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MARKETING PRACTICES OF NGO'S IN TELANGANA STATE

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INTRODUCTION

A Non-Governmental Organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. Task-oriented and driven by people with a common interest. NGOs perform a variety of service and humanitarian functions, bring citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information. Some are organized around specific issues, such as human rights, environment or health, improving and developing work. They provide analysis and expertise, serve as early warning mechanisms and help monitor and implement international agreements. Their relationship with offices and agencies of the United Nations system differs depending on their goals, their venue and the mandate of a particular institution.

NGOs are difficult to define, and the term 'NGO' is not always used consistently. In some countries the term NGO is applied to an organization that in another country would be called an NPO (Non Profit Organization), and vice-versa. There are many different classifications of NGO in use. The most common focus is on "orientation" and "level of operation". An NGO's orientation refers to the type of activities it takes on. An NGO's level of operation indicates the scale at which an organization works, such as local, regional, national, or international

Marketing is a very important function in business practices. It entails making the customer aware of the proposition of a product or service, making them buy the product/ service, and ultimately building a brand. In nonprofits too, the marketing principles hold good because there is requirement of funds to carry on existing functions and to build capacities for future. So, the donor is our customer here, and the cause or project is a product!

Research and evidence has shown that marketoriented organizations, which understand the target audience thoroughly, are the most successful ones. How would one attract a customer (a donor here) if there are no efforts made towards building a brand and a customer base? So, let us understand the applicability of marketing principles for NGOs, to understand why they need marketing and why it is necessary to realize the importance of concerted efforts and allocating resources towards it.

The major challenge of NGOs is to influence the behavior of the people and that is all what marketing is about. Though, many of NGOs fail to have marketing engines but rather more focus on the needs of the beneficiary than the donor and scarcely reach the fund.

NGOs India have been providing the information and basic profiles of Non Governmental Organisations (\underline{NGO}) / Non Profit Organisations (\underline{NPO}) / Voluntary Organisations of various states, districts, cities, towns and villages of India. Funding agencies, supports and volunteers use to find out and get the data and information from the NGOs India. You can enlist your NGO to <u>add</u> in this web portal of national NGO network.

DIFFERENCE BETWEEN VARIOUS TYPES OF NGOS

All the forms as Trust, Society or Non Profit Company are known and classified as NGO. Society, Trust or Non Profit Company all are known and identified as NGO, only formation, registration and management processes are main difference. There are other differences given below. Those who want to form or run NGO can check and find that what kind of NGO formation they prefer. NGO can be formed in any type for social welfare and social development.



Procedures, Rules and Requirements	Company	Society	Trust
Registration processes have the status of Non Profit Organisation (NGO) / Non Profit Organisation (NPO)	Non Profit Company is an NGO/ NPO.	Society is an NGO / NPO.	Trust is an NGO / NPO There is no difference in the registration process in the status of 'NGO' in any organisation registration process
Law/Act applied for to register NGO	Companies Act.	Societies Registration Act, 1860	Indian Trusts Act/ Bombay Public Trusts Act
Time takes to Form	3-6 Months.	1-2 Months.	From 2 days to one week.
Registering Authority	Registrar of Company.	Registrar or Deputy Reg. of Societies of the concerned State/ Charity Commissioner.	Sub-Registrar of Registration/ Charity Commissioner.
Issue of Name approval	Before registration name approval is required by application to ROC.	If any other NGO is not registered with the required Name in the particular jurisdiction of registration, then it is possible. And if any other Society (NGO) is registered with the name in that registrar then it can not be approved and provided.	Name approval is not required, if the name is not under Emblem Act.
The State Emblem of India (Prohibition of Improper Use) Act, 2005	Name cannot be approved if the name is restricted under the Emblem Act.	Name cannot be approved if the name is restricted under the Emblem Act.	The names restricted under the Emblem Act can be disapproved. But sometimes some Deputy Registrars and Readers refuse the other names which are not under the Emblem Act, just due to their personal and unofficial reasons, this is illegal they can not do it. If they do such actions, they can be legally challenged against their offensive and unauthorised actions.
Eligibility of Family Members to be Member of Organisation	Anybody can be the director of a Company. But certain Government Ministries/ Departments and funding agencies can refuse funding for the Company having same family members as directors.	Members of the same family can not be member in a Society.	There is no restriction in formation of a Trust with members of the same family. But certain Government Ministries/ Departments and funding agencies can refuse funding to the Trusts those are having same family members as Trustee. So initially family members can be there to form NGO but at the time of funding from certain Ministries or Funding agencies the Trustees can be changed.

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Minimum Members/	Minimum Two Directors.	Minimum Seven	At least (Minimum) Two
Directors/ Trustees at state level Registration required		Members.	Trustees.
Minimum Members at National level required	Minimum Two Directors.	Minimum Eight Members from 8 different states are required in National level Society.	Minimum Two Trustees only, no limit of maximum Trustees/ Members.
Governing Structure	 General Body of Directors. Board of Directors. 	 General Body. Executive Committee. 	 General Body/Board of Trustees. Executive Committee. Or Only one General Body of Trustees
Area of operation of NGO	Company can be operated throughout India. National validity is there as the registration is granted by the Central Government.	Society can be operated throughout India when registered as a National level society. When a society is registered in one State, area of operation will be in that state only.	Registration under Trust Act has national validity and can operate throughout India. Some certain terms, clauses and processes are applicable during registration and after registration.
Status for Rights of Vote and Power	Provision of the voting rights vary on the basis of share holding capacity of Directors.	All members of a society have equal rights in the General Body.	All Trustees have equal rights except the Settler, if there are any specific powers are provided. Authorised persons have different powers
Can get funding. There is no difference to get funding in any of the NGO form.	Company can have funding possibilities.	Society can get funding if it is eligible according to the terms of the funding agencies or Government Ministries or departments.	Trust can get funding if it is eligible according to the certain terms of the funding agencies or Government Ministries or departments.
Annul Reports and other Documents to be submitted or filed apart from Income tax department	Company has to submit Annual Return and audited accounts at the financial year end.	According to the Section 4 of Societies Registration Act Annual list of managing body is to be filed every year. Resolutions are also submitted for approval in certain cases in certain states and in all or certain cases in some states.	No Annual report, resolution or any documents are required to be submitted or filed after registration of Trust to Registering authorities. Only the General body and other executive committees or any sub committees have to maintain their own registers of meetings, resolutions, decisions and/or any other activities regarding decisions.
General Body and Board meetings	In the Companies Act there are specific provisions of meetings. At least one Annual General Meeting and 4 Board meetings are required to be held every year.	General Body and Board meetings are required to be held as prescribed in the bye laws of the society. To follow the democratic pattern of society, regular meetings should be held for active societies.	No provisions exist to organise meetings. But to follow the democratic pattern of working of NGO registered under Trust Act, regular meetings should be organised for active Trusts. To organise meetings, adequate rules can be framed in the trust deed.
Transfer of Directorship/	Directorship can be	Membership of Society is	There is no provision to

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Membership/ Trusteeship	transferred. Restriction on	not transferable according	transfer the Trusteeship in
	the transfer can also be	to the Act.	the Indian Trust Act
	placed.		
Can use Foundation,	Foundation, Samiti word	Foundation, Samiti,	In the name of Trust the
Trust, Society, Samiti,	can be used with the	Society, Organisation	words Foundation, Trust,
NGO words with the	name.	words can be used with	Samiti, Society or any
name of organisation		the name of society.	words can be used. No
			need to use Trust word
			along with the name
~			during Trust registration.
Can a foreigner be a	Foreigners can be	A foreigner can be a	There is no restriction and
director/ member/ trustee	directors.	member of society.	provision to foreigners to
			be or not to be members.
			So foreigners can be
If there is a family in a	Those more by southing	It is difficult to get ECD A	members of a Trust.
If there is a foreigner in any NGO	There may be certain difficulties to get FCRA	It is difficult to get FCRA registration if there is any	If there are any foreigner members in a Trust then it
	registration.	foreigner member in a	may not possible to get
	registration.	Society.	FCRA.
Provision of Recurring	Annual Returns and	Negligible and minimum	No statutory recurring
expenditure	balance Sheet are filed	statutory compliances are	expenditure after
<u>F</u>	with certain fees. Have to	required.	registration.
	pay fee if there is any		
	resolution to approve.		
Eligible for School/	Non Profit Company is	Society is eligible for	Trust is eligible for
College Formation	eligible for School/	School/ College formation	School/ College formation
	College formation except	in all States of India,	except in few certain
	in certain States of India.	including Rajasthan.	States of India like
			Rajasthan. So if you want
			to form school/ college in
			those states you have to
			register a separate society
			and can run a Trust as an
			NGO for social
Can manh an ait	Comment hadro of Comment	Concern1 hadre oon normi't	development works.
Can members get	General body of Company	General body can permit	Trustee can not receive
Payment or can not	can approve to get	and approve to get	Payment but if there is a provision to get funds in
	payment.	payment.	provision to get funds in the trust deed then
			Trustees can receive
			payment for project or if
			the Trustee is providing
			professional service or
			consultancy.
			consultancy.

IMPORTANCE OF THE STUDY

NGOs perform a variety of services and humanitarian functions; bring citizens concerns to governments, monitor policy and various other tasks that the government fails to carry out perfectly, or at all. These organizations are not present to put up a competition against those set up by the government. Instead, they provide a "helping hand" to the nation and make the best use of its resources to ensure maximum development. NGOs often hold an interesting role in a nation's political, economic or social activities, as well as assessing and addressing problems in both national and international issues, such as human, political and women's rights, economic development, democratization, healthcare or the environment. NGOs in developing country face a challenge to meet up the proper requirements needed to provide aid in situations betrayed by nature such as famine, droughts, earthquakes, cyclones and etc.

STATEMENT OF THE PROBLEM

The Nonprofit organization realized the importance of marketing since 1980s and early 1990s due to lack of capital resources, charity activities and hard sustainability, even though the number of NPOs are increasing day by day. Therefore, this increase of NGOs is creating competition within each other. On the other hand, surviving on the leading business world and demanding public interest has been another tough challenge for the non-profit sector itself. Hence, the main thrust of this study is to do with an identification of how an NGO's use marketing practices in Telangana.



REVIEW OF LITERATURE

According to Litterer (1969) quoted by Misra, Rajeeb (2008)25,, structure refers to "the identification of elements in an organization and relations between them". Fowler has developed a model of NGO structure that reflects the main characteristics of NGOs. Fowler says that NGOs need to have strengths in fiveareas – organizational design (vision), systems (strategies and programs), mobilization of resources, maintaining external relationships and achieving results consistent with the mission.

M. Moore says that all organizations benefit from committing themselves to a strategy (Moore 2000), even those acting as not for profit. Of course, NGOs offer values which lie in the achievement of social goals where it is difficult to pinpoint a revenue stream, but they may create a strategy focusing on social matters (like a way in which the citizens might be mobilized to contribute to social purposes). Very seldom one may find articles with the opinion, that the formal planning process is not necessary (Crittenden, Crittenden and Hunt 1988). More often authors underline that a basic matter is overall strategic planning, which influences, i.e. on general marketing strategy, and must involve all levels of an organization (Greenley 1984; Tavish 1989). One may find some conceptions of how to adapt business strategies to the non-profit sector by examining similarities between nonprofit-making and profit-making organizations (Smith and Saker 1992; Yorke 1984). Although non-profit organizations frequently seek professional support for market decisions (Briks and Southan 1990) they are more and more often aware of 'customer attitude' necessity (Grønbjerg 2001; Olson and Boyer 2005). It is very important to underline that NGOs have to undergo evolution - create their strategic position encircling proper foundations, innovations and i.e. ideas of modern marketing (Borwn and Kalegaonkar 2002; McDonald 2007; Thomas 2007).

RESEARCH GAP

Several authors suggest that NGOs are important organisation, but discuss the NGOs' supporting role on a general level, assuming that the roles and partnership opportunities and challenges are similar in different markets. Furthermore, the authors do little to differentiate different types of NGOs. Furthermore, due to the seemingly strong government presence throughout the society in Telangana state, it is relevant to respond to the doubts on Telangana state NGOs' credibility as independent public interest organizations, which surfaced during the background interviews.

NEED FOR THE STUDY

The need for this study is to develop a strategic Marketing practices for NGOs that will help the organization to sustain and achieve its objectives in future and also to motivate NGOs and implementing the effective strategic marketing plan to win the level of public trust.

OBJECTIVES OF THE STUDY

The following are the objectives of the research study: 1) To study the marketing strategies of NGOs and generate awareness about the same 2) To put forward effective techniques of marketing in an NGO.

3) To identify major constraints and issues faced by NGOs in marketing

HYPOTHESIS

1. There is no significance difference between the development of NGOs and marketing practices.

2. There is no significant impact of interventions on marketing practices on NGO'S of selected respondents in Telangana state.

3. There is no significant difference between the constraints and issues of NGOs and marketing Practices.

SCOPE OF THE STUDY

The present study examine marketing practices of NGO's in Hyderabad districts of Telangana state,. For this purpose NGO's have been identify from Private Organisations, Public sector Organisations and Voluntary sector Organisations.

METHODOLOGY

Sources of Data

The study is based on both primary data & secondary data. The primary data has been collected by using a questionnaire and the secondary data has been collected from books, magazines and the internet.

Primary source

The appropriate method for collecting the primary data for the purpose of this research was Interview /communication method through designing a questionnaire which was distributed to local NGOs. The primary data was collected via e-mail, telephone, and face to face interviews with executives and/or senior officers of the organizations.

Secondary Source

Secondary data was used to get better insight on the research topic, to develop better

understanding Information on marketing management in nonprofit sector was retrieved from different scientific articles from online libraries and journals, course literature, e-books, on NGO operation, governmental and donor reports. Secondary data was essential to establishing the viable platform for the theoretical framework constituting the bases of my research. A thorough theoretical framework helped clarify dilemmas about nonprofit marketing as a precondition for fundraising and NGO sustainability. Course literature, journals, articles and reports from different governmental organization enriched the secondary data by providing basic concepts of the theoretical background of the study research.

SELECTION OF SAMPLE

a) Sampling Unit

The study focused especially on the suitability of NGOs of Telangana State, and therefore grassroots NGOs constituted most of the interviewees. Convenience sampling method has been followed for collecting the response from the respondents.

Solution of the second second



b) Sample Size

Ngo's are divided in to three groups : Private Organisations, Public sector Organisations and Voluntary sector Organisations.Sample will be drawn from three groups. Sample respondents of the NGO'S would be covered as three groups viz, Private Organisations, Public sector Organisations and Voluntary sector Organisations .The same methodology will be followed for selecting sample respondents from the NGO's. The sample size would be respondents of NGO's of Telangana State. The population for this research study consists of employees of NGO's were contacted through a face-to-face interviewing method using the questionnaire.

SAMPLING METHOD

The sample representative of the population will be selected as per simple random sampling method, a non-probability convenience sampling method .The statistical tool used for the purpose of the analysis of this study is simple percentage technique and ranking techniques. After the collection of data through the questionnaire, editing was done carefully. Based on the responses of the samples, tables were prepared. The data collected were analyzed and interpreted with the help of tables & figures.

a. Statistical Techniques

ANOVA and t-test, measures of central tendency, measures of dispersion, correlation and regression analysis, chi square test and Z test are the statistical tools that would be apply apart from the structure equation model

b. Data Processing and analysis

The data will be analyzed by using SPSS for Windows 21.0 statistical package.

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CUSTOMER SATISFACTION IN MALLS – A STUDY WITH REFERENCE TO HYDERABAD CITY

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INTRODUCTION

Retail is the sale of goods to end users, not for resale, but for use and consumption by the purchaser. The word retail is derived from the French word retailer, meaning to cut a piece off or to break bulk. In simple terms, it implies a first -hand transaction with the customer. Retailing can be defines as the buying and selling of goods and services. Thus retailing can be said to be the interface between the producer and the individual consumer buying for personal consumption. This excludes direct interface between the manufacturers and institutional buyers such as the government and other bulk customers. Retailing is gradually inching its way towards becoming the next boom industry. The customer satisfaction process is a complex phenomenon. The purchase of goods or services includes a number of factors that could affect each decision. Customer satisfaction is more complex and even more important for retailers today than in past. The retailing sector in India has undergone significant transformation in the past ten years. Retailing is gradually inching its way towards becoming the next boom industry. The customer satisfaction process is a complex phenomenon. The purchase of goods or services includes a number of factors that could affect each decision. Customer satisfaction is more complex and even more important for retailers today than in past

CUSTOMER SATISFACTION

Customer satisfaction measures how well the expectations of a customer concerning a product or service provided by your company have been met. **Customer satisfaction** is important because it provides marketers and business owners with a metric that they can use to manage and improve their businesses. Customer satisfaction is essential for business success in today's market place. **Customer satisfaction** is a marketing term that measures how products or services supplied by a company meet or surpass a **customer's** expectation.

Shopping Mall

A large retail complex containing a variety of stores and often restaurants and other business establishments housed in a

series of connected or adjacent buildings or in a single large building. From the late 20th century, entertainment venues such as movie theaters and restaurants began to be added. In North America, Gulf countries, and India, the term shopping **mall** is usually applied to enclosed retail structures (and is generally abbreviated to simply **mall**), while shopping **centre** usually refers to open-air retail complexes; both **types** of facilities usually have large parking lots, face major traffic arterials, ...

TYPES OF MALLS - Neighborhood Center:

This center is designed to provide convenience shopping for the day-to-day needs of consumers in the immediate neighbourhood. A neighborhood center is typically a straight-line strip with no enclosed walkway or mall area.

Community Center

Community centers (or community malls) are larger than neighborhood centers, and offer a wider range of goods. They usually feature two anchor stores which are larger than that of a neighborhood center's, e.g. a discount department store. They may also follow a strip configuration, or may be L- or U-shaped. Community centers usually feature a retail area of 100,000 to 350,000 square feet (9,300 to 33,000 m2) and serve a primary area of 3 to 6 miles (4.8 to 9.7 km).

Regional Center

This center sells a full variety of general merchandise, mostly apparel. Its main attractions are its anchors; they are typically enclosed malls.

Superregional Center

This center is similar to the regional center, but it is larger with more anchors and carries a deeper selection of merchandise. Superregional centers draw from a larger population base. Typical configuration is enclosed with multilevel.

Fashion/Specialty Center

Fashion or specialty centers feature upscale apparel shops and boutiques and cater to customers with higher incomes. They



usually have a retail area ranging from 80,000 to 250,000 square feet (7,400 to 23,000 m2) and serve an area of 5 to 15 miles (8.0 to 24 km).

Power Center

Several large anchors, including discount department stores, off-price stores, warehouse clubs or "category killers" (stores that offer huge selection in particular merchandise categories at low prices) dominate. The center consists of several freestanding anchors and only a few, small specialty tenants.

Theme/Festival Center:

Theme or festival centers have distinct unifying themes that are followed by their individual shops as well as their architecture. They are usually located in urban areas and cater to tourists. They typically feature a retail area of 80,000 to 250,000 square feet (7,400 to 23,000 m2).

Outlet center

Outlet centers usually consist of manufacturers' outlet stores selling their own brands at a discount. They are found in rural or tourist locations. Typical outlet center designs include enclosed malls, a "village" cluster or a strip configuration.

OBJECTIVES OF THE STUDY

1. To identify the general profile and the buying habit of the customers of Malls in Hyderabad city.

2. To examine the expectations of the customers from the malls and find out how far they are satisfied.

3. To enquire into the various dimensions of service quality rendered by these malls

4. To measure the satisfaction level of the customer with regard to the various dimensions of service and to rank them.

5. To suggest suitable measures to augment the service quality of the malls.

CONCEPTUAL FRAME WORK

The Retail Sector of Indian Economy is going through the phase of tremendous transformation. The retail sector of Indian economy is categorized into two segments such as organized retail sector and unorganized retail sector with the latter holding the larger share of the retail market. At present the organized retail sector is catching up very fast. The impact of the alterations in the format of the retail sector changed the lifestyle of the Indian consumers drastically. The evident increase in consumerist activity is colossal which has already chipped out a money making recess for the retail sector of Indian economy. With the onset of a globalized economy in India, the Indian consumer's psyche has been changed. People have become aware of the value of money. Nowadays the Indian consumers are well versed with the concepts about quality of products and services. These demands are the visible impacts of the Retail Sector of Indian Economy. Since the liberalization policy of 1990, the Indian economy, and its consumers are getting whiff of the latest national and international products, the with help of print and electronic media. The social changes with the rapid economic growth due to trained personnel's, fast modernization; enhanced availableness of retail space is the positive effects of liberalization.

1. REVIEW OF LITERATURE

- Meenakshi Choudhary (2013)79 studied the growth of the retail sector in India with special study on the recently commissioned mall at Tier II city, Bhopal to know the consumers' sensitivity on the kind of shopping; to know the behaviour of customers on mall culture of Bhopal; to find out the adaptability of mall culture; and to analyze the consumer behaviour in the city of Bhopal. The data were collected from primary as well as secondary sources. The primary data were collected by means of a questionnaire from 200 respondents. The findings of the study reveal that when customers' expectations are greater than their perceptions of the delivered service, they are dissatisfied and feel the quality of the retailer service is poor.
- John William and Prabakar (2012)76 made an attempt to understand the factors influencing the shoppers' buying at the organized retailers; to study the customer perceptions on organized retailers; to study the promotional activities taken by the organized retailers; to provide suggestions to improve the services provided by the organized retailers. The primary data were collected using a structured questionnaire and the consumers who visited the organized retail shop. The survey was carried out in the organized retail outlets in Coimbatore and a sample of 20 each from five retail outlets and totally of 100 respondents from the population selected randomly. The study reveals the perception of service quality influenced by the various natures with various customers even some of the general factors like personal interaction. Physical aspects are the dimensions on customer perception, which remains constant and is common to all customers on a majority basis. Hence, the retail outlets have to frame their own strategies in order to attract the customers on a longer basis
- Verma and Madan (2011) in a study conducted in Indian context highlighted that retailers are offering newer service dimensions to create unique shopping experiences for the customers. However, whether consumers are able to perceive newer service dimensions and getting affected for store patronage in new store formats or not, remains to be found out. They emphasized the fact that Indian retail environment is going through a sea change due to the introduction of new formats and opening up of retail industry, it becomes important to understand the store image perceptions of consumers here. The study attempted to find out the key factors that are perceived as important to Indian consumer in evaluation of a retail format.



Vipul Jain (2010)62 explored the retail revolution in the Delhi Region. Some specific objectives of the study are: to identify the factors in revolution of retail; to identify the gender preference of retail departments; to find the existing customers of retail; and to explore the reasons behind attracting customers toward retail stores. Shoppers' Stop, Pantaloons, Westside, Ebony, Globus, Big Bazaar and Lifestyle are targeted through the survey by open ended and closed ended questionnaire. The method used for the collection of data was exploratory research and conclusive research which consists of secondary research and questionnaire design.It was realized that there can be various motivational factors that act as a driving force in the preference of retail stores. It was also realized that customer service is the strongest factor for both men and women. Customers of various age groups are also a deciding variable in customer services. They suggest that all retail activities and promotions should therefore aid the customers to make a decision. Hence, retailers needs to provide information, guarantees and after sales services to reduce the perception of risk.

2. STATEMENT OF THE PROBLEM

The present study under the title, "Customer Satisfaction with regard to the service quality of Malls in Hyderabad city is an attempt to understand the various factors influencing the satisfaction level of the customer with regard to the various dimensions of service quality such as tangibles, reliability, responsiveness, assurance and empathy. A perfect parity between the services offered by seller and the services expected by the buyers is visit to make the transaction smooth and hassle free.so the services offered become an integral part of the marketing strategy of the firm. In this context it is imperative to make study on the satisfaction of customers towards malls in Hyderabad city.

3. METHODOLOGY

Both Primary data and Secondary data have been used for the study purpose. The primary data will be collected from the customers of shopping mall with the help of structured questionnaire. The questionnaire was prepared in such a way that they are simple and understandable so as to enable the respondents to express their views and opinions freely.

The secondary data has been collected by referring to journals, articles and magazines and various relevant websites.

4. STATISTICAL TOOLS

ANOVA and t-test, measures of central tendency, measures of dispersion, correlation and regression analysis, chi square test and Z test are the statistical tools that would be apply apart from the structure equation model

5. HYPOTHESIS

The following hypotheses were formulated

- 1. Satisfaction level varies with the age group of the respondents.
- 2. Higher the satisfaction level higher is the frequency of visit.
- 3. Higher the income, higher the satisfaction level of shoppers in the departmental stores.
- 4. Satisfaction level varies with the amount spent on purchase.
- 5. Satisfaction level varies with the persons/media through which the respondents got introduced to the shop.
- 6. The level of satisfaction in each of the dimensions varies with the respondent's reason for selecting a particular shop.
- 7. The attitude of customers towards shopping malls and overall customer satisfaction is positive.

6. SCOPE OF THE STUDY

This study covers the extent of customer satisfaction regarding various service dimensions rendered by the Malls in Hyderabad city .In the prevailing globalized economic scenario the consumers have ample opportunities to select any shop for buying good quality products. In an acutely competitive atmosphere it is important and challenging for the retailers to attract the customers to sustain and to promote their business. Among the various aspects that build the rapport with the buyers and keep them in their fold , service quality is much more important than the technical or product quality . Hence the present study aims at bringing out the various aspects concerned with customer satisfaction which would surely serve a purpose for retailers to work out their service quality with regard to the various dimensions such as tangibles, reliability, responsiveness, assurance and empathy.

7. PERIOD OF THE STUDY

Meaningful analysis cannot be undertaken unless data is available for atleast 5 to 10 years Hence attempt would be made to cover for the years 2010-2015

8. LIMITATIONS OF THE STUDY

- As the study is confined to the respondents of Hyderabad district, this research is applicable to Hyderabad district only and therefore the findings of this research study cannot be extended to other areas.
- Primary Data have been collected using the questionnaire and therefore study is limited to the data collected.
- Time and cost are the factors which have limited the size of sample



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ADVERTISEMENT OF TOUR AND TRAVELS

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ABSTRACT

Advertising can be considered as the successful resource which is a combination of different techniques that could be used for the purpose of promoting products and services of a company. The brand image and brand awareness can be created by using the advertisements. Nowadays, in this competitive market for getting competitive advantages among their competitors many companies are using advertisements as their major marketing campaigns. In order to perform their advertisements, companies are trying to make use of advertising agencies through which they are trying to design their advertisements efficiently to attract the customers. Especially advertising agencies are happened to be important resources within the advertising field and they are playing important role in supporting the companies with their effective advertising designs and campaigns. Advertising agencies are the group of people who has experienced talented and skilled individuals capable of making efficient advertisements on behalf of companies in order to succeed themselves in the market place. An overview is given of the short history and rapid rise of medical tourism, its documentation, and current knowledge and analysis of the industry. Definitions of medical tourism are limited hence who medical tourists are and how many exist are both indeterminate and inflated. Definitions often conflate medical tourism, health tourism and medical travel, and are further complicated by the variable significance of motivation, procedures and tourism. While media coverage suggests long-distance travel for surgical procedures, and the dominance of middle class European patients, much medical tourism is across nearby borders and from diasporas, and of limited medical gravity, conflicting with popular assumptions. Numbers are usually substantially less than industry and media estimates. Data must remain subject to critical scrutiny. Medical travel may be a better form of overall categorization with medical tourism a sub-category where 'patient-tourists' move through their own volition. Opportunities are diffused by word of mouth with the internet of secondary value. Quality and availability of care are key influences on medical tourism behavior, alongside economic and cultural factors. More analysis is needed of the rationale for travel, the behaviour of medical tourists, the economic and social impact of medical tourism, the role of intermediaries, the place of medical tourism within tourism (linkages with hotels, airlines, travel agents), ethical concerns and global health restructuring. Interpersonal influence and word-of-mouth

OBJECTIVES OF THE STUDY

Although there is phenomenal growth in Indian Tourism, but rural tourism was never given any priority. The concept of rural tourism has a noble cause, it is another kind of sustainable tourism that exploits resources in rural regions, causes little or no harmful

impact, and generates increasing benefits to rural areas in terms of rural productivity, employment, improved distribution of wealth, conservation of the rural environment and culture, local people's involvement, and a suitable way of adapting traditional beliefs and values to modern times.

INTRODUCTION

Tourism is one of the world's fastest growing industries as well as the major source of foreign exchange earning and employment for many developing countries.

World tourism demand continues to exceed expectations, showing resilience against extraneous factors. According to the UNWTO World Tourism Barometer, released (November 2006):

- In the first eight months of 2006 international tourist arrivals totaled 578 million worldwide (+4.5%), up from 553 million in the same period of 2005, a year which saw an all-time record of 806 million people traveling internationally.
- Growth is expected to continue in 2007 at a pace of around 4% worldwide.

Tourism is vital to the well being of many countries, because of the income generated by the consumption of goods and services by tourists, the taxes levied on businesses in the tourism industry and the opportunity for employment and economic advancement by working in the industry.

WHAT DEFINES TOURISM

The concept of tourism refers to the broad framework that identifies tourism's essential characteristics and distinguishes tourism from similar, often related but different phenomena The two terms 'travel' and 'tourism' can be used in isolation or together to describe three concepts:



- **International Tourism:** Consists of inbound tourism, visits to a country by non-residents, and outbound tourism, residents of a country visiting another country
- Internal Tourism: Residents of a country visiting their own country
- **Domestic Tourism:** Internal tourism plus inbound tourism (the tourism market of accommodation facilities and attractions within a country)
- **National Tourism:** Internal tourism plus outbound tourism (the resident tourism market for travel agents and airlines.

According to the WTO tourists are people who: "travel to and stay in places outside their usual environment for not more then one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited."

Devised by WTO was endorsed by the UN Statistical Commission in 1993 following an International Government Conference held in Ottawa, Canada in 1991.

The main features of advertise are as under

- It is directed towards increasing the sales of business.
- Advertising is a paid form of publicity
- It is non-personal. They are directed at a mass audience and nor at the individual as is in the case of personal selling.
- Advertisement are identifiable with their sponsor of originator which is not always the case with publicity or propaganda.

Objective / Functions of advertising

The purpose of advertising is nothing but to sell something -a product, a service or an idea. The real objective of advertising is effective communication between producers and consumers. The following are the main objectives of advertising:

Preparing Ground for New Product

New product needs introduction because potential customers have never used such product earlier and the advertisement prepare a ground for that new product.

Creation of Demand

The main objective of the advertisement is to create a favorable climate for maintaining of improving sales. Customers are to be reminded about the product and the brand. It may induce new customers to buy the product by informing them its qualities since it is possible that some of the customers may change their brands.

Facing the Competition

Another important objective of the advertisement is to face to competition. Under competitive conditions, advertisement helps to build up brand image and brand loyalty

and when customers have developed brand loyalty, becomes difficult for the middlemen to change it.

Creating or Enhancing Goodwill:

Large scale advertising is often undertaken with the objective of creating or enhancing the goodwill of the advertising company. This, in turn, increases the market receptiveness of the company's product and helps the salesmen to win customers easily.

Informing the Changes to the Customers

Whenever changes are made in the prices, channels of distribution or in the product by way of any improvement in quality, size, weight, brand, packing, etc., they must be informed to the public by the producer through advertisement.local tribal community. Guide service, food

Benefits to Manufacturers

- It increases sales volume by creating attraction towards the product.
- It helps easy introduction of new products into the markets by the same manufacturer.
- It helps to create an image and reputation not only of the products but also of the producer or advertiser. In this way, it creates goodwill for the manufacturer.
- Retail price, maintenance is also possible by advertising where price appeal is the promotional strategy.
- It helps to establish a direct contact between manufacturers and consumers.

Benefits to Wholesalers and Retailers

- Easy sale of the products is possible since consumers are aware of the product and its quality.
- It increases the rate of the turn-over of the stock because demand is already created by advertisement.
- It supplements the selling activities.
- The reputation created is shared by the wholesalers and retailers alike because they need not spend anything for the advertising of already a well advertised product.
- It ensures more economical selling because selling overheads are reduced.
- It enables them to have product information.

Benefits to Consumers

- Advertising stresses quality and very often prices. This forms an indirect guarantee to the consumers of the quality and price. Further large scale production assumed by advertising enables the seller to seller product at a lower cost.
- Advertising helps in eliminating the middlemen by establishing direct contacts between producers and consumers. It results in cheaper goods.
- It helps them to know where and when the products are available. This reduces their shopping time.



- It provides an opportunity to the customers to compare the merits and demerits of various substitute products.
- This is perhaps the only medium through which consumers could know the varied and new uses of the product.
- Modern advertisements are highly informative.

Benefits to Salesmen

Salesmanship is incomplete without advertising. Advertising serves as the forerunner of a salesman in the distribution of goods. Sales is benefited the advertisement in following ways:

- Introducing the product becomes quite easy and convenient because manufacturer has already advertised the goods informing the consumers about the product and its quality.
- Advertising prepares necessary ground for a salesman to begin his work effectively. Hence sales efforts are reduced.
- The contact established with the customer by a salesman is made permanent through effective advertising because a customer is assumed of the quality and price of the product.
- The salesman can weigh the effectiveness of advertising when he makes direct contact with the consumers.

Benefits to Community or Society

• Advertising, in general, is educative in nature. In the words of the late President Roosevelt of the U.S.A., "Advertising brings to the greatest number of people actual knowledge concerning useful things: it is essentially a form of education and the progress of civilization depends on education."

Ecotourism

Ecotourism, or ecological tourism, is a movement to make Tourism more ecological. When successful, it contributes actively to the conservation of natural and cultural heritage, includes local and indigenous communities in its planning, development and operation, reduces poverty and enhances intercultural & environmental understanding.

Marketing and promotion

Marketing and promotion of India as a major tourist destination is critical for the industry to achieve its potential. Lack of adequate budgetary support for promotion and marketing, compared with competing tourist destinations, is a major reason for India lagging behind as a tourist destination. Marketing under the "Incredible India" campaign helped place India as a good tourist destination on the global tourism map.

CONCLUSIONS

Highlighting some of the most important inconsistencies in Indian Government thinking on tourism, we

attempted to provide tentative answers to some major policy questions. What is the relative growth potential of domestic and international tourism in India? Can one use tourism as a development tool? We tried to show that the dominant tourismas-an-engine-of-growth position underlying the government policy (2002) has resulted in an inflation of the importance of international tourism and a gross overvaluation of its economic potential. We also attempted to substantiate the point of view that the 'responsible development' idea which supports some minor parts of the government policy, may lead to ideal forms of tourism on paper, but is in fact based on simplifications which tend collude with the stubborn, harsh realities of everyday life. Both aforementioned perspectives have in common that they start from outspoken goals or norms. Without much research and analysis, the government seems to have embraced these norms and goals - at least on paper. Apart from the fact that these goals are not exactly compatible, one wonders whether a little more original thinking, research and analysis would not have resulted in a more realistic and useful policy. Given the lack of reliable statistics and meaningful quantitative research, even today, the overall picture of Indian tourism remains rather patchy and

unclear. For example, while international tourism is though to harbor an enormous unused potential, so far, it remains unclear who the international tourists are?; What categories of international tourists can be distinguished? and what the quantitative significance is of each of these categories.

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A STUDY OF LECTURES' FRUSTRATION IN EXAMINATION SCRIPT ASSESSMENT IN SELECTED POLYTECHNICS IN NORTH CENTRAL NIGERIA

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ABSTRACT

The study investigated lecturers' frustration in examination script assessment in North Central Nigeria. The descriptive correlation survey design was adopted for the study 322 randomly selected lecturers from 6 polytechnics participated as sample. The sample was made up of 190 males and 132 females (112 senior and 210 junior lecturers). Four instruments (Organizational Frustration Scale, Examination Script Assessment Frustration Scale, Lecturers' Frustration Reaction Scale and Consequence of Lecturers' Frustration Scale) were used for data collection. Pearson r was used to test for significance on the relationship between frustration and the 15 independent variables of mediating factors of frustration in examination script assessment. The Zero Order Multiple Correlation was used to test for significance on the relationship between frustration and 11 independent variables on lecturers' reaction to their frustration in examination script assessment. The t-test was used to test for significance on the level of frustration among the groups of lecturers in examination script assessment. Regression analysis was used to test for significance on the correlation between frustration and the 13 independent variables on the consequences of frustration in examination script assessment. Based on the 15 mediating factors measured, 9 reported high relationship as in poor response to questions, out of point, empty/scanty script, bulky answer, poor handwriting, rough scripts, lobbying/interference, large number of scripts and shortage of time for marking. Also, significant relationship exist between frustration and lecturers' reaction in the 11 subscales measured as in anger, aggression against students, poor scoring, complain to authorities, succumb to pressure from students and others. A further significant difference was found among the groups of lecturers in their level of frustration. To this extent, female and junior lecturers reported higher levels of frustration than male and senior lecturers in examination script assessment. Lastly, frustration significantly correlated with 13 variables in the subscales measuring the consequences of frustration in examination script assessment as in worry over 50% examination success rate, poor results, students' agitation, stress and disciplinary actions on lecturers among others. It was recommended among others that polytechnic authorities should organize orientation programmes for fresh students on how to approach examination at the beginning of their programme and for lecturers generally; but target the female and junior lecturers more on how to deal with frustration in examination script assessment among others.

KEYWORDS: Assessment, correlation, examination, Frustration, survey

INTRODUCTION

Considerable research evidence (Byrne, 1993; Costigan & Crocco, 2006) coupled with observable behaviours of lecturers during examination script assessment, indicate frustration. Frustration in this profession cannot be overlooked because (Odunayo, 2010) the affected teachers may likely display hostility, aggression and anger on the students in the psychological development and academic achievement of their students. In North Central Nigeria, there are several polytechnics and large number of lecturers who may be frustrated during assessment of examination scripts. For instance, Costigan and Crocco (2006) report that:

> Teachers are frustrated in their adherence to scripted lessons designed to maximize students' scores on highstake testing.

It is known from observation and reports (Tye & O'Brien, 2002) that examination scripts are not accurately and adequately assessed by teachers suffering from frustration due to some mediating factors. The implication is that the grading and quality of polytechnic graduates in North Central Nigeria will be affected.

