo catalytic reagent with antibacterial properties to remove dye and pathogenic pollutants[12].C₆₀ form of Fullerene has relatively very poor solubility, miscibility, and process ability, thus to apply it in various fields much more concern must be given to undress it. Hence fullerene may open up a new research attempts for application in wastewater treatment.

2.2. Carbon Nano Tubes (CNT)

Nanoscale carbon having needle shape tubular structure with sp² carbon atoms was discovered by Sumio Iijima

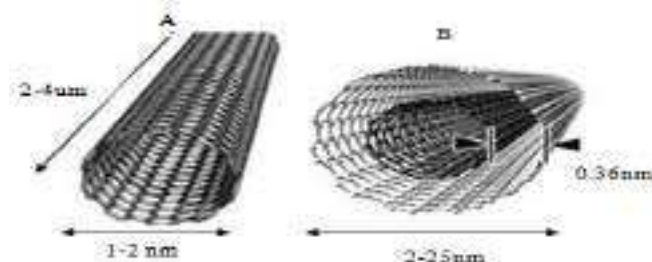


Figure 6 (A). Single walled CNT (B). Multi-walled CNT

and called as Carbon Nanotubes (CNT) [13].CNT are further divided in to two types-Single-Walled CNT(SWCNT) and Multi-Walled CNT(MWCNT) having graphitic carbon atoms in single layer with closed edges or multiple layers respectively, possessing cylindrical tube like structure with diameter of nanometer range and length up to several millimeters as shown in Figure 6 [14]. CNT are found to be extremely hydrophobic in nature [15] and thus suitable to capture many non-polar organic pollutants like Poly Aromatic Hydrocarbon (PAH) [16], Chlorophenols[17] and many organic Dyes[18] from polluted water. Modification of surface sites of CNT can be achieved by chemical reactions like oxidation, halogenations, ozone treatment, heat treatment, etc. which may convert CNT surfaces into polar surface for the remediation of any ionic pollutants like Fluoride, Nitrate, Mercury, Cadmium, etc. many other hazardous toxic metals[19,20]. The mechanism of removal of pollutants is very complex, it may be sorption occurring by chemical or physical forces, CNTs absorptive sites may be found at three places, firstly at interiors hollow space of nanotubes which are open ended, secondly at interstitial spaces in between the tubes, thirdly at groves present at the boundary of nanotube bundles and the adsorption may occur at the outermost surface of the CNTs [21,22].The removal of charged particles may be attributed to electrostatic attraction forces. Utilization of CNT and

surface modified CNT has been reported as an very effective Nanosorbents for the removal of ionic pollutants[23,24] and the adsorptive capacities of functionalized CNT have been found superior results than the normal CNT for the removal of Lead(Pb) [25], Chromium(Cr) [26], Mercury(Hg) [27] like hazardous heavy metal ions. Polymer functionalized CNT shown greater reactivity for removal of heavy metal ions, graphical mechanism[28] of that is shown in figure 7. As CNTs has provided a wide range of application in waste water treatment, further modification methods can be used in remediation of many other pollutants.

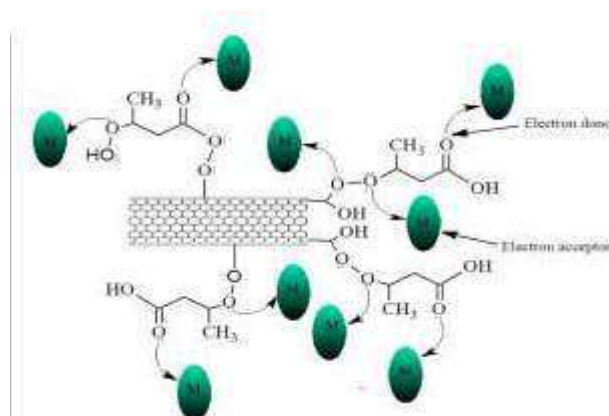


Figure 6 Mechanism of heavy metal removal by functionalized Carbon Nanotube [28]

2.3. Graphene & Graphene Oxides

One atom thick two dimensional sheet of sp² carbon atoms arranged in hexagonal ring shapes within nano scale range Figure 7 a, b [29], possess amazing mechanical and electrical properties. For the production and characterization of this astounding Nanomaterial Gien and Novoselov [30] received Noble Prize in physics for the year 2010. Owing to its specific electrical and mechanical properties initially Graphene has been used only for electronic applications in super capacitors and transistors [31] but later on it has been reported as an effective solution for desalination of saline water in the form of membrane filtration [32] with cost effective approach.

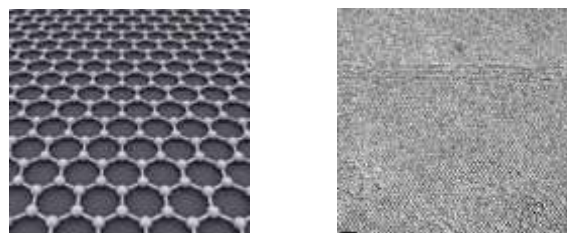


Figure 7 a (i) Computerized Structure of Graphene, [16] b (ii) Atomic resolution imaging of Graphene membranes[16]

A group of researchers obtained nanocomposites of Graphene by the bioreduction of Graphene Oxide and



intercalated silver ion has been reported as an effective nanosorbent for pathogenic effluent treatment [33].

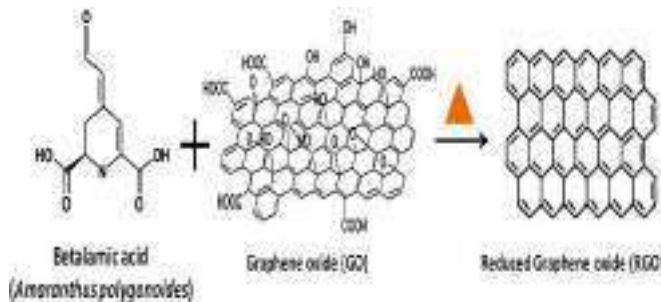


Figure 8 Bio-reduction of Graphene oxide by *Amaranthus* plant extract

Adsorptive removal of many organic pollutants viz. dyes, drugs, toxic chemicals, pesticides and oils has also been reported in literature, with explaining possible mechanisms of removal of organic pollutants by the graphene-based materials involving π - π interaction, anion- π interaction and cation- π interaction and weak functional group interactions [34]. Tea Poly phenols modified grapheme nanosheets have been reported as an effective sorbent for lead ion removal with antibacterial properties and greater selectivity over other metal ions with ease of regeneration [35]. Oxidized form of Grapheme is well known as Grapheme oxide(GO), having many oxygen bearing functional groups on its surface viz. Carbonyl, carboxylic, Epoxy etc. [36], with the help of these functional groups many Graphene Oxide layers can stack upon each other to form a thin film or filtration membrane[37] which are found to be extremely useful in Nano filtration techniques for wastewater treatment [38]. The large specific surface area of GO make it suitable to adsorb higher amounts of pollutants on its surface [39]. GO based hydrogel is also reported in literature and proved to be superior adsorbent for the removal of dyes with the ease of separation from aqueous phase[40].

2.4. Nano Activated Carbon (NAC)

Amorphous structural form of Nano Carbon with average particle size less than 100 nm comes under this category of allotropic form of Carbon. Structure of NAC is complex, highly porous, having large surface area with minute amount of other elements like Oxygen, Silica or some other metals or ash [41]. Nano Activated Carbon has highly porous structure with pore size varying from less than nanometer to some hundred nanometers [42] as shown in figure 9-

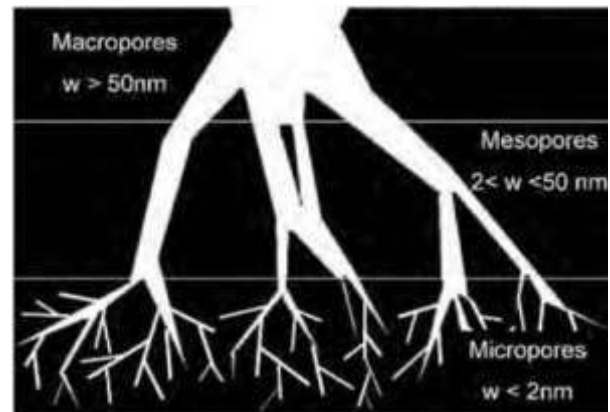


Figure 9 Graphical Distribution of Nano-Pores in NAC [41].

The nanoporous Carbon is found to be super-active for adsorptive removal of phenol [43] and some heavy metal ions [44]. Impregnation of other metallic nanoparticles on NAC was reported to be more effective adsorbent for the simultaneous removal of many heavy metal ions [45]. Recently NAC was prepared in cost effective manner from agro-waste products for the removal of Dye stuffs [46] and ferrous ion [47] from industrial effluents. It is observed that removal of heavy metals by NAC depends on the distribution of porosity, oxygen functional groups, surface area etc. found on NAC [48]. Surface modification improves the adsorption capacity and it is found that NAC modified with magnetic nano metal oxides can be regenerated efficiently [49], consequently further research efforts must be imparted for the development of various types of metal oxides embedded NAC. Recently, a group of scientists explained the complicated mechanism of adsorptive removal of Phenols & Nitro-Phenols using agrowaste derived NAC [50].

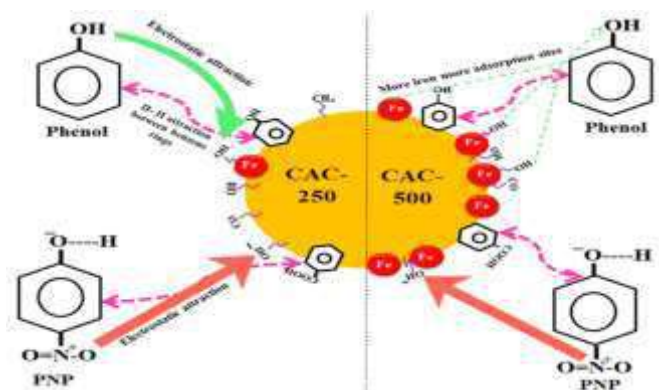


Figure 10 Removal of phenol & p-Nitro Phenol by NAC [50].

3. CONCLUSION

On the basis of the fundamental structure, shape and dimension classification of Carbonaceous Nanomaterials (CNMs) is briefly discussed with giving brief emphasis on mechanism of action and some applications of CNMs in



water pollution remediation. We hope that it can be helpful for pioneer researchers, working in the field of Nanomaterials. However the impact of Nanomaterials on environment and our future generations including overall ecosystem must be taken into considerations for the sake of safety purposes.