THE PROBLEM

Examination script assessment by lecturers in polytechnics poses great challenge which often lead to frustration. A number of studies (Byrne, 1993; Costigan & Crocco, 2006; Tye & O'Brien, 2002) in primary and secondary schools, report that some mediating factors such as increased paper work, changing student characteristics, negativity, pressure from parents and community and tension between teachers and administration are responsible. It is doubtful whether these mediating factors will be consistent and generalizable with those of polytechnic lecturers in North Central Nigeria. Equally, a number of studies (Byrne, 1993; Tye & O'Brien, 2002) report that teachers react to their frustration in test assessment as in teacher attrition, discontent and © 2022 EPRA IJMR | www.eprajournals.com | Journal DOI URL: https://doi.org/10.36713/epra2013



disappointment etc. These studies took place in primary and secondary schools. However, they are yet to be determined in the case of polytechnics in North Central Nigeria. Furthermore, studies on how different groups of lecturers react and, the consequences of their frustration in examination script assessment are available (Tye & O'Brien). However, the question of the extent to which the reports of these studies are artifacts of measuring what obtains in the case of polytechnics in North Central Nigeria, is yet to be determined. Therefore, the study is being conducted and extended to identify the mediating factors, lecturers' reaction, differences in group reactions and consequences of lecturers' frustration in examination script assessment. It is hypothesized that:

- a. There is no significant relationship between lecturers' frustration in examination script assessment and some mediating factors.
- b. There is no significant relationship between lecturers' frustration in examination script assessment and some reactions.
- c. Level of frustration will not differ significantly among groups of lecturers in examination script assessment.
- d. There is no significant relationship between lecturers' frustration in examination script assessment and some consequences.

REVIEW OF LITERATURE

Introduction

This review of literature is couched fundamentally on conceptual, theoretical framework, mediating factors and lecturers' reaction to their frustration. Other areas of review include differences among groups of lecturers in their reaction and consequences of lecturers' frustration in examination script assessment.

Conceptual Framework

Frustration

Frustration has been severally defined in view of existing literature. For instance, Fargnoli (1997) sees frustration as, "an emotional response to circumstances where one is obstructed from arriving at a personal goal". According to Fox and Spector (1999), frustration occurs when an instigated goal response (or predicted behavioural response) is interrupted and is comparable to anger and disappointment – a condition where expectations exceed reward, input exceed income. Similarly, frustration is seen as a common emotional response to opposition. It arises from the perceived resistance to the fulfillment of individual will (Wikipedia, 2010). Frustration can be considered a problem – response behaviour and can have a number of effects depending on the mental health of the individual.

Examination Script Assessment

Examination script assessment is the process of gathering data on students' academic progress. Specifically, assessment is the way instructors gather data about their teaching and their students' learning (Hanna & Dattmer, 2004).

The data provide a picture of a range of activities using different forms of assessment such as pre-tests, observations, practical, oral and written examination. Once these data are gathered, it can then be used to evaluate students' academic performance. The evaluation, therefore, draws on one's judgment to determine the overall value of an outcome based on the assessment data. It is in the decision making process then, that ways are designed to improve the recognized weaknesses, gaps or deficiencies (Filer, 2001).

Frustration in Examination Script Assessment

Lecturers' frustration in examination script assessment is an emotional response to situation that prevents an objective assessment of examination scripts. When frustration occurs among lecturers in examination script assessment, it is comparable to anger and disappointment – a condition where expectations exceed reward, input exceed outcome (Myers, 1993; Fox & Spector, 1999).

Theoretical Framework

Social Exchange Theory

The Social Exchange Theory is adopted in this study to explain rigorously, lecturers' frustration in examination script assessment. The Theory explains that each individual compares the rewards he or she receives from a relationship to his or her costs or inputs. In general it explains, one expects to get more out of the relationship if he or she puts more into it. The theory predicts that, where the outcomes are equivalent, relationships will be stable, whereas inequitable ones will be unstable. This explanation applies to lecturers who are constantly assessing their rewards vis a vis their costs or inputs in lecturing task. Reward here will be good performance of students in examination. Input will refer to the amount of lecturing/teaching/practical demonstration efforts put in for students to perform academically. Discrepancy arises when assessment results show poor academic performance of students and the amount of lecturers' input. It is this discrepancy that results in lecturer frustration in the assessment of examination scripts. If lecturers perceive inequality in reward (students' poor academic performance) and costs or inputs, then the work relationship becomes unstable with chain reactions of anger and aggression with inevitable consequences.



Frustration – Aggression Theory

The frustration – Aggression Theory is also adopted in this study to explain why Lecturers who are frustrated in examination script assessment display anger and aggression. The Theory attempts to explain why people scapegoat. It gives explanation as to the cause of violence. It explains that frustration causes aggression; but when the source of the frustration cannot be challenged, the aggression gets displaced onto an innocent target. This Theory tends to provide answers to the reactions of lecturers and the consequences that follow their frustration in examination script assessment (Wikipedia, 2010). For instance, Costigan and Crocco (2006) report that teachers expressed disappointment and annoyance about the demands of administrators on them to meet the state criteria for students' progress as measured by the state tests. They also report that teachers are leaving the profession as a consequence. The reaction and consequences are on students also who bear part of the action of teachers in this regard.

Mediating Factors of Lecturers' Frustration in Examination Script Assessment

Several mediating factors account for lecturers' frustration in examination script assessment. For instance, Tye and O'Brien (2002) report that, "test preparation, standards, assessing test and increased accountability as determined by teachers' discontent and attrition are linked to frustration in assessing test". Tye and O'Brien also report other mediating factors as, "increased paper work, changing student characteristics, negativity and pressure from parents and the community along with tension between teachers and administration". The separate findings of Lander and Ekholm (1998), Mosen (2002) and Simmons (2002) support this report that:

Evaluation tools may be more suited to the needs of policy officials than they are to schools and teachers. Moreover, the skills required for gathering and interpreting school or programme level data are quite different from those required for class room assessment. Similarly, Costigan and Crocco (2006) confirm that, "teachers expressed disappointment and annoyance about the demands of administrators on them to meet the state criteria for students" progress as measured by state tests".

There is great variability with respect to time and effort needed to prepare a test or examination only to discover that during assessment, performance of students does not show it. Lecturers may compare answers in different scripts to ascertain whether cheating occurred during the examination. This exercise can be very frustrating. Teachers may be forced to inflate grades especially in standardized tests to boost the image of schools and local authorities (Tye & O'Brien, 2002). Costigan and Crocco (2006) report that teachers are frustrated in their adherence to scripted lessons designed to maximize students' scores on high-stake testing.

One mediating factor in Lecturers' frustration in examination script assessment, is lecturer's stress. For instance, Byrne (1993) reports that, "stress results from an imbalance between perceived demand (by teachers) and what the students give in a test assessment; and these could lead to frustration for the teachers and students".

Overpopulation of students and shortage of time for assessment of examination scripts have resulted in stress for teachers. Teachers often complain that it takes too much time to assess children individually on a regular basis. They also complain that the wide range of writing abilities of students in their classrooms make assessment difficult. As a result, teachers feel frustrated that no one cares for how well they are able to assess students' work and know the problem first hand (Byrne, 1993). This is the case with polytechnics in Nigeria where a lecturer assesses over a thousand scripts in one semester – with bulky answers, poor handwriting, rough scripts and poor response to questions etc. Dorman (2003) reports that, "overload was a strong predictor of work pressure which in turn causes emotional exhaustion". This could lead to frustration. There is also too much time devoted to test taking strategies, administrative meetings regarding tests results and a loss of independence in the classroom. Of course, state testing has severe emotional toll on teachers (Costigan & Crocco, 2006).

Several lecturers get into trouble with authorities not because of lecturing lapses; but from assessment of examination scripts with many demoted or sacked or leaving them with the frustration of re-assessment of script. Yet, some teachers believe that their primary mission is instruction and support for the students' whole development. As a result, many teachers.

Another mediating factor of lecturers' frustration in examination script assessment is ignorance in the conduct of evaluation of students. For instance, Shepard (2000) reports that:

When teachers are not knowledgeable about how to conduct classroom evaluation of students, then the assessment of test scripts becomes a frustrating task.

One more mediating factor of frustration has to do with uniqueness of approach to answering questions by students. Instances abound. Dorman (2003) and Sadler (2009) in their separate studies conclude that teachers confronted with the task of classroom evaluation maintain that the difficulty comes from having to assess students who are uniquely different in their approach to answering questions. The uniqueness of the students stems from their different personalities, backgrounds, learning styles and confidence levels.

Lastly, the non alignment of school work with school based evaluation could trigger – off frustration among lecturers. Evaluation tools may be more suited to the needs of policy officials than they are to polytechnics and lecturers. Moreover, the skills required for gathering and interpreting school or programme level data are quite different from those required for classroom



assessment (Lander & Ekhom; Mosen, 2002; Simmons, 2002). This is the case with polytechnics in Nigeria where curriculum is imposed and dictated by the National Board for Technical Education (NBTE); but evaluation or assessment is polytechnic and lecturer based. Frustration comes in when lecturers must comply dogmatically with external curriculum that kills their own initiative.

Lecturers' Reaction to Frustration in Examination Script Assessment

Lecturers react to their frustration in examination script assessment. For example, Costigan and Crocco (2006) confirm that teachers in New York State expressed disappointment and annoyance about the demands of administrators on them to meet the state criteria for students' progress as measured by the state tests. According to the report, teachers felt it was unreasonable to judge students' skills and abilities using one measure. It should be noted that disappointment and annoyance are indices of frustration.

Teachers also react to their frustration in examination script assessment in hostility aggression and anger on students in the classroom (Otunayo, 2010). These factors produce negative effects on the psychological development and academic achievement of students. Anger, hostility and aggression could take the form of annoyance, insult on students, poor scoring, abandonment of scripts, late marking, complain to authorities, indiscriminate award of marks and succumbing to pressure from parents/students. Others are expression of disappointment, lecturers on the defensive, lecturer discontent, setting aside of offensive scripts and lecturer attrition. These reactions of lecturers are consistent with the Frustration – Aggression Theory that frustration can cause aggression. The report of Dill and Anderson (1995) in their experiment support this Theory that frustration can lead to aggression. Therefore, the reactions of lecturers to their frustration in examination script assessment are acts of aggression.

Consequence of Lecturers' Frustration in Examination Script Assessment

Evidences that consequences exist in lecturers' frustration in examination script assessment abound. One such consequence is lecturer attrition. For instance, Costigan and Crocco (2006) point out that good teachers are leaving the profession because they no longer feel a viable part of the education system – a system whereby students and teachers become hostages to the mandates of state testing due to the emotional toll state testing has on them. This is the case of polytechnics in Nigeria where curriculum is dictated by NBTE and tests assessment must follow the guideline.

Another consequence of frustration in examination script assessment, is that assessment of script can lead to stress and burnout especially in situations where scripts have to be re be remarked, agitation by students due to poor results, depression among lecturers and student petition over results etc. Byrne (1993) reports that in the last ten years, administrators and clinicians have observed a sharp increase in incidences of teacher burnout. Lambert etal in Burrows and Shade (2013) report that teachers are stressed by testing and increased paper work among others. Tye & O'Brien (2002) linked dictated curriculum by state standards and the emphasis on high stake testing that leaves very few decisions to teachers professional judgment as stressors – these are indicators of frustration among teachers. Once there is burnout, it is an indication that lecturers cannot function effectively in their job as a consequence of prolonged and extensive job related stress and in this case, large examination script assessment that takes time to fulfill.

METHODOLOGY

Research Design

Descriptive survey method was adopted for the study. This method was found suitable because of the possibility of reaching the subjects in scattered locations in North Central Nigeria (Afolabi, 1993).

Sample

Baseline socio-demographics of the 322 participants from each Federal and state polytechnics selected were: Kogi State Polytechnic, Lokoja 60, Federal polytechnic, Bida 40, Federal polytechnic, Idah 50, Benue Polytechnic, Ugbokolo 50 and Isa Mustapha Agwai Polytechnic Lafia 64, Federal Polytechnic Nasarawa 58. The participants consisted of 190(59%) males and 132(41%) females. In terms of group cadre, the participants also consisted of 112(35%) senior lecturers and 210 (65%) junior lecturers.

For the purpose of this study, lecturers from assistant lecturers to lecturer I were grouped junior lecturers; while those from senior lecturers to chief lecturers were grouped senior lecturers. Also, the study was delimited to only Federal polytechnics in North Central Nigeria.

Instrumentation

The following instruments were used for data collection:

a. Organizational Frustration Scale (OFS)

The OFS is a 29 – item inventory developed by Spector (1975) to measure the frustration level of individuals in organizations as manifested by each individual's perceived co-workers acts of aggression, time-wasting, sabotage and unreasonable demands to the self. The OFS is at one end of a continuum with job satisfaction. The reliability and validity coefficients were provided by the author; while Dieke (1997) provided same for Nigeria samples. The OFS has been used to correlate other scales for the purpose of identify mediating factors of frustration etc.



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- b. Examination Script Assessment Frustration Scale (E-SAFS)

The E-SAFS was developed by the researchers as a self – report scale to measure the mediating factors of frustration among lecturers in examination script assessment. The design of the E-SAFS is clustered around two sections namely sociodemographics such as sex, rank and name of institution. The other section is designed on a Likert – type five point scale with response modes of strongly agree, agree, undecided, disagree and strongly disagree. In scoring the items, respondents would have a possible total score ranging from 1 - 5 which represents a respondent's opinion. The higher the score, the more influenced the respondent is by the scale. Respondents would be required to tick against a response that represents their opinion. In all, the scale is a 15 item questionnaire – A test-retest reliability reported a Pearson r of 0.57 for the scale. The present study adopted the E-SAFS as an effort in identifying the mediating factors of frustration among lecturers due to

- the fact that the scale has proved useful in pilot studies in measuring the factors it intends to measure.c. Lecturers' Frustration Reaction Scale (L-FRS)
- The L-FRS was developed by the researchers as a self-report scale to measure lecturers' reaction to their frustration in examination script assessment. The design of the L-FRS is clustered around two sections namely socio-demographics such as sex, rank and name of institution. The other section is designed on a Likert type five point scale with response modes of strongly agree, agree, undecided, disagree and strongly disagree. Each answer in the L-FRS is scored on a scale value of 1 5. The higher the score, the more influenced the respondent is by the scale. The scale was developed as a paper and pencil test that would require the respondents to tick against a response that represents their opinion. In all, the scale is a 11 item questionnaire. A test-retest reliability reported a Pearson r of 0.62 for the scale.
- d. Consequence of Lecturers' Frustration Scale (C-LFS)

The C-LFS is a paper and pencil test developed by the researcher as a self-report scale to measure the consequences of lecturers' frustration in examination script assessment. The design of the C-LFS is clustered around two sections namely socio-demographics such as sex, rank and name of institution. The other section is designed on a Likert – type five point scale with response mode of strongly agree, agree, undecided, disagree and strongly disagree

Each answer in the C-LFS is scored on a scale value of 1 - 5. The higher the score, the more influenced the respondent is by the scale. The respondents are required to tick against the response that best represent their opinion. In all, the scale is a 13 item questionnaire. A test-retest reliability reported a Pearson r of 0.59 for the scale.

Procedure

Four research assistants assisted in the administration of the instrument which lasted for four weeks. They were specially trained on the procedures of the exercise which includes the psyche of lecturers and the technical nature of some aspects of the instrument.

Data Analysis

The statistical techniques used in the study are the Pearson Product Moment Correlation, Zero Order Multiple Correlation, t-test and the COX Stepwise Regression Analysis.

RESULTS

Hypothesis 1:

There is no significant relationship between lecturers' frustration in examination script assessment and some mediating factors. To test the hypothesis, the 15 mediator variables (E-SAFS) were correlated with the (OFS) scores to find out the contribution of each mediator variable to the frustration of lecturers in examination script assessment. The results of the test are presented in Table 1:



Mediators	Df	r.	Р	S
Poor response to questions	320	.575	.000	S
Out of point	320	.749	.000	s
Empty/scanty script	320	.677	.000	S
Bulky answer	320	.578	.000	S
Poor handwriting	320	.562	.000	S
Rough script	320	.478	.000	S
Lobbying/interference	320	.688	.000	S
Large number of scripts	320	.722	.000	S
Sight defects	320	.349	.000	S
Scoring problems (accuracy)	320	.240	.000	S
Inadequate/unavailability of marking scheme	320	105	.000	S
Lack of registration number	320	.201	.000	S
No numbering of questions answered	320	.222	.000	S
Shortage of time for marking	320	.502	.000	S
Missing script	320	.302	.000	S
N=322		P<0.05		

Results in Table 1 indicate positive relationship between lecturers' frustration in examination script assessment and the 15 mediating factors measured. They are significant at 0.05 confidence level. However, in terms of degree of relationship between lecturers' frustration in examination script assessment and the 15 (E-SAFS) subscales measured, the mediating factors of out of point (r = .749, df = 320, P<0.05), large number of scripts (r = .722, df = 320, P<0.05) and lobbying/interference (r = .688, df = ...) 320, P<0.05), displayed high relationship; while poor response to questions (r = .575, df = 320, P<0.05) poor handwriting (r = .575, df = 320, P<0.05) poor handwriting (r = .575, df = .575, d .562, df = 320, P<0.05), and shortage of time for marking (r = 502, df = 320, P<0.05) displayed moderate relationships. The results further displayed low relationship in 6 subscales measured.

Hypothesis 2:

There is no significant relationship between lecturers' frustration in examination script assessment and some reactions. The results of the test are presented in Table 2.

						Assessm	nent.				
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.000										
X2	482**	1.000									
X3	-0.109	-0.401	1.000								
X4	-0.066	0.001*	-0.041	1.000							
X5	-0.042	-0.115	0.053	-0.440	1.000						
X6	-1.08	-0.009	-0.133	0.059	-0.440	1.000					
K7	-0.122	-0.030	-0.040	-0.400	-0.120	-0.007	1.000				
X8	-0.009	-0.054	-0.045	0.122	-0.008	-0.121	-0.029	1.000			
X9	-0.010	0.005	-0.005	-0.005	0.0026	-0.022	-0.333	-0.123	1.000		
X10	-0.321	-0.027	0.226	-0.006	-0.051	-0.114	-0.040	-0.033	-0.047	1.000	
X11	0.011	-0.023	0.218	0.020	0.021	-0.142	-0.085	0.119	-0.077	-0.047	1.00
Key											
•	est Coeffici	ent.									
** Hig	hest Coeffi	cient.									
K1	Anger.				X2	Aggre	ession again	st students.			
K 3	Poor sco	ring.			X4		lain to Aut				
X5	Succumb	U	essure f	rom Par	ents, X6	-		ward of ma	rks.		
	students/	school Auth	ority.		,						
X7		on of Disapp	•		X8	Insult	on students	5.			
<u> </u>	-	s on the defe			X10		rer disconte				
X11		to leave serv									
		Table 2 india		correlation	coefficients	range fro	m _0 /82 (h	eing the co	rrelation co	efficient h	etween

Table 2:Zero Order Multiple Correlation Coefficients on Reaction to Lecturers' Frustration in Examination Script

Results in Table 2 indicate that the correlation coefficients range from -0.482 (being the correlation coefficient between X2 - the variable of aggression against students and X1 - the variable of anger) to 0.001 (being the correlation coefficient between X4 – the variable of complain to authorities and X2 – the variable of aggression against students). In general, the pattern of lecturers' reaction to their frustration tilts towards negative because most of the correlation coefficients (65.2%) display negative values.



Similarly, the cumulative scores of Lecturers' Frustration Reaction Scale (L-FRS) X11 indicate a very low coefficients ranging from 0.002 (being coefficients of X4 and X11) to 0.021 (being the coefficient of X5 and X11). The results suggest that the variables as measured in the L-FRS are reactions of lecturers to frustration in examination script assessment.

Hypothesis 3:

Level of frustration will not differ significantly among groups of lecturers in examination script assessment. The results of the test are presented in Table 3.

Group	Ν	Х	SD	SE	t.	df	tCrit.	Р.	Sig.
Male	190	21	15.01	.581	8.01	320	1.96	000	S
Female	132	42	12.04	.432					
Senior Lecturer	112	15	11.00	.333	26.11	320	1.96		S
Junior Lecturer	210	46	10.05	.457					

N=322

Results in Table 3 indicate that female lecturers (t = 8.01, df = 320, P<0.05) are more frustrated in examination script assessment than their male counterparts; while junior lecturers are more frustrated (t = 26.11, df = 320, P<0.05) in examination script assessment.

Hypothesis 4:

There is no significant correlation between lecturers' frustration in examination script assessment and some consequences. The results of the test are presented in Table 4.

Table 4: Stepwise Regression Analysis on Consequences of Lecturers' Frustration in Examination Script Assessment.

Unstandardised		rdised	Standardised Coefficient		
	Coefficient				
Model	В.	Std. Error	Beta	Т	Sig.
1 (constant)	66.811	3.150		20.010	.000
Under assessment of scripts	1.173	.437	.090	2582	.669
Over assessment of scripts	933	.436	.094	-1.138	.048
Indiscriminate award of marks	1.030	.393	.016	2.623	.000
Depression	-1.620	.459	.084	-3.528	.001
Stress	-238	.556	.095	.428	.000
Worry over 50% examination success rate	-1.957	.637	.041	-2.072	.195
Poor results	1.266	.639	.029	1.982	.483
Students' agitation	-1.470	.618	.054	-2.30	.000
Disciplinary actions on lecturers	-1.569	.435	.028	-3.608	.002
Lecturer attrition	1.245	.377	078	-2.590	.010
Emotional exhaustion	.523	.404	.082	1.982	.000
Unreliable results	-1.599	.392	.056	3.303	.004
Lecturer dependence	.414	.426	.067	.702	.018

Dependent Variable: Frustration Multiple R = .461 R. Square = .239 Adjusted RSquare = .229

ANOVA						
Source of Variation	Sum of Square	Df	Mean of Sqare	F.	Р	Sig.
Regression	49008.044	13	2728.727	14.021	000	S
Residual	134620.79	312	123.502			
Total	186718.96					

Results in Table 4 show that multiple regression analysis yielded a multiple correlation of R = .461 with 23% of the conservative estimate of the percentage of the variance explained and F.Ratio of 14.021, significant at 0.05 level.

The analysis also reveals a standard error of only 9.359. To this extent, the subjective independent variable (C-LFS) predicted 93% of assessment. Only the variable of lecturer attrition is not a consequence of lecturers' frustration in examination script assessment.



SUMMARY OF MAJOR FINDINGS

The following major findings were generated in the study:

- a. Significant positive relationship exist between frustration (OFS scores) and the (E-SAF scores) on the 15 subscales measured. However, 9 subscales reported high relationship with frustration as in poor response to questions, out of point, empty/scanty script, bulky answer, poor handwriting, rough script, lobbying/interference, large number of scripts and shortage of time for marking.
- b. Lecturers react to their frustration in examination script assessment as measured between frustration (OFS scores) and lecturers reaction (L-FRS scores).
- c. Significant differences exist in levels of group reactions to their frustration in examination script assessment. Female lecturers are more frustrated than their male counterparts; while junior lecturers are also more frustrated than their senior counterparts.
- d. The consequences of lecturers' frustration as measured were reported in all the C-LFS measures except in lecturer attrition.

DISCUSSION

The main objective of the study was to determine lecturers' frustration in examination script assessment in selected Federal and state polytechnics in North Central Nigeria. The discussion is presented in the following.

Mediating Factors of Lecturers' Frustration in Examination Script Assessment

From the results and analysis, the study found significant relationship between frustration and 15 E-SAFS subscales measuring poor response to questions, out of point, empty/scanty script, bulky answer, poor handwriting, rough scripts, lobbying/interference, large number of scripts and sight defects. Others are scoring problems (accuracy), inadequate/ unavailability of marking scheme, lack of registration number, no numbering of questions answered, shortage of time for marking and missing script. This report is consistent with those of shepard (2000) that:

When teachers are not knowledgeable about how to conduct classroom evaluation of students then the assessment of test scripts becomes a frustrating task.

The report is also consistent with those of Byrne (1993) that:

Overpopulation of students and shortage of time for assessment of examination scripts have resulted in stress for teachers. As a result, teachers feel frustrated that no one cares for how well they are able to assess students work and know the problem first hand.

This report can be justified. In Nigerian polytechnics, student population is usually high. Sometimes, the ratio is up to one lecturer to 400 students. To attend to them is usually frustrating. Another justification is that the demands imposed on lecturers by school authorities and parents/students in polytechnics, is very frustrating. For instance, Costigan and Crocco (2006) report that, "teachers are frustrated in their adherence to scripted lessons designed to maximize students' scores on high-stake testing".

Lecturers' Reaction in Examination Script Assessment

The study found significant positive relationship between lecturers' frustration and some reactions measured as in anger, aggression against students, poor scoring, complain to authorities, succumb to pressure from parents, students and school authority, indiscriminate award of marks, expression of disappointment, insult on students and lecturers on the defensive. Others are lecturer discontent and threaten to leave service. These findings are in accord with those of Odunayo (2010) that, teachers also react to their frustration in examination script assessment in hostility, aggression and anger on students in the classroom. The report of Dill and Anderson (1995) supports this finding that frustration can lead to aggression. This result can be justified because when one is frustrated, it could lead to aggression. For example, Costigan and Crocco (2006) confirm that teachers in New York State expressed disappointment and annoyance about the demands of school administrators on them to meet that state criteria for students' progress as measured by the state test. In Nigeria, the criteria for students' progress are 50% examination success rate forced on lecturers or else the affected lecturers will face panel for poor results.

Level of Frustration among Groups of Lecturers in Examination Script Assessment:

The results indicate significant difference in the level of frustration among groups of lecturers in examination script assessment. The study reports that female lecturers are higher in their level of frustration than their male counterparts; while junior lecturers are higher in their level of frustration in examination script assessment than their senior counterparts. This result does not support that of Arogundade (2003) that gender does not have significant influences on organizational frustration. This result can be justified. First, female lecturers have more emotions than their male counterparts and secondly; by that will become more frustrated.

The junior lecturers are more frustrated because they do not have the same patience, tolerance, experience and consideration like their senior colleagues.



Consequences of Lecturers' Frustration in Examination Script Assessment

The study found significant correlation between frustration and some consequences in examination script assessment as in under assessment of scripts, over assessment of scripts, indiscriminate award of marks, depression, stress, worry over 50% examination success rate, poor results, students agitation and disciplinary actions on lecturers. Others are Emotional exhaustion, unreliable results and lecturer dependence. These results confirm those of Byrne (1993) that in the last 10 years, administrators and clinicians have observed a sharp increase in incidences of teacher burnout. The report also confirms those of Lambert et al in Burrows and Shade (2013) that teachers are stressed by testing and increased paper work among others. However, lecturers' attrition was not found to be a consequence of lecturers' frustration in examination script assessment as against what obtains in the United States of America (Costigan & Crocco, 2006). This may be attributed to difficulty in getting alternative jobs elsewhere.

CONCLUSION

Based on the results of the study, it is concluded that:

- a. The mediating factors of lecturers' frustration in examination script assessment are poor response to questions, out of point, empty/scanty script, bulky answer, poor handwriting, rough script, lobbying/interference, large number of scripts, sight defects, scoring problems (accuracy), inadequate/unavailability of marking scheme, lack of registration number and no numbering of questions answered. Others are shortage of time for marking and missing script.
- b. Female lecturers and junior lecturers are more frustrated in examination script assessment than male and senior lecturers.
- c. Lecturers react to their frustration in examination script assessment as in anger, aggression against students, poor scoring, complain to authorities, succumb to pressure from parents, students/school authority, indiscriminate award of marks, expression of disappointment, insult on students, lecturers on the defensive, lecturer discontent and threatening to leave service.
- d. The consequences of lecturers' frustration in examination script assessment are under assessment of scripts, over assessment of scripts, indiscriminate award of marks, depression, stress, worry over 50% examination success rate, poor results, students' agitation, disciplinary actions on lecturers and emotional exhaustion. Others are unreliable results and lecturer dependence.

RECOMMENDATIONS

- a. Polytechnic authorities should organize orientation programme on how to write/approach examination for fresh students:
- i. By organizing a two-day orientation for fresh students immediately after their registration on how to approach examination at the beginning of their programme.
- ii. To teach them on examination ethics.
- iii. To teach them on examination regulations.
- iv. To teach them on examination preparation.
- v. To teach them on expectations concerning the appearance of examination scripts.
- vi. To teach them on the effects of lobbying/interference.
- vii. To teach them on the requirements of marking schemes.
- b. Lecturers should adjust to their work and social environment in polytechnics in order to avoid frustration that could lead to reactions that can endanger their health and employment.
- c. Polytechnic authorities should organize orientation for lecturers generally; but target the female and junior lecturers more on how to deal with frustration in examination script assessment:
- i. Through the presentation of papers on how to deal with anger, aggression and impatience in a work place.
- ii. Through the presentation of papers on the consequences of their actions and wrong judgment on assessment of examination script.
- iii. Through the presentation of papers on how to handle examination matters in a school environment.
- d. Polytechnic authorities should reconsider the 50% examination success rate that has made many lecturers to face examination panels by:
- i. Looking into the causes of students' failures.
- ii. Scrutinizing students' credentials at entry point and conducting additional interviews for would-be students.
- iii. Employing the right kind of lecturers.
- iv. Ensuring that what is due to lecturers are paid promptly.
- v. Providing the right kind of school environment for lecturers.
- vi. Polytechnic authorities should ensure that the prescribed student-lecturer ratio is adhered to in order to avoid lecturer burnout, stress and frustration.
- vii. More lecturers should be recruited by polytechnic authorities due to the over population of students. The carrying capacity for each programme and class size set by the NBTE should be adhered to in order to avoid large number of scripts per lecturer.
- viii. Polytechnic authorities should make for the possibility of managing time for lecturers in the assessment of examination scripts. The best way to manage time is to ensure that lecturers are not over loaded with scripts.



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A COMPARATIVE ANALYSIS OF EMA KEITHEL MARKET OF MANIPUR: AN ANTHROPOLOGICAL UNDERSTANDING

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ABSTRACT

The Ema (Ima) keithel is one of the indigenous markets in the world. Women are the sole owners and traders of this market. The objective of the research was to study the Ema market through a gendered perspective and economic anthropological analysis, and its importance in society. Both qualitative and quantitative data were collected for the study. The qualitative data were collected through a case study and open-ended interview technique while the quantitative data were collected with the help of a questionnaire. The comparative analysis of the Ema keithel markets in Manipur is based on a variable like income earned in a day and the type of products based on the different markets of Ema keithel shows significant relationships among the income and types of products.

KEYWORDS: Ema keithel, Women vendors, Income per day, Type of Products, Manipur, India

INTRODUCTION

The Ema (Ima) keithel (Ema refer to as a mother, Keithel refer as to display), also known as the Khwairamband Bazaar by the people of Manipur, is one of the indigenous markets in the world. The uniqueness of the market is that women are the sole owners and traders of this market. It is the second largest women's market in Asia. Women of all age groups, mostly middle-aged women, used to come to sell their goods. But, with the need for financial support, many young women are also seen in the market doing their business. These women trade and deal with different types of products, ranging from daily wear needs to the basic and essential commodities of society. Manipur is located in the northeast part of India with an area of 22,327 sq. km. According to the census 2011 report, Manipur has a total population of 28,55,794 with a sex ratio of females of 49.63% to 50.37 % for every male. The state has a population of 42.79 percent in the hills and 57.2 percent in the valley. The literacy rate of females is 70.26%, as compared to 83.58% for males. There are a number of ethnic communities inhabiting the state, the majority of which are the *Meitei* communities, occupying the valley region, and the tribal communities, which belong to different ethnic groups. In fact, all types of religious beliefs are found in the state. But the majority of them follow Hinduism, Christianity, and Sanamahism. Before the annexation of Manipur under the Indian Union, it was once an independent princely state with its own history. Since India's independence, the state and the rest of the northeastern states have been ignored by mainstream development efforts. Against this backdrop, the women in Manipur, especially the Ema of Ema Keithel, have been the backbone of the Manipur economy. The majority of these female vendors are the primary breadwinners in their families. The primary objective

of this study is to explore the different sections of the markets and types of products found in *Ema*, with its vast potential for an entrepreneur.

Economic anthropologists have examined how resources are distributed, goods are allocated, and political regimes are supported. They also focused on the ties between material life and power, ranging from gender control of food in households to financial control of monopolies in markets. The market as a place creates social capital not only for the communities staying in and around the market but also generates a source of income for the migrants who are in search of economic opportunities. An anthropologist like Dan Rose (2002) has shown an interest in the study of women's roles in the traditional and new markets and the conflicts associated with such transactions. This kind of study attempts to address the unique features of the marketplace and the daily activities performed by women. The market as a place for daily business transactions solely performed by women not only provides an exchange of information but also social and cultural values among different ethnic groups. It creates a sense of belonging amid the different cultural groups that depend on the markets for daily survival by providing food and labor. There is a strong bond that binds people in the markets, such that a malfunction in one part of the market often leads to the collapse of society at large. In a traditional market, the exchange of goods and commodities is community-specific and region-allocated. With the advent of modern technologies, societies today have become handicapped by their local communities' increasing dependence on each other. It is problematic to say that a community or any society can exist without the help of markets. This study of markets on communities has found that "if markets depend upon communities, economies of

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livelihood also leave space for individual acquisition, unobligated manoeuvre, and self-interested transaction (Barnard, 2002)."

The *Ema Keithel* market area is solely owned and controlled by women. It would be unfair to consider these women only as "entrepreneurs" because their role goes beyond the marketplace, such that they play a major role in the political arena in terms of agitation against unlawful activities, conflicts, social evils, and violence in the state.

It is very difficult in times of globalization for the survival of a traditional market like the present market under study, which bears unique features of its own. Considering the work of Black R. (2012) in his study of the Italian traditional market, he mentioned that the "traditional market today not only bears economic importance but also has a clear social and urban significance." Often, they are the mirror of the local context in which they are absorbed. " So, the need and almost requirement of conducting thorough research on such an indigenous market will reflect the importance of its value and be a way of preserving its identity and uniqueness.

OBJECTIVE OF THE STUDY

 To explore the relationships between types of products and income earned by the women in the market
 To study the impact of income earned and types of markets in the market

RESEARCH METHODOLOGY

Study Site: The study will be carried out in the *Ema* market and other such markets which are of significance to the *Ema* market.

Study population: The objective of the research was to study the *Ema* market through a gendered perspective and economic anthropological, and its importance in the society for subsistence. The study will include the 600 female traders in the market.

Study design: The study design will be holistic in nature and with a perspective of feminist orientation. The present study will use the resources, skills, and privileges available to the researcher to make it accessible to penetrate the borders and break through the confines of voices and experiences of subjects whose stories are otherwise restrained and out of reach. Both qualitative and quantitative data were collected for the study. The qualitative data were collected through a case study and open-ended interview technique while the quantitative data were collected with the help of a questionnaire. For analyzing the quantitative data SPSS version 21 was used for calculating the relevant statistical analyses such as frequency, percentage, and mean was computed. Some of the statistical tests done were tests of significance, and one-way ANOVA to compare the mean of the dependent and independent variables and check for any significance, and to conclude the association of studied variables. Before, the research was conducted prior information was given through informed consent. All ethical clearance was taken before the research was conducted.

LITERATURE REVIEW

In Yumlembam Linthoi Chanu (2020) study purpose was to understand the marketing problems and activities of

women enterprises in Manipur; and consequently, to examine their impact on sales growth. The study was felt due to the need for the hour to introspect into the reasons for the slow pace of industrial growth and entrepreneurship development in Manipur, of which an assumption is the marketing reasons. The study also shows that marketing was a problem for women entrepreneurs in Manipur. However, the results show that marketing restrictions do not have a significant impact on sales growth. The study also shows that marketing activities of women's companies include branding, packaging, labeling, provision of product-related services, standardization of products, special pricing, use of middlemen as a sales channel, counter selling, personal selling, and advertising conventional and modern, as well as trade promotion. The study concludes that though women enterprises face hardship and obstacles in marketing the products, does not remain a drawback and contributes significantly to sales growth.

Meetei U. Hirom (2015), according to the study, the influx of many goods and products from neighboring countries such as Myanmar and Bangladesh has led to the authenticity of the markets deteriorating day by day. The majority of the products available here reflect the true spirit of the local people and are well crafted by the society's indigenous communities. Due to their poor education and impoverished family situation, many microcredit providers charge unfair interest on loans to these women traders.

Thingbaijam Laxmi and Das, K.K (2015), the current research is being conducted in Manipur, a state in India's northeast. The research is based on secondary data gathered from Census reports. The role of Manipuri women in socioeconomic and cultural life is significant. They also handle all of the market's buying and selling. Rural and urban markets are dominated by women. They are heavily involved in agriculture and related activities. There is also an increase in the number of female entrepreneurs and self-help groups for women. The number of working women in various industries is increasing. As a result, women must be recognized for their contributions (to the Nation, to the family). Land records should be kept in the names of women to ensure equal access to farm family resources. Women must be protected from discrimination by their male counterparts. The status of women is a critical factor in determining progress in any society.

Prsaian et. al (2014) The current paper discusses and attempts in-depth research on the constituents of the *Khwairamband* market as well as the problems faced by women traders in the market. Unstructured interviews, discussion, and observation methods were used. The importance of observation in understanding the operation of middlemen and private banks in the market was emphasized. For two months, a case study was carried out. The market area was once developed in the form of a socioeconomic recreational center, where even the Royal Princess used to come and conduct her daily transactions. Women weavers are rarely involved in product marketing and sales.

SIGNIFICANCE OF THE PROPOSED STUDY

1) The research will also have policy implications, as the findings will indicate measures to safeguard the socio-cultural values of the market in the global era.

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2) The findings will have academic utilities, especially

for those who are interested in the indigenous market.

RESULTS AND DISCUSSION

Table 1. Socio-economic status of the respondents	
Variables	

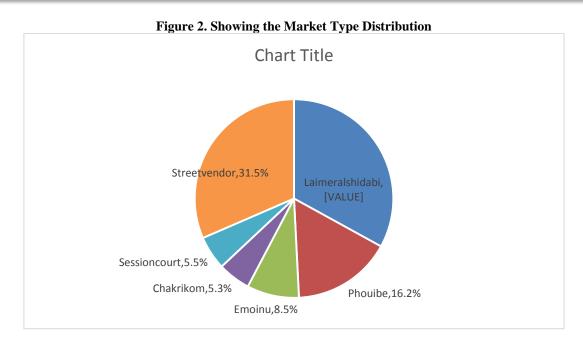
Variables				
Age Category	Frequencies(n=600)	Percentages (mean)		
25-35	7	1.2		
36-45	98	16.3		
46-55	161	26.8		
56-65	242	40.3		
66-75	88	14.7		
75 above	4	.7		
Marital status				
Unmarried	35	5.8		
Single	7	1.2		
Married	438	73		
Widow	100	16.3		
Divorce/ Separated	20	3.3		
Education				
Illiterate	11	1.8		
Primary	63	10.5		
Middle	74	12.3		
High school	199	33.2		
Secondary	79	13.2		
Graduate/P. G	179	29.0		
Religion				
Christian	55	9.2		
Hindu	404	67.3		
Islam	55	9.2		
Meitei	86	14.3		
Locality				
Rural	158	26.3		
Urban	442	73.7		

From above table 1, it can be summarized that the market is occupied by women in the age range of (55-65) with 40.03 % which is the maximum category of women who are already in their middle-aged and almost unoccupied with the rearing of children and household responsibilities. The least age was found among the women with age 75 and above. In marital status, married women occupied the highest number with 73% with cases of single women traders found at 1.2 % in the market. The highest educational level found among these women was a high school education score of 33.2 % while a few women illiterate 1.8% were also doing business. The *keithel* is occupied by multi-ethnic religious communities with 9.2% Muslim and tribal each and Hindu followers being the highest with 67.3% and the indigenous *Sanamahi* believers with 14.3% were distributed in the data collected. The

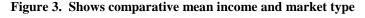
distribution of women vendors based on their residence show that most of the women traders are from urban area occupying the three main *Ema keithel* with 73.7% from urban and 26.3 women vendors who are mostly street vendors from the rural area.

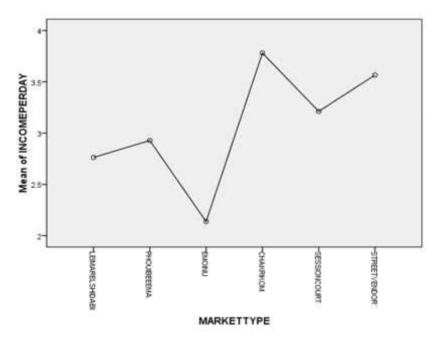
The profit earned by an individual woman was found to be Rupees 300 to 500 per day on an average normal day which is during the off-season. While the minimum margined earned per day by these women was found to be rupees 100 to 300 daily. There is a varied difference in terms of the types of products for sale and the amount of profit gained during a particular season. So, the need for analysing the interrelationship among various types of products and income earned needs further inquiry which will be followed in the following chart.





In figure 2, it shows the distribution of the respondents based on the type of market they are engaged in. The *Leimarelshidabi keithel* illustrates the highest variety of women respondents 198 (33%) being one of the largest among the *Ema keithel* market, followed by the street vendor with 189 (31.5%) women respondents. In fact, some of the products in these two markets like fruits, vegetables, fish, fermented bamboo shoots, local indigenous products, smoked fish, etc. are quite in competition between the women vendors. So, a few of the women vendors from *Leimarelshidabi* were complaining that their business is not going profitable, as most of the customers and passers-by would get the street vendor's products which are at the roadsides. The remaining clothes market is the *Phouibe keithel* with women vendors of 97 (16.2%) respondents selling all kinds of traditional and modern needs of women's garments and the second largest among the market, and *Emoinu keithel* engaged with religious and rituals ceremony clothing needs with 51(8.5%) women respondents. The last market meant for local sweets, salts, and fruits is found in *Chakrikom keithel* being the smallest among all with 32(5.3%) women respondents. While the other two markets Session court and street vendors comprise fish, local vegetables, flowers, dairy products, and local eatable products, along with ready-made garments, imported shoes, and slippers which are mostly Moreh products, etc.







In above figure 3, it shows the mean income per day earned by the women vendors depending on the type of market they are engaged in. It is found that *Emoinu Keithel* seems to have been less profitable with a mean income of 2.14 in the remaining market. While *Chakrikom keithel* seems to be profitable with a mean value income of 3.78 as the highest. The results should be considered as standard error due to their minimum size representable as the market is the smallest of all. The second profitable market seems to be the street vendor with an income per day of 3.57 mean.

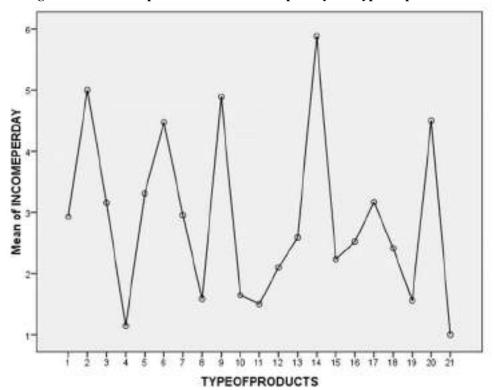


Figure 4. Shows comparison of mean income per day and types of products

In above figure 4, where the number in the horizontal column shows the type of products represented by (1- fresh fish, 2fermented fish, 3-smoked fish, 4- Egg, 5- livestock, 6- Fruits, 7- Vegetables, 8- Pottery, 9- Rice, 10 - Handicrafts, 11-Bamboo and cane, 12- Cotton Cloths,13- Woollen clothing, 14- Silk products, 15- Life cycle rituals clothing, 16-Traditional religious cloths, 17- salts, 18- local sweets, 19-Flowers, 20- Iron items, 21- Miscellaneous). It can be concluded that the highest income earned by women vendors depends on the type of product which is shown with silk products being one of the highest income-generating sources for women in the market. While the least income-generating source products were found to be under the category of miscellaneous products like note exchange stall which is around 3 in number and are not at all profitable. The reason was that nowadays new notes for old notes can be converted without any charge in any bank easily. Moreover, the demands for coins are very less among the public.

CONCLUSION

The above data of comparative analysis of the *Ema keithel* markets in Manipur based on a variable like income earned in a day and type of products based on the different markets of *Ema Keithel* shows that there is a significant

relationship between the type of products and the income a women vendor can earn in a day for her family. From, the findings especially for academic research scientists and scholars who are interested in the *Ema Keithel* would be an immense help for future data reference as the study is unique and one of its kind to rule out significant results comparison was not possible. So, it would be wise to consider for further research in the field.

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A STUDY OF ACTIVISM, LEVEL OF ASPIRATION AND ACADEMIC ACHIEVEMENT OF SOCIALLY AND ECONOMICALLY DEPRIVED

Neelam

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INTRODUCTION

The main basic function of education society is to develop skills, knowledge and awareness of our national and international heritage and the achievement of human people, possessing a essential technical outlook and commitment to the ideals of patriotism, democracy, secularism, socialism, peace and the principles enunciated in the Preamble to our Constitution. The education sector has to produce leaders of society in all areas of activities with a commitment to the above ideals. according to Education in traditional values with our national needs and priorities make sure that our best talents make befitting contributions on societal needs. Education is the main instrument of social change and national reconstruction. Through education we prepare the young generation of today to reconstruct the nation, the citizen of tomorrow. The schools are engaged in this important task of preparing the future nation builders. On the quality and number of persons coming out of our schools and colleges depends our success in the great enterprise of national reconstruction, whose belief objective is to raise standard of living of our people. But society of education are normally weak among many Dalits, tribals and other deprived social groups and a positive outlook is harder to build. The way the schools function, stand for and support somewhat than question, the accessible social and gender division make it more difficult to break the ferocious circle that keeps children away from school in poor families. Poverty and a defenseless life-situation add to common social practices in keeping these children in no-win situations. Poverty is widespread in India, with the nation likely to have one third of the world's poor.

Our Constitution assures us of equality in opportunity and status, giving socioeconomic justice to all the citizens of India. Very interestingly, we see that the students belonging to the families of higher status whose parents are rich and can afford their education, manage to get admissions in all these faculties by paying money, donation fee etc. Socially and economically deprived people are being neglected in almost all spheres. They are still suffering from atrocities. So far as intelligence and competence are concerned, students belonging to deprived group are equally intelligent and competent. Deprivation is the insufficiency of the basic necessities for survival of individual. The degree of deprivation may vary but deprivation is a common phenomenon which is being experienced by all human beings. Not having sources of income, assets and ownership of property are some forms of economic deprivation. Social deprivation, arising out of the ascribed status of caste, tribe or religion, is another form of deprivation, especially in highly stratified rural areas. This lack of facilities creates, in socially and economically deprived students, feeling of insecurity. They form a few images about the nature and self image gives increase to the feeling of adequacy or inadequacy in an individual. If a student perceives himself to be able, confident and adequate, and a person of worth, he has more energy available to spend on academic achievement and will inspire for higher grades and will try to achieve his goal through hard work. In many researches, Educational Achievement and Level of Aspiration is seem to be highly consistent variables and first control, nonetheless, the foundation for Academic Achievement seems to be Level of Aspiration which has to be cultivated early in life. Since high or low Level of Aspiration depend upon accessibility to resources available within the environment, lack can be assumed to shape and chanalize their Activism also in significant way.

OBJECTIVES OF THE STUDY

1. To identify socially and economically deprived undergraduates.

2. To study the activism of socially and economically deprived under graduates.

3. To study the level of aspiration of socially and economically deprived under graduates.

4. To study the academic achievement of socially and economically deprived under graduates.

5. To study the interrelation relationship between dependent and independent variables (Deprivation, Student Activism, Level Of Aspiration and Academic Achievement.).



Procedure of the Study

Administration of the Tools Scoring of the Tools Collection of Data Editing and Coding of Data Data Processing Interpretation of Data and Findings Report writing

Statistical Analysis Descriptive Statistic

Mean• SD• Inferential Statistic C.R. Values• Coefficient of Correlation• Method of the Study 6 Colleges of kanpur City Total 1350 units of I year Graduate. Selection of Tools Sampling Design Descriptive Survey Method Probability Sampling Purposive Sampling Systematic Random Sampling Tools for Dependent Variables Sharma Student Activism Scale• Level of Aspiration Measure• CBSE Board Exam Results• Tools for Independent Variables Socio•

VARIABLES

Dependent variables

1. Activism 2. Aspiration Level 3. Academic Achievement

Independent variables

1. Social deprivation 2. Economic deprivation

Controlled variables

1. CBSE Board Pass out Students 2. Students from kanpur University

METHOD Keeping in research objective in mind and nature of the study, the descriptive survey method was employed in this study.

STATISTICAL TECHNIQUES To analyze and interpret the data, Mean, S.D., C.R. values and Coefficient of Correlation were used. all statically technique compute by the SPSS 16 version.

FINDINGS OF THE STUDY

Nature and Distribution of Socio Economic Status Scores.

In order to observe the nature of SES scores in the selected Sample of under graduates students, the scores obtained by R.L. Bhardwaj's SES Scale were tabulated. A frequency table of the scores was prepared which is shown in table given below. The observation of the above table reveals that the scores are normally distributed with slight deviation, most of the frequencies being concentrated at the center and gradually decreasing towards both the ends of distribution. To ensure representativeness of the sample, frequency polygon curve of the obtained scores was prepared (The pictorial presentation of the obtained scores on socio economic status scale also confirmed the normal distribution of the sample with slight positive skewness. Further to see the diversions in distribution the values of mean, median, SD,skewness and Kurtosis were computed, which is shown in table given below

Statistical Values for the Scores of SES.

Variable	Ν	Mean	SD	SK	KU
SES	1281	44.04	13.95	.762	.274

To Study Social and Economic Deprivation of Undergraduates

To determine the deprivation of undergraduates, the tool of socio economic status by R.L. Bhardwaj was applied. This tool divided the sample into 5 categories upper class, upper middle class, middle class upper lower class and lower class according to the scores obtained by the sample.



SN	CATEGORIES	SCORE
1	Upper Class	60 and above
2	Middle class	40-59
3	Lower class	30 and below

Table from the Manual of Socio Economic Status Scale by R.L.Bhardwaj.

The students who scored below 39 on this tool was considered as deprived undergraduates and students who scored 60 or above 60 was considered as non deprived undergraduates as socio economic status is a set of facilities, opportunities, privileges, prestige and recognition one enjoys. High socio economic status means the achievement 133 of such mentioned sets, while low socio economic status is the deprivation from these. Middle socio economic status is the condition between the twos extremes. So the undergraduates, who scored between 40-59 on SES scale were eliminated from the sample.

Sex	Gen	OBC	SC,	ST
Male	208	159	268	635
Female	244	198	204	646
Total	452	357	472	1281

Category Wise Distribution of Sample.

The table reveals the number of males and females from different categories in the sample. it is clear from the table that number of male and female units are almost equal, where girls and boys constitute 51% and 49% of the total sample respectively. When we see the sample distribution category wise, we find that SC,ST category contributes 37% followed by General and OBC with 35% and 28% respectively.

Category Wise Distribution of Deprived Undergraduates. Socially and Economically Deprived

Sex	General	OBC	SC	,ST
Boys	99	58	130	287
Girls	128	86	111	325
Total	1 2 2 7	144	241	612

In this table observed that number of deprived girls are more than the deprived boys. The girls are 53% of the total sample while and the boys are 47%. Most of the deprived students are found from SC/ST category and least number of deprived students are found from OBC category. In SC.ST category number of deprived boys is more than deprived girls. In total group 39% are SC/ST, 37% are general category and 24% are OBC students. The findings are systematically arranged and presented here in accordance with the objectives as follows:

FINDINGS RELATED TO REPRESENTATIVENESS OF SAMPLE

The distribution of SES scores in the total sample was found normal with- slight positive skewness and lepto kurtosis.

FINDINGS RELATED TO DEPRIVATION OF UNDERGRADUATES.

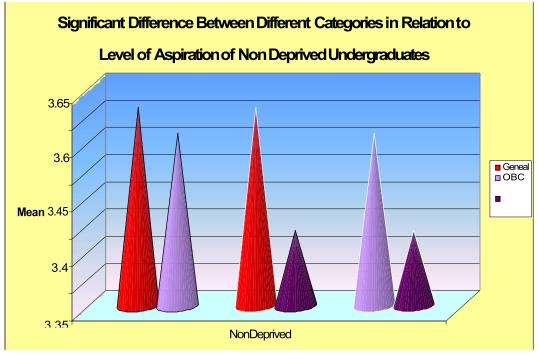
49% undergraduates students of the total sample were socially and economically \neg deprived. While 17% undergraduates were non deprived. Socially and economically deprived group consisted 53% of girls students and \neg 47% of Boys students. In socially and economically deprived group 39% were SC/ST, 37% were \neg from general category and 24% were from OBC category.

FINDINGS RELATED TO THE STUDENT ACTIVISM OF UNDERGRADUATES

The mean values of student Activism of undergraduate were 44.658 and \neg 48.773 for socially and economically deprived and non deprived group respectively. It shows that though the activism of non deprived group is more than the deprived group but youth from both the groups are average activists. Findings related to the student activism of deprived and non deprived undergraduates There was significant difference between deprived and non deprived male in \neg relation to their activism. Deprived male were more activists in nature. Non deprived females were found more activist in nature in comparison to \neg deprived female undergraduates. The C.R. value for deprived and non deprived female was found significant at 0.01 level. As far as the total group of deprived and non



deprived was concerned, non- deprived undergraduates displayed more activism in comparison to deprived undergraduates. The results of the study by Baird, Leonord L (2010) support these findings, who through his study concluded that the identifiable activists came from middle-class homes where educational experiences had stimulated their mental curiosity. Findings related to the student activism of male and female undergraduates. In deprived group, male students were found more activists. - In non deprived group the female students showed higher activism. - Findings related to the student activism of deprived and non deprived undergraduates from different categories In general and OBC category non deprived undergraduates were found more- activist in nature. In SC/ST significant found category no difference was between deprived andnon deprived group Findings related to the significant difference between student activism of deprived and non deprived undergraduates from different categories The statistical facts indicated thatIn deprived group- General category undergraduates were found highly activists followed by SC/ST undergraduate. OBC category undergraduates were found least activists. General category students were found more activists than OBC category students. General category student were found more activists than SC/ST category students. Students from SC/ST category had more activism is comparison to students from OBC category. In Non deprived group- General category students were found most activist followed by OBC. - Students from S/ST category were found least activists. No significant difference was found between general and OBC category students in relation to student Activism. Significant difference was found between SC/ST and General category. - General category students were found more activists. OBC category undergraduates were found having more activism in- comparison to SC/ST students.



FINDINGS RELATED TO LEVEL OF ASPIRATION OF UNDERGRADUATES

Keeping in view the research objective in mind. Findings related to Level of Aspiration of deprived and non deprived undergraduates students. By the SPSS Software The C.R. value between the deprived and non deprived groups revealed:

1. Deprived and non deprived male undergraduate have equal level of aspiration.

2. Deprived and non deprived female have equal level of aspiration.

3. Non deprived undergraduates have higher aspirations in comparison to deprived undergraduates students.

Most of the Researches also analysis that parents with fewer financial resources tend to hold lower aspirations for their children, and young people from socially disadvantaged backgrounds tend to have lower aspirations than their more advantaged peers. (Schoon, 2006) Findings related to level of aspiration of male and female undergraduates The C.R. value between the scores of level of aspiration of male and female undergraduates have higher aspirations in comparison to deprived female students. 2. Non deprived female students have higher aspirations in comparison to non deprived male students. Research results also support the findings that : Girls consistently have higher aspirations than do boys (Schoon, Martin and Ross, 2007) girls have 'consistently higher' aspirations than boys, and parents have higher aspirations for their daughters than their sons -



contrary to trends in previous generations. (DAILY MALE REPORTER, Last updated at 12:25 PM on 16th December 2008, Vidyavati Mukandlal and Sharma Prerna, 2008)

Findings Related to level of Aspiration of deprived and non deprived undergraduates from different categories

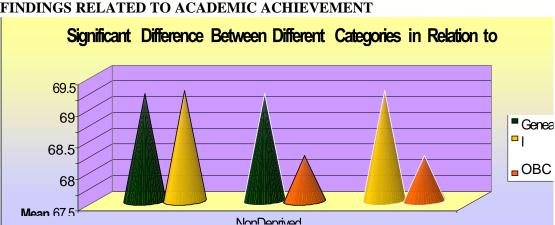
The C.R. values between deprived and non deprived undergraduates from different categories revealed the following facts:

1. Deprived and non deprived students from general category have equal level of aspirations. Both are equal level of aspirations.

2. Deprived and non deprived students from SC and ST have equal level of aspirations Both are equal level of aspirations.

3. Non deprived students from OBC category students have higher aspirations in comparison to deprived students.

Strand (2007) in his study found that aspirations help mitigate the effects of low socioeconomic background for certain minority groups, such as Indian and Chinese students; however, the effects are less strong for Pakistani and Bangladeshi students and least strong for Black Caribbean young people.34 [16] Finding related to the significant difference between level of aspiration of deprived and non deprived undergraduates from different categories The C.R. values related to level of aspiration of undergraduates from deprived – and non deprived group revealed that Undergraduates, whether they are from any category, general OBC or SC/ST, – or any group deprived or non deprived, they all have equal aspirations. Category does not affect level of aspiration. So level of aspiration of under graduates is hardly effected by their category. Studies have shown that ethnic minority families have high aspirations for their children, yet not all parents have the skills and resources to help them achieve those goals (Steinberg, 1996).



FINDINGS RELATED TO ACADEMIC ACHIEVEMENT

Findings related to Academic Achievement of deprived and non deprived undergraduates. Non deprived students had a better academic achievement in comparison to- deprived students. Non deprived male students' academic achievement is better than deprived - male students' achievement. Non deprived female students had higher academic achievement than deprived - female students. Blanden and Gregg (2004) reviewed a wide range of literature and quantitative information about the relationship between family income and levels of educational attainment. The academic support teachers provide within the classroom is also related to their expectations of students and often differentiated based on beliefs and expectations related to race, ethnicity, and socioeconomic class. In the classroom, teachers tend to call on those students whom they perceive to be from high status family. They are more likely to provide extra time and help to these students, because they expect them to learn, grow, and succeed. On the other hand, teachers tend to become impatient and ignore poor students whom they believe are unable to achieve to the level of the others in the classroom (Brophy & Good, 1974; Gandara, 1999). Often, these lower expectations – and differentiated learning opportunities – are related to cultural beliefs and socio economic status of the students. Findings related to Academic Achievement of male and female undergraduates from deprived and non deprived group The statistical figures for deprived group showed that there existed nosignificant difference between deprive boys and girls students in relation to their academic achievement. Significant difference was found between boys and girls students from- socially and economically non deprived group of undergraduates. It means academic achievement of boys is greater than girl students in this group. Sara Mead(2009) in her research article found that It troubles not only parents of boys, who fear their sons are falling behind, but also parents of girls, who fear boys' academic deficits will undermine their daughters' chances of finding suitable mates. But the truth is far different from what these accounts suggest. The real story is not bad news about boys doing worse; it's good news about girls doing better. In fact, with a few exceptions, boys are scoring higher and achieving more than they ever have before. But girls have just improved their performance on some measures even faster. As a result, girls have narrowed or even closed some academic gaps that previously favored boys, while other long-standing gaps that favored girls have widened, leading to the belief that boys are falling behind. Findings related to Academic achievement of deprived and non deprived undergraduates from different categories In every category general, OBC and SC/ST, non deprived group showed a- higher



academic achievement than deprived group. In general category there existed significant difference between deprived and non deprived undergraduates in relation to their academic achievement. Non [18] deprived undergraduates from general category had better academic achievement. In OBC category, non deprived undergraduate showed better academic – achievement. In SC/ST category, non deprived SC/ ST students had a better academic- achievement in comparison to deprived undergraduates. Overall, findings suggest that deprivation effect academic achievement. Delpit(2001) also found links between academic failure and socio economic status. A recent study by Annie E. Casey Foundation found that children who both live in poverty and read below grade level by 3rd grade are three times as likely to not graduate from high school as students who have never been poor (Hernandez, 2011). Findings related to the significant difference between academic achievement of deprived and non deprived undergraduates from different categories The calculated C.R. Values on academic achievement of undergraduates from different categories exposed that As far as the category wise academic achievement of deprived undergraduates was concerned, no significant difference was found between general & OBC, OBC & SC/ST and General & SC/ST in relation to their academic achievement. It can be inferred that there exists no significant difference among different categories in relation to their academic achievement. Many experts have since asserted that achievement gaps are the result of more subtle environmental factors and -opportunity gaps in the resources available to poor versus wealthy children. Being raised in a low-income family, for example, often means having fewer educational resources at home, in addition to poor health care and nutrition. At the same time, studies have also found that children in poverty whose parents provide engaging learning environments at home do not start school with the same academic readiness [19] gaps seen among poor children generally (U.S. Department of Education, 2000; Viadero, 2000, Sparks, 2011). In non deprived group, the difference of mean values of academic- achievement scores of undergraduates, between general Vs. OBC, OBC Vs. SC/ST and General Vs. SC/ST were found insignificant, it revealed that there exists no significant difference among different categories in relation to their academic achievement. Above observations about deprived and non deprived group indicate that category does not effect academic achievement.

FINDINGS RELATED TO INTERACTION RELATIONSHIP BETWEEN DEPENDENT AND INDEPEND	ENT
VARIABLES	

S.	VariablesNO.	Mean	S.D.	'r' value for thevariables	'r' value
A	SES	38.56	8.20	SES & Student Activism	0.074**
В	Student Activism	45.73	16.77	SES & Level of Aspiration	0.066
С	Level of Aspiration	3.08	2.79	SES & Academic Achievement	0.332*
D	Academic Achievement	63.80	7.76	Student& Level of Aspiration	0.112*
				Student & Academic Achievement	0.062
				Level of Aspiration & Academic Achievement	0.031

The findings indicated that correlation between deprivation and student \neg activism was negligible but positively correlated and value was significant at 0.05 level. The findings of the study, by WILLIAM S. ARON,(2002) suggest that there is very little direct effect on activism by social background, indicating that past studies of student political activism have overemphasized the influence of social background factors. SES also showed negligible but positive correlation with level of aspiration \neg which was found insignificant at 0.05 level. Trusty (1998) in his study also found socio economic status as predictor of low aspiration. Coefficient of correlation between SES and academic achievement was $0.332\neg$ which was low but positively correlated. The 'r' value was also found significant at 0.01 level. Analyses by The Education Trust, a Washingtonbased research and advocacy organization, and others have



found that students in poverty and those who are members of racial minority groups are overwhelmingly concentrated in the lowestachieving schools. One study of 46 industrialized countries found the United States ranked 42nd in providing equitable distribution of teachers to different groups of students: For example, while 68 percent of upper-income 8th graders in the U.S. study sample had [20] math teachers deemed to be of high-quality, that was true for only 53 percent of low-income students (Braeden, 2008). Interrelationship between student activism and level of aspiration showed¬ positive but very low correlation but the 'r' value was found significant at 0.01 level. Student activism with academic achievement and Student activism with level¬ of aspiration, were having negligible but positive correlation. Both 'r' values were found insignificant at 0.05 level of significance. Findings also indicated that activists were found to be intellectual but not academically inclined and therefore not outstanding students. They tended to be talented in nonacademic areas such as art, speech, drama and writing (Baired Leonard L)

CONCLUSION

The major facts which have emerged out from the detailed description of the findings of the study, are that socially and economically deprived undergraduates are less activists than non deprived undergraduates whereas deprived male are more activists than non deprived male undergraduates, non deprived female undergraduates are more activists than deprived female students. Male students from deprived families are more activists than female students and female students from non deprived families are more activists than none activists than male students. Non deprived undergraduates from general, OBC and SC,ST category showed higher student activism than non

deprived students. General category undergraduates whether from deprived or non deprived group were found more activists than any other category. As far as the level of aspiration of deprived students is concerned, non deprived undergraduates had higher level of aspiration. In deprived group, male students had higher aspirations and in non deprived group female had higher aspirations. Undergraduates from all the categories have equal level of aspiration. 230 Category does not affect level of aspiration. Non deprived students had a better academic achievement in comparison to deprived students. There existed no significant difference between deprive boys and girls students in relation to their academic achievement. In socially and economically non deprived group, academic achievement of boys was greater than girl students. There existed no significant difference among different categories in relation to their academic achievement. Above observations about deprived and non deprived group indicated that categorydoes not effect academic achievement.



A COMPARATIVE STUDY OF IMPACT OF DIGITIZATION IN TAXATION BETWEEN INDIA AND BANGLADESH

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ABSTRACT

India as a developing country is committed to increasing tax revenue and achieving fiscal discipline with a view to increasing self-reliance. The external environment influencing the tax performance of India has changed remarkably as the country more and more integrated with the global economy during the 1990s. In recent years, the Government of India has initiated some administrative and policy reforms in the tax system. An improved tax administration in association with some pragmatic policy initiatives has of late resulted in a modest improvement in the tax to GDP ratio. However, the performance is still unsatisfactory as compared to other countries at a similar stage of economic development.

KEYWORDS: Digitization, Tax administration, Tax policy

INTRODUCTION

The term tax has been derived from the French word tax which means to charge Review of different literature suggests that "tax" was introduced to generate public and state revenues to cope with the situation after major crises like famine, devastation of war etc. Likewise, in the Indian Subcontinent "tax" was introduced to raise additional finances in order to replenish the revenue deficit caused by the Sappy Mutiny of 1857 (K I Interview). Following the Mutiny, the British government took over the rule of India from the East India Company, which was in a bad financial state. To find a way-out, the government appointed a Finance Member in India, named Mr. James Wilson, who introduced a bill to the Indian Legislature entitled "An Act for Imposing Duties on Profits is arising from Property, Professions, Trades and Offices" in1860.

However, the Act did not work well in 1865 and was reintroduced in 1867 as certificate tax, which in turn was converted into regular income tax in 1869. Though the changes over the years improved the tax system in form and coverage, the income tax was altogether abolished in 1873-74 when there was a comfortable budgetary surplus (Bala Swapan Kumar 2009). However, in 1879-80 taxes ware raised in the form of license taxes and continued until

1885-86. meantime in 1886 the Indian government adopted the Indian Income Tax Act, which was again amended substantially in 1916 and consolidated in the income tax law of 1916. In 1922 the All-India Income Tax Committee was appointed. It recommended a broad-based "Income Tax Act" and necessary institutional arrangement for tax collection. Based on the recommendations the Indian government adopted the "Income Tax Act 1922 (Act XI of 1922) and established the Inland Revenue Board as the highest authority for income tax. The very "Act" tried to address few fundamental issues and peoples" concern, such as the basis for assessing income, profits and gains, the taxpayer's choice, etc., but still it was a continuation of the reactive and centralized tax system of the British ruler and people's views and concerns were not reflected in a structured manner.

CURRENT REVENUE REGIME

The current fiscal regime of Bangladesh consists of direct and indirect taxation. It is governed by the National Board of Revenue (NBR). Revenue is also generated from non-NBR sectors and under the laws and acts of related ministries. The NBR taxes include Customs Duty, Value Added Tax (VAT), Supplementary Duty (SD), Personal Income Taxes (PIT) and Corporate Income Taxes (CIT). Personal and Corporate Income Tax, the single largest source of direct tax, is governed by the Income Tax Ordinance, 1984 (XXXVI of 1984). The income tax laws consist of the following statutes (apart from the main statute) (Bala, Swapan Kumar 2009): - Income Tax Ordinance 1984 – the parent statute;

- Income Tax Ordinance 19
- S.R.O. (Statutory Rules and Order)/Gazette Notification;
- Income Tax Circular;
- General or Special Order;
- Explanation/Office Memorandum;
- Verdicts of Appellate Tribunal for equivalent fact;
- Verdicts of the High Court Division on question of law; and



- Verdicts of the Appellate Division on judgment of the High Court Division.

Besides fiscal income from direct sources (e.g. income tax) India generates a substantial share of its revenue from indirect sources through import and excise duties (customs duties). Customs duties are normally payable on the following goods: a) imported and exported goods; b) goods brought from any foreign country to any customs station and without payment of duties there, transshipped or thence carried to and imported at any other customs station; and c) goods brought in from one customs station to another.

The customs duties were the biggest contributors to the tax revenue until the late 1980s. That is when their decline started, due to reduced rates and levies to comply with the demands of global and globalized trade and the fiscal policies of market liberalization, and also for shifting of economy from trading to local manufacturing. It then became necessary to think of other options for revenue generation. Given the context, in 1986 the World Bank suggested introducing VAT in Bangladesh. With the aim of greater revenue generation for the government and stimulating economic growth, the VAT Bill 1991 was proposed in the National Parliament on 1st June 1991 and a month later the Bill was passed and made into the VAT Act 1991. The VAT Act 1991 contains over 70 laws that guide a business in VAT related issues, from registration to penalties on non-compliance. It also dictates the structure of the VAT authority and the power it may exert on businesses regarding the three taxes within the realm of the Act as the situation demands.

DISTRIBUTION OF TAX BURDEN AND PROGRESSIVITY IN INDIA

One of the basic concepts of designing and implementing an equitable taxation regime is "Broad Basing", meaning that the taxes should be spread over as wide as possible a section of the population, or sectors of the economy, to minimize the individual tax burden. While indirect taxes (e.g. GST) levied on goods and services affect the rich and the poor alike, direct taxes may create burdens on a certain income group. Indirect taxation is commonly used to generate tax revenue paid indirectly by the final consumer of goods and services. It is paid by everyone in society, regardless their financial situation.

Hence, indirect taxation can be viewed as regressive as it imposes a greater burden (relative to resources) on the poor than on the rich. In contrast to direct tax, the taxpayer and the taxbearer are not the same person. Hence, to reduce an individual's tax burden, the taxation regime should be diverse and broadbased with an equitable balance of both direct and indirect sources. On the other hand, the term "progressive" refers to the way the tax rate progresses from low to high, with the result that an individual on average pays less than the person's marginal tax rate. This also means that people with lower income pay a lower percentage of that income in tax than those with a higher income. Unlike indirect taxes, direct taxes are linked to the taxpayer's ability to pay, and hence are considered to be progressive. In India, direct taxes consist of taxes from income tax and other taxes.

The sources of income tax can be classified in 7 categories:

- 1. Salaries
- 2. Interest on securities
- 3. Income from house property
- 4. Income from agriculture
- 5. Income from business or profession
- 6. Capital gains
- 7. Income from other sources.

Indirect taxes are collected by intermediaries from the person who bears the ultimate economic burden of the tax. The intermediary later files a tax return and forwards the tax proceeds to the government with the return. The major indirect taxes in Bangladesh include: value added tax (VAT), excise duty, trade tax and turnover tax. Nevertheless, the tax structure of Bangladesh is perceived to be regressive as it is heavily dependent on indirect taxes (about 64% in 2014). The gap between direct and indirect tax has reduced since 2005 as the share of direct tax has increased.

REVENUE FORGONE

In Bangladesh there is no good estimate of revenues forgone due to tax exemptions. At the time of preparing tax incentives, the revenues estimates are also not prepared. As a result, the actual cost benefit accounting is not prepared. Whereas Indian tax structure is becoming narrow day by day in terms of exemptions and deduction because of which people avoid paying taxes.

DEFINING AND MEASURING DIGITIZATION

We believe the extent of a country digitization can be measured across six key attributes:

Ubiquity – the extent to which consumers and enterprises have universal access to digital services and applications.

Affordability – the extent to which digital services are priced in a rang that makes them available to as many people as possible **Reliability** – the quality of available digital services

Speed - the extent to which digital services can be accessed in real time

Usability - the ease of use of digital services and the ability of local ecosystems to boost adoption of these services

Skill - the ability of users to incorporate digital services into their lives and businesses.

ECONOMIC IMPACT

Analysis confirms that digitization has a material economic impact, which we assessed with three variables: growth in per a pita GDP, job creation, innovation. We analyzed 150 countries using a classical production function model to assess economic impact, controlling for a number of variables.



We found that an increase in digitization of 10 percentage point triggers a 0.50 to 0.62 percent gain in per capita GDP. By contrast , previous studies that focused mainly on broadband penetration established that a 10percentage point increase in broadband penetration contributes a gain in per capita GDP of just 0.16 to 0.25 percent. Thus the GDP impact from digitization is more than twice as large as the impact of broadband penetration.

Additionally, the economic impact of digitization accelerates as countries transition to more advanced stages. Constrained digital economies realized a 0.5 percent increase in GDP per

Capita for every 10percent increase in digitization. While advanced digital economic show a 0.62 percent increase in GDP per capita forever 10 percent digitization increase.

8.2%

2021

-7.3%

2.4%

Comparative growth in GDP: India and Bangladesh					
Year	2017	2018	2019	2020	
India	8.3%	6.8%	6.5%	4.0%	

7.9%

7.3%

(Source-World Bank)

Bangladesh

India witnessed an all-time high GST revenue collection from October 2020 onwards. In the recently released collection figures, the Finance Ministry has revealed that the provisional net indirect tax collections for financial year (FY) 2020–21 recorded a growth of 12.3%; 108.2% of revised estimates of indirect taxes for FY 2020–21 has been achieved. This is a feat in itself.

7.1%

TAX COMPLIANCE PATTERNS

In our main sample (the set of firms surveyed in the baseline survey), we find that overall compliance is very low: 34.1% of firms are VAT registered; 2.6% of firms paid package VAT in the last year; and 5.7% paid a positive amount of regular VAT in the last quarter. We can also see that a firm becoming registered is not sufficient to ensure payment in practice. There are a substantial number of what NBR refers to as "stop filers": firms that are registered but who do not file or remit taxes. Note that the NBR believes that essentially all firms in these areas

should be VAT registered and should be paying regular VAT. There is therefore substantial room to improve compliance even on very basic measures such as registration, filing, and non-zero payment. We see substantial variation in compliance across sectors. We also see variation based on firm size, with a very steep gradient in compliance by number of employees. Bangladesh Tax Revenue was reported at 2.886 USD bn in May 2022. This records an increase from the previous figure of 2.752 USD bn for Apr 2022. Bangladesh Tax Revenue data is updated monthly, averaging 433.352 USD mn from Jul 1990 to May 2022, with 383 observations. The data reached an all-time high of 4.694 USD bn in Jun 2021 and a record low of 87.797 USD mn in Jul 1990. Bangladesh Tax Revenue data remains active status in CEIC and is reported by CEIC Data. The data is categorized under World Trend Plus's Global Economic Monitor - Table: Tax Revenue: USD: Monthly: Asia.

Assessees	Number of Returns 18-19	Number of Returns 17-18	Number of Returns 16-17
Individual	5,52,60,219	4,66,75,114	4,63,79,861
HUF	11,30,554	10,70,688	10,61,945
Firm	12,69,736	11,04,509	10,74,468
AOP/BOI	2,04,048	69,727	76,151
Companies	8,41,942	7,92,268	7,70,092
Others	6,959	1,56,074	1,25,042
Total	5,87,13,458	4,98,68,380	4,94,87,559

If we look for return filing in India in recent years.

(Income Tax Return Statistics 2018-19) Note: Others include Trusts, Cooperative Society, LLP, Local Authority and Artificial Juridical Person.

The income tax department of India has received about 58.3 million income tax returns (ITRs), largely from salaried and individual taxpayers, by July 31. The latest figures are about the same as that of the previous financial year (2020-21). On July 31, 7.24 million ITRs had been filed, shattering all previous single-day records (the maximum being 4.9 million in 2019). All the above collections have been possible because of huge infra-available to file return online.

CONCLUSION

Taxation is indispensable in order to support the basic function of a sustainable state and to create the context for economic growth. An improved tax system is the key to financing public services, reducing inequality, making government more accountable and helping to improve selfreliance. Over time, the NBR has had major achievements as it invested time and efforts to achieve its objectives and to reform the tax system. The tax system in Bangladesh is gradually improving, raising more revenue and reducing the



dependency on aid. However, Bangladesh is still a low tax effort country with a high buoyancy ratio, implying that the policymakers of Bangladesh have the scope and potential to opt for greater revenue mobilization through internal resources in order to meet the budgetary deficit. This report analyzed seven areas of the tax system: tax system in general; distribution of the tax burden and progressivity; revenue sufficiency and tax leakages; tax exemptions; effectiveness of the tax administration; government spending and transparency and accountability. With the objectives of looking into the complex character of tax systems in order to evaluate the fairness of a tax system under review. The report reveals the situation in Bangladesh and provides a set of recommendations at the end of every chapter for a better understanding by readers. The recommendations indicate that fair taxation is possible if the government follows standard norms of policy implementation and if it improves the transparency and accountability based on participatory approaches.

The study finds that there remains a lot to improve in terms of the tax collection to achieve the desired tax to GDP ratio. Tax exemptions and tax evasion in general also contribute to the low revenue mobilization. The construction of institutions that are independent and easily monitored is an important strategy for curbing corruption and abuse. This should include clear processes and regulations, accompanied by dedicated enforcement capacity. Transparency and inclusiveness are essential in fair tax systems. This implies that citizens should have detailed information about how taxes are assessed, how much tax revenue is collected and how that revenue is used. Measures to enable citizens to monitor the fairness of tax collection efforts and expenditure are crucial. To conclude, researcher only can say that from the above data it is clear that both the countries are making 100% efforts to collect and make collection of taxes easy and fast with the help of technology but India with huge amount of population facing burden of major part not making tax payment. Whereas Bangladesh is showing better performance in tax compline in terms of percentages because of less population and high degree of faith in tax structure amongst the population. There is a need in India to make people more aware a have a faith in paying taxes.

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ACNÉ

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SUMMARY

Acne is the most traumatic and globally annoying chronic inflammatory skin disease. Its prevalence is highest among patients aged 12-24 years, at a frequency of 85%, although it can persist into adulthood, despite treatment. Its effect involves emotional and physical aspects (presence of marks), in addition to its effect on quality of life. Its clinical presentation ranges from the presence of comedones to mixed comedogenic acne with inflammation (1)(2). The face is the most affected area in most cases, and the trunk is affected in 61% of patients. The lesions caused by this can range from scarring to the presence of post-inflammatory hyperpigmentation. Stimulation of the immune system by hypercolonisation of Propionibacterium acnes is thought to be the possible cause (3).