REFERENCES

1. Yaqoob, A.A., Parveen, T., Umar, K., Mohamad Ibrahim, M.N. (2020) "Role of Nanomaterials in the Treatment of Wastewater: A Review". *Water*, 12, 495.
2. https://en.wikipedia.org/wiki/Water_scarcity#cite_note-1
3. Dong Y, Li F and Wang Y, (2020) "Low-Dimensional Nanomaterial-Based Sensing Matrices for Antibiotics Detection: A Mini Review." *Front. Chem.* 8:551, doi: 10.3389/fchem.2020.00551.
4. <https://epm.univie.ac.at/research/low-dimensional-quantum-solids/research-focus/pristine-carbon-nanostructures/>
5. Czikkely M et al(2018), "Review of heavy metal adsorption processes by several organic matters from wastewaters". *Water* 10(10):1377.
6. Sweetman M. J., May S., Mebberson N., Pendleton P., Vasilev K., Plush S. E. and Hayball J. D., (2017) "Activated Carbon, Carbon Nanotubes and Graphene: Materials and Composites for Advanced Water Purification" *Journal of Carbon Research*, 3, 18; doi:10.3390/c3020018.
7. Coville NJ, Mhlanga SD, Nxumalo EN, Shaikjee A. (2011), "A review of shaped carbon nanomaterials." *S. Afr J Sci.* ,107(3/4).
8. <https://www.nobelprize.org/prizes/chemistry/1996/summary/>
9. Yadav B.C. and Kumar Ritesh.(2008) "Structure, properties and applications of fullerenes". *International Journal of Nanotechnology and Applications*, 2, 15–24.
10. Lyon D. Y., Brown D. A. and Alvarez P. J. J., (2008), "Implications and potential applications of bactericidal fullerene water suspensions: effect of nC60 concentration, exposure conditions and shelf life". *Water Science and Technology*, 57.10, 1533-1538.
11. Sharma, A., Das, J. (2019) "Small molecules derived carbon dots: synthesis and applications in sensing, catalysis, imaging, and biomedicine". *J Nanobiotechnol* 17, 92.
12. S. Sepahvand S. and Farhadi S., (2018) Fullerene-modified magnetic silver phosphate(Ag₃PO₄/Fe₃O₄/C₆₀) nanocomposites:hydrothermal synthesis, characterization and study of photocatalytic, catalytic and antibacterial activities *RSC Adv.*, 8, 10124–10140
13. Lijima S.,(1991) "Helical Microtubules of Graphitic Carbon". *Nature*, 354, 56-58.
14. Lijima S. & Tshinarai I.(1993) "Single-shell carbon nanotubes of 1-nm diameter". *Nature*, 363, 603–605.
15. He Hua, Huyg Lien Ai Pham, Dramou Pierre, Xiao Deli, Zuo Pengli, and Pham-Huy Chuong. (2013) "Carbon Nanotubes: Applications in Pharmacy and Medicine". *BioMed Research International*, Article ID 578290, 1-12.
16. S, Yang CM, Hattori Y, Takahashi K, Kanoh H, Kaneko K. (2007) "Adsorption of polyaromatic hydrocarbons on single walled carbon nanotubes of different functionalities and diameters". *J Colloid Interface Sci.*, 314, 18–24.
17. Liao Q, Sun J, Gao L. (2008) "Adsorption of chlorophenols by multi walled carbon nanotubes treated with HNO₃ and NH₃". *Carbon*, 46, 544–561.
18. Rajabi M., Mahanpoora K. and Moradi O., (2017) "Removal of dye molecules from aqueous solution by carbon nanotubes and carbon nanotube functional groups: critical review." *RSC Adv.*, 7, 47083–47090.
19. Li YH, Wang S, Zhang X, Wei J, Xu C, Luan Z, et al. (2003) "Adsorption of fluoride from water by aligned carbon nanotubes". *Mater Res Bull.*, 38, 469–76.
20. Di ZC, Ding J, Peng XJ, Li YH, Luan ZK, Liang J.(2006) "Chromium adsorption by aligned carbon nanotubes supported ceria particles". *Chemosphere*, 62, 861–865.
21. Agnihotri S, Mota JPB, Rostam-Abadi M, Rood MJ. (2005) "Structural characterization of single walled carbon nanotube bundles by experiment and molecular simulation". *Langmuir*, 21, 896–904.
22. Kang S, Herzberg M, Rodrigues DF, Elimelech M. (2008) "Antibacterial effects of carbon nanotubes: size does matter". *Langmuir*, 24, 6409–6413.
23. Ihsanullah F., Al-Khaldi F.A., Abu-Sharkh B., Abulkibash A.M. and Qureshi M.I. (2016) "Effect of acid modification on adsorption of hexavalent chromium (Cr(VI)) from aqueous solution by activated carbon and carbon nanotubes". *Desalination and Water Treatment*, 57(16), 7232-7244.
24. Li J.X., Chen S.Y., Sheng G.D., Hu J., Tan X.L. and Wang X.K. (2011) "Effect of surfactants on Pb(II) adsorption from aqueous solutions using oxidized multiwall carbon nanotubes". *Chem. Eng. J.*, 166, 551-558.
25. Jun X.U.Y., Arrigo R., Xi L.I.U. and Sheng S.D. (2011) "Characterization and use of functionalized carbon nanotubes for the adsorption of heavy metal anions". *New Carbon Mater*, 26, 57-62.
26. Sheikh A.H.E., Degs Y.S.A., Asad R.M.A. and Sweileh J.A. (2011) "Effect of oxidation and geometrical dimensions of carbon nanotubes on Hg(II) sorption and preconcentration from real waters". *Desalination*, 270, 214-220.
27. Velickovic Z., Vukovic G.D., A.D., Marinkovic M.S., Moldovan, Grujic A.A.P., Uskokovic P.S. and Ristic M.D. (2012) "Adsorption of arsenate on iron(III) oxide coated ethylenediamine functionalized multiwall carbon nanotubes". *Chem. Eng. J.*, 18,174-181.
28. Bankole, M.T., Abdulkareem, A.S., Mohammed, I.A. et al. (2019) "Selected Heavy Metals Removal From Electroplating Wastewater by Purified and Polyhydroxybutyrate Functionalized Carbon Nanotubes Adsorbents". *Sci Rep* 9, 4475.
29. Jannik C. Meyer, A. K. Geim, M. I. Katsnelson, K. S. Novoselov, T. J. Booth. (2007) "The structure of suspended graphene sheets". *Nature*, 446, 60–63.
30. Novoselov K. S., Geim A. K. S., Morozov V., Jiang D., Zhang Y., Dubonos S. V., Grigorieva I.V., Firsov A.A. (2004) "Electric Field Effect in Atomically Thin Carbon films". *Science*, 306, 666-669.
31. Raymond L. D. (2014) "Chemical control of grapheme Architecture". *ACS Nano*, 8, 9733-9754.
32. Surwade S.P., Sergei S.N., Ivan V.V., Raymond R.U., Sheng D. (2015) "Water Desalination Using Nanoporous Single-Layer Graphene with Tunable Pore Size." *Nature nanotechnology*, 10, 459-464.
33. Firdosh M.J., Lalitha P.,(2016) "Nanosilver-decorated nanographene and their adsorption performance in wastewater treatment." *Bioresour. Bioprocess.* 3, 4-12.
34. M. R. Gandhi, Vasudevan S., Shibayama A., Yamada M., (2016) "Graphene and Graphene-Based Composites: A Rising Star in Water Purification - A Comprehensive Overview" *Chemistry Select*, 1, 4358–4385.
35. Zheng S, Hao L, Zhang L, Wang K, Zheng W, Wang X, Zhou X, Li W, Zhang L. (2018) "Tea Polyphenols Functionalized and Reduced Graphene Oxide-ZnO Composites for Selective Pb²⁺ Removal and Enhanced Antibacterial Activity." *J Biomed Nanotechnol.* Jul 1;14(7):1263-1276.
36. Yi Wei, Yushan Zhang, Xueli Gao, Zhun Ma, Xiaojuan Wang, Congjie Gao. (2018) "Multilayered graphene oxide membranes for water treatment: A review". *Carbon, Elsevier* 139, 964-981.
37. R.K. Joshi, P. Carbone, F.C. Wang, V.G. Kravets, Y. Su, I.V. Grigorieva, H.A. Wu, A.K. Geim, R.R. Nair. (2014) "Precise and ultrafast molecular sieving through grapheme oxide membranes". *Science*, 343, 752–754.
38. Chong Jeng Yi, Wang Bo, Mattevi Cecilia, Li Kang. (2018) "Dynamic microstructure of graphene oxide membranes and the permeation flux". *Journal of Membrane Science*, 549, 385–392.
39. N.V. Medhekar, A. Ramasubramaniam, R.S. Ruoff, V.B. Shenoy. (2010) "Hydrogen bond networks in graphene oxide



- composite paper: structure and mechanical properties". *ACS Nano*, 4, 2300–2306.
40. Guo H., Jiao T., Zhang Q., Guo W., Peng Q., Yan X. (2015) "Preparation of Graphene oxide Based hydrogels as Efficient Dye Adsorbents for Wastewater Treatment". *Nanoscale Research Letters*, 10, 272, 1-10.
 41. Saleh N.B., Nabidul A.R.M., Joseph H.B., Nirupam A., Jaime P.T., Tara S.A. (2014) "Emergent Properties and Toxicological Considerations for Nanohybrid materials in Aquatic System". *Nanomaterials*, 4(2) 372-407.
 42. Shivashankar M. and Bubanal Sadashiv, (2017) "History, Method of Production, Structure and Applications of Activated Carbon". *International Journal of Engineering Research & Technology*, 6(6), 495-498.
 43. Hwang H., Sahinb O. and Choi Joon W., (2017) "Manufacturing a super-active carbon using fast pyrolysis char from biomass and correlation study on structural features and phenol adsorption". *RSC Adv.*, 7, 42192-42202.
 44. Guo J., Song Y., Ji Xia., Ji L., Cai Lu, Wang Y., Zhang H. and Song W., (2019) "Preparation and Characterization of Nanoporous Activated Carbon Derived from Prawn Shell and Its Application for Removal of Heavy Metal Ions". *Materials*, 12, 2411-17.
 45. Dinesha B.L., Sharanagouda H., Udaykumar N., Ramachand C.T. and Dandekar Anil B., (2017) "Removal of Pollutants from Water/Waste Water Using Nano-Adsorbents: A Potential Pollution Mitigation". *Int.J.Curr.Microbiol.App.Sci.*, 6(10), 4868-4872.
 46. Pradhanang R. R., Adhikari L., Goswami S., Adhikari R., Pradhananga M., Rajbhandari R., Ariga K. and Shrestha Lok Kumar, (2017) "Dye Adsorption on Nanoporous Carbon Materials Derived from Agro-Product. *Journal of Carbon Research*", 3 (12), 1-11.
 47. Thilagam G., Mani N., Arivoi S., Hema M. (2016) "Adsorption behavior of Fe (II) ion from aqueous solution onto nano carbon". *International Journal of Chemical Studies*, 4(1), 96-102.
 48. Gallios George P., Tolkou Athanasia K., Katsoyiannis Ioannis A., Stefusova K., Vaclavikova M. and Deliyanni Eleni A. (2017) "Adsorption of Arsenate by Nano Scaled Activated Carbon Modified by Iron and Manganese Oxides". *Sustainability*, 9-1684, 1-18.
 49. Jain M., Yadav M., Kohoutc T., Lahtinen M., Garg V.K., Sillanpää M., (2018) "Development of iron oxide/activated carbon nanoparticle composite for the removal of Cr(VI), Cu(II) and Cd(II) ions from aqueous solution" *Water Resources and Industry*, 20, 54–74.
 50. Yadav N., Maddheshiaya D. N., Rawat S., Singh J. (2020) "Adsorption and equilibrium studies of phenol and para-nitrophenol by magnetic activated carbon synthesised from cauliflower waste." *Environ. Eng. Res.* 25(5): 742-752.



A STUDY OF CHALLENGES AND METHODS OF PRIVACY PRESERVATION IN SOCIAL NETWORKING DATA

Himani Saini¹

Research Scholar,

Department of Computer Science and Applications,
Maharshi Dayanand University,
Rohtak(Haryana), India

Gopal Singh²

Asst. Professor,

Department of Computer Science and Applications,
Maharshi Dayanand University,
Rohtak(Haryana), India

ABSTRACT

Enormous amount of data is being generated by various ecommerce or social Networking sites. To provide suggestions and recommendation to the customers or users, there is a need to processed and analysed this voluminous data. Sharing of these data is helpful for application users. While sharing the private data, privacy preservation become one of the major concern for everyone. Due to the easy availability of numerous digital technologies, tons of data is generated every minute and preserving or securing such huge amount of data is not an easy task. this paper examines various privacy threats and privacy preservation techniques such as anonymization, randomization and cryptography.

KEYWORDS *privacy preservation, privacy threats, data anonymization, Randomization, cryptography.*

I. INTRODUCTION

Nowadays, the Use of various social networking sites become a trend. the term **social networking sites** means **the online platforms on which people can create their public profile and interconnect with the other people(family, friends and relatives etc) on the website** [1]. The most common or trending social networking sites are Facebook, WhatsApp, Instagram, Twitter, Snapchat, LinkedIn etc. Due to the exquisite use of these sites, the social media data generated by the users is exploding [2]. These social sites have gained enormous popularity in a very short period of time, so people tend to use diverse sites for various purposes like -To communicate with their family and friends, to share their daily experiences with each other, express their views on some commercial products or social events etc.

In Today's digital era, where there is plenteous availability of digital tools on internet , people are not much interested to use offline sources to store all their private information. People are online storing their personal content such as date of births, contacts, pictures, files, zip code, bank related information, some official documents and bookmarks [3]. Even people can easily interact with these social networking sites through tweets, posts and tags.



Fig.1 Various Social Networking Icons

The volume and variety of these user-generated social media data is procreating exponentially. There can be many reasons behind this rapid growth but the main cause can be the

affordable availability of internet connectivity, storage and various computer technologies. Among all these social sites, Facebook is one of the most widely used social networking site and at the top with an active users of 2.13 billion worldwide. WhatsApp another messaging app with an additional calling feature is at the second level with an active users of 1.5 billion. Facebook messenger is just behind it with 1.3 billion users and last but not the least Instagram has its 800 million active users all over the world [4].



Fig.2 Numbers of the Active Users in Some Trending Social Networking Sites

II. PRIVACY PRESERVATION

As we all know that the social media data is increasing sharply day by day. The privacy of this data is one of the major growing concern in recent time. Before going in detail, let's make you clear about the term "privacy preservation". The term privacy preservation mainly **refers to the safekeeping of personal data or information specifically from being leaked, damage, loss or destroyed.** the personal information not only means an important document. It can be anything like images, audio or video recordings, applications, databases or can be a combination of them.

Sometimes the user himself contributes to a data leak either intentionally or unintentionally. This is the best example to understand when we allow all mobile applications to seek access to our personal data like images, contacts, documents etc. without reading the rules and privacy status.

III. CHALLENGES IN PRESERVING PRIVACY: PRIVACY THREATS

To avoid such circumstances which is described above where user itself contributing to the data leakage, there is need to educate the users about such privacy threats. There are several

privacy threats which can be riskier but we will discuss about some of the major privacy threats which are [5] :-

- vigilance
- Data Revelation
- favouritism or biasness

A. Vigilance

It mainly refers to the action of observing something carefully. Another term used for this is surveillance. All these social networking sites does provide suggestions like choose friends, people you may know and much more, just by looking on the actions they performed and the type of data they share.

B. Data Revelation

Data revelation can be define as the process of disclosing of all the sensitive information of the customer to the third party. Example disclosing of the patient personal data (eg-age, name, dob, gender, disease etc.) from the hospital is a serious kind of privacy threat. It can be used to violate customers privacy.

C. Favouritism

The act of inequality where a person or group is treated unfairly. The related term to this are discrimination, bias, injustice etc. To combat with such situations there is a strong need to spread awareness among people because one of the main reason of this is lack of awareness among people.

IV. PRIVACY PRESERVATION METHODS

Now when people are using the social networking sites continuously, they always have a fear that their personal information will fall into wrong hands or can be misused by anyone. To protect the loss or damage of the personal data we need to preserve it by various means.



Fig.3 Privacy Preservation

There are various privacy preserving techniques for securing the data and few of them are listed below:

- Data Anonymization
- Randomization
- Cryptography

A. Data Anonymization

It is defined as the process by which personal data is modified in such a way that the original data cannot be identified either directly or indirectly by anyone. It is also called as de-identification [6]. Data anonymization helps in transferring the data with in a closed boundary between two or more parties. It reduces the risk of unwanted disclosure of information which is one among the several privacy threats. Anonymization can be obtain by several methods like Generalisation, swapping, data removal, suppression etc. Two of the main privacy preserving approaches are k anonymity or l diversity.

- 1) **K-Anonymization:** Some of the Anonymized data possessed this property. The concept was first introduced by Latanya Sweeney and Pierangela Samarati in 1998. A release of data is said to have the k anonymity property if the information for each person contained in the release cannot be distinguished from at least k-1 individuals whose information also appear in the release [7]. Example: While trying to identify a person from a table the only input information given is person's birth date and gender, then there will be k people meeting the requirement [8].
- 2) **L-Diversity:** l-diversity is another type of group based anonymization which basically aim is to

preserve privacy in datasets. "An equivalence class is said to have l-diversity if there are at least l well represented values for sensitive attributes. A table is said to have l-diversity if every equivalence class of the table has l-diversity [9]. l-diversity model is just a modification of the k anonymity model which handle some of the gaps that is present in k anonymity model.

B. Randomization

Randomization is one of the easy, efficient and less expensive technique for privacy preservation [10]. Randomization is the process in which real data is altered by taking away some sensitive information and adding noise before sharing them. It is said to be an easy approach because it doesn't require knowledge of other records in the data. It can be applied at the time of collection of data or at pre-processing stage.

C. Cryptography

Cryptography has been defined as the technique of converting the plain text into cypher text. It is mainly used for storing or transferring the data in such a way so that only the receiver can read that useful information, no one else can misused the data. It's a complex method to use on large datasets, because encryption on large datasets is difficult to implement and it also reduces the utility of data. It is used to maintain the data confidentiality, integrity, authentication etc [11].

V. RESEARCH GAPS AND STATUS

This section covers the gaps present in all these privacy preserving methods.

A. Limitations of k anonymity

The k-anonymity model does not protect against attacks based on background knowledge. it reveals individual sensitive information. The loss of data utility, when applied on high dimensional data [12].

B. Limitations of l-diversity

L diversity method is more prone to the skewness attack and similarity attacks, because of the semantic relationship between the sensitive attributes it is inappropriate to neglect the attribute exposure [13].

C. Limitations of Randomization

It is not possible to apply randomization method on large datasets because of time complexity and data utility. preserving privacy at the cost of data utility is not acceptable that's why it may not be an appropriate method of privacy preservation [14].

**D. Limitations of cryptography method**

Cryptography is very complex method to apply on large datasets and it is not suitable for unstructured data. It's not a good method when it comes to preservation of data attributes[14].

VI. CONCLUSION AND FUTURE TRENDS

In this paper, we have discussed about various privacy preservation techniques. These methods are helpful in achieving privacy or securing the personal

data upto some extent. All the above discussed methods have their own advantages and disadvantages that's why new method with higher approximation and better results is need to be developed. Machine learning and various other soft computing techniques can be used to preserve privacy of user's data. There is still a lot of future work can be performed on this, which can provide more optimum results to the users.

REFERENCES

1. "Techopedia," [Online]. Available: <https://www.techopedia.com/definition/4956/social-networking-site-sns>. [Accessed 29 may 2020].
2. J. Zhang, J. Sun, R. Zhang, Y. Zhang and X. Hu, "Privacy-Preserving Social Media Outsourcing," in *IEEE INFOCOM 2018-IEEE Conference on Computer Communications, Honolulu, HI, USA, 2018*.
3. M. Siddula, L. LI and Y. LI, "An Empirical Study on the Privacy Preservation of Online Social Networks," *IEEE*, vol. 6, pp. 19912-19922, 2018.
4. "Whatsapp Revenue And Usage Statistics 2020," 24 april 2018. [Online]. Available: <https://www.businessofapps.com/data/whatsapp-statistics/>. [Accessed 29 may 2020].
5. P. M. Rao, S. Krishna and P. Kumar, "Privacy Preservation Techniques in big data analytics: a survey," *Springer open*, pp. 1-12, 2018.
6. S. and K. , " A Research on Bigdata Privacy Preservation Methods," *IJRTE*, vol. 8, no. 1S4, pp. 175-177, 2019.
7. w. contributors, "k-anonymity," *WIKIPEDIA, The Free Encyclopedia*, 2014. [Online]. Available: <https://en.wikipedia.org/w/index.php?title=K-anonymity&oldid=959297811>. [Accessed 30 may 2020].
8. S. Shelke and B. Bhagat, "Techniques for Privacy Preservation in Data Mining," *International Journal of Enginnering Research & Technology*, vol. 4, no. 10, pp. 490-493, 2015.
9. WilliamKF, "L-diversity," *WIKIPEDIA, The Free Encyclopedia*, 2014. [Online]. Available: <https://en.wikipedia.org/w/index.php?title=L-diversity&oldid=910039769>. [Accessed 30 may 2020].
10. P. Nivetha and s. Thamarai, "A Survey on Privacy Preserving Data Mining Techniques," *International Journal of Computer Science and Mobile Computing*, vol. 2, no. 10, pp. 166-170, 2013.
11. *The Economic Times*, "Definition of Cryptography," *Economic times*, 2020. [Online]. Available: <https://economictimes.indiatimes.com/definition/cryptography>. [Accessed 30 may 2020].
12. N. Mogre, G. Agarwal and P. Patil, "A Review On Anonymization Technique For Data Publishing," *International Journal of Engineering Research & Technology*, vol. 1, no. 10, pp. 1-5, 2012.
13. K. Rajendran, M. Jayabalan and M. E. Rana, "A Study on K-anonymity, l-diversity and t-closeness Techniques focusing Medical Data," *International Journal of Computer Science and Network Security*, vol. 17, no. 12, pp. 172-177, 2017.
14. P. M. Rao, S. Krishna and A. S. Kumar, "Privacy Preservation techniques in big data analytics: a survey," *springer nature*, pp. 1-12, 2018.
15. "Social Media logo Collection," *Freepik*, 2010. [Online]. Available: https://www.freepik.com/free-vector/social-media-logotypeset_3765835.htm#page=1&query=social%20media%20icon&position=43. [Accessed 2 Jun 2020].
16. "9 Biggest threats to Privacy- is the Right to Privacy dead?," *blokt*, 2020. [Online]. Available: <https://blokt.com/guides/biggest-privacy-threats>. [Accessed 2 Jun 2020].