The aim of this literature review is to communicate to the scientific community the different measures and treatments for this disease, which, as will be analysed, has not only personal impacts, but also psychological and social implications. In fact, this work is based on a dissemination of studies and reviews from 5 years ago, which means that we have all the most up-to-date information possible on this subject.

KEYWORDS: Acne, scars, benzoyl peroxide, comedones, sebaceous glands.

INTRODUCTION

Hereditary factors have also been attributed in the pathogenesis of acne, where severe cases of acne have been found to have a family history of acne. A large-scale genetic study in the UK compared the genes of patients with severe acne with those of a control group; and provided information on how to predict who is prone to acne by establishing the loci of the genes that can cause it (4).

Within the pathophysiological development of acne, we have 4 factors:

• Abnormal follicular hyperproliferation of keratinocytes, leading to the formation of follicular



plugs.

- Increased sebaceous production in the sebaceous follicles.
- Proliferation of microorganisms in the retained sebum.
- inflammation

RELATED CAUSATIVE FACTORS

Extreme dietary programmes have not proven to be of any value; rather, a balanced, healthy diet has been shown to be appropriate. Studies have found that diet can exacerbate acne. Carbohydrates, milk and other dairy products, saturated fats, including trans fats, along with deficiency of omega-3 and polyunsaturated fatty acids can promote acne. Dietinduced insulin and insulin-like growth factor-1 (IGF-1) overlap with elevated IGF-1 levels during puberty and affect sebaceous gland homeostasis. Some researchers believe that patients should consume an adequate calorie balance and restriction of refined carbohydrates, milk, dairy, nutritional supplements, saturated fats and trans fats. They recommend a diet rich in vegetables and fish. Clinical features include comedones, pustules, nodules, cysts and scars. The comedones that are generated can range from closed to open. Open comedones are also called blackheads, due to oxidation of the keratin. Closed comedones are called blackheads. Pustules occur when follicular inflammation is such that a collection of neutrophils is produced. Cvsts are keratin-filled structures with follicular lining that dilate. Nodules occur when these become more inflamed. These are clinically red, with a palpable lesion. Scarring may be the end result once resolved. These scars can be: icepick (narrow and deep), hypertrophic (stacked and smooth), and atrophic (flat and depressed) with a thin epidermal surface. Keloids and hypertrophic scars extend beyond the original site of inflammation. This is an effect that occurs in severe forms of acne, and once present, they are permanent (5)(6). Increased leptin levels increase inflammation. Regular exercise can help with weight control, but can cause alterations in stress hormone regulation, depending on the intensity and timing of the activity, along with increases in adrenal hormones and testosterone. The sebaceous glands play an important role in the generation of acne, due to the response of stress hormones and neuropeptides, as well as promoting the release of enzymes that increase the production of hormones and cytokines (7).

SOCIAL IMPACT

Acne has a major impact on appearance, which is related to self-esteem, self-perception and daily activities. Furthermore, it has been strongly associated with depression, suicidal thoughts, school absenteeism, unemployment, along with relationship problems (impairment with social interaction and public presence) and reduced employability. Influencing factors include decreased sexual attractiveness, relationships with family and friends, people's opinions, stigmatisation, stress, and fear of scarring or persistence of the condition. As a result, treatment has been shown to improve their quality of life. One of the most significant stressors is stress. This can lead to excoriations and itchy lesions that can cause increased inflammation, scarring, hyperpigmentation and anxiety. The stress response is due to hypothalamic-pituitary-adrenal activation, with subsequent adrenergic and cholinergic stimulation, leading to susceptibility of the skin to infection and the ability of the bacteria responsible to adhere to the skin and proliferate (7)(8).

ADHERENCE TO TREATMENT

Adherence to treatment is low, due to several factors, including early improvement, perceived worsening of acne, adverse effects of medication (especially topicals). Oral isotretinoin treatment and treatment satisfaction has been linked to increased treatment adherence in adolescents, suggesting that simplification of treatment (usually monotherapy), patient selection and increased acne severity, together with the use of isotretinoin, have contributed to increased treatment adherence. In contrast, the prescription of multiple treatments, topical retinoids and the prescription of more products has been associated with non-adherence in adolescents; a challenge considering that guidelines suggest starting treatment with topical retinoids and not using monotherapies (8).

THERAPEUTIC MODALITIES

Combination topical and oral antibiotic therapies are not recommended because of increased bacterial resistance. Benzoyl peroxide is a broad-spectrum bactericidal agent, to which bacterial resistance has not been reported (8).

TOPICAL RETINOIDS

These drugs are a diverse group of vitamin A derivatives that modulate gene expression. The US Food and Drug Administration (FDA) has approved the use of this medication for acne vulgaris with products such as: adapalene, tretinoin and tazarotene, preventing the formation of comedones and regulating keratinocyte proliferation, along with anti-inflammatory effects. Topical retinoids are the treatment of choice, especially for maintenance therapy for all types of acne, reducing comedogenic and inflammatory acne lesions. They also have the benefit of preventing and reducing the appearance of atrophic scarring and hyperpigmentation. Due to the effects of skin dryness and irritation, always start with low doses of adapalene or tretinoin, and escalate until tolerated. Adapalene has been studied to be the least effective and best tolerated, while tazarotene is the most effective and least tolerated (8).

TOPICAL AND ORAL ANTIBIOTICS AND BENZOYL PEROXIDE

Topical antibiotics can be used first-line in the treatment of acne vulgaris and have anti-inflammatory effects; however, they should not be used as monotherapy because of the rapid and high development of antibiotic resistance after weeks or months. High rates of resistance are due to erythromycin and clindamycin, leading to decreased efficacy. Decreased resistance rates have been shown with concomitant use of benzoyl peroxide, probably due to non-selective bactericidal activity. Therefore, the use of topical antibiotics are indicated for the treatment of moderate to severe acne or inflammatory acne that does not improve with topical therapy. They should also be used in combination with topical retinoids and/or benzoyl peroxide; monotherapy is not recommended.



Long-term therapies (3-6 months) should be avoided to prevent antibiotic resistance. The first line of oral antibiotics are tetracyclines, such as doxycycline and minocycline, which have anti-inflammatory properties and are considered the first line. Sarecycline is a new tetracycline for moderate to severe acne in patients aged 9 years and older. In cases of contraindication to erythromycin, Azithromycin is suggested. The use of other antibiotics (trimethoprim/sulfamethoxazole, penicillins, cephalosporins) is rejected because of limited scientific support (8).

HORMONAL THERAPY AND CONSIDERATIONS

There are 4 types of combined oral contraceptives approved by the FDA for the treatment of moderate acne in postmenarcheal women: ethinylestradiol and norgestimate; ethinylestradiol, norethindrone acetate, and ferrous fumarate; estradiol and drospirenone; and ethinylestradiol, drospirenone, and levomefolate. This medication is used for its antiandrogenic effect, generated by decreasing the size and function of the sebaceous glands, in addition to its effect in decreasing comedones and inflammation; in general, for the use of this medication, it is important to consider the acnegenerating effects of progesterone-based contraceptives, such as medroxyprogesterone and the etonogestrel implant. In a 2018 study, they show that inflammatory acne can be exacerbated by the use of levonorgestrel intrauterine devices. The potassium-sparing diuretic, Spironolactone, has been used by dermatologists in doses of 50-200 milligrams per day and is well tolerated in moderate to severe hormonal acne; however, it has not been approved by the FDA (8).

ISOTRETINOIN

Isotretinoin is an oral retinoid, generally safe and well tolerated, despite having negative connotations. The FDA has approved its use for the treatment of severe recalcitrant acne vulgaris, in addition to moderate treatment-resistant acne, for acne that causes scarring or significant psychosocial distress. Although this drug is considered safe, isotretinoin has embryotoxic and teratogenic effects; therefore, women who are at risk of pregnancy should use contraception (recommended 1 month before pregnancy, during and 1 month after completion of treatment with this drug) or sexual abstinence before taking this drug. In addition, pregnancy testing counselling is always required for all female patients (8)(9).

New modalities under study for the treatment of acne have included studies with a new antibiotic called Sarecillin, a new tetracycline, approved by the FDA and currently in use. Tazarotene 0.1% was re-launched on the market; this formulation attempts to impart moisturising effects to counteract potential irritation. Another drug currently on the market is topical Minocycline, which optimises the therapeutic effect while reducing systemic effects (10). Treatment involving supplementation with essential omega fatty oils, vitamins A and E has been shown to assist in the generation of the skin lipid barrier and keep the skin moisturised. In the case of vitamin C, it is used as antiinflammatory formulations or as a nutritional component; however, its individual efficacy has not been well studied (11).

TREATMENT ASSESSMENT

There is an Acne Severity Scale (CASS), which can be used as an indicator of severity based on the presence of inflammatory and non-inflammatory lesions, in addition to assessing response to treatment. Aggravating factors, such as comedogenic products, medication, stressors, diet, smoking, obesity, occupation, lifestyle; or systemic disorders, such as Cushing's syndrome, androgen-secreting tumours, along with previous acne treatments, adverse effects, adherence problems should be evaluated beforehand. In women, possible signs of hyperandrogenism should be evaluated (12).

CONDITION		ive Acne Severity Scale (CASS) DESCRIPTIÓN
Clean	0	No lesions evident, not very noticeable, very few comedones and scattered papules. scattered.
Almost clean	1	Visible from 2.5 metres distance; few scattered comedones and few small papules and very few papules and very few pustules
Mild	2	Easily recognisable, less than half of the affected area is involved, a few comedones, papules and pustules.
Moderate	3	More than half of the affected area involved; numerous comedones, papules and pustules. pustules.
Severe	4	Entire area involved; covered with comedones, numerous pustules and papules, few nodules and cysts.
Very severe	5	Extensively inflamed, covering the affected area, presence of nodules and cysts. cysts.



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TABLE 3. Summary of treatments for atrophic scars			
NIVEL Y GRADO	DESCRIPCIÓN		
Level 2, Grade D	Chemical peels, such as 40% glycolic acid, have been found to significantly improve moderate acne and are safe and effective in Asian patients. Asian patients.		
Level 2, Grade D	Photodynamic therapy with topical 5-ALA (aminolevulinic acid) and intense pulsed light (blue or red light) is effective for moderate to severe acne.		
Level 2, Grade D	As monotherapy, Intense Pulsed Light Therapy (blue or red light) is less effective than Photodynamic Therapy, but can be tried if the side effects of Photodynamic Therapy are not tolerable.		
Level 2, Grade D	Combined blue-red LED phototherapy, for which home devices are available, is safe and effective for the treatment of mild to moderate acne, with good adherence.		
Level 2, Grade D	The erbium glass laser is an effective treatment for active acne. Laser therapy may be necessary for 1 to 4 sessions.		
Source: Oon HH, Wong	SN, Aw DCW, Cheong WK, Goh CL, Tan HH. Acne Management Guidelines		
by the Dermatological Soci	ety of Singapore. J Clin Aesthet Dermatol. 2019;12(7):34-50.		

There is a study that shows that the use of fractional mycoplasma radiofrequency on atrophic scars, marks, open pores, UV damage, significantly improves scars after 3 treatments with this method. Eighty-six patients were studied, with 15 patients showing 75% improvement, 57 patients showing 50-75% improvement and 14 patients showing 25-50% improvement (13). In another study, the use of 0.3% adapalene gel with 2.5% benzoyl peroxide was shown to prevent and reduce atrophic scarring within 6 months (14). Jessner's microneedling and chemical peel therapies (mixture of 14% resorcinol, 14% salicylic, 14% lactic acid and ethanol) have shown significant improvement; this method uses microneedling in several sessions followed by placement of

atrophic scars. Its effect lies in the creation of micro-slits from the epidermis to the papillary dermis. Jessner's solution, on the other hand, produces thinning and exfoliation of the epidermis and dermis, accelerating the skin repair process (15). Another review showed that hyaluronic acid injection improves the appearance of moderate-severe atrophic scars, leading to improved self-perception. The treatment effect, however, developed gradually over time and the highest improvement was at the end of the study (16). There are other modalities that have evolved over the past decade and are still in use today, such as: subcision, injection of fillers, chemical peels, the use of dermabrasion, and the application of microneedles. Each of these with variable results (17).

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Table 4. Practical Recommendations Key practical recommendations (18) Clinical Recommendations **Evidency** Level *Comments* Topical retinoids should be used as monotherapy in mild acne В Limited evidence from and in combination with other agents (topical or oral) for randomised controlled trials moderate to severe acne. and expert consensus. Topical retinoids should be used for maintenance therapy С Expert consensus and once targets have been completed and oral agents should be narrative reviews. discontinued. Systemic antibiotics should be used for the treatment of В Systematic review of moderate to severe acne. heterogeneous studies. Oral isotretinoin should be used in the treatment of severe В Systematic reviews and nodular acne or refractory acne in adults and adolescents. meta-analyses of nonrandomised trials. Combined oral contraceptives should be considered in Α Cochrane reviews or menarche unresponsive to treatment or intolerance to past randomised controlled therapies, due to their association with acne flares with trials with consistent menstruation or in women with signs and symptoms of evidence. hyperandrogenism (acne, hirsutism, oligomenorrhoea).

Source: Oge' LK, Broussard A, Marshall MD. Acne Vulgaris: Diagnosis and Treatment. Am Fam Physician. 2019;100(8):475-484



RECOMMENDATIONS FOR TOPICAL THERAPIES

Benzoyl peroxide or combinations with erythromycin or clindamycin are effective for the treatment of acne and are recommended as monotherapy for mild acne or in combination with systemic antibiotic therapy for moderate to severe acne. It is effective in avoiding antibiotic resistance to antibiotic treatment (systemic or oral). Topical antibiotics as monotherapy are not recommended due to the presence of antimicrobial resistance (19)(20).

RECOMMENDATIONS FOR SYSTEMIC ANTIBIOTIC THERAPY

Recommended in the management of moderate to severe acne, as well as forms of inflammatory acne that are resistant to topical treatments. Doxycycline and minocycline are more effective than tetracycline, but neither is superior to Erythromycin, Azithromycin the other. and trimethoprim/sulfamethoxazole may be effective, but their use is limited to those who cannot use tetracyclines (pregnant women or children under 8 years of age). Erythromycin and trimethoprim/sulfamethoxazole should be restricted due to increased risk of bacterial resistance. Benzoyl peroxide should always be used with antibiotic and maintenance therapies after completion of antibiotic treatment (19)(20).

RECOMMENDATIONS FOR USE OF HORMONAL AGENTS

Combined oral contraceptives (with estrogen) are effective and recommended in the treatment of inflammatory acne in women.

Spironolactone is useful in the treatment of acne in specific women.

In patients with adrenal hyperandrogenism, low doses of corticosteroids are recommended in the treatment of acne (19)(20).

RECOMMENDATIONS FOR THE USE OF ISOTRETINOIN

Isotretinoin is recommended for use in severe nodular acne. It is appropriate for the treatment of moderate acne that is refractory to treatment or for the management of acne that causes psychosocial disturbances.

Low doses of isotretinoin can be used to treat acne and reduce the frequency and severity of adverse effects.

INTERMITTENT DOSES OF ISOTRETINOIN ARE NOT RECOMMENDED.

Routinely monitor liver function, cholesterol and triglycerides.

Women of childbearing age taking isotretinoin should be advised about various methods of contraception.

Patients should be monitored frequently for inflammatory bowel disease and depressive symptoms.

Explain to patients about the potential risks of isotretinoin (19)(20).

CONCLUSIONS

The management of acne will continue to undergo continuous development and research. Increasingly, there will

be more and more elements leading to optimal therapy. As has been seen, medication recommendations are quite clear and approved from 2000 to the present. However, nonpharmacological strategies are equally important, as this would avoid the indiscriminate use of medication and possible adverse effects, ranging from skin conditions to depression or antibiotic resistance. New therapies based on the application of lasers and dermabrasion are still being investigated, so there is still faith that this pathology, so traumatic for those who suffer from it and for those who have sequelae, has an effective treatment, of short duration and without major adverse effects.

FINAL STATEMENT

This review is based on an article by Santiago Vintimilla called "Acné, un enfoque actualizado", whose author authorized the translation and rewriting from the Spanish language version to the english language version.

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BUDDHISM: THE RELIGION OF THE TRANSCENDENT WISDOM

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ABSTRACT

Buddhism is by far one of the great religions in the world that originated in India; it was further developed in existence 25th centuries ago. There is a question, why does Buddhism exist to this day? Because the Buddha found that everyone in Buddhism has a transcendent intellect called Buddha Prakriti. Buddha's words are true that truth never changes. Whether, you are Buddhist or not, believe it or not. Then those who are still available for transcendental knowledge will be Buddhas. So, in this world, there are outstanding intelligent people who are a scientist, a philosopher, a doctor and a jurist. Therefore, the main objective of this research paper is to highlight the Buddhism as a religion of transcendent in the modern era. In this way, to be successful, we must have an object of research, practice and study. It turns out that people with exceptional intelligence tend to be lonely travelers.

INTRODUCTION

Buddhism is a great religion in the world was born in India so far; it has existed and developed over 25 centuries ago. Why does Buddhism exist to this day? Because the Buddha discovered that everyone has a Transcendent Wisdom in Buddhism called Buddha nature. The Buddha's words are the truth that truth never changes. Whether you are a Buddhist or not a Buddhist, believe or not. Then people are still available to have transcendent wisdom will be a Buddha. So, in this world there are excellently intelligence people who are a scientist, a philosopher, a doctor, a jurist. To be successful, we must have purpose to research, practice, and study. It has been discovered that people of exceptional intelligence are lone travelers.

German philosopher Arthur Schopenhauer said: Only when a person is lonely can he be himself. If someone doesn't love solitude, he doesn't love freedom, because only when a person is lonely can he be free. Studies show that people with outstanding intelligence are often the ones who spend less time communicating. Because they are busy thinking about themselves, thinking about the meaningful things of life, for sake of life, they set goals for themselves.

BUDDHISM AS THE RELIGION OF THE TRANSCENDENT WISDOM

The Buddha too, when he was still a crown prince Siddhartha, he was beyond the palace, went to the forest to find a way to liberate himself and be able to help humanity. Who went to the forest to study with priest and ascetics for six years? Priest Siddhartha thought that he has been practicing self-mortification which no one else could overcome by he still could not attain enlightenment. He gave up the life of extreme asceticism. Now priest Siddhartha knew that must follow the middle path to get enlightenment. Hermit Siddhartha sat in meditation at Bodhi Tree for 49 day he became the Buddha. During the past 45 years, the Buddha preached the Dharma to everyone on the path to liberation, advised people to practice dharma on their own, the Four Noble Truths, the Eightfold Paths leading to the way out of suffering; the Buddha could not save people without practicing dharma.

With transcendent wisdom, the Buddha sees all things in the process of changing ceaselessly and the Buddha affirmed that change is predestined by cause and effect formed. It was not created by a supernature being who created people and things. Because Buddhism is a religion that comes out of theism, so it doesn't believe in a mysterious creator of the universe who creates mankind and all things.

If it is possible to create a human being, it must be perfectly beautiful, without disabilities, without disease, without thirsty hunger, to avoid poverty. But, in this world there is so much suffering and unhappiness, where people are blessed, peopling poor, illnesses, incurable disease. The Buddha said there are no creator people and things. Which are people who do good causes have good results, who do bad causes have bad results.



Everyone in the world always want to study their life how to have peace and happiness forever, when they get, they often cling to them, but are always afraid of losing. Because people only know the good and evil, right and wrong, but they do not know what is beyond good and bad. The Buddha with transcendent wisdom he studied the practice and understood this world. So, he reached his goal and finished everything, which is the Buddha, went beyond the good and the evil.

This is the Middle Path that does not accept good and evil. Buddha does not accept all there is an extreme. All is No is the second extreme, to be separated from the two extremes of Yes and No is called the Middle Way. As well as gain and loss, good and bad reputation, praise and blame, happiness and suffering, are legal, because it is relative, there are two sides, and jumping back and forth suffering self is not meditation. Suppose people are happy they are married the first few years are very happy, until they have children and take care of them, the husband goes to work early and stays late at night, so often the family is happiness decreases, leading to suffering, because happiness is the subtlety of suffering, suffering is the gross part of happiness. We want peace and serenity to follow our mind, study our life and ourselves.

So, when we have the time, be happy, when the time is over, be happy also. The Buddha said the is impermanent, to know life's ups and downs, always keep a balanced mind, that is Middle Way, which is like a log drifting in a river, the log itself is not damaged. If it does not get caught in a tree branch, does not pull to the right or left, won't be picked up by humans, then this log will drift into a great river and then enter the sea. So, happiness and suffering, good and evil are two sides embankment, we only take the Middle Path without clinging to the right and left sides, good and evil will definitely enter the holy stream of the four jhāna.

Three actions are karmic of body, mouth and mind to come retribution. The Buddha does not have to create cause and effect. The Blessed One is an enlightened person who sees and speaks out so that we know how to do well and avoid evil, so that we can do more perfect, who is ethical to avoid bad retribution. Laws of the universe and human life, Newton discovered the gravity of the earth, actually it is already in the universe, and Newton is a smarter person who explored the gravity of the earth. So, everyone, Buddhist or non-Buddhist must obey the law of cause and effect.

The Buddha attained Enlightenment and seeing, cause and effect are available in the universe, not because the Buddha invented the law of cause and effect, Buddha said that he has realized and seen the path of cause and effect, good and bad, happiness and suffering in its process, there is no Buddha, no God, no Divine to interfere with the law of cause and effect. Whether we believe it or not, religious or non-religious, atheist or not, cannot escape the law of cause and effect, governed by cause and effect. There is an old saying that fish eat ants, one day ants eat fish. Meaning that the powerful, the rich bully the person who is sure that he does not escape the law of cause and effect, the rule in his life also has to pay the price of sowing resentment for a person, the law of justice returns to him. When cause ends, then effect ends, philosophy is very clear, Buddhists must realize the truth, cause and effect are not only for religion but cause and effect cover this universe, because it is the principle of life, not limited to one person on earth or globe.

The Buddha was born under the tree of No Worries, attained enlightenment under the Bodhi Tree, and passed enter nirvana under two Sala Trees. This is an important event in the life of the Buddha associated with the three types of trees, shows that Buddhism is always associated nature. This is the Buddha's massage that human beings have a relationship with nature.

Why did the Buddha let the sangha practice for three months to the summer retreat in the rainy season? Because of going restrict to avoid accidentally killing insects, grass, trees. About 60 years ago, the scientists studied to understand that global warming; climate change affects human beings, plant and animal life around world. Who did make the earth warm? Due to human greed, no believing in cause and effect, living only for their own benefit, felling trees, destroying forests. Deforestation results in climate change, drought, sea level rise, and poor, environmental. More causes industrial zones massively developed close to the population, so they result a disaster in their living environment with smoke and dust, affected by industrial runoff. Another reason is due to population growth, so it has to exploit nature resources and reclaimed land. Race with chemical weapons is also a cause of polluted environment, creating destruction of nature. So human beings and all species need nature, if we are too greedy, selfish, we will also disappear from the earth, because we breathe the same air if the air is too polluted, let's live well and intelligently. We will be happy and peaceful.

1969 – 1972, there have been a total of 6 times Nasa went to the moon, but since then, the US agency has no intention of doing it again. 1971 the first cosmic black hole – the power to swallow all planets discovered is called Cygnus X-I. What we currently know about black holes is only part theory. And it also contains a lot of things that scientists cannot explain.

Astronaut Jeffrey Hoffman said: "My dream is to make the Moon an important economic zone for the Earth." Hoffman shared, maybe someday. This is the Era of high-tech information, evolution of material, biological evolution...The Buddha advised people to give up greed, hatred, and delusion and his disciples not to question whether this world is finite or infinite, this life is finite or infinite what you must first admit is that life is full of suffering, the birth, aging, sick, death, sorrow, lamentation, pain, despair, and distress. Let's cut them off right now by Eightfold path.

The Buddha is like everyone else, he is a prince Siddhartha, studied and knew that human beings have endless possibilities. Over 25centuries ago, the Buddha said: There are many planets in the universe. So let us use our endless possibilities not to surrender to fate, we must follow the law of material evolution good or evil. If we do not follow the



evolutionary law of good, when you have the power to anger or disagree "press the button" all disappears and you do not exist because we are all on this earth. Therefore, good and intelligent people achieve the universal level of good living and right view.

The Buddha's transcendent wisdom saw that everyone has Buddha nature it is called transcendent wisdom. And sees all things in the process of changing ceaselessly and the Buddha affirmed that change is predestined and cause and effect formed. Not by any god to create people and things. People who act well are happy and peaceful. Everyone who wants to be liberated should practice the Dharma of Buddhism.

CONCLUSION

Buddhism is a transcendental wisdom which realizes the operation of the universe and human life, more than 2500 years ago. Shakyamuni Buddha said that there are many worlds in the universe, and there are many insects in the water bowl, until today scientists have discovered. Like we see manmade aircraft, goldmine, oil field, water source, coalmine...People have found them. There are bridges across the river, fully equipped boats, high-rise building, people have come to the moon...all these things are done by humans' brains and labors, so humans have a superhuman ability to learn even more deeply, how can be at peace and happy forever, aircrafts can fly in the man-made universe, so we can also fly by ourselves.

This is what Shakyamuni Buddha did; he practiced by himself under the Bodhi tree in India. Scientists sitting alone in the laboratory have found a lot of material means to serve humanity. Then Buddha also meditated alone under the Bodhi Tree for 49 days and nights fighting internal mind and externally to become a Buddha, and has six divine powers, also known as six supernatural: the power of Transformation, the power of Celestial Hearing, the power of Discerning the Mind of Other, the power of knowing past lives, the power of celestial vision, the power of extinction of suffering. The Buddha brought the enlightened Dharma to convey to sentient beings' peace and happiness and impacted energy to human beings to live a good life. If they want to practice more deeply, they will become saints, Arahant or Buddha. Buddhism makes benefits for sentient beings, so Buddhism still exists to this day.

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THE CONCEPTIONS OF VOLITIONAL FORMATION AND ITS IMPORTANCE OF THE SANKHĀRAKHANDHĀ IN BUDDHISM

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ABSTRACT

The five sections are separate parts that come together to form a human being. Buddha taught that all people are made of these five elements. It is a matter that is tangible (i.e. can be touched); this section is connected to our five senses (smell, touch, taste, sight and hearing). Holistic mental structures include habits, prejudices, and prejudices. Our will, or will, is also part of the fourth section. They are equanimity, pride, lust, karma, virtue and other kinds of thoughts which are not perfect. Finally, the laws of cause and effect, known as kamma, are the area of the fourth section. Therefore, the main objective of this paper is to highlight the conceptions of volitional formation and its importance of the Sankhara-khandha in Buddhism.

KEYWORDS: Buddhism, Conceptions of Volitional Formation, Sankhara-khandha, and Society.

INTRODUCTION

The intention of this paper is primarily; to uncover the primary meaning that links the various contexts in which the term appears; and, secondarily, to arrive at a precise interpretation of sankhārakhandhā and its function concerning the theory of dependent origination. It will not attempt to find one English translation with which to render all the connotations of Sankhara since, as we saw above, such an undertaking would be doomed to failure. Instead, It will attempt to adduce an extensive (and, It hopes, comprehensive) explanation of Sankhara that will provide an understanding of the word's general meaning by stressing the simultaneous presence of its causal and affective dimensions. To achieve this task, it will first use the fivefold division to analyze the different contexts of the word. It will not discuss Sankhārakhandhā within the scheme. Once the different contexts have been presented, and the meaning of the term within them has been clarified, it will proceed to discuss the general sense of the term Sankhara. Finally, it will examine the specific function of Sankhara as one of the Pancakkhandha. This methodology will offer us both a general understanding of the term Sankhara and the sankhārakhandhā.

THE SEMANTIC TERM OF SANKHARA

To know the specific function of Sanskarkhand, I will first explore the meaning of the word Sanskāra in its broader context. Sankhara is one of the Pali words which is highly endowed with philosophical connotations. Stcherbatsky remarks that "words and concept rites play a distinctive role in all Indian philosophical systems". It usually implies some mystical occult power, which later manifests itself in some powerful fact. In his introduction to, I.B. Homer refers to a passage in the Pali text Society Dictionary of Samkhara to emphasize the semantic depth of the word. Mixes perspectives, is so complete that it is almost impossible to master Western terminology. Its meaning lies in the translation. Mrs. Rhys Davids also expresses her nervousness about the significance of the word.

We are only at the threshold of its problems, and it is hence not strange if we find them as baffling as, let us say, our own confused usage of many psychological terms-feeling, will, mind-about which we ourselves greatly differ, would prove to an inquiring Buddhist. If I have not attempted to go into the crux of the *sankhārakhandhā* [*sic*], it is because neither the Manual [the *Dhammasanganī*] nor its Commentary brings us any nearer to a satisfactory hypothesis.



The exact meaning of this 'mysterious power' still remains obscure. As Bandusena Madanayake points out in his doctoral thesis, 'thirty scholars have put forward as many different meanings' for this single term. One of the reasons for this diversity of translations might be the fact that within the Pāli language itself, *Sankhara* possesses many meanings. Surendranath Dasgupta explains the polysemy encountered in the Pāli canon by the fact that:

Buddha was one of the earliest thinkers to introduce proper philosophical terms and phraseology with a specific philosophical method, and he often used the same word with more or less different meanings. Thus some philosophical terms are soft when compared with precise and definite definitions of meaning found in later Sanskrit.

Yet many scholars, such as Hans Wolfgang Schumann, suggest that the rather wide semantic field associated with the word *Sankhara* was nonexistent at the time of the Buddha. According to Schumann, this diversity of meanings resulted from the growth of exegesis in the earlier *Sutta* literature and from the development of an intricate and systematic philosophical system that arose many centuries after the death of the Buddha.

L. B. Horner divides Sankhara into four different categories, each having a different meaning. This classification consists of Sankhara (1) as one of the aggregates, (2) as of the links of the *pațiccasamuppāda*, and (3) as a sort of activity associated with the body, speech, and mind (kāya, vacī, and citta) and finally (4) as properties when associated with the term life $(\bar{a}vu)$. Schumann, in his thesis Bedeutung und Bedeutungsentwicklung des Terminus Sankhara in frühen Buddhism us, elaborates a similar scheme by classifying the various interpretations of the term into four categories. Using Horner's and Schumann's classifications as a starting point, I have developed a more extensive scheme consisting of five categories: (1) Sankhara as a sańkhatadhamma, as a synonym of its cognate form Sankhara, (2) as a paccaya, (3) as āyu-Sankhara, (4) as part of the compounded words sasankhāra and Sankhara, and finally, (5) as one of the five aggregates.

SANKHARA AS SANKHATA

Throughout the Pāli canon, the concept of *Sankhara* is closely associated with that of *Sankhara*. The usual definition of the term runs thus: "it is called *Sankhara* because it 'produces' *Sankhara*. Because the Pāli word for what I have translated as "to produce" is *abhisatikharoti*, a cognate of *Sankhara*, the deciphering of this definition is rendered more difficult. The *Atthasalini* provides us with a description of *Sankhara* that may clarify the above definition of *Sankhara*. "The *Sankhāra* are made, having been assembled by conditions, and whatever is not Sankhara is *asaňkhata*. S.Z Aung, in his appendix to the translation of the *Abhidhammattasatigaha*, emphasizes that, although the notion of being compounded is implied by the term *Sankhara*, the idea of being conditioned and having been caused

is the closest to the definition of the term. These conditions, or causes, that produce the *saṅkhatadhamma* seem to be *Sankhara* as well.

I do not think that, here, the term *Dhamma* is used in a different sense than Sankhara. If the Buddha had said "Sabbe Sankhara Anatta" meaning that all the conditioned phenomena are substance less, people might have wrongly inferred that the unconditioned phenomenon (asankhatadhamma) must have a permanent entity (Atta). The unconditioned phenomenon, which, in the Theravada tradition, is restricted to a unique component (Nibbana), is also devoid of any permanent entity (Atta). In order to avoid the misunderstanding that Sabbe Sankhara Anatta could potentially imply, the term Sankhara is replaced by Dhamma in this particular context. Moreover, by stating 'Sabbe Dhamma Anatta,' the text not only suggests that all the conditioned phenomena are anana but that the only unconditioned phenomenon is Nibbana is Anatta as well. The Commentary on this passage also mentions that Sankhara is a synonym of Sankhara, the latter referring to any element (Dhamma) which has been conditioned.

Therefore, we may affirm that *Sankhara*, as a *Sankhara*, refers to all the principles of existence except *Nibbana* (and other *Dhamma* considered by other traditions as *asańkhata*). Stcherbatsky presents an interesting theory as to why the conditioned phenomena are called *Sankhara*: The elements of existence were regarded as something more similar to energies (*samskrta dhamma* [skr. equivalent for *sańkhata-dhamma*]) than to substantial elements. Since the energies [*sańkhata-dhamma*] never worked in isolation but always in mutual interdependence according to causal law, they were called 'synergies' cooperators (*samskara* [skr. equivalent for *Sankhara*).

SANKHARA AS PACCAYA

Within the complex theory of dependent origination, *Sankhara* is inserted as a link between ignorance (*avijja*) and consciousness (*viññāna*). This means that on account of ignorance, *Sankhara* comes into being and generates a consciousness. It seems that within the *pațiccasamuppāda*, the term *Sankhara* has a meaning radically different from the one previously ascribed to "*Sankhara* as a *Sankhāra*" since there is no explicit textual evidence of conditioned phenomena producing consciousness.

The *Vibhanga* defines *Sankhara* produced by ignorance (and implicitly generating a future consciousness) as volition (*cetanā*). The *Sutta* literature also has a similar definition of *Sankhara:* the *Samyutta Nikaya* equates the term with the six groups of volition, which are defined therein with respect to the six sense doors.

Volition is clearly explained in the *Aliguttaranikāya*, where the Buddha states that what he calls volition (*cetanā*) is simply *kamma* and that one who 'cetanizes' is one who generates *kamma* either by the body, words, or mind: 'Monks, I



say that volition is action. Having 'cetanized,' one acts by deed, word or thought. Another example of the relation between *sańkhāra* (or volition) and *kamma* is symbolically exemplified in the *Rathakāravagga* of the *Aṅguttaranikāya*. In this *Sutta*, a 'wheel-maker' explains to the king that the wheel (and by analogy, the *kamma*-concept) 'kept rolling as long as the impulse that set the motion (*abhisaṅkhārassagati*) lasted. It then circled and fell to the ground. The term *abhisaṅkhara* is a synonym of volition and refers here to the dynamism and momentum usually associated with *kamma*. For this reason, Padmasiri de Silva points out that *Sankhara* are often considered synonymous with the concept of volition or *kamma*. These pieces of textual evidence support the relationship that the Burmese meditation teacher Sayagyi U Ba Khin drew between *kamma* and *Sankhara*.

In this connection, we should understand that every action, either by deed, word, or thought-leaves behind a force of action, *Sankhara* (or *kamma* in popular terminology), which goes to the credit or debit account of the individual, due to whether the action is good or bad. There is an accumulation of *Sankhara* (or *kamma*) with everyone, which functions as the supply source of energy to sustain life that is inevitably followed by suffering and death.

The Vibhanga further states that Sankhara produced by ignorance are threefold: meritorious Sankhara(puññābhisankhāra) non-meritorious Sankhara (apuññābhisankhāra) and 'unshakable' Sankhara (āneññābhisańkhāra). Meritorious Sankhara are defined as being profitable volitions kamma that will yield their results either in the sensual sphere or in the fine material sphere; these meritorious 'actions' (of body, speech, and mind) consist of charity, morality, and meditation. The non-meritorious Sankhara are explained as being unprofitable kamma, the results of which will be reaped only in the sensual sphere. The unshakable Sankhara are said to be wholesome kamma producing a result in any of the four immaterial spheres. This division of Sankhara into meritorious, non-meritorious, and unshakable further stresses the relation between Sankhara and kamma since the Vibhanga states that these three divisions constitute the entire field of the kamma process.

The Vimohavinodanī elucidates the meaning of Sankhara as threefold: there are Sankhara of body, speech, and mind. The Sankhara of the body is initiated by the body and expressed through it. The Sankhara of speech and mind are initiated by speech and the mind and express themselves through them. According to the Yamaka, the Sankhara of the body are said to originate from breathing in and breathing out; the Sankhara of speech, from reflection and investigation which "denote the whole mental process of thinking the mental Sankhara, from saññā and Vedana or, in other words, all the principles associated with the mind except reflection and investigation. I do not believe that body Sankhara (kāyasańkhāra) arises from the mere function of respiration, but since breathing is essential for the subsistence of the body and

the performance of any other action, it is considered to be the precursor of any further body *Sankhāra*.

Similarly, reflection and investigation are not inherently speech Sankhāra (vacīsaňkhāra), but because these functions precede all verbal activities, they are regarded as the foundation that allows a person to speak and thereby generate speech Sankhāra. Since the mental Sankhara are said to arise from saññā and Vedana, Sankhara as a paccaya is not simply deeds but also physical, vocal, or mental actions that will yield certain consequences in the future. Both of these, the karmically charged action and the future consequences are Sankhara in the sense of conditioned phenomena, but only the former can be classified under Sankhara as a paccaya.

CONCLUSION

The Common Meaning of the Word Sankhara

Now that we have looked at the meaning of *Sankhāra* within the first four divisions of our fivefold classification, it will attempt to extract the essence of the term and underline the general meaning of this puzzling concept. We have seen that *Sankhāra*, as a *Sankhara*, refers to all the principles of existence, i.e., everything that exists except, of course, for *Nibbana*, which is considered to be an unconditioned phenomenon. In this context, *Sankhāra* is a synonym for conditioned phenomena since all of them are, by definition, conditioned. As mentioned before, this particular definition of *Sankhāra* means 'the entire universe,' within and without; this includes the individual microcosm made up of the five aggregates and the macrocosm of the entire phenomenal world we live in. In short, *Sankhāra* as a *Sankhara* refers to everything that causes and that is caused.

Sankhara as a paccaya was defined in terms of two divisions. First, we examined the various Sankhāra divided into Punna, apuñāa, and āneñña, each being respectively described as meritorious Kamma, unprofitable Kamma, and wholesome Kamma producing a result in any of the four immaterial spheres. Then, the word was described in terms of kāyo, vacī, and citta, referring to physical, verbal, and mental actions. In this context, Sankhāra seems to mean any action that will ultimately bring about a result; here, Sankhāra is not different from volition, which is often equated with kamma. Sankhara as a paccaya is the initiating action (mental, vocal, or physical) and the kammic force that will yield an effect. However, this effect, although not included in Sankhāra as paccaya, falls under the definition of Sankhāra as a saňkhata, for the result of a particular Sankhāra (or kamma) is nothing but a conditioned phenomenon.