SOCIOLINGUISTIC APPROACH TO THE SUBJECT OF LINGUISTICS

Lola Takhirovna Abdullaeva

Department: The chair "Theoretical aspects of English"
University: Samarkand State Institute of Foreign Languages
Country details: Uzbekistan, Samarkand, Bustonsaroy str., 93

ABSTRACT

The article deals with the sociolinguistic approach to the problems of linguistics. A sociolinguistic approach to the problem of linguistics requires taking into account such problems as language and society, the relationship of words and concepts, sociolinguistics and terminology.

KEY WORDS: *language and human being, linguistics, language and society, communication.*

DISCUSSION

Sociolinguistics, a branch of linguistics that studies language in connection with the social conditions of its existence. Social conditions mean a complex of external circumstances in which a language actually functions and develops: a society of people using a given language, the social structure of this society, differences between native speakers in age, social status, level of culture and education, place of residence, as well as differences in their speech behavior depending on the communication situation.

To understand the specifics of the sociolinguistic approach to language and the difference between this scientific discipline and "pure" linguistics, it is necessary to consider the origins of sociolinguistics, to determine its status among other linguistic disciplines, its object, the basic concepts that it uses, the most typical problems that fall within its circle competencies, research methods and directions of sociolinguistics formed by the end of the 20th century.

The fact that language is far from being socially uniform has been known for a long time. One of the first recorded observations that testify to this dates back to the early 17th century. Gonzalo de Correas, lecturer at the University of Salamanca in Spain, clearly distinguished the social varieties of the language: "It should be noted that the language has, in addition to the dialects that exist in the provinces, some varieties associated with the age, status and property of the inhabitants of these provinces: there is a language of rural residents, commoners,

townspeople, noble gentlemen and courtiers, a scientist-historian, an elder, a preacher, women, men and even small children".

The term "sociolinguistics" was first used in 1952 by the American sociologist Herman Curry. However, this does not mean that the science of the social conditioning of language originated in the early 1950s. The roots of sociolinguistics are deeper, and one should look for them not in American scientific soil, but in European and, in particular, Uzbek.

Linguistic studies, taking into account the conditioning of linguistic phenomena by social phenomena, were conducted with greater or lesser intensity at the beginning of this century in France, Russia, and the Czech Republic. Scientific traditions different from those in the United States have determined the situation in which the study of the relations of language with social institutions, with the evolution of society has never been fundamentally separated in these countries from "pure" linguistics. "Since language is possible only in human society," wrote I.A. Baudouin de Courtenay, "then, in addition to the psychic side, we must always note the social side in it. Linguistics should be based not only on individual psychology, but also on sociology".

Modern sociolinguistics is a branch of linguistics. While this science was just forming, getting on its feet, one could argue about its status, but by the end of the 20th century, when in sociolinguistics not only the object, goals and objectives of research were determined, but also tangible results were obtained; the "linguistic" nature



of this science became quite obvious. Another thing is that sociolinguists have borrowed many methods from sociologists, for example, methods of mass surveys, questionnaires, oral polls and interviews. But, borrowing these methods from sociologists, sociolinguists use them in relation to the tasks of language learning, and in addition, on their basis, they develop their own methodological techniques for working with linguistic facts and with native speakers.

Each linguistic community uses certain means of communication - languages, their dialects, jargons, stylistic varieties of the language. Any such communication medium can be called code. In the most general sense, a code is a means of communication: a natural language (Uzbek, English, Somali, etc.), an artificial language such as Esperanto or a type of modern machine languages, Morse code, marine flag signaling, etc. In linguistics, it is customary to call language formations a code: language, territorial or social dialect, urban koine, etc.

A subcode, or subsystem, can also be divided into varieties and thereby include subcodes (subsystems) of a lower level, etc. For example, the Uzbek literary language, which itself is a subcode in relation to the national language, is divided into two varieties - the codified language and the spoken language, each of which has a certain self-sufficiency and differs in functions: the codified language is used in book-written forms of speech, and the spoken language is in oral, everyday life forms. In turn, the codified literary language is differentiated into styles, and styles are realized in a variety of speech genres; there is some semblance of such differentiation in spoken language.

Codes (languages) and subcodes (dialects, styles) that make up the socio-communicative system are functionally distributed. This means that the same contingent of speakers who make up a given linguistic society, possessing a common set of communicative means, uses them depending on the conditions of communication. For example, if we are talking about the subcodes of the literary language, then in scientific activity the native speakers of the literary language use the means of the scientific style of speech, in the field of office work, jurisprudence, administrative correspondence, etc. they are obliged to resort to the means of the official business style, in the sphere of religious cult - to the words and constructions of the religious-preaching style, etc.

In other words, depending on the sphere of communication, the speaker switches from one language to another.

A similar picture is observed in those societies where not one, but two languages (or several) are used. Bilinguals, i.e. people who speak two (or more) languages usually "distribute" their use depending on the conditions of communication: in an official

setting, when communicating with the authorities, one language is used predominantly, and in everyday life, in the family, when dealing with neighbors, the other). And in this case, we can talk about switching from one code to another, only the styles of one language, as in the first example, do not appear as codes, but different languages.

If in the process of communication we can switch from one language means to another, for example, when changing the addressee, while continuing to discuss the same topic, this means that we have a set of means at our disposal that allows us to speak about the same thing in different ways. This is an extremely important property of language, which provides the speaker with the opportunity not only to freely express their thoughts in this language, but also to do it in different ways. The ability of a native speaker to express the same meaning in different ways is called his ability to paraphrase. This ability, along with the ability to make sense of what is said and the ability to distinguish between right and wrong phrases, underlies a complex mental skill called language proficiency.

Variability manifests itself at all levels of verbal communication - from possession of the means of different languages (and, consequently, variation, alternating use of units of each language depending on the conditions of communication) to the speaker's awareness of the permissibility of different phonetic or accentual variants belonging to one language (in modern Russian literary language, these are variants of the type *було[шн]ая / було[чн]ая*, etc.).

From a sociolinguistic point of view, the phenomenon of variability deserves attention insofar as different language variants can be used depending on social differences between native speakers and on differences in the conditions of verbal communication.

This term appeared in linguistics relatively recently - in the second half of the 20th century. It is formed of two parts - a socio-part, indicating the attitude towards society, and the second component of the word "dialect"; it is, in essence, a contraction of the phrase "social dialect" into one word. A sociolect is called a set of linguistic features inherent in any social group - professional, estate, age, etc. - within the limits of a particular subsystem of the national language. Examples of sociolects include the speech features of soldiers (soldier's jargon), schoolchildren (school jargon), criminal jargon, hippie argo, student slang (see below for the terms "jargon", "argo", "slang"), professional "language" of those who work on computers, various trade argos (for example, "shuttle traders", drug dealers), etc.

The term "sociolect" is convenient to refer to diverse and dissimilar linguistic formations, which, however, have a common feature that unites them:



these formations serve the communication needs of socially limited groups of people.

The main goals of sociolinguistics are the study of how people who make up a particular society use language, and how changes in the society in which this language exists affect the development of language. These goals correspond to two cardinal sociolinguistic problems - the problem of social differentiation of language and the problem of social conditioning of language development.

For the current stage of development, the first of these problems is characterized by the following features:

1. Rejection of the widespread in the past straightforward view of the differentiation of language in connection with social stratification of society: according to this view, stratification of society into classes directly leads to the formation of class dialects and languages.

2. With the rejection of a straightforward interpretation of the problem of social differentiation of language and the recognition of the complexity of social and linguistic relations, another feature of the development of this problem in modern linguistics is associated: with a general tendency to identify systemic connections between language and society, sociolinguists point to the mechanism and a priori the problem, which declares the complete isomorphism (that is, the complete correlation of properties) of the structure of the language and the structure of the society it serves.

3. With regard to the development of the problem of social differentiation of language, modern sociolinguistics is characterized by a broader view of the phenomenon of variation of language means (which may be due to both social and intra-linguistic reasons), including such means that belong to relatively homogeneous language formations, which is, for example, the literary language.

THE LIST OF USED LITERATURE

1. Panov M.V. *Principy sociologicheskogo izucheniya russkogo yazyka. – Russkij yazyk i sovetskoe obshchestvo, kn. 1. M., 1968*
2. Avrorin V.A. *Problemy izucheniya funkcional'noj storony yazyka (k voprosu o predmete sociolingvistiki). L., 1975*
3. Zvegincev V.A. *O predmete i metode sociolingvistiki. – Izvestiya AN SSSR. Seriya literatury i yazyka, vyp. 4. M., 1976*
4. Nikol'skij L.B. *Sinhronnaya sociolingvistika. M., 1976*
5. SHvejcer A.D. *Sovremennaya sociolingvistika. Teoriya. Problemy. Metody. M., 1976*
6. Krysin L.P. *Yazyk v sovremennom obshchestve. M., 1977*
7. *Social'naya i funkcional'naya differenciacya literaturnyh yazykov. Otv. red. M.M.Guhman. M., 1977*

8. *SHvejcer A.D., Nikol'skij L.B. Vvedenie v sociolingvistiku. M., 1978*
9. *Panov M.V. Sociofonetika. – V kn.: Panov M.V. Sovremennyy russkij yazyk. Fonetika. M., 1979*
10. *Teoreticheskie problemy social'noj lingvistiki. M., 1981*
11. *Zvegincev V.A. Social'noe i lingvisticheskoe v sociolingvistike. – Izvestiya AN SSSR. Seriya literatury i yazyka, vyp. 3. M., 1982*
12. *Vinogradov V.A., Koval' A.I., Porhomovskij V.YA. Sociolingvisticheskaya tipologiya. – V kn.: Zapadnaya Afrika. M., 1984*
13. *Krysin L.P. Sociolingvisticheskie aspekty izucheniya sovremennogo russkogo yazyka. M., 1989*
14. *Diahronicheskaya sociolingvistika. Otv. red. V.K.ZHuravlev. M., 1993*
15. *Mechkovskaya N.B. Social'naya lingvistika. M., 1996*
16. *Belikov V.I., Krysin L.P. Sociolingvistika. M., 2000*



CREATING AN EFFICIENT PARALLEL CORPUS FOR BANGLA-ENGLISH STATISTICAL MACHINE TRANSLATION

A. A. Tanveer Hossain¹

¹Department of Computer Science and Engineering,
 United International University

Foysal Ahmed Bhuiyan²

²Department of Computer Science and Engineering,
 United International University

Md. Adnanul Islam³

³Department of Computer Science and Engineering,
 United International University

ABSTRACT

Parallel corpora are essential resources for multifarious linguistic analyses. In this article, we collect the data mostly from OPUS corpus, and preprocess the data for Bengali → English machine translation manually. We use MOSES (an SMT toolkit) for translating the Bengali texts. In this article, we elaborately discuss about collecting and formatting data, and an efficient translation mechanism from Bengali to English. To this context, we also evaluate the performance or translation accuracy in terms of BLEU, METEOR, and TER score.

KEYWORDS: *parallel corpus; machine translation; statistical machine translation; natural language processing*

INTRODUCTION

A parallel corpus is a collection of text and each text is translated to another language. Here in this case only two languages are involved - English and Bengali. Using this collection, we will make a web based translator. So parallel corpus translation can be either unidirectional, bidirectional and multi directional. Our Translation is unidirectional, i.e., from Bengali text translated into English text. Collecting large-scale parallel corpus is needed huge attention.

A plethora of people are not well at interacting with English. Therefore, our study aims to motivate the Bengali monolingual speakers to learn the English language very easily, as learning English language is quite important at present. Moreover, an efficient machine translator relies heavily on the availability of necessary parallel corpora, which is lacking for Bangla-English language pair [11, 13]. Considering these aspects, the major objectives of this study are as follows:

1. We collecting a large amount of Bangla-English parallel sentences.
2. We perform necessary preprocessing by cleaning and formatting the collected data.
3. Next, we train MOSES using our created dataset.
4. Using MOSES, we translate Bengali texts to English.

5. Finally, we test the output for measuring the translation performance using our created parallel corpus.

LITERATURE REVIEW

Parallel corpora proved to be extremely advantageous for cross linguistic research and translation in recent years. Although Bangla language is spoken by more than 210 million people all over the world as a first or second language, English has become the prominent language in today's world [12, 14]. To understand English, we aim to create an efficient Bangla → English translator. In existing literature, several approaches have been used to create bilingual or monolingual corpora. We analyze several such techniques with higher accuracy, which are summarized in Table 1.

Table 1: Summary of several existing studies

Research paper	Year	Key contribution(s)
Resnik et al. [1]	2004	This study describes techniques for mining the Web to extract the parallel text it contains. STRAND is an architecture for structural translation recognition and acquiring natural data.
Mumin et al. [2]	2012	This study introduces an English-Bengali sentence-aligned parallel



		corpus consisting of more than 200,000 sentences.
Khosla et al. [3]	2018	This work presents a survey of the existing methods of building a parallel Corpus. Moreover, it discusses sentence alignment approach, web mining approach, manual approach, and machine translation approach.
Hasan et al. [4]	2019	This work describes how the performance of the models differ based on the data and modeling techniques. It also compares the results obtained from Google's machine translation system.
Rahman et al. [5]	2010	It shows how to use the root word to translate into English Sentence from Bangla sentence. It deals first to find out the root word from the database by defining the parts of speech of that sentence. Then, it detects the proper grammatical structure of that sentence for the target language.
Garg et al. [6]	2011	This study uses grapheme based method to model the transliteration problem by achieving an accuracy of 93.22%.
Akan et al. [7]	2020	This research focuses and investigates the complex issues of transliteration and translation from the Bangla into English, and tries to find suitable solutions on the basis of a need-based analysis and argument.
Mumin et al. [8]	2001	This paper describes an implementation process of a Machine Translator system between Bangla and English. Linguistic Knowledge (LK) architecture is preferred to implement this architecture. In this system, Lexical Functional Grammar (LFG) framework is used.
Uddin et al. [9]	2005	This study utilizes some complex Bangla sentence types, and tries to solve them by creating some new parameters.
Hasan et al. [10]	2019	This work shows different NMT Bidirectional Long Short algorithms Term Memory (LSTM) and Transformer based NMT, to translate the Bangla to English language.

In summary, none of these studies consider a plausibly large amount of data for Bangla→English translation. Moreover, average accuracy or performance level is quite low for Bangla→English translation using the existing approaches.

METHODOLOGY

Our proposed methodology undergoes several major steps as mentioned below:

- Obtain the raw data
- Extract and align the document
- Prepare the corpus for statistical machine translation (SMT) systems

Figure 1 reflects the proposed methodology of our article.

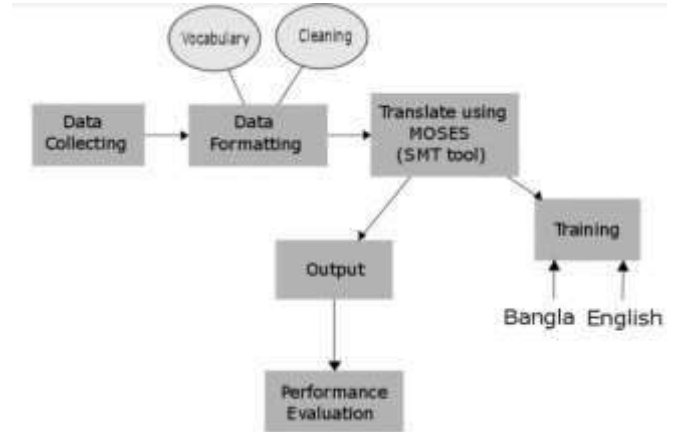


Fig. 1: Proposed methodology

Data Cleaning and Formatting

The process of data cleaning is to detect and correct or remove inaccurate data from the dataset. Here, we have cleaned inaccurate or invalid characters from the corpus that are not in either Bangla or English form. For formatting, we manually align several Bangla-English sentence pairs, and perform proper translations wherever incorrect translations are found.

Translation Using MOSES (SMT Toolkit)

MOSES is an implementation of the statistical or data-driven approach to machine translation. This is one of the superior approach as an SMT tool in the field at the moment. It is employed by the online translation systems established by the likes of Google and Microsoft. Here, we use standard external tools for some of the language modeling and processing tasks such as GIZA++, SIRLM.

Training

The training dataset consists of input vector pairs and parallel output vector. We use both Bangla and English data, and the output is Bangla to English translation. In MOSES, the training process takes in the source and target data and uses occurrences of words and segments to conclude translation connects between the two languages.

Training Pipeline and Decoder

The two main components in MOSES are - 1. The training pipeline and 2. The decoder. The training pipeline is a collection of tools which is written in Perl, with some in C++. It takes the raw data, which turn it into a machine translation model. Generally, the data need to be prepared and explicitly cleaned before starting training, tokenizing the data and converting tokens to a standard case. The decoder is a single C++ application. It mainly takes the trained machine translation model and source data to be translated as inputs, and translates the source data into the target language.

Performance Evaluation

Next, we perform the performance evaluation of Bangla→English machine translator using our dataset. We evaluate the translation performance using three standard performance metrics – BLEU, METEOR, and TER [15].

BLEU is one of the most popular automated and inexpensive metrics, which evaluate the quality of the machine translated text. BLEU also proposes an algorithm, called ‘corpus bleu’ to calculate the BLEU score for multiple sentences, for example - a paragraph or an article. The TER score measures the amount of editing that a translator would have to perform to change a translation so it exactly matches a reference translation. By repeating this analysis on a large number of sample translations, it is possible to estimate the post-editing effort required for a project. In TER a higher score is a sign of more post-editing effort and so the lower the score the better, as this indicates less post-editing is more required. METEOR can now automatically learn a version for a new target

language using only the parallel data used for MT system development. The METEOR automatic evaluation metric scores machine translation hypotheses by aligning them to one or more reference translations.

IMPLEMENTATION AND RESULTS

Environment Setup

MOSES is a SMT tool which offers two types of translation models: one is phrase-based and another is tree-based. MOSES features organized translation models that enable the unification linguistic at the word level. Moses then allows new source language text to be decoded using trained statistical models to produce automatic translations in the target language. Figure 2 and Figure 3 show how we install MOSES in our machine using Linux operating system.

```
nithun@nithun-Z170X-Gaming-3:~$ git clone https://github.com/noses-smt/nosesdecoder
Cloning into 'nosesdecoder'...
remote: Enumerating objects: 187, done.
remote: Counting objects: 100% (187/187), done.
remote: Compressing objects: 100% (105/105), done.
Receiving objects: 16% (24192/147482), 5.16 MiB | 122.60 KiB/s
```

Fig. 2: Importing MOSES from GIT

```
nithun@nithun-Z170X-Gaming-3:~/nosesdecoder/boost_1_69_0$ ./b2 -j4 --prefix=$PWD
--libdir=$PWD/lib64 --layout=system link=static install || echo FAILURE
Performing configuration checks
- 32-bit : no
- 64-bit : yes
- arm : no
- mips1 : no
- power : no
- sparc : no
- x86 : yes
- symlinks supported : yes
- lockfree boost::atomic_flag : yes
```

Fig. 3: Installing MOSES with Boost

GIZA++ (Figure 4) is an SMT toolkit which used to train IBM Models 1-5 and an HMM word alignment model. It uses these models to compute Viterbi Alignments for SMT. It is an implementation of IBM

model and it treats word alignment. It improved incomprehension calculation for models IBM-1, IBM-2 and HMM. It implements pegging, implemented a series of heuristics in order to make pegging properly efficient.

```
nithun@mithun-Z170X-Gaming-3:~$ git clone https://github.com/lngvietthang/giza-pp.git
Cloning into 'giza-pp'...
remote: Enumerating objects: 140, done.
remote: Total 140 (delta 0), reused 0 (delta 0), pack-reused 140
Receiving objects: 100% (140/140), 210.75 KiB | 285.00 KiB/s, done.
Resolving deltas: 100% (32/32), done.
nithun@mithun-Z170X-Gaming-3:~$ git clone https://github.com/lngvietthang/giza-pp.git
fatal: destination path 'giza-pp' already exists and is not an empty directory.
nithun@mithun-Z170X-Gaming-3:~$ cd giza-pp
nithun@mithun-Z170X-Gaming-3:~/giza-pp$ make
make -C GIZA++-v2
make[1]: Entering directory '/home/nithun/giza-pp/GIZA++-v2'
mkdir optimized/
g++ -Wall -Wno-parentheses -O3 -funroll-loops -DNDEBUG -DWORDINDEX_WITH_4_BYTE
-DBINARY_SEARCH_FOR_TTABLE -DWORDINDEX_WITH_4_BYTE -c Parameter.cpp -o optimiz
ed/Parameter.o
```