Sankhara, as it appears in the compounds Sankhāra and sasaňkhāra, is interpreted slightly differently in the Sutta and Abhidhamma literature. In the former, these compounds are described mainly as attributes of the state of parinibbāna, while in the latter; they do not only qualify that state but any conditioned phenomena as well. Although the qualified term varies depending on the Pitaka, the meaning of the qualifier remains the same. Asaňkhāra refers to that which has arisen



effortlessly as a result of an individual's inner tendencies. On the other hand, *Sankhara* points to something brought about by effort or striving. The meaning of *Sankhara* in these compounds is "conscious effort or instigation.

Sankhara means with effort or instigation, hence produced by. When used as a qualifier to *parinibbāyin*, it means that someone has attained *parinibbāna* through conscious effort. Sankhara means the opposite. Within this context, the actual meaning of Sankhāra implies production, whether it is Nibbana or a conditioned phenomenon.

Although these two meanings are distinct, our discussion of the four previous categories of *Sankhāra* could be combined and shaped to form a general meaning that *Sankhara* (as a producing force) generates other *Sankhāra* (conditioned phenomena). Yet, these conditioned phenomena can, in tum, become a producing force and create more conditioned phenomena. Whenever these conditioned phenomena are associated with the four other aggregates (i.e., when the conditioned phenomena are mental states and not external objects), they may very well become active or productive *Sankhara*. But, if independent from the four aggregates, these conditioned phenomena will remain passive *Sankhara*.

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WOMEN'S ENTREPRENEURIAL ACTIVITY IN INDIA

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INDIA'S ROLE IN WOMEN'S ENTREPRENEURIAL ACTIVITIES

India's government has launched a variety of programs and policy that encourage the women entrepreneurship. Every year government announced the budget for entrepreneurship which is almost 1 billion with including other necessary facilities. (Hug&Moyeen, 2002). The government has adopted a few steps, including a distinct tax policy, a tax incentive, and a gift tax, all of which are part of the National Action Plan (NAP) for the advancement of women leaders. India Bank however has developed massive measures to strengthen women, like authorizing a loan with a 9% rate of interest. Several commercial and government sectors, as well as multiple Nongovernmental organizations such as Micro Industries Development Assistance and Services (MIDAS), different small Enterprise development support and advice agency, Basic Bank, commonly known as special bank, was established with the sole purpose of providing finance to small and cottage businesses, role of People's Republic of India tiny and cottage industries corporation (BSCIC), and others, have been recognized for encouraging entrepreneurship development . Different government banks lunched various efforts to boost women's equality.

Sectors of Women Entrepreneurs in India

Women entrepreneurs began their journey in India and have achieved success. Women contribute to the economy of India in a variety of ways, according to Roy (2016) and Hossain et al. (2009), which include 16.1 percent in textile, 69.4 percent in handicraft, 1.6 percent in printing, 3.2 percent in agriculture product, 3.2 percent in food, 4.8 percent in parlor, and 1.6 percent in others. In today's society, women are very interested in various types of online business. According to Haque (2013), women establish over 12,000 pages on the social networking website 'Facebook.' These statistics are steadily increasing.

Women's Entrepreneurship via Social Media

Platforms such as Facebook, according to Nylander and Rudstrom (2011), enable entrepreneurs to interact with clients. To open various social networking sites, most women entrepreneurs in India create a page for their business, provide essential information about their business, and upload images of their products. As a result of these social networking sites, internet business is witnessing a transformation these days, with female entrepreneurs being able to easily update any product on arrivals, promotions, and consumer inquiries regarding pricing and shipping, among other things. One of the tools of times utilized by feminine entrepreneurs is social media (Teoh& Chong, 2008). Anukrati Sharma (2013) explored recent trends, influences, and consumer tastes in E-commerce and online ordering. Individuals considering purchase decisions, according to the survey, are somewhere between ages of 21 and 30. Alexa (2018) claimed that Facebook is the biggest social media platform and the world's second - largest website. The uniqueness of this platform is that business organizations can use that to actively participate and work collaboratively with their clients in aimed at encouraging them to share and spread positive content (Smith et al., 2012).

Female Entrepreneur on the Internet and On Facebook

Facebook, which started in 2004, has gained a global presence and popularity. Facebook has been one of the most effective sites for promoting female entrepreneurs. It is easier to access and spread information than the other medium of business site. It is classified as a social site because it allows users to create personal profiles, which speeds up the process of sharing information and forming bonds effectively with other people (Haque, 2013). Tufekci and Lewis et al. (2008) claimed that, Women use Facebook more widely than men. When it comes to

learning about the business environment, women face numerous obstacles that prevent them from entering the market. Regrettably, Facebook completely changes picture in digital advertising by forming a power dynamic, face-to-face interaction, financial strength, political and social status, time and cost constraints, lack of experience, and so on. In India, there is a lack of cyber security legislation, which is why Indians are having difficulty with E-commerce.

Various Platform of E-Commerce

Various E-commerce platforms operate their businesses in India. Daraz is one of them, and it is now the largest ecommerce company in India, with 100% foreign investment Amazon, and other websites. Indian firms are now operating and performing admirably alongside foreign firms. Amazon has



recently established a presence in India and is conducting business there.

Delivery systems are being improved as people continue to shift from offline to online shopping. They are becoming more intelligent and automated

Market Size of E-commerce in India:

In 2016 the market size was around 5.60 billion and it has been increasing in 2019 131.84 billion and now it is 166.16 billion till August in 2020.So, it seems very clear that market size of E-commerce is increasing day by day. Now, India becomes 47th position in the E-commerce industry in the world ranking.

THE ROLE OF WOMEN IN THE WORKFORCE

Today Women were making decisions regarding their lives, education, and career goals. Women in business act as an essential player in the business world. Women entrepreneurs are creating jobs, hope and opportunities in every community worldwide, be it a corporate, government or private sector. The role of women in the workforce has increased dramatically over the last several decades. Many women are successfully balancing both work and family life to create a strong path for future generations who may wish to accomplish the same achievements. The fact that women now have so many new doors open that were once closed, it is possible to achieve anything in terms of business. One of the best ways to gain toplevel employment is through a college education, which can either be achieved in a traditional classroom or online. For the woman who has children, learning at home is an ideal way to gain the knowledge necessary to obtain a job with higher pay.

TODAY'S WOMEN AND E-COMMERCE

New information and communication technologies can be powerful tools for increasing the competitiveness of countries and contributing towards economic growth and development. However, in many parts of the world, women, especially those living in rural areas, are still excluded from accessing the Internet or do not have the skills to use it in a profitable way. On theother hand, examples from developing countries demonstrate that, if given access and knowledge-how, women entrepreneurs have benefited from using the new technologies in a large number of areas, such as getting access to valuable business information, finding new (export) markets, marketing their products and services over the Internet, securing large orders through networking with community members, and generally cutting costs through more efficient business practices. Women are under-represented in the Indian software industry, constituting about 23 percent of the IT workforce (NASSCOM 2004). Within engineering and science streams, computer science is considered to be a good option for girls because it leads to office- based work and is not associated with shop floor or dirty outdoor jobs, as are other engineering specializations.

Women entrepreneurs are increasingly setting up their own networks, and becoming more integrated in existing

ones, they are also beginning to form and participate in virtual

associations, networks and online forums. Regional, national and international women entrepreneurs' associations have been found in particular to provide an important source of information and support to nascent, new and established women business owners. Women are forming associations to increase their access to Technology, increase familiarity with business cultures in foreign markets and access these markets more effectively. These associations also provide mentoring and training, and catalyze the process of building Networks with government and corporate procurement officials. All of these developments are contributing to promoting a pro-active entrepreneurial culture for women and facilitating the transition to international activity. Thus, in many respects, women-owned businesses may be in the process of overcoming obstacles in many of the areas crucial for internationalization. The extent to which women entrepreneurs seize the opportunities offered by networking and new technologies is critical for their ability to grow and internationalize, and fulfil their potential as major players in the global economy.

Women have gained a foothold in many E-commerce areas. In B2C e-commerce, most success stories of women empowered enterprises have to do with marketing unique products to consumers with disposable income. The consumers are found largely in developed countries, implying that there is a need for sufficient infrastructure for the delivery of products for the business to prosper and establish credibility. For example, if an enterprise can venture into producing digital goods such as music or software that can be transmitted electronically or if such goods can be distributed and/or delivered locally, then this is the option that is more feasible and practicable. There are many more successful cases of ecommerce ventures that the women sector can emulate. While most of the examples involve B2C E-commerce, it must be

noted that women are already engaged in wholesale distribution businesses in developing countries. Thus, they can begin to penetrate B2B or B2G markets. For example, the Grameen Village Phone Network is a classic example of women's empowerment in India. Operators of the village phones are all poor women (who have been selected for their clean and strong credit record). These village phones are regularly visited by members of male dominated villages. Notably, the women entrepreneurs (village operators) enjoy wider discretion in expending their profits from their phone services than with their household income.

THE ROLE OF GOVERNMENT IN THE DEVELOPMENT OF E-COMMERCE

While it is generally agreed that the private sector should take the lead role in the development and use of Ecommerce, the government plays an instrumental role in encouraging ecommerce growth through concrete practicable measures such as: Creating a favourable policy environment for E--commerce and Becoming a leading-edge user of e-commerce



and its applications in its operations, and a provider to citizens of E-Government services, to encourage its mass use. Among the public policy issues in electronic commerce that governments should take are:

- "bridging the digital divide" or promoting access to inexpensive and easy access to information networks
- legal recognition of e-commerce transactions
- consumer protection from fraud
- protection of consumers' right to privacy
- legal protection against cracking (or unauthorized access to computer systems) and
- Protection of intellectual property.

Government can use E-commerce in the following ways:

- E-procurement Government agencies should be able to trade electronically with all suppliers using open standards through 'agency enablement' programs, 'supplier enablement' programs, and e-procurement information systems.
- Customs Clearance With the computerization of customs processes and operations (i.e., electronic submission, processing and electronic payment; and automated systems for data entry to integrate customs tables and codes), one can expect more predictable and more precise information on clearing time and delivery shipments, and increased legitimate revenues.
- Tax Administration This includes a system for electronic processing and transmission of tax return information, online issuances of tax clearances, permits, and licenses, and an electronic process registration of businesses and new taxpayers, among others.

Areas with respect to SME uptake of E-commerce:

The following are the more relevant areas for government intervention with respect to SME uptake of E-commerce:

E-SME Development - Government can provide incentives to encourage widespread E-commerce use by SMEs. An "SME development program" in which various sectors can provide technical assistance to SMEs to promote E-commerce uptake, can also be developed. Banks, financial lending and training institutions, and corporations should be encouraged to develop "SME desks" that will address the specific needs of SMEs. In particular, steps should betaken to:

- provide incentives to individuals to become entrepreneurs by lowering borrowing rates
- provide incentives to SMEs that intend to use Ecommerce in their business operations
- broaden credit extension facilities to SMEs in order for them to use ICT and E- commerce;
- Offer discounts on business solution software packages and software licenses.

Moreover, big businesses and corporations should be encouraged to transfer technology to SMEs by offering them free training in ICT and E-commerce. Awareness Campaign - Evidence suggests that SMEs have insufficient knowledge of information technology and Ecommerce. Government and private sector partnerships can engage in a campaign to disseminate information to SMEs about E-commerce policies, best practices, success stories, and opportunities and obstacles relating to the use of ICTs and Ecommerce. These awareness campaigns could include free training courses and workshops on E-commerce, security and privacy, awards programs, and information centers to assist SMEs. Ultimately, this information campaign should come in the form of an overall E-commerce development strategy for the economy, focusing on its various innovative applications for SMEs.

- **E-Government** Government should be the lead-user of E-commerce if various business and private-sector related activities are to be prompted to move online. Egovernment can take the form of various online transactions such as company registration, taxation, applications for a variety of employee and business relatedrequirements etc.
- Network Infrastructure and Localization of Content - An important strategy in this regard is the construction of "Tele centers" or electronic community centers that would serve as a community-shared access and connectivity platform especially in the rural areas (e.g., an Electronic Agri information center which provides market information to farmers in rural areas). These Tele centers can also be a venue for capacity building, skills enhancement, training, communications and content development.
- Strengthening Consumer Protection A more comprehensive measure that government can undertake to ensure security in E-commerce transactions is the establishment of a Certification Authority, which verifies seller and buyer identities, examines transactions and security procedures, and issues digital certificates to those who are able to meet the set security standards. A good example of this government effort is Singapore's Certification Authority, Netrust.

The above case studies show how ICTs can become a tool for the transformatory empowerment of women at a collective level. Connectivity and access to information for livelihoods and enterprises:

- Connectivity through networks can support access to information, covering technical information on sustainable agricultural practices and innovation, market news and agricultural commodity process, weather predictions and rainfall patterns, recommended crops for the season and information on institutions that provide expertise and training.
- (ii) Data Management: Information technologies can create systems to store, retrieve and manage information which can help enhance operational efficiency and accuracy in financial transactions, something that organizations that work with poor



women.

- (iii) Creation of Data Repositories: ICTs can help to reclaim women's agricultural knowledge base and can facilitate the systematic recording and dissemination of knowledge about agricultural practices.
- (iv) Mobilization and education of women workers: ICTs can bring about political empowerment of women by furthering their demands, needs and rights as workers.
- Linking of women producers to global markets: Although not an easy avenue, ICTs can enable women producers to benefit from E-commerce by linking them to global markets.
- (vi) Efficient communication for micro-enterprises of poor women: For poor women involved in micro enterprises, ICTs can enable building of a network with customers, suppliers, banks, etc, thus facilitating timely access to people and resources and thereby providing better business opportunities.
- (vii) Opportunities for skill-building and employment: It is possible that disadvantaged women with handicaps in education and training can still benefit from opportunities in the IT labor market. This can happen if they can master basic aspects of computer use and maintenance. There are some organizations that are attempting to explore such possibilities.

Electronic commerce, or E-commerce, refers to economic activity that occurs online. E-commerce includes all types of business activity, such as retail shopping, banking, investing and rentals. Even small businesses that provide personal services, such as hair and nail salons can benefit from ecommerce by providing a website for the sale of related health and beauty products that normally are available only to their local customers. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although itmay encompass a wider range of technologies such as e-mail, mobile devices social media, and telephones as well. Ecommerce differs from E-business in that no commercial transaction, an exchange of value across organizational or individual boundaries, takes place in E-business. The buying and selling of products, services by business and consumers through an electronic medium, without using any paper documents. Mobile E-commerce, M-commerce is the term used to describe the growing trend of using networks that interface with wireless devices, such as laptops, handheld computers or mobile phones to initiate or complete online electronic commerce transactions.

Women Entrepreneurship Platform

The idea of setting up a Women Entrepreneurship Platform (WEP) to promote and support established as well as aspiring women entrepreneurs in India took seed at the 8th Annual Global Entrepreneurship Summit (GES) 2017 held in Hyderabad, jointly by NITI Aayog in partnership with the Government of the United States of America. The platform was formally launched on 8 March 2018. It is the first of its kind facilitation platform which is mandated to work in collaboration with public as well as private sector organizations and bring them on a single platform by listing their women focused entrepreneurship schemes, initiatives and programmes on WEP website. It also enables sharing of best practices amongst women entrepreneurs and partner organizations and promotes evidence based policy making.

WEP Partners

WEP, through its partners, tends to offer services to members under various support areas:

- Incubation and Acceleration
- Entrepreneurship Skilling
- Marketing Assistance,
- Funding and Financial Assistance
- Compliances Support
- Social Entrepreneurship

WEP has more than 30 partners from various industries and sectors and have signed Statement of Intent (SoI) with many of those who have committed specific deliverables towards WEP users..Under the Social Entrepreneurship domain, WEP will also launch its IVRS service to facilitate registration for aspiring and established women entrepreneurs in social and development sector who are not tech savvy and do not have access to internet.Since its launch in March 2018, in a short span of eight months, WEP through its partners have offered various support services for WEP registered women entrepreneurs, some of them are as follows:

- WEP along with WEE Foundation launched two mentorship programmes, the first happened in IIT-D and the other will soon begin in IIT-B.
- WEP in association with NEXUS started several Incubation cohorts for women entrepreneurs.
- WEP along with SREI and Google Internet saathi will on board around 3,000 women entrepreneurs from rural areas on
- WEP platform for them to avail services available on the platform.
- WEP partner INNSAEI Ventures has committed a corpus of INR 10crores for WEP for women led ventures in frontier technologies.

WEP Road Show Series

In the month of July 2018, WEP launched its '*Road Show* Series' to initiate dialogue with various State Governments and to sensitize local stakeholders for building a conductive entrepreneurial ecosystem for women entrepreneurs. More than 1000 women



entrepreneurs participated across states.

- Mumbai: In Association with Atal Innovation Mission (AIM) and Narsee Monjee Institute of Management Studies (NMIMS), Mumbai.
- Bengaluru: In association with Jain University and United Nations and NASSCOM
- WEP-E MERG event, in association with Ministry of Medium and Small Enterprises (MSME), Government of India and Government of Karnataka
- Delhi: International Conference on Empowering Women-Fostering Entrepreneurship, Innovation and Sustainability in association with Shriram College of Commerce conference, New Delhi
- Pune: In association with Symbiosis University, PuneWEP New Platform

WEP will launch its highly evolved AI/ML based Version 2.0 of the online platform in the month of December 2018 by adding an additional layer of 'Mapping' to the platform through which information, schemes, programmes, events, courses, news etc. will be shown to the user, based entirely on the chosen area of interest. This feature available on WEP portal would greatly improve user experience and help in giving greater exposure to existing initiatives in this ecosystem.

International Conference on Empowering Women- Fostering Entrepreneurship, Innovation and Sustainability in association with Shriram College of Commerce conference, New Delhi

Women Entrepreneurship and the E-Commerce Opportunity

In the wake of the Covid-19 pandemic, with lockdowns and persistent social distancing norms that led to a decline in aggregate demand and in business for physical retailers, Ecommerce emerged as a viable alternative for some small business owners. Among them were women creative entrepreneurs. Often home-based, some women skilled in crafts, design, and other creative endeavors were able to leverage their creativity, talent, and intellectual property to avail opportunities brought about by the growing demand for products sold online. They fulfilled the need for products ranging from masks and other wearable's to household and packaged food items. The geographically un tethered nature of this kind of E-commerce enables women entrepreneurs to balance income generation with domestic responsibilities in a way that geographically tethered work may not allow.

Studies of existing women-owned businesses suggest that they remain small with a majority (83.2 per cent) according to the Sixth Economic Census 2013 -14) operating without hired workers. But, success in Ecommerce also ultimately relies on relatively low prices, but high volumes of production that call for larger set-ups. To enable more women to grow their businesses, they need

i. Access to more and better education that includes training on how to run a business;

- ii. more equitable access to a steady stream of capital beyond short-term microloans that frequently get used for consumption as opposed to business investments; and
- iii. More gender-specific provisions in government schemes supporting small andmedium enterprises.

Stories of successful women entrepreneurs in India.

The Weekend Leader has compiled the stories of 10 successful women entrepreneurs in India. Their stories will offer you great motivation and inspiration. Indian women's foray into entrepreneurship is women empowerment at its best

1. Anju Srivastava

A tender-hearted 13-year-old girl who volunteered at an ashram before school hours moved by the ubiquitous deprivation that she encountered on the roads of Mumbai, hangs on to the same bleeding heart 45 years later even after launching a successful social enterprise whose turnover touched Rs 50crore in 2018-19.

Win greens Farms Private Limited, founded by 58year-old Anju Srivastava, sells flavoured dips, sauces, baked chips, bakery chips, tea, pita bread and a lot more but primarily helps women and farmers lead a financially secure life.

Back in 2008, Srivastava had embarked on a unique agrarian venture renting half an acre of land from a farmer in Gurugram. She raised culinary herbs in the land and sold them at Rs 150per pot at exhibitions in and around Delhi.

"We sowed parsley, thyme and marjoram - which can be easily potted - under the brand name of WIN (Women Initiative Network)," says Sri vastava of the early years of her venture in which her elder son Vikram Aditya has been associated from the beginning.Later, Sri vastava tweaked the business plan and got into products with basil dips with chips, which was the turningpoint in her venture.

"In 2012, winter was about to set in and we had an extra stock of basil. Since dew kills basil, we decided to make basil dips with chips that became a hit," she recalls.

When they had a good stock of garlic in March- April, they introduced garlic dip, which set the stage for making more such products in the subsequent years. Currently, Win greens offers 150 products from its stable.

As Sri vastava expanded the business, she rented more land – which has touched about 100 acres now - and increased her partnership with farmers offering them more income. "Farmers worked the entire year to earn hardly Rs 10,000 earlier," she says. "They faced high risk as they were dependent on rains and lacked the ability to do business.

Dipika Mishra

Dipika Mishra, who has been working as production manager at the unit for the past five and a half years, says that the women are given regular counseling to overcome day to day issues."Coming from underprivileged backgrounds they are not just earning but also learning," she says. "Two supervisors studied while working here and can now handle bank work



while another woman saved money to buy a piece of land, on which she wants to build a paying guest accommodation and be self-dependent in old age,"

Srivastava's husband, Arjun, a former marketing director at PepsiCo, is a director in the company and is actively involved in the business. Elder son Vikram continues to work with her, while her daughter Zoha joined her recently. The youngest son, Omar, is pursuing his education at University of Toronto.Besides, she wants to open a state-of-the-art healthy food café in sync with the needs of Generation Next.

The Best Small Business Apps

Best for project management: Asana, Trello, Monday **Best for Time Tracking:** TopTracker, TSheets, Harvest

Best for Sales and Client Relationship Management: Honeybook, Hubspot, Nutshell

Best for Inventory and Shipping: ShipStation, Shopventory, Shyp Best for Social Media Management: Later, Planoly, Hootsuite Best for Accounting: Quickbooks, Invoice2Go, Hurdlr

Online businesses women can start from home

Setting up an online business is a lot easier and costeffective than it used to be. Here are some ideas that can help women, especially homemakers, to set up profitable businesses from the comfort of their homes.

✤ Tiffin service

Ordering in food has become the norm with numerous food-ordering apps providing quick and easy meal fixes. Setting up a Tiffin service can be a **profitable business**, **especially in communities that have a large working population.** You can easily start a tiffin service with kitchen appliances that are already available in the house. Other things you would need

in addition are groceries and packaging containers. Using WhatsApp, you can create a group and send the daily menu on the group and get your orders. The cost of setting up can be as little as Rs 5,000.

Baked goods

If you are adept at baking and enjoy making cookies, biscuits, brownies, breads, or cakes at home, then this passion can become your calling. All you require: an oven and baking ingredients. A low-end oven can cost upwards of Rs 4,000 and along with ingredients, the total investment can range between Rs 5,000 and 15,000. It would also make sense to focus on one or two things you are good at.

YouTube channel

Cheap data rates and high speed internet have made YouTube stars out of common people. Even with basic equipment like a Smartphone camera and amateur photography

and editing skills, you can start making videos and upload them on YouTube and use Google Ad Sense to make money. All you need to turn it into a successful business is creative content. Most popular and easy to create are home cooking videos, DIY arts and crafts, makeup tutorials, home remedy videos, and more. If you specialize in a particular subject, you can turn that into a channel and become an influencer.

Papads

Papads are another staple found in most Indian households. These are in demand throughout the year. It is an easy business to set up with very low investment. You will need a papad maker and ingredients for all the varieties of papads you wish to make. You can sell them to individual consumers or in bulk to stores and also cater to functions and parties.

Quirksmith

Quirksmith is a silver and fashion jewellery brand in India. The brand is famous for its unique designs. The brand is run by two sisters, Divya and Pragya and they've combined their talents and expertise to make Quirksmith what it is today. While Pragya handles marketing and strategy for the brand, Divya heads the design and production, ensuring each product shines through the noise online

CASE STUDIES OF SUCCESSFUL ENTREPRENEURS TRAINED UNDERATI SCHEME

1. Case Study of Mrs. Nirmala Patagar From House wife to Entrepreneur.

Nirmala Patagar is from Sirisi in Uttar Kannada. She is handicapped and has studied up to PUC. Her husband works in the sericulture department. They are blessed with a daughter and a son. Her husband's salary was not sufficient to meet the needs of the family. She was very unhappy as the children were not sent to a good school. Mrs. Nirmala, though handicapped, is a very dynamic and confident lady and was keen to take up some business on her own to supplement the family income. As she was handicapped, she could not take up a job but, this deficiency has not affected her self-confidence. One day Mrs. Patagar saw a newspaper advertisement given by CEDOK, Dharwa d regarding training in entrepreneurship skill development. She was thrilled and approached the Training Officer, CEDOK at the District Industries Centre, Karwar for more details. She had requested the training officer to visit Prashanti Foundation Sirsi to explain the details of the programme. After listening to them she has decided to undergo training in paper products as it requires less investment. Finally she has took her husband's permission and joined the five-week ESDP in paper products at Chetana Industrial Estate, Sirsi conducted by ni-msme with CEDOK as a Partner Institution.

• ESD Pin paper products:

As Mrs. Patagar had a strong desire for self-employment, she had actively participated in the programme. She took keen interest in learning the art of making of paper products, and had worked hard to rach perfection. The training programme helped her to develop leadership skill, team building and other



managerial skills. She gained technical knowledge about gift items like greeting cards, photo stands, pen stands, calendars, files, and envelopes.

• Enterprise set up:

After one month of completing the programme, the first follow-up meeting was arranged. During the meeting she expressed her desire to start the enterprise and also shared the problems of starting up with the Training Officer, CEDOK, Karwar. Seeing the enthusiasm of Mrs. Nirmala, he motivated, counselled and guided her in solving problems connected with startingthe enterprise.

2. Case Study of Ms. Mayuri Software professional: Self employment by choice.

Ms. Mayuriwas born in Pochampally village, Nalgonda district, Andhra Pradesh in the year 1985. Her father was a cloth merchant. She was the youngest among all siblings. Since her childhood she had keen interest in business and high ambition to reach great heights .After completing her Engineering degree in Computer Science from JNTU, Hyderabad in the year 2007, she has joined M/sInfosys Pvt Ltd at Hyderabad. She has justworked for about 6 months to gain basic experience as the goal of her life was self employment.

About GIEMA

GIEMA is one of the oldest small scale industrial associations registered in the year 1989 under societies act. Since then the organization is taking up the issues/problems of small scale industries and finding ways for entrepreneurs. The organization has been recognized as Udyami Mithra under RGUMY and assisting first generation entrepreneurs in product selection and guiding them in every stage till the launch of proposed venture. GIEMA has been actively involved in implementation of several central and state government schemes. It is one of the Partner Institution of ni-msme in conducting the Entrepreneurship & Skill Development Programs.

Entrepreneurship Development Programme:

She admits that the advertisement in the local newspapers given by Gulbarga Industrial Estate Manufacturers Association (GIEMA) announcing to conduct exclusive women EDP on behalf of National Institute for Micro, Small & Medium Enterprises (ni-msme), Hyderabad sponsored by the Ministry of MSME, Govt. of India was a timely help. Ms. Mayuri has attended the training program from 20-12-2010 to 03-01-2011. As she was determined to start a small scale activity, she was regular and punctual to the training. During the training period itself she has finalised to take up the embossing of number plates for the two wheeler and four wheeler motor vehicles. According to her the training content was so informative and highly beneficial. During the 12 days EDP the participants were given inputs on motivation, qualities of entrepreneurs, organizations involved in enterprise development, method of product selection process based on market survey, government policies, schemes, procedures, preparation of project report preparation, managing an enterprises, marketing etc., Most important schemes like Prime Ministers Employment Generation Program (PMEGP) were dealt. Networking of the institutions and support services from different organizations were discussed in detail. The atmosphere was very conducive to learn. With gratitude she acknowledge the sponsorers of the program.

Future Plans

At present the enterprise activity is going on in a rented premises at 1st Floor, Satalkar Complex, Opposite Kannada Bhavan, Gulbarga, Karnataka with the her husband's help. She wants to move to her own premises. Further she wishes to modernise and expand her enterprise by adding a blank foil machine so that she could make low cost number plates for the 2-wheeler customers. This means she can generate employment for some more unemployed people. She advises the job seeker to stand on their own and to serve the society gainfully.

3. Case Study of Mrs. Andal From Farming to Industry

India is the largest banana producer in the world, with 110 million tonnes of banana, followed by Brazil which produces 64 million tonnes only. Tamil Nadu is the highest producer among the states with 19 per cent of national share. With in Tamil Nadu Trichy district tops the list. In Trichy district, Thottiam taluk is located on the bank of Cauvery river and the entire area is cultivated with banana. After selling the banana fruits, the banana flowers and the tree trunks are left as waste.

Training in food processing:

Periyar TBI, Periyar Maniammai University, Vallam selected 25 farm women at Varatharajapuram, a village in Thottiam taluk, and gave them six weeks of entrepreneurship and skill development training (ESDP) through partnership programme with National Institute for Micro, Small and Medium Enterprises (ni-msme) Hyderabad. The training was organised at the Primary Agricultural Co-Operative Credit Society, Varatharajapuram. About 12 trained EDP participants formed a group and worked with Mrs. Kannagi. Periyar TBI has given a Project Proposal for `.4.25Lakhs and the Project is under process. Mrs. Andal was trained in banana fiber extraction, coloring of banana fibres, producing banana fibre products like banana fiber bags, mats, table mate, boxes, etc. which have a very good demand. Mr. Jaya prakash of Home Impex Enterprises, Trichy imparted training to the women about making of banana flower thokku, a technology developed by the National Research Centre for Banana in Trichy. Banana flower is medicinally recognised as a health product. Indian Farmers Fertilizer Co-operative Society (IFFCO) adapted Varatha rajapuram village and is offering many training programmes As a result of continued efforts, the Primary Agricultural Cooperative Credit Society of Varatharajapuram came forward to establish production unit for these trained candidates.



4. Case Study of Ms. Yeshoda Beauty parlour: Better option for women Family background:

Yeshoda, aged about 40 years, basically hails from Balyaker village of Kunigal taluk of Tumkur district of Karnataka state. After marriage, she has been living in Ramakrishna Nagar inMysore city. Her husband is an employee of Karnataka road transport department. Yeshoda ants to support her family by generating additional income. Yeshoda has interest in beautician

business and she wants to learn the skills. She has two children and she wants to give goodeducation.

Contact with CEDOK

At that time, CEDOK, Mysore has given wide publicity about the one-month ESDP in beautician through local /newspapers. Yeshoda approached the coordinator of the programme at their office and enquired about the programme. Yeshoda applied with confidence for the programme and she got selected for the training. Her husband also supported her in attending thetraining.

5. Case Study Mrs. Sasikala: Huge demand for artificial jewels to goldornaments Family background

Pallikonda is a very small village located about 24 km from Vellore on the Bengaluru resident of pallikonda, highway, situated on the banks of Palar river. Mrs. Sasikala has completed her 10th standard and got married to Mr. Manigandan and Manigandan is working as two-wheeler mechanic. Sasikala has two children, one is in 2nd standard and the other in LKG.

Contact with VIT University

VIT University has set up a Village Resource Centre (VRC) with satellite connectivity in association with Indian Space Research Organization (ISRO), Bengaluru in Pallikonda for Tele- medicine, Tele-agriculture and Tele-education. Apart from this they also train unemployed youthand women in employable skills. When they mobilised candidates for training in artificial jewellery making, their Project Associate of Pallikonda VRC made Sashikala understand about the training and its curriculum.

Present Status

Sasikala has utilised the training in a better way and started a small beautician shop in Parthasarathi Nagar, Ramapuram with an investment of `.10,000. She also started making artificial jewellery and selling to her customers and school students in a cost effective manner. Now she is able to get average monthly income of `. 4,500. She is very much thankful to National Institute for Micro, Small and Medium Enterprises (ni-msme), Ministry of MSME and VIT University for having given the opportunity to undergo the training

CONCLUSION

Women's empowerment in cases of social status, economic security, self-actualization, etc. is an inevitable part of

country's overall development. Without women the mainstream development program, sustainable development process is just nearly impossible. Not only that, this development would always be a dream without active and meaningful participation of the country's women in it. After completing the analysis and finding part the study found that e- business is the most convenient and easiest option to run business for the women entrepreneurs. Women Entrepreneurship through e-business has enhanced their economic status and decision- making power. Economic status, self-worth, self-confidence, control over own life-related issues, control over resources, and social status of women entrepreneurs are the variables that define empowerment of women. If women gain economic freedom, social recognition, they gain visibility and a voice at home, workplace and community. This has an impact on their social status regarding increase in their leadership ability, gender equality and so on. According to the study, women are becoming more interested in establishing their own onlinebusiness as it is easier than any other form of business. So, governance and policy formation should support the women entrepreneurs so that they can develop and empower themselves. It will lead to the development of our country's sustainable economic growth, creates employment opportunities aswell as make a contribution towards the women entrepreneurs' family and community.

SUGGESTIONS

- There should be continuous efforts to inspire, encourage, motivate and co-operate womenentrepreneur.
- Big service provider like Amazon, Flipkart, Paytm must organize programmes and workshop to train them on various marketing process, delivery process, packaging method and other various managerial aspects.
- Government and Non government agencies must also come forward to help and encourage women entrepreneur. So there is huge scope in E-commerce as it is still very young in India with many big companies in shorter period of time.

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SOME SUCCESSFUL WOMEN ENTREPRENEUR FROM 2014 TO 2021

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TOP BUSINESS IDEAS FOR WOMEN IN 2021

Online business for women has skyrocketed thanks to the internet. Today, it's possible for women to earn big and be successful on their own terms. They can even buy the tools they need online. Here are eight home based business themes that can be started at the comfort of your home.Women looking forward to starting their very own home business need to have a good idea. Carrying out a business from home is easier, convenient and is lowinvestment. This blog listsout some of the more successful business ideas for women.India is moving ahead in so many ways. Women today whether at home or at office, they are intelligent, confident and career focused. Many have even become successful entrepreneurs too. Some are successfully running their own business from home. This is why home businesses are attractive to people. They can earn extra income and require minimal investment to begin selling. Making money this way is also simpler for women who are house-wives, office goers - even college students. It begins with selling in the simplest way. Here are some business ideas that have worked really well,

- Selling handicrafts online
- Online gift store
- Sell traditional sarees online
- Custom jewellery business
- Sell paintings or modern art online
- Become a freelance writer
- Open a Kids day-care business
- Sell plants and organic produce online
- Start an online cloud kitchen
- Selling handicrafts online

SOME SUCCESSFUL WOMEN ENTREPRENEUR FROM 2014 TO 2021

1. Vidya Venkatraman: Founder & CEO of Meraki& Co.

Woman-owned agencies with a fierce passion for helping others build and grow the business that excites them. A start-up firm delivering big results incepted on 3rd May 2020, in-between the world pandemic of Covid-19 to provide creatively driven and digitally focused marketing solutions to businesses. In Assistance with Social Media Marketing, Graphic Designing, Franchise Consultancy, PR, Content Writing, Photo shoots & video shoots, Influencer Marketing, Packaging, Website Development and other Branding exercises, her team has helped 50+ businesses boost their online discernibility. Vidya trusts "Every brand should have a strong digital presence globally as this pandemic was the perfect example where everyone experienced the POWER OF DIGITALIZATION", aiming for the new Digital Era with prosper growth and valuable productivity.

2. Anamika Sengupta: Founder of AlmitraTattva and Co- founder of Almitrasustainables

Anamika Sengupta is the founder of AlmitraTattva and Co-founder of Almitra Sustainables. Changing the stereotypical thinking about women and motherhood, she made maternity her strongest pillar and has nurtured and mothered both- her son and the two brands. Working with a unique model of motherhood squad, she has developed the brands through to its pinnacle of success. Her Sustainability mantra of co-existence with her brand AlmitraSustainables is breaking legs with norms that provide conscious and contemporary solutions to end plastic use in regular lifestyle choices. She is a world class leader with a motivated sense of motherhood which helps her to rejuvenate a sense of green lifestyle, conscious consumerism and natural parenting.

3. Rania Lampou: Global Educator, STEM Instructor Greek Astronomy and SpaceCompany (Annex Salamis)

Rania Lampou is a STEM instructor at the Greek Astronomy and Space Company (Annex of Salamis) and she is also working at the Greek Ministry of Education and Religious Affairs. She is a passionate researcher on Neuro education.She has been awarded many national and international prizes (so far 63) and she is a "GlobalTeacher Award 2020" (AKS Awards) winner and a "Global Teacher Prize finalist 2019" (Varkey Foundation). She introduced



STEM in astronomy and physics projects and combined STEMwith Language Teaching. She is the founder and international coordinator of five innovative international projects with humanitarian emphasis. She is also an author of scientific books for kids.Furthermore, Rania is a social activist, a global peace ambassador and is collaborating with many humanitarian, scientific, cultural and educational organizations.

4. ZorainKhaleeli: Founder of Zorains Studio and Academy

Empowering the domain of hair makeup Industry, Zorain has become the founder of India's first fully digitally equipped training academy. Passionate from the age of 15, she has been part of India fashion week, couture weeks, having worked with top models and designers including Rocky S and Falguni Shane Peacock. She has also been serving the Bollywood and Kannada film Industry, catering to ZeenatAman, Shraddha Kapoor, ShruthiHariharan and many more.Embracing the journey by becoming the most fabulous women leader winning distinguished awards in lifestyle, wedding and hair makeup industry, Zorain believes "Makeup is not just an artbut a technology that can create the most beautiful transformations".

5. Sushmitha Gowda: Founder of Mirakki Hair care

Sushmitha Gowda is a young Entrepreneur with a multifaceted career. After graduating, her entrepreneurial instincts led her to start a hair care brand "Mirakki" that stands today as one of the top-selling hair care products across India.In the year 2021, she ventured into a new project ENTICE which deals with a series of luxury skincare and wellness products. She is also a belly dancer and Actor. She will be playing a lead role in the upcoming Kannada feature film- Love Mocktail2. This powerhouse of talent envisions a niche in the beauty and wellness industry. She truly believes that today health is one of the biggest assets one can possess and we must invest right and take good care of ourselves.

S Sarita Singh: Managing Trustee Priyadarshani Group of Schools

S Sarita Singh is an Entrepreneur and Educationist and has discharged the role of creator and curator in Publishing, Entertainment and Investment sectors.She has been featured in Forbes and has been positioned in India's A-Listers and was recently awarded as "The Woman Icon of The Year" and has been honored with the National Award for Woman Leadership. She has also been featured as one of the 100 Inspirational Leaders of India. Student is at the centre of her vision for Education. She wants to help every learner to evolve as acomplete person, fulfill his or her potential and help shape a shared future built on the well-being of individuals, communities, and the planet.

Sheelaa M Bajaj: Founder of Sheelaa M Bajaj

Sheelaa M Bajaj, is a serial Entrepreneur. Her latest start-up being the largest divine guidanceplatform in the world, aims to empower, guide and transform people who are at the rock bottom in their lives.Sheelaa, is an Author, Radio and TV host, Life coach, Motivational speaker, Tarot, Feng Shui Grand Master and priestess of 'The Temple of Miracles' – India's first Yoruba Community temple. A name to reckon with Numerology, Tarot, Spiritual healing for over two decades, the team has 17 practitioners globally, mentored by Sheelaa – providing guidance and healing through Tarot, Akashic records, and many advanced modalities, all with an intention to serve andsupport the society.