Fig. 4: Installing GIZA++

SRILM (Figure 5) is a toolkit which support Moses SMT system hierarchical phrase based SMT system. The toolkit can be downloaded and used free of charge. The main features of SRILM are to Generate the n-gram count file from the corpus and train the language model from the n-gram count file and calculate the test data incomprehension using the trained language model. To train the model properly, we have to make source and target languages word alignment using GIZA++, phrase extraction and scoring. It creates lexicalized reordering

tables and configuration file of MOSES. To train 3.5 hundred thousand data this took about 5 hours using 4 cores on a powerful desktop (Intel i5-6500, 16GB RAM, AMD Radeon RX570 GPU). After finishing the training, it creates a 'moses.ini' file in the designated directory. We can use the model specified by this ini file to translate.

```
++ -Wall -W -DNDEBUG -O3 -funroll-loops -o mkcls GDAOptimization.o HCOptimizati
n.o Problem.o IterOptimization.o ProblemTest.o RROptimization.o MYOptimization
.o SAOptimization.o TAOptimization.o Optimization.o KategProblemTest.o KategProb
emKBC.o KategProblemWBC.o KategProblem.o StatVar.o general.o mkcls.o
make[1]: Leaving directory '/home/nithun/giza-pp/mkcls-v2'
nithun@mithun-Z170X-Gaming-3:~/giza-pp$ cd /usr/share/srilm
nithun@mithun-Z170X-Gaming-3:~/giza-pp$ sudo gedit Makefile
[sudo] password for nithun:
gedit:17905): Tepl-WARNING **: 08:31:49.198: GVfs metadata is not supported. Fa
lback to TeplMetadataManager. Either GVfs is not correctly installed or GVfs me
adata are not supported on this platform. In the latter case, you should config
re Tepl with --disable-gvfs-metadata.
nithun@mithun-Z170X-Gaming-3:~/giza-pp$ sudo apt-get install tcsh
Reading package lists... Done
Building dependency tree
Reading state information... Done
tcsh is already the newest version (6.21.00-1).
The following packages were automatically installed and are no longer required:
  cpp-8 gcc-8-base libcaf-openmpi-3 libfprint-2-tod1 libgcc-8-dev
  libgfortran-8-dev libllvm9 libnpx2
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
nithun@mithun-Z170X-Gaming-3:~/giza-pp$
```

Fig. 5: Installing SRILM

RESULTS AND DISCUSSIONS

We divide our corpus into training, development, and testing data. Note that, training and testing are mutually exclusive of each other. For decoding process (i.e., generating translations), we use a subset of our

Bangla-English parallel corpus, which contains 1,000 Bangla source sentences. After testing these source sentences with MOSES, the generated translations are reasonably close to the reference sentences (Figure 7).

This process of generating translation is reflected in Figure 6 and Figure 7.

```

mithun@mithun-Z170X-Gaming-3:~/Desktop/Work/model$ ~/mosesdecoder/bin/moses -f moses.ini.1 < /home/mithun/Desktop/Work/model/in > out
Defined parameters (per moses.ini or switch):
  conflu: moses.ini.1
  distortion-limit: 6
  feature: UnknownWordPenalty WordPenalty PhrasePenalty PhraseDictionaryMemory name=TranslationModel0 num-features=4 path=/home/mithun/Desktop/Work/model/phrase-table.1 input-factor=0 output-factor=0 LexicalReordering name=LexicalReordering0 num-features=6 type=wbe-msd-bidirectional-fe-allff input-factor=0 output-factor=0 path=/home/mithun/Desktop/Work/model/reordering-table.1.wbe-msd-bidirectional-fe.gz Distortion KENLM name=LM0 factor=0 path=/home/mithun/Desktop/Work/ln/toy.binlm.1 order=5
  input-factors: 0
  mapping: 0 T 0
  weight: UnknownWordPenalty0= 1 WordPenalty0= -1 PhrasePenalty0= 0.2 TranslationModel0= 0.2 0.2 0.2 0.2 LexicalReordering0= 0.3 0.3 0.3 0.3 0.3 0.3 Distortion0= 0.3 LM0= 0.5
line=UnknownWordPenalty
FeatureFunction: UnknownWordPenalty0 start: 0 end: 0
line=WordPenalty
FeatureFunction: WordPenalty0 start: 1 end: 1
line=PhrasePenalty
FeatureFunction: PhrasePenalty0 start: 2 end: 2
line=PhraseDictionaryMemory name=TranslationModel0 num-features=4 path=/home/mit
    
```

Fig. 6: Decoding by MOSES

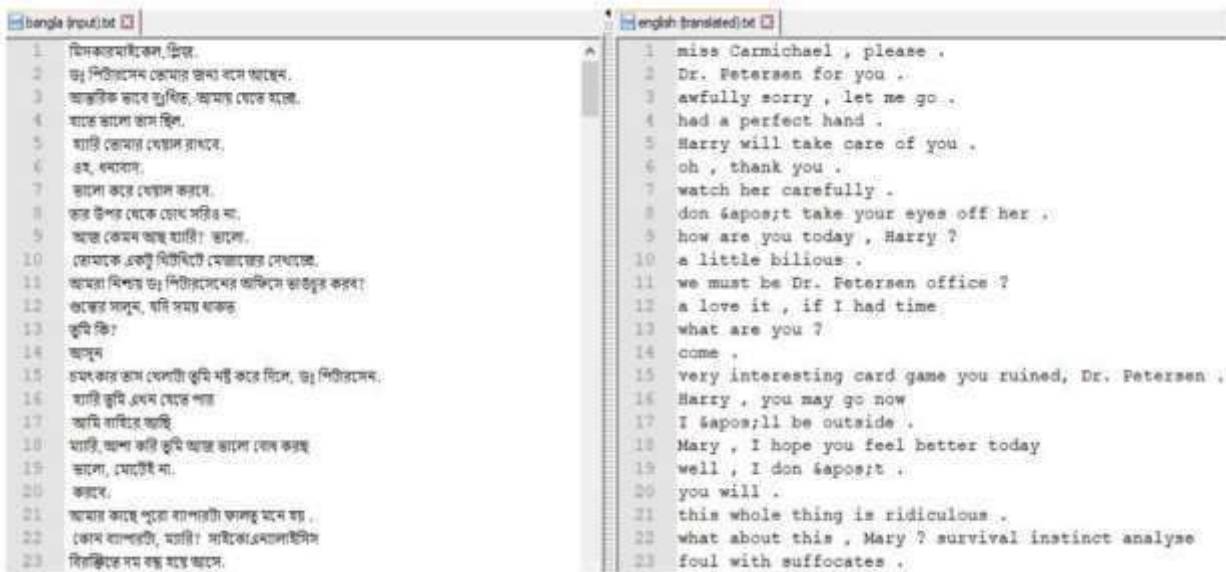


Fig. 7: Snippet of our generated Bangla to English translations

Next, we show the evaluation of our translations in terms of three different performance scores – BLEU, METEOR, and TER in Table 2. In Table 2, we find that our achieved BLEU, METEOR, and TER scores are 19.2, 27.7, and 83.2 respectively. Note that higher BLEU and METEOR scores and lower TER score indicate better performance.

Table 2: Performance scores of Bangla→English translation using our dataset

Performance score	SOTA (Baseline)	MOSES with our dataset	Improvement over SOTA
BLEU	18.5	19.2	4%
METEOR	25.6	27.7	8%
TER	86.6	83.2	4%

These scores create a benchmark performance for state-of-the-art (SOTA) Bangla→English machine translation approaches. This result indicates the efficacy of our created novel parallel corpus for Bangla-English



translation, which can be a useful resource for the researchers in future.

CONCLUSION

Translators play a very important role in different real life applications [11]. Now-a-days, most of the global organizations thrive for higher accuracy in translating from one language to the desired language. Hence, our goal is to make such a tool that offers higher translation performance and also can achieve proper market value. However, such translation tools require rigorous training with more than a million parallel data of the highest quality. Thus, time and resource become immediate limitations of machine translation systems. Moreover, corpus-based translators (e.g., MOSES) cannot realise the highly sensitive rules of grammatically rich languages such as Bangla, since they do not explicitly deal with rules. Nevertheless, adding rules is a tough and time consuming task. Besides, ensuring quality data for training a machine translator seems to be a never-ending process. Therefore, the future work of this study includes enhancing the quality of our employed parallel Bangla-English corpus. Furthermore, our aim is to develop this tool for the low-resource Asian languages in order to translate them into English language. Apart from this, we plan to develop groundbreaking algorithm(s) to effectively realise the sensitive rules from quality parallel corpora.

REFERENCES

1. Noah. Resnik, Ps Smith. *The web as a parallel corpus. computational linguistics.* 2002.
2. Abu Shoeb Md Selim Mohammad Iqbal Muhammed Mumin, Mohammad Awal. *Supara: A balanced english-bengali parallel corpus.* 2012.
3. Sonal Khosla. *A survey report on the existing methods of building a parallel corpus. International Journal of Advanced Research in Computer Science.,* 2018.
4. Firoj Chowdhury Shammur Khan Naira. Hasan, Md. Arid Alam. *The web as a parallel corpus. computational linguistics.* 2019.
5. Sangita Ph. D. M. Huda Mohammad. Rahman, Md Poddar. *Open morphological machine translation: Bangla to english.* 2010.
6. Vishal. Garg, Kamal Goyal. *Development of a punjabi to english transliteration system. International Journal of Computer Science and Communication.,* 2011.
7. Faruquzzaman. Akan. *Transliteration and translation from bangla into english: A problem solving approach.* 2020.
8. Mohammad. Mumin. *An implementation of machine translation between bangla and english.* 2001.
9. Mahbub Hasan Muhammad. Uddin, Mohammad Murshed. *A parametric approach to bangla to english statistical machine translation for complex bangla sentences.* 2005.
10. Firoj Chowdhury Shammur Khan Naira. Hasan, Md. Arid Alam. *Neural machine translation for the bangla-english language pair.* 2009.
11. Md. Adnanul Islam and A. B. M. Alim Al Islam, "Polygot: Going Beyond Database Driven And Syntax-based Translation", in *Proceedings of the 7th Annual Symposium on Computing for Development, ACM, 2016.*
12. Md. Adnanul Islam, Md. Saidul Hoque Anik, and A. B. M. Alim Al Islam, "Polygot: An Approach Towards Reliable Translation By Name Identification And Memory Optimization Using Semantic Analysis", in *Proceedings of the 4th International Conference on Networking, Systems and Security (NsysS), IEEE, 2017.*
13. Md. Saidul Hoque Anik, Md. Adnanul Islam, and A. B. M. Alim Al Islam, "An Approach Towards Multilingual Translation By Semantic-Based Verb Identification And Root Word Analysis", in *Proceedings of the 5th International Conference on Networking, Systems and Security (NSysS), IEEE, 2018.*
14. S. Sakiba, M. Shuvo, J. Mela, B. Saha, N. Sultana, and M. Islam, "A Memory-Efficient Tool for Bengali Parts of Speech Tagging". In: *Hemanth D., Vadivu G., Sangeetha M., Balas V. (eds) Artificial Intelligence Techniques for Advanced Computing Applications. Lecture Notes in Networks and Systems, vol. 130, Springer, 2020.*
15. H. Hasan, M. Islam, M. Hasan, A. Hasan, S. Rumman, and N. shakib, "A Spell-checker Integrated Machine Learning Based Solution for Speech to Text Conversion", in *Proceedings of the 3rd International Conference on Smart Systems and Inventive Technology (ICSSIT), IEEE, 2020.*



PERCEIVED MENTAL HEALTH AND LEARNING ENVIRONMENT OF STUDENTS IN NEPAL DURING COVID-19 OUTBREAK

Noora Shrestha

Assistant Professor,
Department of Mathematics and Statistics,
P.K. Campus,
Tribhuvan University,
Nepal
<https://orcid.org/0000-0003-3905-6098>

Article DOI: <https://doi.org/10.36713/epra6333>

ABSTRACT

The COVID-19 pandemic has brought into attention the mental health of various affected populations including children and youth. The objective of the study was to assess the perceived mental health and learning environment of college students in Nepal during COVID-19 outbreak.