ParidhiGoel: Co-Founder Love Earth Skincare

A young entrepreneur, ParidhiGoel is the co-founder of Love Earth Skincare. She started the brand at the age of 21 in 2016 and within a short span of 4 years, the brand has become one among the top selling skincare brands across India.She is a believer of consistency and feels that the key to every successful business is regularity and not losing hope in what one believes in. Being a successful women entrepreneur herself, Paridhi feels that all women should be empowered and she promotes it by employing enthusiastic and hardworking women in her team. She also believes in giving back to the society which has helped her brand become a success, and thus, a part of the profit made by Love Earth goes to an orphanage in Ghaziabad.

Yukti Nagpal: Director of Gulshan

Empowering the Idea of Wellness- Luxury- Living-Responsibly, Ms. YuktiNagpal, Director, Gulshan announces the arrival of a new creed of Real Estate stalwarts. An MS in marketing fromSan Francisco (US) not only graduated on the Dean's list but also did her alma mater proud by bagging the prestigious MARCOM Gold Award.Yukti is a strong-willed dynamic leader, taking care of everything from Sales, Human Resource Acquisition, Construction, to the Best CRM Strategies, with indomitable flair. She has pioneered the idea of initiatives like 'Home Konnect' that enables residents to embrace and exercise a positive approach towards imprinting Ecofriendly footsteps as a collective community.

Gauthami Balraj: Co-Founder of Mirakki

A people's person, an enterprising entrepreneur, a social media enthusiast and above all a humanist who closely works for various social causes, especially welfare of street dogs. Also, a nature lover with an attachment for traditions and culture. That's a short description of GauthamiBalraj, the co-founder of Mirakkihaircare.Gauthami believes in staying calm through all situations and building a good rapport with her team to give their best and more for the growth of the brand. Her zeal and hard work brought the Mirakki brand- Times Business Award for serving the best



herbal hair care products to their valued customers. She is eagerly strategizing to continue her work and path of success for Mirakki.

Priya Paul – Chairperson of Park Hotels

Priya Paul is considered one of the most successful female entrepreneurs in India and a legendary figure in the hospitality industry. She hails from a prestigious Group.After business family, Apeejay Surrendra completing her graduation in Economics from Wellesley College in the U.S. Priva joined the family business at the marketing Division of Park Hotels. She initially reported to her father and Chairperson, Surrendra Paul. In less than two years, she became the Acting General Manager of The Park, New Delhi.However, in 1990, she lost her father in a tragic incident when the ULFA militants gunned down Surrendra Paul. Only one year before that incident, Priva's younger brother Anand died in a car accident. These incidents left a vacuum both in the family and at the workplace.

Moment of inspiration

At a very young age of 23, and with very little experience, Priya was left to manage all three hotels of The Park – a huge challenge that she solemnly took up. Soon, she realized the hotels needed a major renovation and created a kind of revolution in India's hospitality industry.Priya single-handedly introduced the concept of boutique hotels in India.Besides, trendy and contemporary designs and interiors – a sharp contrast to the country's archetypical 5star properties – she introduced innovative concepts such as:

- Amusing corners for guests to hang out
- Themed lounges
- In-vogue restaurants

She also experimented with the menus and music. Her initiatives helped her hotel chain tacklethe recession of the early 1990s.

Notable success

Today, she owns a chain of six hotels across major cities including Kolkata, New Delhi, Chennai, Bangalore, Hyderabad and Visakhapatnam. This mompreneur is known for her innovation, strong will and spontaneity. She credits meditation as the tool that helps her stay calm and motivated.

Priya is also a recipient of numerous prestigious awards, including the Padma Shri award given by the Indian Government in 2012.

6. KiranMazumdar-Shaw, Founder of Biocon

Kiran graduated college in the late 1970s with a B.Sc. in Biology and Zoology. However, she aspired to follow in her father's footsteps later in life. Her father's work, as the head brew master for one of India's largest beer companies, inspired her to change her career. Shortly after, she headed to Australia to train as a brew master. Her intentions were to return to India and obtain a job with her newfound knowledge. However, the Indian brewing industry was heavily male dominated (still true today) and employers refused to offer her a job.In an interview with The Financial Times, Kiran recalls, "I was being politely told, 'we are very impressed with your qualifications, but this is not a woman's job."

Moment of inspiration

Undeterred and with little support, she decided to start her own venture and began building her own business from scratch. She understood that entrepreneurship was traditionally a male bastion and that the country wasn't kind to women in business, but she chose to persevere anyway. Luckily, she met an Irish entrepreneur, Leslie Auchincloss, who was looking for an Indian partner to produce enzymes – a role that suited her interest in biology. Kiran launched Biocon India in 1978 as a joint venture with Ireland-based Biocon Biochemicals, retaining a 70% stake in the company. She started the business in the garage of her rented house in Bangalore with a seed capital of Rs. 10,000.

Notable success

Today, Biocon is one of India's largest biotech companies, with a market capitalization of nearly

\$7bn on the Bombay Stock Exchange. And Kiran Mazumdar-Shaw is India's first self-made Indian female billionaire, and an inspiration to hundreds of male and female entrepreneurs.

7. RichaKar, Co-Founder & CEO of Zivame

RichaKar was born in Jamshedpur and comes from a very conservative family. After completing her engineering from BITS Pilani, followed by a brief stint in the IT sector, she moved on to complete her master's from NarseeMonji Institute of Management Studies in 2007. Soon after, she worked at SAP Retail Consulting, a company that helped her gain valuable retail experience. One of her clients included the famous lingerie company, Victoria's Secret.This opportunity offered her a chance to research the Indian lingerie market, where she realized a social discomfort that was causing a myriad of issues for both women shoppers and retailers.

Moment of inspiration

To solve this problem, she developed a business idea to help women understand their lingerie needs and get the right products without hassle. In 2011, she co-founded Zivame (meaning "radiance" in Hebrew) with her friend Kapil Karekar to put her ideas into play. Initially, she had to overcome several challenges — including pushback from her family. The idea of talking about lingerie was a major taboo in India. Another big challenge was finding ways to finance her endeavor. In the initial phase, Richa borrowed Rs. 30,00,000 from friends and close family. The founders



started in a small office space. As the business grew, the company secured funding from investors including IDG Ventures, Kalaari Capital and Unilazer Ventures

Notable success

In three years, Zivame grew from a small business to a team of more than 200 members. It is now one of India's leading online lingerie stores, making Richa one of the most influential female entrepreneurs.

8. Jyoti Naik, Ex-President, Shri Mahila Griha Udyog, Lijjat Papad

Jyoti Naik was 12 years old when she joined her mother in the business of making *papad* (a thin, crisp, round flatbread from India) in the early seventies. The brand they worked for, Shri Mahila Griha Udyog Lijjat Papad, was started by seven women way back in 1959 with a modest loan of Rs.80.Growing up, Jyoti was the eldest among her four brothers and sisters. After the sudden demise of her mother in 1976, she continued working various jobs at LijjatPapad while caring for her four siblings.

Moment of inspiration

Eventually she became president in 1999, where she helped build a sustainable business model within the company and employed many village women.Her contributions to LijjatPapad's unique business model imparts a sense of equality and justice. It serves to equip Indian women with dignity, self-reliance and self-respect.

Notable success

Although Jyoti has since retired, she helped expand the women's cooperative into becoming ahousehold name.

Many consider this to be one of the first pioneers of India's co-operative movement.

It is now manufactures and sells various products including:

- Papad
- Spices
- Wheat flour
- Detergent powder
- Detergent cake
- Liquid detergent

With the help of Jyoti, LijjatPapad has become an entrepreneurial success story employing over 43,000 and has 81 branches across the country. It also includes a turnover of over USD 100 million.During her tenure, Jyoti received many awards and accolades including 'Vandemataram Rashtriya Seva Award' for her efforts towards the empowerment of women, and a PHDCCI Brand Equity Award given to her by Dr.A.P.J.AbdulKalam.

9. Upma Kapoor, Founder of Teal & Terra

Born and raised in Delhi, Upma lost both her parents in a tragic accident when she was 12 years old. She went to live with her sister and brother-in-law and completed her MBA

in finance from ICFAI.

Moment of inspiration

She worked in the corporate sector for almost 15 years and then left her cushy job to venture into the beauty industry. Entrepreneurship was always at the back of her mind, which inspired her to create Teal & Terra.Upma funded Teal & Terra with her savings and contributions from friends and family.The company banks on the age-old wisdom of Ayurveda and its cosmetic products are allnatural. Priced from Rs. 500 onwards, Teal & Terra primarily produces hair and skin care products.

Notable success

In a short span of time, Teal & Terra has been able to position itself as an acclaimed brand in the beauty industry, with a chunk of its revenue coming from repeat buyers.

The shift from the service industry to entrepreneurship wasn't an easy ride.

There were many challenges in the path, including brand acceptance and stiff competition from the established players in the segment. She also had to struggle to maintain a healthy work-life balance as a single mom (or mompreneur).

Nonetheless, within a significantly short span of time, all the hard work and perseverance has paid off. Upma started with about Rs 7.5 lakh and in just two years since its launch, Teal & Terra has clocked in revenue of Rs 2.24 crore and managed to carve a niche of its own.

10. Vandana Luthra – Founder of VLCC

Vandana Luthra started VLCC as a wellness center in 1989 on a small bank loan, with a focus on health and beauty in New Delhi. Over the years, she has endured criticism and competition to become a wellness queen -aconcept that was an alien concept way back in the 1980s.Born into an educated middle-class family, her father was a mechanical engineer and her mother was an Ayurvedic doctor who ran an organization called Amar Jyoti.

Moment of inspiration

Like her parents, Vandana was inspired by the idea of impacting someone's life and making the world a better place to live in. She later followed her dreams by traveling to Europe to study

beauty and wellness. Vandana started the wellness and beauty giant VLCC back in 1989 when her daughter was just a toddler.She faced the typical challenges of a mompreneur, while trying to balance a healthy work-life at home.Besides entrepreneurship being a male-dominated space, she also faced strong criticism in the initial stages of her branding. She often had to convince doctors and the medical fraternity about the concept of wellness.Convincing



them meant she had to recruit a variety of experts in the beauty, health and fitness fields to show that holistic healthcare was here to stay — and not just a fad.

Notable success

Her company has since grown from the small office she held in Delhi. Today VLCC has spread its wings to 11 countries in Southeast Asia, the GCC Region and more recently East Africa.The company also has two manufacturing units, one in Haridwar, India and another in Singapore.Vandana's willpower and diligence led her to be awarded the Padma Shri in theyear 2013.She was later identified by Fortune India as the 33rd most powerful Indian female entrepreneur. Given her expertise in the field, the current Modi government has appointed her as the Chairperson of the Beauty & Wellness Sector Skill Council.

FINDINGS

- 2.0% respondents are below 18 years old, 38% respondents are 18-25 years old, 36% respondents are 26-35 years old, 16.0% are 36-45 years and 8% are 45 years and above inage.
- 48% of the respondents are having Bachelors degree, 23% of the respondents possess master's degree, 17.0% of the respondents are pursuing high school and 7% of the respondents are pursuing diploma and 5% are pursuing doctorate degree.
- In this study, most of the women entrepreneurs(43%) are married, 31% are unmarried, 21% are divorced, and 5% are single parents.
- Most (37%) of the respondents have the monthly expenditure of Rs 30000-50000, 34% belonged to 50000-70000, only 2% have more than 90000 Rs expenditure. However, the level of contribution of women entrepreneur in household expenditure is noticeable. 43% of my total respondents marked that they are contributing an amount range of 10 to 20 thousand per month. 24% and 21% said the level of contribution lies on 20000-30000 and30000-40000.
- Only 6% of the respondents have a monthly income from e-business of above 45,000, 18% are in the income category of 35,000-45,000, 31% are in the income category of 25,000-35,000, 34% are in the income category of 15,000-25,000 and 11% are in the income category of below 15,000.
- It is also clear that 17% of the respondents have experiences less than one year, 47% have experience between 1-3 years, 24% of the respondents have 3-5 years of experience, 9% of the respondents have 5-7 years of experience, 3% of the respondents hold more than 7 years of experience.
- 56% strongly agreed with the statement i.e. Economic Freedom influence women Empowerment. 30% of the respondents agreed that Economic Freedom influence women

Empowerment. 12% of the respondent's opinioned neutral, 2% of the respondents disagree that Economic Freedom influence women Empowerment

- 32% agreed with the statement i.e. Social Recognition influence women Empowerment. 16% of the respondents strongly agreed that Social Recognition influence women Empowerment. 30% of the respondent's opinioned neutral, 22% of the respondents disagree that Social Recognition influence women Empowerment
- 44% opinioned neutral with the statement i.e. Selfindependency influence women Empowerment. 12% of the respondents strongly agreed that selfindependency influence women Empowerment. 24% of the respondents agreed that Self-independency influence women Empowerment, 16% of the respondents disagree and 4% of the respondents disagree that Social Recognition influence women Empowerment.
- 36% agreed with the statement i.e. Participation in family Decision making influence women Empowerment. 12% of the respondents strongly agreed that Participation in family Decision making influence women Empowerment. 30% of the respondent's opinioned neutral, 20% of the respondents disagree and 2% of the respondents disagree that Participation in family Decision making influence women Empowerment
- 34% opinioned neutral with the statement i.e. Control over family resources influence women Empowerment. 18% of the respondents strongly agreed that Control over family resources influence women Empowerment. 12% of the respondents agreed that Control over family resources influence women Empowerment, 28% of the respondents disagree and 8% of the respondents disagree that Control over family resources influence women Empowerment.
- 50% agreed with the statement i.e. Control over Expenditure making influence women Empowerment. 16% of the respondents strongly agreed that Control over Expenditure influence women Empowerment. 28% of the respondent's opinioned neutral, 6% of the respondents disagree that Control over Expenditure influence women Empowerment
- 34% opinioned neutral with the statement i.e. Control over own live related issues influence women Empowerment. 14% of the respondents strongly agreed that Control over own live related issues influence women Empowerment. 20% of the respondents agreed that Control over own live related issues influence women Empowerment, 28% of the respondents disagree and 4% of the respondents disagree that Control over own live

related issues influence women Empowerment.

- 32 % of the respondents strongly agree that Ebusiness enables the women to develop leadership in the society followed by 14% of respondents somewhat agreed. 12% of respondent's feel neutral about the E-business enables the women to develop leadership in the society. Additionally 22% somewhat disagree and 20% respondents strongly disagree that the E-business enables the women to develop leadership in the society.
- 25 % of the respondents strongly agree that Entrepreneurship through E-business enables women to get a sense of gender equality followed by 30% of respondents somewhat agreed followed by 25% of respondent's feeling neutral about Entrepreneurship through E-business enables women to get a sense of gender equality. Additionally 15% somewhat disagree and 5% respondents strongly disagree that the Entrepreneurship through E- business enables women to get a sense of gender equality.
- 19% of the respondents strongly agree that Women entrepreneurship in E-business creates a distinctive social entity/image for women followed by 31% of respondents somewhat agreed followed by 5% of respondent's neutral about Women entrepreneurship E-business creates a distinctive social in entity/image for women. Additionally 30% somewhat disagree that online advertising is a valuable source of information about establishing personal taste and 15% respondents disagree that Women entrepreneurship in E-business creates a distinctive social entity/image for women.
- 25% of the respondents strongly agree that Entrepreneurship through E-business is a source of inspiration for other women followed by 15% of respondents somewhat agreeing that Entrepreneurship through E-business is a source of inspiration for other women followed by 15% of respondents neutral about Entrepreneurship through E- business is a source of inspiration for other women. Additionally 25% somewhat disagree and 25% respondents disagree that Entrepreneurship through E-business is a source of inspiration for other women.
- 25% of the respondents strongly agree that Women entrepreneurship through E-business creates a greater social acceptability for women followed by 15% of respondents somewhat agreed followed by 23% of respondents neutral about Women entrepreneurship through E-business creates a greater social acceptability for women. Additionally 12% somewhat disagree and 25% respondents strongly disagree that Women entrepreneurship through E-business creates a greater social acceptability for women.

- 32 % of the respondents strongly agree that Ebusiness enables women to achieve the economic freedomfollowed by 10% of respondents somewhat agreeing that E-business enables women to achieve the economic freedom followed by 15% of respondents opinioned that E-business enables women to achieve the economic freedom. Additionally 32% somewhat disagreeand 11% respondents strongly disagree that E- business enables women to achieve the economic freedom.
- 29 % of the respondents strongly agree that Women involvement in E-business enhances the standard of living followed by 14% of respondents somewhat agreed followed by 14% of respondents are neutral about Women involvement in E-business enhances the standard of living. Additionally 29% somewhat disagree and 14% respondents strongly disagree that Women involvement in E-business enhances the standard of living.
- 19 % of the respondents strongly agree that Entrepreneurship through E-business enables women to contribute in family incomefollowed by 21% of respondents somewhat agreed followed by 20% of respondents' are neutral about the Entrepreneurship through E- business enables women to contribute in family income. Additionally 20% somewhat disagree and 20% respondents strongly disagree that the Entrepreneurship through E- business enables women to contribute in family income.
- 20 % of the respondents strongly agree that Women entrepreneurship through E-business enhances women employability followed by 20% of respondents somewhat agreed neither followed by 10% of respondents' neither agreeing nor disagreeing that Women entrepreneurship through Ebusiness enhances women employability. Additionally majority i.e. 40% somewhat disagree and 10% respondents strongly disagree that Women entrepreneurship through E-business enhances women employability.
- 14 % of the respondents strongly agree that Ebusiness enables women to a control over Expenditure followed by 13% of respondents somewhat agreed neither followed by 24% of respondents' neither agreeing nor disagreeing that Ebusiness enables women to a control over Expenditure. Additionally 17% somewhat disagree and 32% respondents strongly disagree that Ebusines enables women to a control over Expenditure.

CONCLUSION

Women's empowerment in cases of social status, economic security, self-actualization, etc. is an inevitable part of country's overall development. Without women the



mainstream development program, sustainable development process is just nearly impossible. Not only that, this development would always be a dream without active and meaningful participation of the country's women in it. After completing the analysis and finding part the study found that e- business is the most convenient and easiest option to run business for the women entrepreneurs. Women Entrepreneurship through e-business has enhanced their economic status and decision- making power. Economic status, self-worth, self-confidence, control over own liferelated issues, control over resources, and social status of women entrepreneurs are the variables that define empowerment of women. If women gain economic freedom, social recognition, they gain visibility and a voice at home, workplace and community. This has an impact on their social status regarding increase in their leadership ability, gender equality and so on. According to the study, women are becoming more interested in establishing their own onlinebusiness as it is easier than any other form of business. So, governance and policy formation should support the women entrepreneurs so that they can develop and empower themselves. It will lead to the development of our country's sustainable economic growth, creates employment opportunities as well as make a contribution towards the women entrepreneurs' family and community.

SUGGESTIONS

- There should be continuous efforts to inspire, encourage, motivate and co-operate women entrepreneur.
- Big service provider like Amazon, Flipkart, Paytm must organize programmes and workshop to train them on various marketing process, delivery process, packaging method and other various managerial aspects.
- Government and Non government agencies must also come forward to help and encourage women entrepreneur. So there is huge scope in E-commerce as it is still very young in India with many big companies in shorter period of time.

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THE PRIORITY IMPORTANCE OF ECOLOGICAL AND ETHICAL PHYSICAL EDUCATION IN THE MODERN EDUCATION SYSTEM

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ABSTRACT

The article describes modern education system, in dealing with the current issue, emphasizes the priority importance of ecological and ethical physical education, the formation of a person who cares about improvement, self-development, and well-being. Also, the paper provides with information on subjectivity that determines active creative position of a person in solving environmental problems, which is important in the implementation of the issue of ecological culture education in adolescents. Using this approach, students can learn to reflect on their current, initial, current level of knowledge and then evaluate their own success and personal growth. That is, as a result of the process and application of forms, methods and methods of educational work, a person is born, he has the ability to choose, evaluate, program and construct the types of activities that are adequate to his nature, satisfy his needs in self-expression and self-development. **KEY WORDS:** physical health, physical education, pedagogical and ethical education, ecological education.

INTRODUCTION

The basis of the activity approach in psychology B.G. Ananev, V.V. Davydov, L.S. Vygotsky, A.N. Leontev, S.L. Restored in the works of Rubinstein. Thus, as general goals, a person who is able to make his personal life the subject of practical adjustments, to be able to relate to himself, to evaluate himself, to choose the methods of his activity, taking into account his interests, directions of values, control of his progress and results [3, 4]. Therefore, in the framework of our research, the active approach is expressed in the creation of such a model of the educational process of ecological culture, which creates a situation of inclusion of teenagers in various types of productive ecological activities in order to stimulate the self-expression and development of the individual.

We consider the main features of the personaloriented approach necessary for our research (A.N. Ålekseev, S.A. Baramzina, E.V. Bondarevskaya, V.I. Leshchinsky, A.V. Petrovsky, I.B. Kotova, V. V. Serikov, V. I. Slobodchikov, A. V. Khutorskoi, I. S. Yakimanskaya, E. N. Shiyanovi and others) [2, 5]. Based on our research, this approach is expressed in education and training cooperation and cocreation, individualization and differentiation, establishing a reliable relationship with each of the students, knowing the individual-personal characteristics of the students. Selfdirected education is based on the recognition of the uniqueness of the student's subjective experience as an important source of individual life action, which is manifested in knowledge. Recognizing that the student is the moving figure of all educational activities, Bondarevskaya states that it is a personally oriented pedagogy. The characteristics of the approach as providing interest, problem, and personal involvement in environmental activities are taken into

account. In this, knowledge and norms are mastered as personally important. In this case, the development of a person's value-emotional sphere, his personal relationship to nature, his activities, his personal position are considered essential. Thus, the effectiveness of the personal-oriented approach is primarily characterized by the personal growth of the student, including the increase in the level of formation of ecological culture.

LITERATURE REVIEW

Humanistic psychology, including the ideas of K. Rogers based on the cultural approach. In this approach, he prepared a general theoretical basis for the development of educational issues (A.G. Asmolov, V.N. Alekseenko, M.M. Bakhtin, E.V. Bondarevskaya, O.S. Gazman, V. Kagan, M.S. Kagan, N. B. Krylova, S. V. Kulnevich, S. Yu. Stepanov and others). E.V. Bondarevskaya distinguishes the following components of a cultured approach, which, in the logic of our research, are important in the process of educating adolescents in ecological culture:

Attitude to the child as a subject of life capable of cultural self-development and self-change;

- Pedagogy as a bridge between the child and culture, capable of leading him into the world of culture and supporting the child's personality in his individual selfdetermination in the world of spiritual and moral values;

- Approach to education as a cultural process in which the driving forces are personal meanings, dialogue and cooperation of its participants in achieving their personal development goals;

- approach to the school as a whole culturaleducational space, in which the cultural patterns of children's



and adults' joint lives are modeled and reconstructed, cultural events occur, culture is created and a person of culture is educated.

- cultural approach is based on the separation of knowledge about the world, the experience of the existence of methods of activity, the experience of emotional-values attitude to the objects and processes of the real world. In this situation, it will be important to make a transition from the study of communication and relations in natural associations to communication and relations in the system of "man society - nature". Environmental problems from the point of view of cultural compatibility allow a deep consideration of the causes of the current global problems, their solution based on the establishment of a relationship of ability of a person to himself and the environment, the methods of practical activity ensure the assimilation of culture by a person.

- the approach ultimately ensures the creation of a single cultural and educational space, in which the formation of the adolescent's personality is enhanced. A practical condition for the involvement of requirements in the development of education in the current conditions is the environmental approach and, in accordance with it, the educational environment comes to the field.

Founders of environmental approach (Yu.S. Manuylov, A.T. Kurakin, V.A. Karakovsky, L.I. Novikova, N.L. Selivanova, V.D. Semenov, V.I. Slobodchikov, E.A. Yamburg, V.A. Yasvin) sees its essence in such a way that children are brought up by organizing acceptance of this environment that surrounds them as a whole, which the children themselves raise with the help of pedagogues, parents, social partners and school friends [1, 3]. Yu.S. Manuylov considers the environment as a potential educational tool in patriotism pedagogy. It emphasizes the growing role of the environment in children's development and its strong interaction with the educational system. Yu.S. Manuylov offers the following definition of the environment: "what the subject is in, under the influence of which his lifestyle is formed, what also "mediates" his personality. In this case, averaging means typicalization. Mediation means to instigate, help, enable, bring about something. Mediation means to change the direction, to influence, to rise to a higher level.

RESULTS

In the logic of our research, this approach is important from the point of view of the structure of the environment. Yu.S. According to Manuylov, the environment consists of a set of niches and elements, in which children's lives interact. Niche (natural, social, cultural) is a certain space that allows children to satisfy their needs and to show their subjective qualities by the child. Spontaneity is a force acting in the form of social movement, information flow, interest wave, mood swings, etc., in the natural and social environment. Nature has the power of violence over children and ensures that they choose the options for their own development. According to Sergeev, the environment consists of a certain physical entity in the form of a specially organized system of tools. The structural integrity and logical completion of each option of the educational environment depends on the designer who describes all the elements and

functions of the environment. The subjectivity of the environment, depending on the observer, is qualified by this, which does not in any way prevent the environment from being considered as an element of objective reality. The environment is also the place where knowledge arises and exists, and it reflects reality and can be transferred to human memory and experience through stimuli. Immerse the subject in the learning environment, he argues. S.F. Sergeev leads to changes in his qualities. It occurs only when the subject's cognitive activity is present, according to motivations, interests and context. Summarizing what has been said, we emphasize that the use of the environmental approach in our research allows us to focus not only on the surrounding natural environment, but also on the use of internal opportunities in the process of educating the ecological culture of the teenager. Creating such an environment from the point of view of the environmental approach is good for us as the organization of socio-cultural (ecological lessons, short-term courses, exhibitions, conferences) and socio-natural platforms (excursions, walks, expeditions, tourist clubs), in which pedagogues are responsible for ecological culture, work with a purposeful focus on the development of all components. The principle of education of this integral quality was distinguished by us through methodological approaches selected based on the study of the situation of the theory and practice of ecological culture education in teenagers. Among the important principles of educational influence, researchers P.I. Agalarova, S.V. Alekseev, N.M. Mamedov, L.V. Moiseeva, V.G. Ershon includes the following:

The principle of systematicity.

The principle ensures the education of ecological culture as a system; allows realize the need to see nature as a whole. This research principle is aimed at determining the stability, consistency, compatibility of phenomena, their interaction. The organization of educational activities determines the development of a system of methods, forms and tools aimed at the interdependence of internal and external factors of the educational environment for the upbringing of ecological culture in adolescents;

Principle of Integration and Differentiation

The principle, first of all, ensures the unity of the goals of biological and environmental education. It reflects the functional dependence of the content on the unity of goals and tasks of education, substantive and procedural aspects, unity of education and upbringing. Integration affects all components of ecological culture: cognitive, emotional and activity. Secondly, differentiation opens up a wide range of opportunities for individual educational routes to meet the interests, abilities, goals, developmental level and other needs of the learner, which requires a variety of educational conditions and pedagogical approaches;

The Principle of taking into account the features of the country.

Natural conditions and resources, ecological situation, problems and solutions in the country, city, region, demographic situation, lifestyle of the population, intellectual



and spiritual potential should be taken into account in the process of education of ecological culture in adolescents. The importance of studying regional features is determined by the area where the teenager lives, his interest in learning about the environment, implementation of concrete practical work, mastering and acceptance of traditions. Studying the characteristics of one's native land, one's connection with previous and future generations (folk traditions, creativity, ability) has a complex effect on all spheres of consciousness intellectual, emotional, ability and will.

The principle of connection of educational and educational activities with the practice of solving nature conservation problems.

The principle of the educational process determines the application of the acquired environmental knowledge and skills of the students in solving practical problems, stimulating the analysis and diversification of the surrounding reality, developing their own views. One of the important channels of implementation of this principle is the active involvement of students in socially useful activities to solve the issues of nature protection in school and outside. The principle of involvement of the public or other noncommercial associations in solving issues related to the education of ecological culture of adolescents determines the fulfillment of the social order by educational institutions, the active involvement of social partners in solving the issues of education of environmental culture.

The principle of using the historical experience of solving environmental education and educational issues.

Time is kept as the past for a person, the historical process in general is defined by the achievements of the past on the one hand, and it is restored by the system of upbringing and education while preserving the identity in culture. On the other hand (and this is very important) sooner or later, a person comes to other situations in order to get out of the crisis situation that occurred in a situation where the past experience is not ethereal. It is in these situations that the creative beginning in a person increases, he creates in order to live, then all the good things created by mankind need to be used, revised to solve new problems.

The principle of creative activity and independence in the role of support of the pedagogue in the process of selection by students or in other types of ecological activity.

This principle consists of active reception of studied phenomena in a goal-oriented manner, their revision, creative processing and application. Student activity is seen in their initiative in reading and a high level of cognitive independence, which is an important characteristic of students' actions in the learning process. Desire and ability to think independently; the ability to find direction in new conditions, to find one's own approach to solving a new problem; seeking to understand not only acquired knowledge, but also methods of acquiring it; independence in personal thinking is one of them.

The principle of harmonious integration of collective and individual forms of educational and extracurricular activities.

This principle is based on the age and individual characteristics of adolescents. The implementation of the principle solves the problems of harmonizing collective and individual forms of organizing educational lessons, using adequate teaching technologies. In this case, cooperation and mutual support creates a pleasant emotional environment, which affects the development of interest and productivity of the educational process [4, 6].

The theoretical research conducted on the problem of education of environmental culture among teenagers in the environment of secondary education makes it possible to draw a number of conclusions. Based on the global nature of environmental problems, it is necessary to search for future directions, organizational forms and methods of educating students' ecological culture. The ecological culture of society and the individual as a scientific concept is explained and described in philosophy, psychology, pedagogy, sociology and is a complex, multifaceted, multilevel problem. Its content is based on universal human values, accordingly it acquires an ecological humanist direction. Its formation requires a comprehensive and systematic review of the characteristics of environmental education, in which they are required to have progress ahead of them in comparison with the development of society's requirements. In the current ecological situation, education of ecological culture in adolescents is considered one of the main tasks, and it is connected with the solution of harmonization issues in the "man-nature-society" system and nature itself in relation to nature, as well as in their interactions with it, which are compatible with strategies and technologies.

DISCUSSION

Environmental education plays a special role in the development of the ecological culture of a person, which ensures the acquisition of systematic knowledge, the development of the necessary skills and attitudes of an ecological nature, and the instillation of the fundamental foundations of personal culture, including ecological culture. In the scientific literature, environmental culture is considered in various aspects: as an indicator of the quality of education and as a result of the students' activities, which shows their attitude to nature.

In order to clarify the situation of the researched problem, referring to the scientific literature shows that it has not been solved either theoretically or practically, as evidenced by many publications, in which there are various opinions on the concept of "ecological culture", as well as the influential aspects of its education, directions are available. The analysis of different opinions allow us to confirm the content of ecological culture, which is considered as an integral part of the general culture of a person, which reveals the versatility of the interaction of faith with the environment. When we say ecological culture, we understand the integrative personal education of a teenager, and it defines its leading specific characteristics: in the cognitive sphere - it determines the awareness of ecological culture as a positive value, in the



emotional sphere - the moral-aesthetic feelings and waves that arise in the interaction with nature, in the sphere of will - the activity of preserving nature determines implementation, selfcreative expression in solving environmental problems.

Environmental culture of adolescents can be formed at different levels. The following levels of the formation of ecological culture are distinguished: elementary, average, high. The level of development of ecological culture is determined by the level of formation of relationship structure, and its organizers are cognitive, emotional, spheres of activity (ratio, emotion, action). The structure of environmental culture of adolescents is given by three components: cognitive, emotional and activity. Criteria for evaluating it: cognitive, emotional-moral; practically determined.

CONCLUSION

The developed benchmark indicators characterizing the level of formation of environmental culture in adolescents made it possible to determine the content of its levels and clarify the dynamics of its development level in the process of education. Analyzing the content of the state's requirements and the high level of the society's educational demands, it is necessary to create an educational environment in the educational institution for the success of the process of educating teenagers in ecological culture. We have studied the structural components of the educational environment and determine that it consists of a combination of spatial and subject environment, pedagogical tools and conditions, and social environment. Certain pedagogical conditions ensure the successful implementation of the model of the process of education of ecological economy in adolescents. The following are included among the main pedagogical conditions: organization of a single educational space through the integration of educational, extracurricular and extracurricular environmental activities, and the use of pedagogical technologies in the educational process that ensure the effective formation of environmental culture in adolescents; to ensure the process of "introduction" to the ecological culture, which forms the directions of values, taking into account the personal history of life and education; the involvement of parents in the process of raising environmental culture; social space; tutoring support.

Also, it is important to rely on personally oriented, activity, cultural and environmental approaches in the education of adolescents in the conditions of the educational environment. Based on the study of the theory and practice of ecological culture education of teenagers, we have distinguished the principles of education of this integral quality. It is necessary to take into account the characteristics of the vouth in order to raise the ecological culture of the targeted adolescents, because most of the ecological abilities, the specification of knowledge acquisition, and the acquisition of ecologically important types of activities directly depend on the age of the child. In the course of research, a model of the process of educating teenagers in environmental culture in the conditions of secondary school education was developed. It will have purposeful, motivational, meaningful, and result blocks.

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PLEURAL EMPYEMA ASSOCIATED WITH SUBMANDIBULAR ABSCESS: CASE REPORT FROM A HOSPITAL IN THE ECUADORIAN AMAZON

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SUMMARY

INTRODUCTION

Pleural effusion is a pathology resulting from overproduction of pleural fluid and decreased absorption. Transudative pleural effusions are caused by general alterations in formation and absorption, as in the case of cirrhosis or heart failure. Exudative pleural effusions are usually caused by local alterations that affect physiology, such as pneumonia, neoplasms or pulmonary embolisms. The origin of the fluid in the present clinical case comes from the presence of an infectious process located in the sub-mandibular region, due to poor hygiene and oral care of the patient, which leads to bacterial pneumonia, which evolves into empyema.

CLINICAL CASE

The clinical case is presented of a 43 year old male patient, attended in a hospital in the Amazon, belonging to the province of Morona Santiago-Ecuador, with a personal history of chronic alcoholism; and the presentation of a picture of pain in the oral cavity of moderate intensity, associated with purulent secretion of moderate quantity, which evolves unfavourably with non-productive cough and pleuritic pain. Complementary studies were carried out which revealed the presence of pleural empyema and submandibular abscess.

EVOLUTION

The patient was treated with broad-spectrum antibiotic therapy, vasoactive support management due to the presence of septic shock and management of his dental problems. In addition, radiographic and tomographic images were taken to confirm the patient's critical clinical condition. Subsequently, the patient decided to request medical discharge to go to another private health unit of greater complexity. **CONCLUSIONS**

Neck abscesses are the result of dental disorders which, if not treated immediately, are a strong predisposing factor for infections in other regions of the body through dissemination, such as the lung, mediastinum and pericardium. The different causes of empyema are of vital importance, because diagnosing the possible aetiologies of empyema can lead to a correct and more targeted management and treatment of the cause.

KEY WORDS: Empyema, Submandibular abscess, Pleural effusion

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ABSTRACT

INTRODUCTION

Pleural effusion is a pathology product of the overproduction of said fluid and decreased absorption. Transudate-type effusions are produced by general alteration of formation and absorption, as in the case of cirrhosis or heart failure. Exudate-type pleural effusions are usually caused by local alterations that affect physiology, such as pneumonia, neoplasms or pulmonary embolisms. The origin of the liquid in the present clinical case comes from the presence of an infectious process located in the sub-mandibular region, due to the poor hygiene and oral care of the patient, which leads him to present a bacterial pneumonia, which evolves to an empyema.

CLINICAL CASE

The case of a 43-years-old patient, treated in a Morona Santiago Hospital, with a history of chronic alcoholism, with symptoms of oral cavity pain of moderate intensity, associated with purulent flux in moderate quantity, which continues unfavorably with non-productive cough and pleuritic pain. Complementary studies are made in this patient, what shows the presence of Pleural Empyema and Submandibular Abscess

EVOLUTION

The patient was treated with broad-spectrum antibiotics, vasoactive support because of the presence of septic shock and the treatment of oral problems. Furthermore, X-ray images and CT scans had been made to confirm critical clinic status of the patient. Nevertheless, the patient requests medical discharge to go to another private and more complex health unit. **CONCLUSIONS**

Neck abscesses are the product of dental alterations that, if not treated immediately, are strongly predisposing to infections in other regions of the body, due to dissemination, such as: lung, mediastinum and pericardium. The different causes of empyema are of vital importance, because diagnosing the possible etiologies of empyema can lead us to correct management and treatment, and more directed towards the cause.

KEY WORDS: empyema, submandibular abscess, pleural effusion

INTRODUCTION

Pleural effusion is a common clinical problem, with an estimated prevalence of 400 per 100,000 patients. Pleural fluid occurs in a small amount, which lies in the cavity between the pleural layers and allows both layers to slide easily. Pleural fluid enters the pleural space through systemic capillaries due to differences in hydrostatic and oncotic pressures between the two pleurae and the pleural space. This fluid is reabsorbed by the lymphatic system, although it is more dependent on the parietal pleura. Now, pleural fluid is mediated by a variety of mechanisms related to increased pleural fluid production, reduced reabsorption or a combination of these (1)(2).

The first step to take in pleural effusion (or suspected pleural effusion) is always to determine what type of fluid it is; it may be transudate (increased hydrostatic pressure or negative pleural space pressure, or reduced oncotic pressure), or exudate (increased permeability in capillaries or obstruction of lymphatic drainage from the lungs). Generally, exudates occur when the pleura is involved, whereas transudates do not. This differentiation is made by means of Light's Criteria, which are mentioned below:

- Pleural fluid protein / serum protein greater than 0.5
- Pleural fluid LDH / serum LDH greater than 0.6
- Pleural LDH greater than ²/₃ of serum LDH at its maximum limit

The presence of one of these is sufficient to identify whether the fluid in a pleural effusion is a transudate or exudate (2)(3)(4).

The main precursors of thoracic empyema are bacterial pneumonia and parapneumonic effusion. Other causes of empyema include bronchogenic carcinoma, oesophageal rupture or penetrating chest trauma, mediastinitis with pleural extension, and thoracic or cervical spinal infections, among others. Despite the use of antibiotics and the availability of pneumococcal vaccines, empyema remains a complication of pneumonia and a major cause of morbidity and mortality. Statistically, nearly 1 million patients are hospitalised in the United States each year for pneumonia. Of those, 20 to 40% suffer parapneumonic effusion, and 5 to 10% progress to pleural effusion. Fifteen percent of these patients die and 30% require drainage of the fluid (5).

Pleural fluid is normally 0.2 ml/kg/hour, which implies that the total volume of pleural fluid. The parietal region is characterised by the highest pleural fluid production and is the site of greatest pleural fluid reabsorption. In the case of pleural effusion due to left heart failure, there is an exception to the rule, where the fluid comes from the visceral pleura. The volume of pleural fluid is determined by the balance between the difference in hydrostatic and oncotic pressures, which are present between the circulation (pulmonary and systemic), and the pleural space. pleural fluid is reabsorbed via the lymphatic pathway into the parietal pleura. Pleural effusion is caused by a disturbance in the balance, usually increased production and decreased reabsorption. Decreased oncotic pressure, elevated pulmonary capillary pressure, increased permeability, lymphatic obstruction and decreased negative intrapleural pressure are the pathophysiological components leading to all the features of pleural effusion (6).

Clinical Presentation

Many of these patients have no symptoms that can be attributed to the effusion per se. If symptoms are evident, it reflects an inflammatory response of the pleura, a restriction of pulmonary mechanisms or alterations in gas exchange. The most common symptom arising from a pleural inflammatory response is pleuritic pain, which is provoked by the parietal pleura (the visceral pleura has no nociceptive nerve fibres).



The pain is usually felt in the region of the origin of the effusion, and is usually related to the respiratory cycle. As soon as the pleural effusion is resolved, the pleuritic pain disappears. The pain describes a diffuse pain, accompanied by a feeling of pressure in the chest. Another symptom that may occur is dyspnoea. The severity of dyspnoea is only related to the extent of the pleural effusion, which occupies space in the chest, right at the site of parenchymal occupation, and is therefore associated with a decrease in lung volume. The rapid clinical improvement of dyspnoea after pleural drainage probably reflects the transition to an improvement of the tension-length curve of the respiratory muscles, especially the diaphragm. In addition, some patients are accompanied by a dry cough, which may be explained by pleural inflammation or lung compression due to the extent of the effusion. In addition, pleural effusion can also markedly impair sleep quality (6).

Physical Examination

Vesicular murmur is diminished or absent at the bases, in addition to basal dullness. Tachypnoea may be present if the effusion is extensive. Pleural rub may be evident in the early stages of a parapneumonic effusion. In clinical practice, determination of the location of the pleural effusion, whether unilateral or bilateral, is made with chest radiography. The clinical history and physical examination serve as a guide for further examinations and may suggest more accurately whether it is a transudate or exudate. If, for example, the patient presents with clinical signs of congestive heart failure with peripheral oedema, oedema, tachycardia, a third sound, jugular vein distension and bilateral dullness to percussion of the lung bases, it is most likely cardiac in origin, and is more likely to be a transudate rather than an exudate. In either case, depending on the suspected type of pleural effusion, it is classified as transudate or exudate (6).

Empyema and Parapneumonic Effusion

Exudates are commonly caused by pneumonia, also called parapneumonic effusion. Empyema refers to a frank infection or pus within the pleural space. Despite current management of pneumonia, mortality is higher in patients presenting with parapneumonic effusion than in patients presenting with pneumonia without effusion; and delaying the effusion is associated with increased mortality. It is important to consider atypical symptoms in older adult patients with the presence of pneumonia, because late diagnosis in these patients may complicate even the drainage of the parapneumonic effusion. The correct selection of antibiotics based on normal microbiology and antibiotic resistance is crucial; patients with community-acquired pneumonia tend to be caused by streptococcal and anaerobic species, while nosocomial infections are caused by methicillin-resistant staphylococcus and gram-negative bacteria (7).

Diagnostic Imaging

If an exudate is identified but its cause is not obvious, further investigation is needed to find the source. Chest CT with contrast is recommended by the British Thoracic Society guidelines to guide further assessment. This can lead to demonstrate specific aetiologies and help determine the next steps to take. Some experts suggest routine investigations to exclude pulmonary embolism as a cause of the effusion, as pleural effusion has been reported to occur in half of all pulmonary embolism episodes (8).

Treatment

Antibiotic Therapy

Antibiotic use should be based on recommendations according to bacteriological prevalence and antibiotic sensitivity management, and patient-specific risks. Antibiotics should be started empirically and then determine whether it is a community-acquired or hospital-acquired infection, or cultures and antibiograms, as well as the effectiveness of the antibiotic in the pleural fluid. In community-acquired infections, the recommended combination is Amoxicillin and Clavulanate monotherapy or third generation cephalosporins combined with clindamycin or metronidazole. Concentrations of these antibiotics in pleural fluid are more than 75% higher than in the bloodstream. In patients with penicillin allergy, the combination of a quinolone with metronidazole/clindamycin is an option. In nosocomial pleural infections, where methicillin-resistant Staphylococcus aureus is very common, empirical treatment should cover these in addition to anaerobes (Vancomycin/Linezolid), antipseudomonal penicillins, carbapenemics or third generation cephalosporins associated with metronidazole (9).

Thoracic drainage

The guidelines of 3 societies are consistent in the fact that purulent pleural effusion, with a Gram+ culture result, or pH less than 7.2 is less likely to resolve without early drainage of the pleural space. In addition, 2 guidelines recommend that pleural drainage be performed without the fluid occupying more than half of the hemithorax. The options for empyema drainage are:

- 1. Repeat therapeutic thoracentesis
- 2. Insertion of a thoracic catheter
- 3. Administration of intrapleural treatment through the thoracic catheter (fibrinolytics, deoxyribonuclease or combination).
- 4. Performing pleuroscopy with adhesiolysis and/or decortication
- 5. Performing thoracotomy with decortication The latter two options represent surgical management of empyema or complicated pleural effusion (9).

Therapeutic Thoracentesis

Although the repeated performance of therapeutic thoracentesis has been widely used, it has recently gained interest. In a study in which thoracentesis was performed in 250 patients, 76% of patients had a favourable resolution after an average of 3 interventions. In another study, they mention that if the volume of the first thoracentesis was more than 450 millilitres, the risk of procedural failure is high. Furthermore, it is recommended that this technique be performed in patients with small to moderate pleural fluid (9).



Chest Tube

Chest tube placement is the most common route for draining empyemas. Although there is no definite consensus, clinical practice guidelines suggest that short-gauge tubes (10-14 F) are suitable for pleural infections and are easier to insert, as well as being less painful for the patient. In any case, pleural drainage tube insertion should be placed under image guidance, usually ultrasound (9).

Deep Neck Abscesses

Among the spaces most associated with odontogenic infections and their spread to underlying spaces with moderate to severe complications are the retropharyngeal and parapharyngeal spaces. Infections that spread into these spaces have a high morbidity and mortality rate, as the dermis and epidermis are generally not altered. On physical and visual examination, abscesses are not adequately identified and have a rapid downward spread, which explains why when an abscess is in the parapharyngeal space it has direct communication with the retropharyngeal space, which in turn spreads directly to the fasciae found in the pleural areas, causing one of the most common complications: pleural effusion. When this is not detected in time and its management and drainage, if necessary, is not adequate, it progresses to the development of pneumonia; These pneumonias are usually accompanied by inflammatory states of poor response to normal antibiotics with CRP that usually exceeds 41 mg/dl; due to its low presentation and depending on the previous clinical condition of the patient as well as the days of evolution of the case, empyema and mediastinitis may occur (10)(11).

These correspond to the presentation of pus between the fasciae of the head and neck, and their main origin in adults is dental infections, which are not controlled by antibiotic therapy, either because it is poorly directed or has a late onset. In addition, certain predisposing factors such as immunodeficiencies, foreign bodies, trauma at the site of onset of the lesion and hygienic-social factors must be taken into account. In order to know the extent of these abscesses, the anatomy of the neck must be understood, with the existing spaces and their distribution among them, since bacteria, viruses or secretions that are normally found in the oral cavity saprophytic form can spread through these in a communications and become infectious when they enter sterile spaces. The spaces or levels to be taken into account are:

- Parapharyngeal
- Peritonsillar
- Chewed
- Submandibular
 Parotid
- Parona - Retropharyngeal
- Retropharylig
 Prevertebral
- Prevertebral
- Carotid (12).

CLINICAL CASE

A 43-year-old male patient, with a history of chronic alcoholism and poor oral care, attended the emergency department of the Misereor Basic Hospital in the Amazonian city of Gualaquiza (Ecuador) on 30 June 2021 for presenting, with no apparent cause, pain in the oral cavity of moderate intensity, associated with moderate purulent chocolate-type purulent secretion. His clinical picture evolved unfavourably, presenting with non-productive cough, dyspnoea on moderate exertion, pleuritic pain, which intensified with inspiration, unquantified thermal rise and moderate pain in the submental region.

PERSONAL HISTORY: Chronic alcoholism since the age of 20, with a consumption of 2 to 3 times a week, until drunkenness. Poor hygiene and oral care.

FAMILY BACKGROUND: Does not refer to

PHYSICAL EXAMINATION:

Vital signs: Blood Pressure: 90/60 mmHg, Heart Rate: 130 bpm, Respiratory Rate: 24 rpm, Temperature: 39 C, Capillary refill 2 seconds, O2 Sat: 89%.

General appearance: poor, diaphoretic. Mouth with halitosis, together with dental pieces in a bad hygienic state, caries is evident in all the pieces, with greater impact at the level of the second and third lower left molar with apparent involvement of the soft and hard palate without alteration. In the neck, there was a painful, mobile, soft mass measuring approximately 6 by 6 centimetres. Chest: in the right lung field, there was an auscultation of pleural rubbing in the right base, an increase in frémito and abolition of vesicular murmur. Left lung field with preserved vesicular murmur.

EVOLUTION

Patient with the aforementioned history was admitted with a diagnosis of pneumonia and neck abscess; antibiotic therapy was started with Ceftriaxone and Clindamycin, in addition to the administration of oxygen through nasal prongs at 2 litres. The patient remained algic, with crepitant rales at the level of the right lung base, febrile and with oedema of the lower limbs. Three days after admission, the symptoms intensified, with the patient in poor general condition, hypotensive and tachypneic. Paraclinical tests showed leukocytosis (15170), neutrophilia (88) and a CRP of 38.

The condition worsened with poor response to fluids and oxygen therapy, so it was decided to rotate to broadspectrum antibiotics (Vancomycin and Piperacillin Tazobactam), and start vasoactive support (norepinephrine at 6 ml/h). The patient continued to eliminate a large quantity of foul-smelling, purulent and foul-smelling sputum, especially at the level of the left third molar, so he was assessed by the Dentistry Department, who proceeded to extract 4 dental pieces, on suspicion of possible causes of the site of origin of the purulent sputum. However, the patient continued to eliminate abundant purulent secretion.



Figure 1: Evolution of Antibiotic Use.



Prepared by: The Authors

On the fifth day, drainage was performed by right thoracentesis, obtaining 1500 millilitres of purulent liquid and a slight improvement in the patient's respiratory and pain symptoms. Samples were sent for study, with suspicion of right pleural empyema.

Paraclinical tests continued to show an increase in leukocytes (17470), with neutrophilia (86%), LDH of 499 and CRP of 23.4, so it was decided to again perform chest drainage without debit. It was decided to rotate antibiotic therapy based on Meropenem, and to perform head, neck and chest CT scans (these took a long time to perform due to the lack of this resource and the difficult location of the hospital). The studies revealed: necrotic descending mediastinitis with multiple collections with gas/liquid level (predominantly upper, middle and posterior mediastinum); right pleural empyema septated until it occupied almost the entire right lung, approximately at the level of T3; and submandibular abscess communicating with the parapharyngeal, pharyngomucosal, visceral and retropharyngeal space, predominantly on the left side. The patient and family were informed of the pathology and the difficulty of treatment in a basic public hospital, so they decided to request medical discharge and take the patient to a more complex private unit. The results obtained in the blood biometry, blood chemistry and pleural fluid study, together with the tomographic images, can be found at the end of the bibliographic references.

DISCUSSION

In a retrospective study conducted by Salom. S., et. al. identified 11 patients with deep neck abscess, where the presentation is predominantly male, with an average age of 53 years. The initial symptom was odynophagia, followed by cervical pain, fever and cervical oedema, which corresponds to the presentation of our patient. In this study, four participants had an odontogenic infection as their origin, and their risk factors were chronic alcoholism, smoking and obesity, which is consistent with the case presented, with the addition in this case of poor oral hygiene. The first and established antibiotics of choice were amoxicillin + clavulanic acid, followed by ceftriaxone and clindamycin, and in 2 cases piperacillin/tazobactam due to the condition and extent of the infection. Of the 11 patients, 3 presented serious complications, with pneumonia and pleural effusion being the initial ones, with consequent descending mediastinitis and finally sepsis; however, these patients did not end in death due to adequate and timely intervention, as well as a timely tomographic study that serves not only to identify the compromised space but is also the guide to establish whether the patient needs to maintain conservative treatment based on antibiotic therapy or if an abscess drainage should be added to this (12). In comparison with the case presented, we can see that there are great similarities, such as the use of similar antibiotics and the characteristics of the patients themselves.

In a 25-year retrospective study conducted in Spain by Sanz. C. and Morales. C., 33 cases were presented, of which the most frequent complication was descending necrotising mediastinitis due to the relationship between the retropharyngeal space and the posterior mediastinum; in this study the age of presentation ranged from 40 to 60 years, corresponding to the age of the patient presented in our case. The previous presence of an abscess in the submandibular space was one, which spread to the retropharyngeal space and later disseminated inferiorly; it should be noted that the presentation of this type of pathology is rare, being even more difficult to detect and present those that start in the submandibular space with its subsequent extension, which ratifies to a certain extent the treatment and the wait for a change of antibiotic therapy in our patient. In this study the mean CRP was 10 mg/dl, compared to our case where the mean CRP was 31 mg/dl (13).

A clinical case from a hospital in Cameroon, reported in 2018, describes a 35-year-old male patient and a 32-yearold female patient, originally from a region of Cameroon, who presented with submandibular oedema that was fluctuant and

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soft on palpation. The patient presented a history of a dental infection 1 month ago, at the level of the second and third molars without treatment. The second patient presented a history of being infected with the acquired immunodeficiency virus and a 1-week-old infection at the level of the second and third molars. Physical examination revealed tachycardia and hyperpyrexia. A neck ultrasound was performed, showing submandibular collections. A chest X-ray was performed, confirming a thoracic empyema. Both patients underwent drainage of the neck abscesses and placement of a chest tube, with significant drainage of purulent fluid, which coincided with the case presented, where drainage was also performed and a large amount of purulent fluid was obtained. In addition, both patients were admitted to the intensive care unit with administration of antibiotic therapy according to their respective culture and antibiogram results. The first patient had a satisfactory response to treatment and was discharged within 4 weeks of admission. The second patient, due to the presence of human immunodeficiency virus infection, died on the 5th day (14).

One of the clinical diagnoses that the patient may consider is Ludwig's Angina, which is a diffuse cellulitis of the submandibular, sublingual and submental space, characterised by its rapid spread to adjacent tissues. One of the elements to watch out for are dental infections, especially of the second and third molars. This pathology is commonly polymicrobial and is related to the normal flora of the oral cavity. It is usually associated with Streptococcus viridans, anaerobes, fusobacterium nucleatum, actinomyces and peptostreptococci. Other findings on physical examination include "woody" induration with crepitus, along with an erythematous floor of the mouth. Timely diagnosis and treatment of this pathology is of vital importance due to the long list of complications that can occur, which include airway jugular obstruction. internal vein thrombophlebitis, mediastinitis, necrotising fasciitis, empyema, pericardial effusion, osteomyelitis, subphrenic abscess, aspiration pneumonia and pleural effusion. Practically, this infectious disease is potentially lethal, with a mortality of 8%. In general, Ludwig's angina originates from a dental infection, a penetrating injury to the floor of the mouth, osteomyelitis or mandibular fracture, otitis media, tongue piercing, sialadenitis (infection of the salivary glands). In a 2017 case from a hospital in Ohio, a 54-year-old female patient was reported who presented with this pathology after a molar fracture. In this case, based on the clinical history and laboratory and imaging tests, the diagnosis of this pathology was reached; therefore, broad-spectrum medication was administered for management (Piperacillin/tazobactam, cefotaxime) and methylprednisolone; subsequently upon discharge, amoxicillin + clavulanic acid was administered for the treatment of this patient for 7 more days (15). In another clinical case reported in 2019, they mention a similar treatment, in a 33-year-old male patient, non-smoker, who presented a similar picture; although, his treatment duration was extended due to complications, such as a multiloculated empyema, where a recombinant tissue plasminogen activator was administered and a chest tube was placed for the management of this patient (16). In the clinical case presented, we decided to treat the

patient with 3rd generation cephalosporins (ceftriaxone) and clindamycin, based on the oral bacterial aetiology, which caused the pneumonia and subsequent pleural effusion for more than 6 days. However, when no improvement was found, it was decided to rotate antibiotic therapy to Piperacillin/Tazobactam and Meropenem for the management of this aetiology. This is a reflection of the high antibiotic resistance that has been generated in recent years.

Non-surgical management includes thoracentesis and chest tube placement. Thoracentesis involves aspiration of pleural fluid through a percutaneously inserted catheter, which may be placed by ultrasound or tomography. Possible complications include haemothorax, pneumothorax, malpositioning of the catheter and bronchopleural fistula. The duration of treatment is usually no more than 7 to 10 days or when drainage is minimal. In patients who do not respond to treatment, or who require prolonged periods of chest tube presence, surgical intervention should be considered (17). In the clinical case presented, due to limited resources and lack of prompt acceptance by a more complex unit, it was decided to place a thoracentesis catheter and perform continuous drainage of the catheter.

In a case report from Sao Paolo in 2019, a 34-year-old male patient presented with a 15-day history of neck oedema, local pain and fever. 17 days earlier, he had undergone dental surgery. A CT scan of the neck, chest and abdomen showed a collection affecting the retromandibular, submandibular, parapharyngeal and mediastinal spaces, as well as bilateral pleural effusion. On admission, sepsis management was initiated with isotonic saline and broad-spectrum antibiotics (ceftriaxone, clindamycin) (18). In this clinical case, due to the absence of care of his teeth, especially lower molars 2 and 3 on the left side, it was decided to treat on the basis of oral bacterial aetiology as the cause of the clinical picture.

Patients with pleural effusion had higher mortality than those without (73.8% vs. 66.1%); and in-hospital mortality was 38.7%, at one month 43.1%, at 6 months 63%; hospital stay 17.6 days, and in ICU 7.3 days (19). In this clinical case, it was shown that the different management and the attempt to refer the patient to another health unit, which was not received, was a determining factor in the patient's death 2 days after requesting medical discharge.

In China, a 2019 study reported a case of a 41-year-old male patient with severe dental infection with maxillofacial and neck involvement admitted to a local hospital. The clinical picture evolved with dissemination of the infection to the floor of the mouth, submandibular space, neck, mediastinum; in addition, the patient was found to have dyspnoea and dysphagia. During this assessment, several specialists were consulted, including otorhinolaryngologists, intensivists and internists, where they started antibiotic therapy with vancomycin and immediate drainage of abscesses. However, despite the various treatments, the patient died of sepsis and multiple organ failure on the third day of hospitalisation (20).

Dental infections are commonly spread diseases if not treated early. Such dissemination can occur in the mediastinum, thorax, abdomen, head and neck. One of the possible consequences of such infections is pleural effusion,



empyema, sepsis and even death. Characteristic of the presence of this pathology is that the treatment is complicated and the consequences can lead to a very high mortality rate (20).

CONCLUSIONS

- In the case presented, the social conditions and risk factors of the patient, as well as the location of the basic hospital in Amazonia, 4 hours away from a more complex service, led to a delay in therapy and the timely performance of complementary imaging tests.
- As health professionals, we must always remember to manage patients as a team, without prioritising or minimising pathologies. Furthermore, we must be involved in the social and political sphere in order to be able to contribute to the development of new policies and infrastructures that benefit patients.
- Neck abscesses are the product of dental disorders which, if not treated immediately, are a strong predisposing factor for infections in other regions of the body through dissemination, such as the lung, mediastinum and pericardium. The different causes of empyema should be taken into account, because diagnosing the possible aetiologies of empyema can lead to a correct and more targeted management and treatment of the cause.
- The incidence of empyema as a consequence of deep neck abscess is rare but has a high mortality due to complications such as necrotising descending mediastinitis.
- Delay in diagnosis and adequate treatment defines the progression of the infection and its complications, which have an impact on immunocompromised patients and patients with social factors such as alcoholism.
- Imaging studies, although not definitive for diagnosis, provide guidance for appropriate treatment, including surgery if necessary.

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Table 1. Blood Biometry		
Leukocytes	15170	
Neutrophils	88%	
Lymphocytes		
Platelets	267000	
Haematocrit	45%	
Haemoglobin	14.6	

Source: Morona Santiago Hospital

Table 2. Blood Chemistry		
Glucose	103	
Urea	49.50	
Creatinine	0.98	
PCR	38.6	
Sodium		
Potassium	3.82	
LDH	378	
TGO	42.9	
TGP	27.9	
GGT	418.6	
Total Protein	4,99	
Albumin	2,22	
Globulin	2,77	
Source, Morona Santiago Hospital		

Source: Morona Santiago Hospital

Table 3. Pleural fluid study

Glucose	60.2
LDH	18931
Proteins	
Albumin	1.5

Source: Morona Santiago Hospital

Pleural fluid study

Light criteria		Result
Pleural LDH:	Serum LDH: 378	50
18931		
Pleural proteins: 3 Serum protein:		0.6
_	4.99	

Prepared by: The authors.

Table 5. Crops grown

Pleural fluid culture	
Corynebacterium spp	
Sputum cultivation	
Candida albicans, Moderate gram-negative bacilli	

Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

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Illustration 1. SIMPLE THORAX TOMOGRAPHY, EVIDENCING RIGHT PLEURAL SPILL.



Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

Illustration 2. SIMPLE THORAX TOMOGRAPHY IN SAGITTAL CUT, EVIDENCING RIGHT PLEURAL SPILL WITH TABICATIONS.



Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.

ILLUSTRATION 3. CT SCAN OF THE CHEST, CORONAL SECTION, SHOWING RIGHT PLEURAL EFFUSION WITH SEPTATIONS.



Source: Morona Santiago Hospital in collaboration with Cuenca Hospital.



BENEFITS AND DRAWBACKS OF e-LEARNING IN MAPEH: A DISCURSIVE PRESENTATION FROM A TEACHER'S VIEWPOINT

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ABSTRACT

E-learning is a type of learning conducted digitally via electronic media, typically involving the internet. It can be accessed via most electronic devices including a computer, laptop, tablet or smartphone, making it a versatile and easy way for students to learn wherever they are. E-learning resources come in a variety of forms – from software programmes and digital courses to interactive online platform and apps. The advantages of e-learning are: learn from anywhere, at any time - since online education only requires a laptop or a smartphone with an internet connection, students can learn anywhere at any time. This flexibility helps working professionals to pursue new courses without giving up their jobs. They can learn at weekends or in their free time. All the course materials are readily available at student's fingertip; save money and time - online education is much more cost effective than completing a regular on-campus degree. It helps students who cannot afford a regular schooling to accomplish their dream without spending a fortune on education. Since you study at your own time, it helps to save time as well; learn at your own pace - Everyone learns at a different pace. In a classroom, where all students are being together, following the lesson may be difficult. This is a serious disadvantage of traditional education. Online education solves this issue.

In online education, all course materials are provided beforehand, and students learn by taking their own time. They can also clarify their doubts by live chats or forums as well; recognition of online degrees - online degrees are accepted by many companies and employers. Many of them are encouraging their employees to get online education as well.

The disadvantages of e-learning are: chances of distraction are very high students can easily lose track of their studies in online education since there are no face-to-face lectures and classmates to remind you about assignments. Until and unless you keep yourself motivated, it takes a long time to complete your course or abandon your entire course; fraudulent online courses - there are many websites that offer online courses without the accreditation of any educational authority or in the name of fake authorities. Such courses will not help you to get any job. So it is very important to choose an accredited online/distance program before you spend money on it; cannot do courses that require workshops like MAPEH. You cannot do an engineering course or any other course that requires labs or hands-on workshops online. Also in courses, you miss the chances of professional networking, overseas experience, etc. which are considered important parts of a course.

KEYWORDS: online learning, online teaching, teaching and learning, education 4.0, the digital education and technology

THE PROS AND CONS OF E-LEARNING

A student who studies remotely can decide when and how much time to devote during a semester to studying the material. They make an individual study schedule for themselves. Some educational institutions give their students the opportunity to postpone and return to their studies without having to pay tuition fees again.

You Have The Opportunity To Study At Your Own Pace

Students do not have to worry that they will leave their classmates behind. You can always go back to studying more complicated questions, watch video lectures several times, read correspondence from the teacher, and you can skip already known topics. The main thing is to successfully pass intermediate and final attestations.

You Can Study Any Place

Students can study without leaving their home or office, anywhere in the world. To start learning, you must have a computer with internet access. Absence of the need to attend an educational institution every day is a definite advantage for people with disabilities, for those living in hard-to-reach areas, imprisoned parents with young children.

Offers On-The-Job Training

It is possible to study remotely in several courses simultaneously to receive the next higher degree. For this purpose, it is not necessary to take a vacation at the main place of work or go on business trips. There are educational organizations that organize corporate training (professional development) for employees of firms and civil servants. In this case, the study does not interrupt the length of service, and the issues studied can be immediately applied to working life.

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High Training Results

Studies by American scientists show that the results of distance learning are not inferior or even superior to traditional forms of education. Distance learning students study most of the learning material on their own. This improves the memorization and understanding of topics learned. And the ability to immediately apply the knowledge in practice at work helps to consolidate it. In addition, the use of the latest technology in the learning process makes it more interesting and lively.

Offers Mobility

Communication with teachers/tutors is carried out in different ways, both online and offline. Consulting with a tutor by email is sometimes more effective and faster than scheduling a faceto-face meeting in person or by correspondence.

• Availability Of Training Materials

The students who study remotely are unfamiliar with such a problem. Access to all necessary literature is available to students after registration on the university website or they receive educational materials by mail.

e-Learning Education Is Cheaper

If we compare training in a single specialty on a commercial basis, both full-time and remotely, the second will be cheaper. The student does not have to pay for travel, accommodation, and in the case of foreign universities, they do not need to spend money on a visa or foreign passport.

It Is Convenient For The Teacher

Teachers and tutors who teach remotely can pay attention to more students and work while on leave.

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GROUNDWATER PROBLEMS IN PUNJAB WITH SPECIAL REFERENCE TO SRI MUKTSAR SAHIB DISTRICT

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ABSTRACT

Punjab is gifted with rich reservoir of water resources but after the advent of Green Revolution, the scenario completely changed. Although Punjab became the bread basket of the entire country, the state started to face the new set of problems. The water level started to deplete in the central districts of Punjab whereas the southwestern part of the state became waterlogged due to the extensive canal network. The more and more usage of chemicals led to contamination of soil, air and water in the entire state. The present study is an attempt to focus on the issues of groundwater in Punjab with prime focus on the district of Sri Muktsar Sahib which is facing the problems of waterlogging, salinity and the poor quality of groundwater owing to the presence of various chemicals such as uranium, nitrate, chloride, fluoride, etc. The study will also mention about the laws and the ongoing programs on the conservation of groundwater.

KEYWORDS: Groundwater, Groundwater Quality, Salinity, Waterlogging,

I. INTRODUCTION

Punjab is a small state which occupies 1.57% geographical area of the country. Although Punjab has a small area but it is blessed with the fertile lands and rich water resources. At present there are three rivers Ravi, Beas and Sutlej which flows through Punjab and has well developed 14500 kms long canal network spread throughout the state (Department of Water Resources, Punjab). Due to its abundant resources, Punjab has been at the forefront in adopting the Green Revolution and was the complete success. It contributes around 55% of the total production of the wheat and around 42% of the total production of the paddy to the central pool. But along with the benefits which Green Revolution brought, it has also brought the several ill effects from the ecological point of view. The Green Revolution demanded the heavy irrigation, chemicals, fertilizers, pesticides which although increased the productivity to the great extent but resulted in the several problems such as water depletion, waterlogging, poor quality of water and in turn several serious health issues in the state of Punjab.

II. AREA OF STUDY

Sri Muktsar Sahib district is one of the 23 districts of Punjab and was carved out of Faridkot district on 7th November, 1995. Colloquially, it is known as Muktsar and is located in the southwest zone of Punjab. It lies between latitudes 29° 54' 15.95" and 30° 40' 9.57" N and longitudes 74° 14' 56.00" and 74° 49' 22.34". The district constitutes 5.19% of the area of the state with an area of 2615 sq km. The district is bounded by the state of Rajasthan and Harvana in the south, the district of Faridkot in the north and Ferozpur in the west and Bathinda in the east. The district is divided into three sub-divisions i.e. Muktsar, Malout and Gidderbaha sub-divisions. From the administrative point of view, the district is divided into blocks namely Muktsar, Malout, Gidderbaha and Lambi. There are four cities and 234 villages in the district. The district has hot and semi-arid type of climate with an annual rainfall of 430.7 mm. The seirozem and desert soils are the two soils found in the district.



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S. No.	Contents	Statistics
1.	GENERAL INFORMATION	
	i. Geographical Area (sq. km.)	2630
	ii. Administrative divisions	
	(As per census 2011)	
	(
	No. of Tehsils	3
		-
	No. of Blocks	4
	No. of Villages	234
		-
	iii. Population (As per census 2011)	9,02,702
	iv. Normal Annual Rainfall (mm)	430.7 mm
2.	GEOMORPHOLOGY	
	i. Major Physiographic Units	Alluvial plains and sand dunes
	ii.Major Drainage	South, south western direction
3.	LAND USE (Sq. Km.)	
	i. Forest Area	38
	ii. Net area sown	2260
	iii. Cultivable Area	2210
4.	MAJOR SOIL TYPES	Two, Seirozom soil and Desert
		soil
5.	AREA UNDER PRINCIPAL CROPS	416000ha
	(Wheat- 206000ha, Rice- 113000 ha, Cotton – 97000 ha)	
6.	IRRIGATION BY DIFFERENT SOURCES	
	(Area and Number of Structures)	
	i. Dugwells	25000ha
	ii. Tubewells/Borewells	59145 No. Tubewells
	iii. Tanks/Ponds	
	iv. Canals	200000 ha
	v. Other sources	
	vi. Net Irrigated Area	225000 ha
	vii. Gross Irrigated Area viii. Gross Cropped Area	434300 ha 436000 ha
7.	NUMBERS OF GROUNDWATER MONITORING	430000 lla
7.	NUMBERS OF GROUND WATER MONITORING	
	STRUCTURES / WELLS OF COMP	
	STRUCTURES / WELLS OF CGWB i. Number of Dugwells	8
	ii. Number of Piezometers	3
8.	PREDOMINANT GEOLOGICAL FORMATIONS	Alluvial
9.	HYDROGEOLOGY	2 muviai
	i. Major Water Bearing Formation	Sand
	ii. Pre-monsoon depth to water level	0.67 mbgl to 7.3 mbgl
	iii. Post-monsoon depth to water level	0.06 mbgl to 7.78 mbgl
	iv. Long-term water level trend in 10 yrs in m	Rise: 0.008 to 0.322 m/yr
	/yr (2002-2011)	
		Fall: 0.031 to 0.209 m/yr
I	1	

Table	1.	Muktsar	District	at a	Glanc	e

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10.	GROUNDWATER EXPLORATION BY CGWB	
	i. Number of wells drilled	
	Exploratory Well	
	Observation Well	2
	Piezometer	
	Slim Holes	3
	ii. Depth Range (m)	332-422 m
	iii. Discharge (liters per minute)	3.5 lpm
	iv. Storativity (S)	0.00157
	v. Transmissivity(m2/day)	3.13 x 10 ⁻²
11.	GROUNDWATER QUALITY	
	i. Presence of chemical constituents more than	
	the permissible limit	226 5000
	EC, in micromhos	336-5980
	F, in mg/l	0.08-6.11
	As, in mg/l	nd-0.0035
	Fe, in mg/l	nd-0.973
	ii. Type of water	Ca- Mg- HCO3 & Na mixed
		anions
12.	DYNAMIC GROUNDWATER RESOURCES (MCM)	As on 31. 03. 2011
	i. Annual Replenishable Groundwater resources	779.14 MCM
	ii. Net Annual Groundwater Draft	540.85 MCM
	iii. Projected Demand for Domestic and Industrial uses upto 2025	24.60 MCM
	Stage of Groundwater development	69
13.	AWARENESS AND TRAINING ACTIVITY	Nil
14.	EFFORTS OF ARTIFICAL RECHARGE AND RAINWATER HARVESTING	Nil
15.	GROUNDWATER CONTROL AND REGULATION	
	i. No. of Over Exploited blocks	Nil
	ii. No. of Critical blocks	Nil
	iii. No. of Semi Critical blocks	Nil
	iv. No. of blocks notified	Nil
16.	MAJOR GROUNDWATER PROBLEMS AND ISSUES	Salinity and Water logging

Source: Central Ground Water Board, 2013

III. GROUNDWATER ISSUES IN PUNJAB

Punjab is an agrarian state and its rate of success lies in the availability of abundant irrigation facilities. Groundwater is the chief source of irrigation water and further the facility of free electricity has put the increased burden on the groundwater of Punjab. There is 170% development of groundwater in Punjab whereas the development index for India is 58%. It clearly indicates towards the extremely critical situation of groundwater in Punjab. The table 2 explains about the status of groundwater resources in Punjab. It also talks about the critical and over exploited blocks. Further the table also points towards the deterioting groundwater quality of Punjab and mentions about the presence of various chemicals in the groundwater of

different districts of Punjab. Around 2,00,000 hectares of area of Punjab is waterlogged which is mostly the problem of southwest Punjab which mainly comprises the districts of Bathinda, Faridkot, Fazilka and Muktsar. These districts also face the issue of salinity which has rendered the water unsuitable for drinking as well as for irrigation purposes. On the other hand, the water table is declining at an alarming rate in the remaining Punjab. As the water table is declining, the farmers are shifting to submersible pumps and digging more deep to extract more and more groundwater, adding further to the already critical situation.

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Dynamic Ground Water Resources		
Net Annual GW Availability	20.35 BCM	
Annual Ground Water Draft	34.66 BCM	
Ground Water Deficit	14.31 BCM	
Stage of Water Development	170%	
Ground Water Development & Management		
Over Exploited	64 blocks in 1964; 110 Blocks out of 138 blocks in 2009	
Critical	3 Blocks in 2009	
Semi-Critical	2 Blocks	
Additional Ground water problems		
Water logged area	2,00,000 ha	
Salinity (EC > 3000 μ S/cm at 25 ° C)	Firozepur, Faridkot, Bathinda, Mansa, Muktsar,	
	Sangrur(Area ~1 million ha)	
Fluoride (>1.5 mg/l)	Amritsar, Bathinda, Faridkot, Fatehgarh Sahib,	
	Firozepur, Gurdaspur, Mansa, Moga, Muktsar, Patiala,	
	Sangrur	
Chloride (> 1000 mg/l)	Firozepur, Muktsar	
Iron (>1.0 mg/l)	Bathinda, Faridkot, Fatehgarh Sahib, Firozepur,	
	Gurdaspur, Hoshiarpur, Mansa, Rupnagar, Sangrur	
Nitrate (>45 mg/l)	Bathinda, Faridkot, Fatehgarh Sahib, Ferozepur,	
	Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala,	
	Ludhiana, Mansa, Moga, Muktsar, NawanShaher,	
	Patiala, Rupnagar, Sangrur	

 Table 2. Status of Groundwater Resources of Punjab

Source: Punjab State Action Plan on Climate Change, 2014 Some of the major issues that need to be addressed in the state of Punjab are outlined by Rajni Sharma (2014). They are as mentioned below:

- Depleting Ground Water
- Water Logging in Southwest Punjab
- Saline / Brackish Water
- Scope of Ground Water Development in Flood Plains and Hilly areas
- Shortage of water in Urban Areas
- Contamination of Ground Water

3.1 Groundwater issues in Muktsar

- a) Groundwater Development: The groundwater resource potential was assessed for all the blocks of the district using the GEC 97 methodology in the year 2011. It was found that all the blocks have the development of below 100% (Malout 61%, Muktsar 78%, Gidderbaha 101%, and Lambi 41%) which reveals that all the blocks fall in the safe category of groundwater development. Overall the development index of the district is 69% (CGWB 2013).
- b) Salinity: The groundwater is alkaline in nature. It is moderate to highly saline with the Electrical conductivity of EC 336 to 5980 μ S/cm (CGWB 2013). There are various other constituents that are present in the groundwater in the varying degrees. There are certain elements which are more than the permissible limit which makes the water of the district unpotable. It was found that 75% of the groundwater was not

suitable for drinking as well as domestic purposes. The waters of the district fall in the classes of C3S1, C3S3, C3S4, C4S1, C4S2 and C4S4. The water of classes C3S1 and C4S1 cause the salinity hazards and the water of class C3S3 cause both salinity and sodium hazards. These classes of water can be used to irrigate salt tolerant crops. The classes C3S4 and C4S4 should be avoided at all the costs as they lead to high salinity and sodic hazards.

- c) **Waterlogging:** The whole of the district is facing the problem of waterlogging which becomes more severe in the post monsoon period. There are various causes which are responsible for waterlogging as mentioned by Sukhdeo Singh (2013).
 - Due to cracks in lining of twin canals of Rajasthan and Sirhind Feeder which runs parallel to the east of Muktsar, there is constant seepage which results in the rise of water table.
 - Poor drainage system has further added to the problem. At first place the drains are not constructed and where they are constructed they are not cleaned regularly.
 - The quality of groundwater is poor so it remains unused and causes the water table to rise.
 - There is huge network of distribution and field channels which are unlined and result in the seepage as well as the back flow of water during the time of irrigation.



The waterlogging has caused the change in the cropping pattern of the district from wheat-cotton to wheat-paddy as cotton is very sensitive to waterlogging. The same is the case with sugarcane and sarson as they can also not tolerate the excesss water. The waterlogging has also affected the productivity of the crops. (Sukhdeo Singh 2013)

d) Chemical Pollution: The traces of several heavy metals have been found in the groundwater of Muktsar which is above the permissible limits and are causing the serious health issues in the district. These have been mentioned in the table 3.