The college students enrolled in bachelor's degree completed a self-administered questionnaire survey. The students were approached through text messaging and email and selected with non-probability sampling during the pandemic. The study assessed information on demographic characteristics, academic difficulties, financial and family difficulties, and mental health issues with coping mechanism during the outbreak.

Descriptive findings revealed that the academic difficulties were more likely to be reported by high percentage of students. The students also described they were facing family and financial problems. High percentage of students was associated with depressive thought. To cope with anxiety and depressive thoughts, more than half students have pursued support from family and friends, helped themselves with self-management activities during the pandemic.

The COVID-19 pandemic situation is making a significant negative impact on mental health and learning environment of college students. The study suggests that health service providers and educators need to consider proactive measures to support the mental health and learning environment of students.

KEYWORDS: COVID-19, Mental Health, Learning Environment, Academic Difficulties, Financial Problems, Depressive Thought, Coping Mechanism, Self-management.

1. INTRODUCTION

The COVID-19 pandemic is causing more than 1.6 billion children and youth (80% of the world's enrolled students) to be out of school in 161 countries as of March 28, 2020 (WHO, 2020). In the year 2020, most of the people were suffered from the corona virus outbreak. The government of Nepal announced suspension of all international flights followed by a countrywide full lockdown since 23 March 2020 because of which many people including children and

youth spent their time staying at home (MoHP, 2020). This pandemic has greatest threats in the global education and created an enormous educational crisis, which might have an immediate impact on children and youth (WHO, 2020).

The previous literature examined that in short period of COVID-19 pandemic, the college students' lives have considerably changed with the new experience of life. Few literatures examined that the pandemic has potential to affect college students



mentally, academically, financially, and socially. The studies also mentioned that some students felt difficulties with access to laptops and the Internet at home. Furthermore, students also reported that they were worried about the health of family members, exam, grades, and insecurity (Son et al., 2020; Al Ateeq et al., 2020; Kecojevic et al., 2020).

Some of the schools, colleges, and universities of Nepal used online tools to assure that lesson plans, videos, tutorial, and other resources are available for some students and probably, most teachers. These universities and colleges also facilitated learning material to be downloaded on a smartphone, which more students are likely to have. They trained the teachers to be familiar with online teaching and learning process. Government of Nepal communicated effectively with students, parents and teachers to provide guidelines, instructions and structure to the learning process, using content delivered by social media, radio or television (WHO, 2020; MoHP, 2020).

Nepal introduced the use of a computer in 1971 for the census. In 2014, the Internet penetration was 30.99% and 77.92% mobile telephone penetration in Nepal (ADB, 2017). In 2019, 34% of the population in Nepal had access to the Internet (World Bank, 2020). In Nepal, many schools and colleges that are situated away from the district centers and city areas do not have technical support that could assist in installation and maintenance of computer technology. In addition, most of the schools and colleges do not have teachers with the technical abilities; they have to depend on external technical support.

The interruption of regular school and college has completely disrupted the lives of many students, their parents, and the teachers. To reduce this impact, many academic institutions prepared to move to online learning strategies with a lot of effort and challenges for teachers and parents. In low-income countries like Nepal, many students do not have a desk, books, Internet connectivity, electricity facility, a laptop at home, or supportive parents. Among the total users of Internet, 56% of Internet users are using mobile data (MoCIT, 2019). These issues many cause the negative effect on students' learning environment.

The COVID-19 pandemic situation has enforced the students into a new experience. The students' mental health in college education has been an increasing worry because of the action of the government of Nepal to close all educational institutions, postponing of all national level examinations and prohibiting the gathering of more people. Most of the students missed their regular school and college because going to school is not only about learning course books, but also about social

connections and peer-to-peer communications. Since disease outbreaks can have mental health consequences, the present study explored the perceived mental health and learning environment among the students during the corona virus disease outbreak. It was assumed that the students has experienced online learning first time in their life

2. METHOD

The cross-sectional study was conducted using online questionnaire survey with 115 students studying in colleges of Lalitpur district of Nepal to realize the influence of the pandemic on their mental health and learning environment. In addition, the survey aimed to capture the ways that students have been coping with the mental health problems associated with the pandemic situation. The demographic characteristics, perceived mental health, and learning environment were assessed during COVID-19 occurrence period. These constructs were derived from existing literature identifying prominent factors affecting college students' mental health and learning environment (Son et al., 2020; Al Ateeq et al., 2020; Kecojevic et al., 2020). Feedback on the COVID-19's impact on the given statements of the questionnaire was elicited using a five-point scale: 1(strongly agree), 2(agree), 3(neutral), 4(disagree), and 5(strongly disagree). Participants were asked to elaborate on each response if they wish.

The government of Nepal had declared a nationwide lockdown and issued a stay-at-home order on 24th March 2020 and closed all educational institutes. The colleges closed their regular classes and held all their classes virtually in response to the COVID-19 pandemic. The questionnaire survey was conducted about four months after the stay-at-home order in 1st week of August 2020. Hence, the students were approached through text messaging and email with non-probability sampling during the pandemic. The students provided informed consent to participate in an anonymous survey and they were also informed about voluntary participation. Out of 115, only 100 students completed the survey, resulting in a response rate of 87%. The inclusion criteria for participation were that the student should have been enrolled in the college and age more than 18 years at the time of a survey. Using SPSS version 23, descriptive analysis examined the distribution of all variables of interest. The demographic information of students was expressed in frequency and percentage. The students' perception on learning environment, mental health, and coping with mental health strategies were presented in the table and bar diagram.



3. RESULTS AND DISCUSSION

There were more male students (60%) than female (40%) who completed the self-administered questionnaire survey and the average age was 21.96 and standard deviation 1.97 years. The students were studying bachelor's degree in management in Lalitpur district of Nepal. The permanent residences of the participants were in province-1 (14%), province-2 (16%), Bagmati province (22%), Gandaki province (11%), Lumbini province (6%), Karnali province (13%), and Sudurpashchim province (18%). The students mentioned their participation in online learning ranged from 1 to 5 hours, 38% of them spent 1-2 hours, 34% spent 2-3 hours, 20% spent 3-4 hours, and 8% of students spent 4-5 hours per day. All the students were involved in online classes and other interaction programs using a virtual meeting application 'Zoom.'

3.1 Perceived Learning Environment

The common learning environment challenges that the students face in pandemic are difficulty in online learning, worried about exam and grades, increasing assignment and project work, and distraction by social media.

3.1.1 Students' Academic Difficulties During COVID-19

The sudden outbreak of a COVID-19 trembled the entire country. This pandemic challenged the education system throughout the country and forced educators to shift to an online mode of teaching. Many colleges that were earlier hesitant to change their traditional pedagogical approach had no option but to shift entirely to online teaching learning with

communication apps such as zoom video conferencing apps. Online learning was a new experience to the students and hence, they stated their concerns about sudden changes in teaching learning process, internet problems, technical issues with online applications, and difficulty of learning online.

Figure 1 demonstrates a majority of the students (60%) were eagerly concerned about sudden changes in the teaching method, online learning, and course completion on time. Majority (80%) of them were likely to worry about their final exam. 72% of students revealed they were worried about their grades based on learning online. Due to lack of physical interaction with their teachers and other students and lack of library facilities, 57% of the students were worried about the completion of assignments. Not only this, many students (87%) mentioned they were stressed because of project work and assignment submission date. 56% of the students agreed that there was lack of interactive learning environment on virtual classes. The students revealed very interesting facts that before COVID-19 pandemic, they wished to engage more time on computer, laptop, or mobile devices. During the pandemic period, they spent most of their time on the computer and mobile device. Now, 74% of the students expressed their agreement to the statement that doing everything sitting in front of a computer is a monotonous and bored. In addition, 46% of the students stated that they were experiencing distraction in learning process by social media, movies, and video games. 66% of the students responded that they were experiencing academic difficulties during the pandemic.

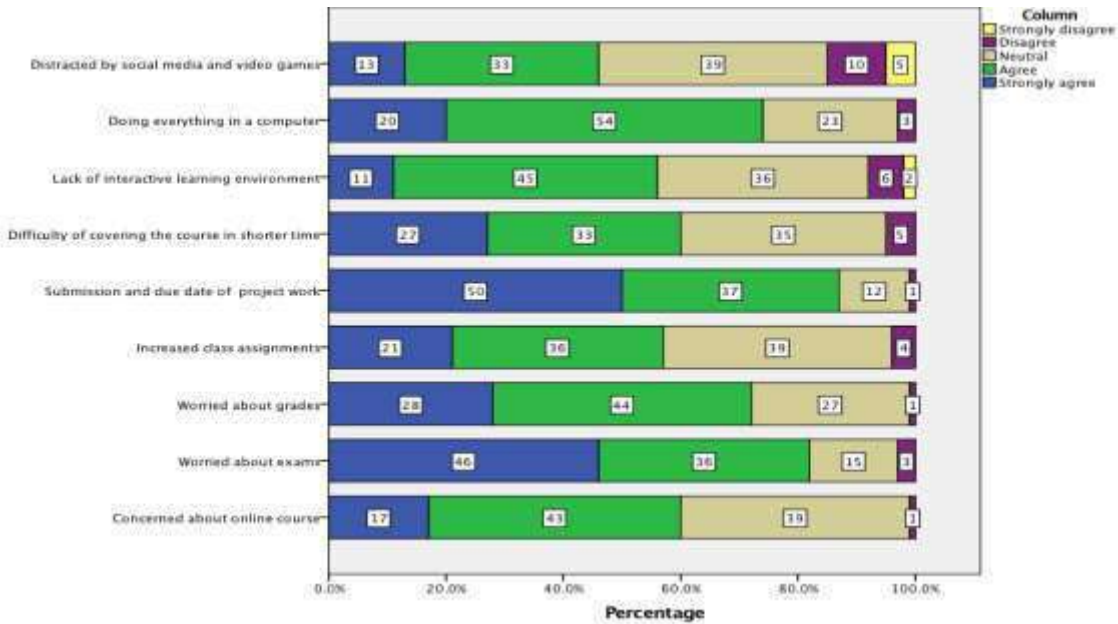


Figure 1. Students' Academic Difficulties

The median value was calculated for the statements that reflect the student's academic difficulties. The average students were neither agreed nor disagreed to the statement 'distracted by social media and video games', according to the median (Md=3) values. The median value (Md=2.0) for other statements indicates that majority of the students agreed that they have experienced difficulties in academic and learning environment during the COVID-19 pandemic.

3.1.2 Students' Financial and Family Difficulties During COVID-19

Table 1 shows more than half of the students expressed their concerns about their financial situations being compressed by COVID-19. These students assumed that pandemic situation is likely to impact

their own and family member's future employment opportunities. The reason for this is not receiving salary from the job of their parents and also a fear of losing the job in the pandemic.

Although the participants are young students, 40% of them mentioned that they were worried about the health of their family members who were more vulnerable, such as grandparents with blood pressure, asthma, and diabetes. A majority of the students (51%) stated that they were worried about their own health and dreaded to be infected by corona virus. 49% of students indicated difficulty in concentrating on online classes due to various sources of distraction at home such as conversation of family members, noise from the kitchen, and neighborhood.

Table 1. Students' Financial and Family Difficulties During COVID-19

Factors	1	2	3	4	5	Median
Financial difficulties	26%	31%	25%	11%	7%	2
Worry about health of family member	13%	27%	32%	20%	8%	3
Distractive environment to study	13%	36%	40%	9%	2%	3
Disruption to eating pattern	34%	37%	20%	9%	0%	2
Disruption to the outdoor activities	19%	22%	32%	24%	3%	3
Changes in the living environment	8%	29%	30%	25%	8%	3
Worry about infected	13%	38%	28%	18%	3%	2

(1- strongly agree, 2- agree, 3-neutral, 4- disagree, 5- strongly disagree)

It is very interesting to know that 71% of students realized disruptions to eating pattern such as

uneven times of eating and omitting meals. Some of them mentioned that they over ate food while involved



in cooking. On the other hand, 9% students reported that they were not having problems in their dietary pattern, as they were eating healthy food at home, not a junk food as usual.

Majority of the students revealed that they stayed with their families, so they could adjust with change in environment during the pandemic whereas 37% of them had difficulties to cope with the new environment. The median values in the table 1, shows that the average agreement of the students to the statement financial difficulties, disruption to eating pattern, and worry about infected during COVID-19 pandemic.

3.2 Perceived Mental Health

The common mental health challenges that the students face in pandemic are depressive thought such as depression, mood swing, eating disorders, anxiety, loneliness, and insecurity. These factors represent only some of the prevalent mental health problems experienced by the college students in the pandemic, which they consider as a part of the college life.

Symptoms for depression and anxiety differ from person to person but when a college life of a student is disrupted, depressive thoughts crosses the line to become a medical condition.

3.2.1 Students' Depressive Thoughts During COVID-19

To assess the impact of the COVID-19 pandemic on students' mental health, few statements were included in the questionnaire and students in the questionnaire and students are asked to rate their perception and presented in table 2. Out of 100 students, 59% agreed that they were suffering from anxiety due to the COVID-19 pandemic, whereas 11% mentioned that they did not have anxiety and 30% of them were neither agreed nor disagreed. Major contributors to the depressive thoughts were depression (48%), mood swing (70%), sleep disorder (32%), insecurity (53%), difficulty with concentration (68%), loneliness (60%), overthinking (56%), and social isolation (44%).

Table 2. Students' Depressive Thoughts During COVID-19

Factors	1	2	3	4	5	Mode
Anxiety	13%	46%	30%	11%	0%	2
Depression	21%	27%	29%	15%	8%	3
Mood Swing	20%	50%	13%	17%	0%	2
Sleep Disorder	15%	17%	45%	23%	0%	3
Insecurity	23%	30%	28%	17%	2%	2
Difficulty with concentration	26%	42%	21%	9%	2%	2
Loneliness	22%	38%	23%	17%	0%	2
Overthinking	21%	35%	24%	20%	0%	2
Social Isolation	17%	27%	29%	25%	2%	3

(1- strongly agree, 2- agree, 3-neutral, 4- disagree, 5- strongly disagree)

The modal values on the table 2 shows that there are students whose perception are neutral for the factors depression, sleep disorder, and social isolation. They faced this kind of pandemic first time in their life and could not figure out what was going on in their life. The data depict a major problem faced by students was depressive thoughts.

3.2.2 Coping with Mental Health During COVID-19

To cope with the mental health difficulties foisted by COVID-19, the students were trying to overcome with this situation using various self-management activities, and seeking help from family members. 41% of the students explained that they were involved in meditation and simple yoga exercises to help themselves cope with mental health problems

during the pandemic. Many of the students used positive coping methods such as regular exercises (50%), stay calm (46%), stay alone and enjoy (59%), and ignoring the news (56%) about COVID-19.

Majority of the students (73%) used relaxing method, for instant, listening to the music and paying video games. Half of the students (50%) declared that interaction with parents, sharing feelings with the family member and online discussion with the friends was the best way to deal with their mental health and other issues. The students also helped themselves to manage with mental health difficulties cooking variety of food, involving in other household tasks, playing indoor games, and sleeping longer. More than half (55%) of the participants were trying to cope with mental health issues with self-management activities during the pandemic.

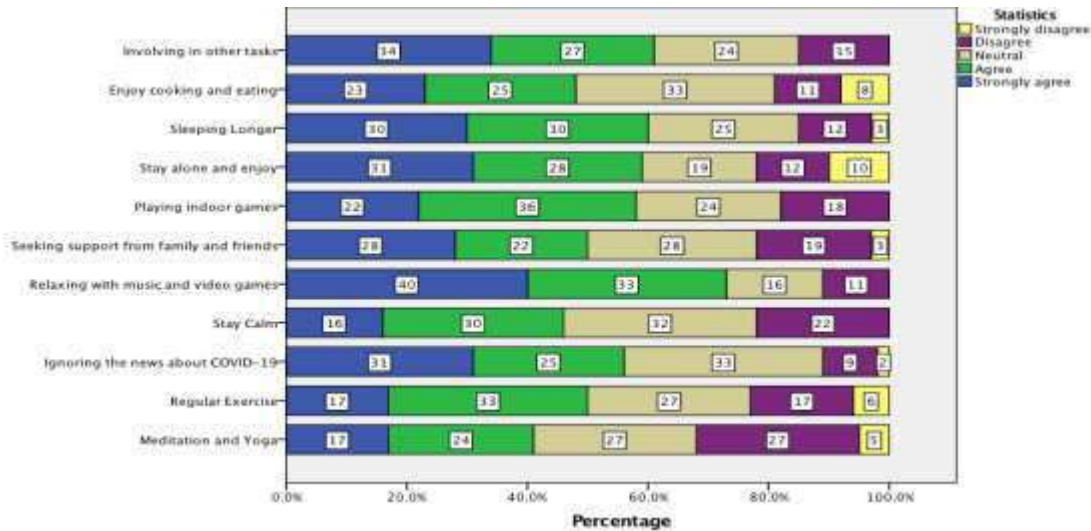


Figure 2. Coping with Mental Health

The previous studies showed that COVID-19 outbreaks influenced students' mental health and wellbeing. The studies also revealed that most of the students were suffering from stress, anxiety, depression, and loneliness during pandemic. The findings of this study are comparable to other national and international studies that were conducted during the pandemic (Dangal et al., 2020; Son et al., 2020). Most of the studies selected young students as a sample with convenient sampling method. The questionnaire items were measured by five-point Likert scale. The findings showed that online learning was associated with stress, financial difficulties, and academic difficulties of the students. In addition, the literatures attempted to disclose the coping mechanism with self-management activities such as breathing exercise, relaxing hobbies, and psychological counseling. A high level of stress was observed among the female students comparing to the male (Al Ateeq et al., 2020; Kecojevic et al., 2020).

The present study was conducted during the pandemic with the online survey and hence, this study acknowledge some limitations. The non-probability sampling used for the online survey of a sample limits the generalizability of the results. The study findings were based on the self-reported questionnaire survey that may affect the participations response analysis. The cross-sectional study design prohibits the ability to make causal inferences, as data represents a single moment in time.

4. CONCLUSION

The study discussed the college students' perceived learning environment and mental health during COVID-19 pandemic. This pandemic situation

is making a significant negative impact on mental health and learning environment of college students. The present study may shed light on the existing mental health problems among students in Nepal and suggest that health service providers and educators need to consider proactive measures to support the mental health and learning environment of students. Proactive efforts to support students' wellbeing, ensuring they have self-management skills to handle the pandemic situation are desirable. The results of this study could be used as a baseline and further studies can be conducted with probability sampling, more sample size, and longitudinal research design to examine other relevant constructs.

REFERENCES

1. WHO. (2020). *Maintaining essential health services: Operational guidance for the COVID-19 context interim guidance*. World Health Organization. <https://www.who.int/publications/i/item/WHO-2019-nCoV-essential-health-services-2020.1>
2. MoHP. (2020). *Health sector emergency response plan: COVID-19 pandemic*. Government of Nepal, Ministry of Health and Population. <https://publichealthupdate.com/health-sector-emergency-response-plan-mohp-nepal/>
3. Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). *Effects of COVID-19 on college students' mental health in the United States: Interview survey study*. *Journal of Medical Internet Research*, 22(9), e21279. <https://doi.org/10.2196/21279>
4. AlAteeq, D.A., Aljhani, S., & AlEesa, D. (2020). *Perceived stress among students in virtual classrooms during the COVID-19 outbreak in KSA*.



- Journal of Taibah University Medical Sciences*, 15(5),398-403. doi: 10.1016/j.jtumed.2020.07.004.
5. Kecojevic, A., Basch, D.H., Sullivan, M., & Davi, N.K. (2020). *The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, Cross-sectional study. PLoS ONE*, 15(9), e0239696. doi:10.1371/journal.pone.0239696.
 6. WHO. (2020). *WHO Nepal Situation Updates on COVID-19. World Health Organization. <https://www.who.int/nepal/news/detail/19-01-2021-who-nepal-situation-update>.*
 7. ADB. (2017). *Innovative strategies for accelerated human resource development in South Asia information and communication technology for education: Special focus on Bangladesh, Nepal and Sri Lanka. Asian Development Bank: Philippines.*
 8. World Bank. (2020). *Individuals using Internet (% of population) Nepal. <https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=NP>*
 9. MoCIT.(2019). *Digital Nepal framework: Unlocking Nepal's growth framework. Government of Nepal, Ministry of Communication and Information Technology.*
 10. Dangal, M.R. & Bajracharya, L. S. (2020). *Students' anxiety experiences during COVID-19 in Nepal. Kathmandu University Medical Journal. COVID-19 special issue, 70(2), 53-57.*