Contaminant	Presence in Muktsar district	Permissible limit (WHO Standards)	Effects
Uranium	43 µg/L	30 µg/L	Neurological disorders
			Damage to kidneys
Nitrate	>100 mg/L	50 mg/L	• Weakness
			• Excess heart rate
			• Fatigue
			Dizziness
Flouride	>1.5 mg/L	1.0 mg/L	Dental fluorosis
			Skeletal fluorosis
			 Impacts development of brain in young children
Arsenic	>50 µg/L	10 µg/L	• Liver, kidney and skin damage.
			Decrease blood haemoglobin.
			Chronic and acute toxicity.
			• Can cause various forms of cancers.
			Hindrance of
			• Findrance of children's development.
			ennuren s development.
Chloride	>1000 mg/L	250 mg/L	• Changes in drinking water taste.
			• At high levels, it can deteriorate water heaters, municipal pipes, pumps and works equipment

Table 3. Contaminants in groundwater of Muktsar and their effects

Source: Various sources

IV. LEGISLATION ON GROUNDWATER POLLUTION

a) The Punjab Preservation of Subsoil Water Act, 2009 The state government came up with The Punjab Preservation of Subsoil Water Act, 2009 to mitigate the problem of declining water table in the state. It is "An Act to provide for prohibition of sowing nursery of paddy and transplanting paddy before the notified dates, and for the matters connected therewith or incidental thereto" (Department of Agriculture and Farmer Welfare). As per the provisions of the act, the farmers could not sow the nursery before 10th may and transplantation of paddy could not be done before 10th june. Its main aim is the conservation of groundwater by mandatory delay in the nursery and transplantation of paddy so that the severe phase of evapotranspiration is over. The act also provides for the destruction of the crop and penalty in case of the violation of the provisions of the act. The impact of the act can be seen as it has resulted in the reduction in rate of decline of water table from 0.9 m (2000-2008) to 0.7 m (2008-2012) (Tripathi et al. 2016).

b) The Punjab Water Resources (Management and Regulation) Act, 2020

This is "an act to provide for the management and regulation of water resources of the State for ensuring the judicious, equitable and sustainable utilization and management thereof, and for matters connected therewith or incidental thereto" (Government of Punjab 2020). The Punjab Water Regulation and Development Authority have been established under the Section 3 of this act which is responsible for management and regulation of water. The act also provides for the establishment of an Advisory Committee on Water Resources which shall be consulted by the Authority on the questions of policy and directions that need to be given to the



general public. The government has also established the Punjab State Council for Water Management and Development in May 2020 under the Section 13 of the act. The main function of the Council is to approve the policies and programmes for the quality water supply. The council is also responsible for reviewing, modifying and approving the State Water Policy and Integrated State Water Plan. The act also provides for the several other provisions like appointment of the enquiry officers, penalties and investigations, powers of the Authority, etc.

V. ONGOING PROGRAMMES

There are some programmes ongoing to check waterlogging and groundwater quality. Few of them are mentioned below:

- Relining of the twin canals of Rajasthan and Sirhind Feeder
- Installation of Reverse Osmosis systems in the villages
- Reclamation of the waterlogged areas
- Programmes under NABARD XXVIII and Jal Jeevan Mission are underway with the Department of Water Supply and Sanitation
- Groundwater Recharge programmes
- Cleaning of drains is done every year
- Sub-Surface Scheme

VI. RECOMMENDATIONS

Some of the recommendations are provided below:

- i. There is need of crop diversification. The state government should provide incentives to the farmers who cultivate the other crops. Also the procurement facilities of the other crops need to be improved.
- ii. There should be the conjunctive use of canal water and groundwater.
- iii. There is a need to improve the drainage system to improve the situation of waterlogging.
- iv. Drip irrigation should be promoted as it will solve both the problems of depleting water table and waterlogging.
- v. Salt resistant crops, fish farming and prawns farming should be encouraged in areas affected by waterlogging and salinity.
- vi. There is need to generate more awareness among the masses regarding the importance of precious resource.
- vii. The suitable management measures should be used to improve the quality of groundwater.

VII. CONCLUSION

As we have studied, Punjab is going through a very critical phase and if necessary steps are being not taken on time it would lead to the water crisis. There are several issues such as depleting groundwater, waterlogging, salinity and chemical pollution which need to be addressed immediately. If we talk about Muktsar district, the line "water, water everywhere and not a drop to drink" from Samuel Taylor Coleridge's poem, 'The Rime of the Ancient Mariner' very well suits the situation. There is abundance of water in the district owing to the high water table but its saline and of poor quality and is not suitable for drinking as well as irrigation purposes. Although the government is taking several initiatives to solve the problem, a lot more needs to be done to improve the situation and provide people with the safe and clean drinking water.

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AIR PURITY DETECTION USING IOT

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ABSTRACT

Increased levels of air pollution have come from technological advancements during the industrial and urban eras, as well as an increase in the number of vehicles on the road. Excessive pollution in the air has a negative impact on both economic growth and the environment. The foundations of this project are the representation and implementation of an Air Quality Analysis System. It is critical to evaluate air quality in the future in order to raise awareness about the need of guaranteeing a healthy future. The sensors analyze dust particles, carbon dioxide, carbon monoxide, nitrogen dioxide, and sulphur dioxide levels in the air using wireless sensors. These measurements are transmitted to a gateway, which delivers them to a cloud database via cellular or Wi-Fi connection. To give data on air quality, the information is examined in the cloud. We will utilize the Blynk iot stage to make an air quality checking framework for this undertaking.

I. INTRODUCTION

Continued exposure to poor air quality surroundings is a serious public health risk in both industrialized and developing countries. Pollutants responsible for poor air quality are estimated to cause almost 2.5 million premature deaths worldwide each year. Because of its connection to industrialisation, public health issues connected with poor air quality disproportionately affect industrialized and developing countries. When airborne contaminants are found, it is frequently simple to take corrective measures to enhance air quality. The Air Excellence Guide (AEG) is a possible common indicator of air quality. The Air Quality Indicator (AQI) is computed and supported on air pollutants such as CO and NO2 compounds that consume opposing properties that happen to the environment and human health. The

Air Quality Indicator is a range that reflects the best meditation of a certain air unused matter at a specified moment. I propose an air quality and air pollution monitoring system that uses the Internet of Things to monitor and check live air quality and air pollution in a given location (IoT). It employs air sensors (Gas Sensor MQ135) to detect the presence of hazardous gases/compounds in the air and continuously transmits this information. Furthermore, the system continuously measures and reports the air level. This study requires people to determine which components of the air are contaminated. Because nodemcu esp12E has Wi-Fi, we can remotely monitor air pollution with module node mcu esp12E.

II. LITERATURE REVIEW

[1] The semiconductor gas sensors could be used to track the target gas concentrations. Using semiconductor sensors, a device has several advantages such as low cost, rapid response, low maintenance, continuous measuring capacity, and so on. A compact scale is one of the system's main advantages.WLAN, network server, and site server Gateway Node are all included in a single lightweight edition. That's a great size for the device. This gadget also aids in the incorporation of various hardware components into the controller as a credit scale microcomputer. The

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network can be modified by including more sensor nodes. Because of its extensive nature and calculation testing, this device is really useful. The technology can be used to track emissions as a smart portable tool.

[2] To enhance air quality, a system to monitor the environment's air utilizing Arduino microcontroller and IOT Technology is presented. The use of Internet of Things (IoT) technology improves the process of monitoring many parts of the environment, such as the air quality monitoring issue discussed in this study. The MQ135 and MQ6 gas sensors are used to detect several types of harmful gases, and the Arduino is at the core of this project. Which is in charge of the entire procedure. The Wi-Fi module connects the entire process to the internet, and the visual output is provided by an LCD.

[3] This platform's cloud computing- based web server analyses real-time data and provides visual effects to represent the interior air quality conditions. In addition, the web server was built to send out alerts to mobile app users or facility management when air quality was moderate or poor, allowing responsible parties to take quick action. A platform for enhancing indoor air quality is created via realtime monitoring and a quick alarm system.

[4] Using the Internet of Things, develop a monitoring system for Indoor Air Quality. Sensors, protocols, and the Internet of Things were employed in the monitoring system discussion material to combat IAQ. MQ gas sensors, DHT, and SHT are examples of inexpensive sensors that may be utilized in an IAQ monitoring system. To develop IAQ monitoring and control systems that are capable of working autonomously. The Internet of Things allows users to monitor their surroundings from anywhere via a Wi-Fi or ethernet connection. Pollutants most commonly used in observations are temperature, humidity, and CO2. Developments in information systems make it easy to conduct and build an integrated monitoring system and produce accurate and efficient data.

[5] The system employs sensors to detect hazardous gases that are more dangerous to human life. By using the sensor inputs and sending them to the screen. When the parameter concentration of smoke exceeds the normal range after the code is run, analogue values are generated. The sensor will update the numbers every 30 seconds by feeling the air. The generated values are saved in a database so that the authorized user can view the information from any location.

[6] A system which might observe the run of toxicant gases and hence the amount of pollution exploitation Raspberry-Pi and IoT is planned which might stop deadly accidents. By the utilization of MQ135/6/7 gas sensors the toxic gases will be perceived or sensed and warning will be given to save the lifetime of individuals. Raspberry-Pi is the centre of this module that controls the whole method. The Wi-Fi module connects the total method to the web and an LCD is employed for the visual Output. The air condition observing system will facilitate the innovation of recent practices to overcome the issues of the highly-polluted areas, which may be a major issue. It efficiently fosters the construction of a healthy life by supporting modern technology.

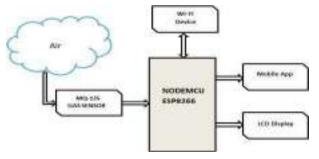
III. EXISTING SYSTEM

The existing project is done using Arduino UNO which connects with ThinkSpeak platform. This device connects with the Wi-Fi to send the data. They used a MO-135 gas sensor to monitor and they also provided a character LCD to display the sensor data. In this project the Arduino is powered and some initial data is shown in the LCD then work goes to the MQ-135 sensor. The Arduino sketch manages the sensing and sending of data to ThinkSpeak. This Arduino is loaded to board by Arduino IDE. Using IoT in smart homes, an air quality monitoring system was constructed and installed indoors to see how people can live in a place with a rich and good atmosphere. The condition indoors was analyzed by MATLAB simulation, the data of fine particulate matter and CO2 in the indoor environment was analyzed using fuzzy control, and a logic base was established based on the AQI data for better air quality in homes.

IV. PROPOSED SYSTEM

This research aims to develop an air pollution monitoring system that can be installed in a specified locality and to improve the system from previously developed systems by creating an android app that can be used by the public easily. In this new proposed system of the Air monitoring System, The ARDUINO IDE plays a key role in controlling the entire system. MQ135 sensor is used for identifying dissimilar ecological factors like alcohol, NOx, CO2, benzene, ammonia, smoke, sulphide steam and moisture. Major sensors are linked with a NODE MCU board and also an LCD unit is connected to the output of the NODE MCU. The connection between hardware components is then established using the ARDUINO IDE software tool. The programming of sensing devices to the NODE MCU is done according to the user's needs. The data from the sensors is displayed on the LCD, and then information is continuously communicated, and the user receives an air quality notification or warning via the BLYNK App.

V. ARCHITECTURE DIAGRAM



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VI. REQUIREMENTS HARDWARE REQUIREMENT • NODEMCU ESP8266:



Description: NodeMCU is an open source platform based on the ESP8266 that allows things to be connected and data to be transferred over the Wi-Fi protocol. Some of the most significant features of a microcontroller are GPIO, PWM, ADC, and so on; by supplying them, it may solve the needs of many projects on its own. For NodeMCU, an open-source firmware, there are open-source prototype board designs available. The term "NodeMCU" is derived from the terms "node" and "microcontroller" (microcontroller unit). The word "NodeMCU" refers to the firmware, not the development kits that go with it. The designs for the firmware and prototyping board are both open source. The Nodemcu ESP8266 is becoming increasingly popular, with nearly half of all IoT projects now using it.

Function: NodeMCU is used in this project to fetch the data that is being detected and transport it to a site where other procedures can be performed.

• MQ-135 GAS SENSOR



Description: The MQ-135 gas sensor is extremely sensitive to ammonia, sulfide, and benzene series steam, as well as smoke and other dangerous gases. It is a low-cost sensor for applications that can detect any type of harmful gas. This module consumes 5V and outputs digital logic outputs such as 0 and 1, which may be used to identify whether or not a dangerous gas has been identified. The output is 0 (LOW) when no gas is detected and 1 when gas is detected (HIGH).

Function: The gas sensor is important in this project since it is used to detect dangerous substances in the air and relay them to the nodemcu.

• 16x2 LCD

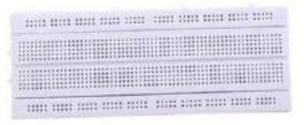


Description: LCD - Liquid Crystal Display - is a type of flat panel display that operates primarily using liquid crystals. LCDs represented a significant advancement over the technology that they superseded, which included lightemitting diodes (LED) and gas-plasma displays.

LCDs employed far thinner screens than cathode ray tube (CRT) technology. LCD displays require substantially less electricity than LED and gas-display screens because they function on the idea of blocking light rather than emitting it. An LCD's liquid crystals generate a picture with the help of a backlight, which emits light from an LED.

Function: The LCD is used to display the output, which indicates whether or not the air is contaminated.

BREADBOARD



Description: A breadboard is a basic gadget that allows you to build circuits without the need of solder. It is a building foundation for electronic prototyping. Because we can reuse them, they are ideal for constructing temporary prototypes and experimenting with circuit design. The lead pitch (the distance between the clips) is generally 0.1 inch (2.54 mm). Integrated circuits (ICs) in dual in-line packages (DIPs) can be placed to span the block's centerline. To complete the circuit, interconnecting wires and discrete component leads can be placed into the remaining open slots.

Function: The breadboard was useful for repairing the components without the requirement for soldering. It made it easier to insert our components and connect them.



• JUMPER WIRE



Description: A jumper wire is an electrical wire or a group of them. They are also known as jumper, jump wire, and DuPont wire. There are different types of jumper like male to male, female to female, and male to female etc., where female specifies connectors and male to pins.

Function: Here we have used jumper wires like male to male, female to male and female to female to connect different components. These were used as a bridge that connected various parts.

A. SOFTWARE REQUIREMENT

ARDUINO IDE

In addition to a code editor, this open-source software provides a message area, a text console, a toolbar, and a menu system. The Arduino IDE is used to upload code to Arduino boards.

• BLYNK IOT PLATFORM

BLYNK is an IOT platform that is used to control Arduino, NodeMCU, and Raspberry Pi via the internet. This is a bridge that communicates between the smartphone and the hardware. It allows us to create awesome interfaces using various widgets which are provided by the platform itself.

VII. CONCLUSION

This system is very simple as compared to the existing air quality monitoring systems. As we can see in the output the quality of the air is detected and the values are shown in ppm. This project is also used for pollution monitoring purposes in cites. In future, this prototype can be extended in real time implementations of urban cities and also can be implemented in Google Maps for live map view of pollution level. The semiconductor gas sensors may be used to track the gas concentrations of the target gas and it has numerous advantages like low-cost, rapid response and low maintenance. This device also helps one to incorporate certain hardware components into the controller as a microcomputer of credit scale. Through incorporating further sensing nodes, the network can be updated.

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GROW ORGANIC, EAT ORGANIC: A STEP TOWARDS SUSTAINABLE AGRICULTURE

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ABSTRACT

A real challenge for sustainable development in the modern era is the growing population across the world and to meet their demands, farmers are using modern farming practices (such as the use of pesticides, synthetic fertilizers, Stubble burning etc. to enhance crop output). These are causing several problems such as depletion of soil health, climatic changes, drop in river water and ground water table, increases pollution and health diseases like cancer, blood pressure, fragile bones and skin diseases etc. Therefore, GOs and NGOs are taking initiative to promote organic farming practices and aware the people about the excessive use of fertilizers. Organic agriculture is a productive and promising agricultural strategy for environmental sustainability. As it improves soil fertility, eliminates environmental issues and reduces the need of synthetic fertilizers. Meanwhile, this type of agriculture encourages sustainable, long-term economic growth. Rural women are also an integral part of Indian agricultural system so it is important to ensure their involvement in natural resource management and adaptation of organic farming practices as well. Thus, it is suggested to provide trainings to farmers, organize campaigns/ awareness programmes related to organic agriculture.

KEY WORDS: Organic Farming, Climate Change, Sustainable Development, Soil health.

INTRODUCTION

Major environmental problems that the world is currently dealing with include climate change, freshwater depletion, ocean overfishing, deforestation, water and air pollution, and hunger. The management and conservation of the earth's natural resources for present and future generations, as well as for the millions of other species that inhabit our planet, is a key component of sustainable development, which aims to improve human-environment interactions. It is important to maintain and improve our natural resources so that all nations can achieve their basic needs of work, food, energy, water, and sanitation by encouraging steady economic growth, resource conservation, environmental protection, and social advancement and equality.

About 2.78 million hectares of land in India are used for organic farming. Oilseeds, tea, coffee, dried fruits, millets, cereals, spices, and others are some of the major organic products grown in India. India produces a lot of these goods and exports these. India's top three states for organic product cultivation are Sikkim, Uttarakhand, and Tripura. Madhya Pradesh, Rajasthan, and Maharashtra are more states that practice organic farming. In India, approximately 58 percent of population relies mostly on agriculture for their livelihood and it has largest plain areas of the world which is immensely fertile and also known for its varied climatic conditions and soil types. These physical variations along with factors like availability of irrigation, use of machinery, modern agricultural inputs like High Yielding Varieties (HYV) of seeds, insecticides, and pesticides have played their important roles in the evolution of different farming practices in the Indian agriculture sector. Kharif, Rabi, and Zaid are the three distinct cropping and agricultural seasons in India and different crops are grown throughout each of these three seasons. From recent years it is noticed that climate change is major challenge and one of the reasons is conventional farming. Pesticide pollution, soil erosion due to non-seasonal farming, and over-irrigation are causing changes in the levels of carbon dioxide and ozone in the soil, water, and air, which in turn is causing changes in weather patterns around the world. Thus, it becomes a serious issue for development. Therefore to overcome and mitigate this problem, adaptation of organic farming one of the most sustainable way to improve the agricultural production which can definitely lead to sustainability in various aspects.

CONCEPTS AND DEFINITION Organic farming

"Organic farming is a comprehensive system of farm management and food production that combines the best environmental and climate resilient practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards, and high production standards in line with the demand of a rising number of consumers for products produced using organic ingredients and processes." (The European Parliament Regulation of Brussels, 2018)



"Organic farming can be described as pro-active ecological management practices that preserve and improve soil fertility, stop soil erosion, encourage and enhance biological variety, and reduce risks to the health of people and animals as well as the environment."

Organic farming is a combination of agricultural techniques or practices that emphasizes on using natural resources to cultivate food as opposed to synthetic outside inputs. Organic farming is basically a more traditional style of agriculture than most modern farming, despite the fact that it is sometimes referred to as "alternative farming."

Sustainable Agriculture development

"Sustainable development is development that meets the needs of present masses without compromising the ability of future generations to meet their own needs." (**The Brundtland Report, United nations**). In agriculture, sustainability can be achieved by growing an abundance of food without using too many resources or harming the environment. Agriculture should create systems for cultivating crops and rearing livestock that are self-sustaining according to the laws of nature.

Thus, it can be suggested that adopting right practices, policies, generating self motivation and awareness among the farmers will lead to sustainable agriculture and food system. It generally deals with three factors: 1) healthy environment 2) economic profitability 3) socio-economic equity. Therefore, small and large farmers, farm women must incorporate reliable sustained agricultural technologies/inputs to improve the farm production and to raise the economy.

Why Organic Farming?

Farming is the riskiest job. Caustic fertilizers, hazardous insecticides, and several other chemicals cause the risk to many individuals who live or work nearby farms until and unless proper precautions are taken. By switching to organic farming, the use of high-risk chemical products by the farmers is very less so the workers and rural Neighbors have nothing to worry about their health. There are some advantage and benefits of organic farming:

- Organic farming does not allow the farmers to use pesticides, fertilizers, genetically modified organisms, antibiotics and growth hormones to raise the production.
- Organic farming promotes the use of crop rotations and cover crops and encourages balanced host/predator relationships.

- Organic residues and nutrient produced on the farm are recycled back to the soil.
- Cover crops and composted manure are used to maintain soil organic matter and fertility.
- It improves the soil physical properties such as granulation, aeration, and improves water-holding capacity and reduces erosion.
- It ensures that natural resources are used as effectively as possible for immediate benefit and helps in their preservation for future generations.
- It is helpful in maintaining the environmental health by bringing down pollutant levels.
- As reducing the amount of residues in the product, it lowers the risks to human and animal health.
- Cost of production is low but the selling price and export values of organic products are high.

Hence in simplest words, organic farming refers to farming methods that are ecologically sound and utilize organic or biological fertilizers made from plant or animal waste. This employs eco-friendly pest control techniques as well. This approach does not encourage the use of agrochemicals on agricultural land. Through this technique, soil erosion and other environmental consequences are reduced.

Principles Of Organic farming

Organic farming is a method of agriculture that use animal or plant waste as well as organic manure as pest control. It is a brand-new approach to agriculture that improves, preserves, and fixes the ecological equilibrium. Green manures, cow dung, and other organic inputs are used in organic farming. OF is of two types one is pure organic and second is integrated organic farming and both are working on these four principles-





1. Principle of Health- health of ecosystem, people, and communities.



3. Principles of Fairness – Good relationships and quality of life.

GOVERNMENT INITIATIVES TO PROMOTE ORGANIC FARMING IN INDIA

Realizing the potential and benefits of organic farming Indian Government is promoting the production of major export crops, fruits and vegetables etc. through various schemes. These projects provide financial support (subsidies) to the framers and NABARD is responsible for establishment of biopesticides/biofertilizers production units and agro waste compost production units respectively which are as follows:

National Horticulture Mission (NHM), Horticulture Mission for North East and Himalayan States (HMNEH), Rashtriya Krishi Vikas Yojana (RKVY), National Project on Management of Soil Health and Fertility (NPMSHF), National Project on Organic Farming (NPOF), Network Project on Organic Farming under Indian Council of Agricultural Research (ICAR) and various schemes of Agricultural and Processed Food Products Export Development Authority (APEDA), Parampragat Krishi Vikas Yojna, Soil health Management scheme and Mission organic value chain development for North eastern region.

Thus, the main aim of organic farming is to reduce the total dependency on chemical fertilizers and pesticides and make farming sustainable, remunerative and respectable. Further, it was also realized that to increase the production of important major crops, use of both organic manures and artificial fertilizers (less), including biofertilizers in an integrated manner is



2. Principle of Ecology- balance between ecosystem and environment or nature



4. Principles of Care –environment and environment of the future

important because soil loses its nutrients after crop cultivation and need to recharge with all necessary nutrients. Therefore, adaptation of organic farming in an integrated manner is a demanding step to promote self-sufficiency and food security in India and Worldwide.

CONCLUSION

To create environmentally and economically sustainable system, organic farming practices play major role. Organic farming is expanding at a 25–30% annual rate in India. India would have 1.35 billion acres under organic cultivation by 2020. Meanwhile, vision Government of India is to flourish India's organic agriculture and provide healthy food for 1.5 billion people by 2030. Comparing organic and conventional farming, the former is 35% more profitable. The scope of organic farming is increasing at a great speed in India. This is mostly due to new experiments and researches done in the agricultural field. New techniques which are invented are fully in support of the health of the soil. People's health is another very important factor to shift to organic farming. Therefore, there is a big chance because customers are responding favorably to organic products, and this will also boost the farmers' prospects. The future of organic farming is highly bright and prosperous because these crops are more naturally grown and nutritious than conventional crops. Organic farming



is widely practiced since it is inexpensive and does not involve the use of harmful chemicals, medications, or other things. Although there are many obstacles, but organic farming can be a viable alternative production method for farmers.

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HEADACHE AS AN ADVERSE EFFECT OF IMMUNOGLOBULIN ADMINISTRATION FOR SELECTIVE IMMUNOGLOBULIN G DEFICIENCY

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SUMMARY

INTRODUCTION: IgG subclass deficiency was described by William Terry in a patient with recurrent infections. Selective IgG subclass is defined as a significant decrease in serum concentration of 1 or more IgG subclasses with normal total IgG, IgA and IgM levels. Persistent low serum levels of one or more immunoglobulin G (IgG) subclasses may be found in a high proportion of adult patients with increased susceptibility to infections (17). This deficiency has been described in association with other primary immunodeficiencies, including: selective IgA deficiency, selective IgM deficiency and Ataxia-Telangiectasia, growth hormone deficiency, Down syndrome, cystic fibrosis, among others (1).

CLINICAL CASE: We present the clinical case of a 28-year-old female patient with a history of selective immunodeficiency to IgG immunoglobulin, repeated urinary tract infections, repeated vaginal infections and herpes simplex II infection, all of which have been treated, She went to a hospital in Morona Santiago three days ago for presenting, as the apparent cause, administration of immunoglobulin for a basic illness, a mild holocranial headache that evolved into a severe headache, accompanied by nausea that led to vomiting on one occasion, for which she was admitted to the hospital for pain management. Complementary examinations showed that there was no metabolic alteration or neurological deterioration, which is why she was classified as an adverse effect of the administration of immunoglobulin 3 days earlier.

EVOLUTION: The patient was admitted for pain management due to severe headaches, multiple analgesics were administered without adequate response, so it was decided to start a tramadol infusion pump. During the following hours of hospitalization she remained with a feeling of nausea and weakness, however, the headache gradually subsided and it was decided to discontinue analgesic medication to assess the response of the clinical picture, and she was discharged 24 hours after admission with a favorable evolution.

CONCLUSIONS: IgG subclass deficiency is a pathology characterized by the fact that it occurs in women over 16 years of age, with a very low prevalence; the presence of respiratory pathologies gives rise to the suspicion of this disease. The treatment of this pathology is based solely on the intravenous or subcutaneous administration of Immunoglobulin G, together with the concomitant treatment of the infections that the patient presents. Adverse effects should always be taken into account, as they are temporary, but quite disabling.

KEYWORDS: Headache, Immunoglobulin G, Urinary Tract Infections, Herpes Simplex

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INTRODUCTION

Usually, IgG subclass deficiency is characterized by frequent or severe upper or lower respiratory tract infections, which are not explained by other causes. The disease predominates in females, starting in those over 16 years of age; its frequency is 1 per 10,000 persons. The IgG1 and IgG2 subclasses are determinants that are generally found to be abnormal in adults. Factors associated with this pathology are: age at diagnosis, female sex, autoimmune conditions, atopy, serum IgG, IgA and IgM levels (3)(16). Infectious complications, especially repeated viral infections, are the most common manifestations, followed by lower respiratory tract infections, such as pneumonia. In some studies, it has with been associated bronchiectasis and increased hospitalisations for chronic obstructive pulmonary disease (4). This disease results in susceptibility to respiratory tract infections, such as pneumonia, recurrent sinusitis. However, non-infectious complications may occur due to the B-cell phenotype (11).

Measurement of immunoglobulin G subclasses has been used for screening patients with chronic diseases. A study by De Vries has suggested that measurement of the immunoglobulin G subclass be measured after measurement of total IgG, IgA and IgM if IgG is greater than 4 gr/L. IgG assessment is useful as part of the evaluation in the study of patients with a history of repeated infections. In addition, this test is requested in patients with low IgA and should be monitored in IgG deficient patients with progression to a common variable immunodeficiency. In general, measurement of the IgG subclass is an important test that provides a comprehensive picture of the humoral system. IgG concentrations are usually measured on the basis of radial immunodiffusion and by ELISA. All methods provide a quantitative measurement of IgG subclass concentrations and with a high sensitivity of detection of IgG subclass concentrations. For the diagnosis of this pathology, 1 or more IgG subclass concentrations lower than the fifth percentile are required in the presence of normal IgG, IgA and IgM concentrations. Abnormal concentrations should be confirmed at least 1 month after the first test (6).

TREATMENT

For most patients, administration should be every 3 to 4 weeks. The dose to be used is 0.3 to 0.5 g/kg every 3 weeks or 0.4 to 0.6 g/kg every 4 weeks. Generally in initial doses, a loading dose of 1 g/kg is given. Thrombotic risk, haemolysis and renal complications are exacerbated by high and rapid infusion doses. Sometimes, administration of this medication leads to anaphylactic reactions in patients with IgA deficiency (10). Monthly IVIG significantly improved quality of life, decreased the number of infections and the need for antibiotics, and improved IgG subclass and serum antibody levels (18).

To produce the immunoglobulins to be administered, as many pathogens, especially viruses, are removed. However, there is a small risk of transmission of these pathogens. All available immunoglobulin replacement products contain more than 95% immunoglobulins with all IgG subclasses. Most products do not contain IgM (to avoid large complexes generating adverse reactions) and contain a small amount of IgA. Thanks to early diagnosis, IgG treatment has become more effective; along with survival, which has improved considerably in the last decade, leading to a reduction in the frequency and severity of infections. However, patients with autoimmune complications and neoplasms remain with a low life expectancy. Initiation of IgG replacement is with IgG levels less than 2 g/L, in patients with recurrent infections, and specific antibody deficiency with IgG levels between 2 and 5 g/L; and patients with IgG greater than 5 g/L with recurrent and severe infections. The initial dose should be considered between 400 mg/kg/month and 100 mg weekly. Levels should be greater than 3 g/L compared to baseline (9).

COMPLICATIONS

As mentioned above, the most frequent complications are lung diseases. Therefore, most of them should be evaluated with high-resolution computed tomography. The most frequent complications to be found are: Bronchiectasis, bronchospasm, obstructive lung disease and granulomas. The risk of developing cancer is between 4 and 25%, with an estimated incidence of malignant neoplasms of 10% (Hodgkin's lymphoma and gastric carcinoma) (15).

ADVERSE EFFECTS OF IMMUNOGLOBULIN G TREATMENT

About 40% of patients receiving immunoglobulin infusion are accompanied by adverse effects within 72 hours. These symptoms include headache, nausea, musculoskeletal pain, tachycardia, flushing, chills and fever (8). These adverse effects can be managed by decreasing the infusion or stopping it. Symptoms may be relieved by acetaminophen, NSAIDs or antihistamines. In some patients, corticosteroids may be needed. To avoid these adverse effects, you can start with a slow infusion and gradually increase the infusion. In general, the infusion rate should not exceed 0.08 ml/kg/min of the 10% IgG solution. With repeated administration of the immunoglobulins, these reactions decrease in severity. Headache is the most common adverse effect, and the most commonly reported. This symptom begins 24 to 48 hours after the immunoglobulin infusion. Most headaches resolve within 24 hours, but severe headaches last up to 72 hours. In a small number of patients, particularly with a history of migraine, it is usually accompanied by nausea and vomiting. Occasionally, headaches may be accompanied by fever. Generally, severe headache is more frequent in patients with high doses of immunoglobulin (1 - 2 g/kg); sometimes, it can lead to meningeal irritation. In cases of migraine, the use of antimigraine preparations is suggested, which can be used again in case of recurrence. In addition, there is evidence of benefit from the administration of glucocorticoids (0.5 - 1 mg/kg prednisone or equivalent) (5).

CLINICAL CASE

A 28-year-old female patient with a history of selective immunodeficiency to IgG immunoglobulin, repeated urinary tract infections, repeated vaginal infections and herpes simplex II infection, all of which have been treated, attended a hospital in Morona Santiago on 28/5/2021 because she had

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presented for the last 3 days and as the apparent cause, administration of immunoglobulin for a basic illness, a picture of mild holocranial headache (3/10 on the VAS scale), which evolved 24 hours later, She had been receiving immunoglobulin for her underlying disease for three days and had a mild (3/10 on the VAS scale), pulsatile holocranial headache, which progressed 24 hours later to a severe headache (8/10 on the VAS scale), for which she selfmedicated with paracetamol and diclofenac with partial improvement. However, 10 hours before her admission, she again presented a picture of severe headache, which increased on movement and was accompanied by nausea leading to vomiting on 1 occasion, for which she was admitted to the hospital for pain management.

PERSONAL BACKGROUND

- 1. Primary selective IgG immunodeficiency, since 3 months, with treatment started on 25/5/2021 with 30 grams of immunoglobulin to be administered monthly.
- 2. Recurrent urinary tract infection, approximately every 20 days. Last episode was 3 months ago. Current treatment with Trimethoprim + Sulfamethoxazole 800/160 milligrams orally every day.
- 3. Repeated vaginal infections, last episode 1 month ago treated with cefuroxime.
- 4. Herpes simplex type II infection, last episode 4 months ago. Treated to date with acyclovir 400 milligrams orally every day.

FAMILY HISTORY: Does not refer

PHYSICAL EXAMINATION

Blood Pressure: 110/60 mmHg, Heart Rate: 110 bpm, Respiratory Rate: 24 rpm, Temperature: 36.7 C, Capillary refill 2 seconds, O2 Sat: 93%,

General appearance regular, atraumatic head, normal implantation of hair, presence of positive time points, eyes: isochoric sclerae, light reactive.

Mouth: oral mucous membranes moist, oropharynx not congestive, chest with preserved vesicular murmur, preserved frémito, no added sounds, abdomen with active hydro-aerial sounds, pain on deep palpation in the mesogastrium, symmetrical limbs, strength and tone preserved. Neurological examination: vigil, oriented in time, space and person, no neurological alteration is evident. Absence of nuchal rigidity, negative Kernig and Brudzinski signs, coordination without alteration.

DEVELOPMENTS

Patient admitted on 28/5/2021 for pain management due to severe headaches, multiple analgesics are administered, including: Tramadol 300 milligrams diluted in 250 milliliters of sodium chloride 0.9%, going to 4 milliliters/hour, Ketorolac 30 milligrams via venous every 8 hours, Paracetamol 1 gram orally every 8 hours, Metoclopramide 10 milligrams via venous every 8 hours, and her basic medication. Laboratory tests were carried out, and there was no evidence of infection or metabolic alterations. During the following hours of hospitalization, she remained with a feeling of nausea and weakness of lesser intensity, and her headache gradually subsided, so it was decided to discontinue analgesic medication to assess the response of the clinical picture, and she was discharged 24 hours after admission with a favorable evolution with a diagnosis of drug-induced headache and selective deficiency of subclasses of immunoglobulin G. She was sent home with signs and symptoms of headache. She was sent home with indications of alarm signs, Diclofenac 50 milligrams orally every day and Tramadol 50 milligrams orally for necessary reasons.

Table 1. Blood Biometry		
Leukocytes	5480	
Neutrophils	78	
Lymphocytes		
Platelets	259000	
Haematocrit	39.3	
Haemoglobin	12.7	
Source: Morone Sentiago Hognital		

Table 1. Blood Biometry

Source: Morona Santiago Hospital

Table 2. Blood Chemistry

	ou onemsery
Glucose	77.9
Urea	15.8
Creatinine	0.64
Cholesterol	126
Triglycerides	51.6
LDL	
TGO	11.5
TGP	7.40
Total protein	6.39
Albumin	3.9
Globulin	2.49



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PCR	2.2
Potassium	
Sodium	
Chlorine	106.8
Uroanalysis	Negative

Source: Morona Santiago Hospital

DISCUSSION

One of the factors studied in a review of 2020 showed that the age at diagnosis, the predominance of the female sex and the presence of recurrent infections, especially respiratory infections (although not only of the respiratory tract), atopy, allergies, autoimmune conditions, are the determinants of the diagnosis of this disease. In our patient, age, female sex and the frequency of genitourinary tract infections led to the suspicion of this disease (12)(13).

In a study conducted in 2021 with 20 patients analyzed, it was reported that 10 patients had rash, 3 patients had headache, 3 patients had pain at the puncture site, 2 patients had chills and 2 patients had fever (7). In the present clinical case, there was evidence of mild headache that increased in intensity over the hours until it became intolerable 72 hours after administration of immunoglobulin G; the condition was accompanied by nausea that led to vomiting on 1 occasion. Therefore, the patient was managed with strong analgesics and antiemetics.

A study conducted in 2020 compared the frequency in subgroups of 269 patients with selective IgG deficiency. The association of HLA-A and B with the frequency of IgG deficiency in patients was found (2). Because the patient was seen in a basic hospital, limited testing was a major limitation in arriving at the association of this patient with HLA-A or HLA-B types.

In a 2003 study, which reported adverse effects in 955 patients after IgG infusion, 4.7% of patients had headache (although they did not report whether the infusion rate was high or low) (14). In our patient, the diagnostic suspicion of IgG post-infusion headache was made because of the multiple history of infections and the frequency with which this symptom is present after immunoglobulin administration (24-72 hours).

CONCLUSIONS

IgG subclass deficiency is a pathology characterized by the fact that it occurs in women over 16 years of age, female, and with a very low frequency; the presence of respiratory pathologies gives rise to suspicion of this disease. The treatment of this pathology is based solely on the intravenous or subcutaneous administration of Immunoglobulin G, together with the concomitant treatment of the infections that the patient presents. Adverse effects should always be taken into account, as they are temporary, but quite disabling. There is sometimes a need to control adverse effects, and in some cases, to prevent them with appropriate and slow administration of Immunoglobulin G.

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PUBLIC PRIVATE PARTNERSHIPS MODEL AND PRIMARY EDUCATION IN WEST BENGAL

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ABSTRACT

The concept of Public Private Partnerships (PPPs) has emerged as a viable option for infrastructure development especially in the context of developing countries. PPPs are emerging as an innovative policy tool for remedying the lack of enthusiasm in traditional public service delivery. They represent a claim on public resources that needs to be understood and assessed. They are often complex transactions, needing a clear specification of the services to be provided and an understanding of the way risks are allocated between the public and private sector. Objectives of the study are to know the primary education system in West Bengal, to find out the opportunities and Challenges of PPP in West Bengal, To find out the Role of PPP in primary Education in West Bengal.

INTRODUCTION

Education is one of the most powerful instruments known for reducing poverty and inequality, and for laying the basis for sustained economic growth. It is fundamental for the construction of democratic societies and dynamic, globally competitive economies. For individuals and for nations, education is the key to creating, applying, and spreading knowledge. Education is an important means to empower the society in general and the underprivileged section in particular. The need for basic education or Primary Education, which is the focus of the present work, is based on six basic arguments. The first set of arguments stands upon a moral foundation: devoting resources to education is the right and fair thing to do. The second argument is that education is a "fundamental human right," to which all human beings are legally entitled. The third argument is economic, that is, education improves the productivity and economic well-being of individuals, and it promotes technological and institutional innovation and economic performance of societies. This includes the reduction of poverty. Fourth, basic education can play a major role in tackling health problems in general and epidemics in particular. Fifth, basic education strengthens the democratic voice of the rural masses by reducing insecurity and organising resistance against the violation of their established rights. Lastly, it enhances women empowerment in general and their voice in family decisions in particular.

Primary Education develops the capacity to learn, to read and use arithmetic, to acquire information, and to think critically about that information. Primary Education is also the gateway to all higher levels of education that train the scientists, teachers, doctors, and other highly skilled professionals that every country, no matter how small or poor, requires. The role of Primary Education in reducing poverty and income inequality is even more strongly established than is its contribution to overall economic growth. Illiteracy is one of the strongest predictors of poverty, and unequal access to educational opportunity is one of the strongest correlates of income inequality. Primary Education is the foundation on which the development of every citizen and nation as a whole is built on. From the beginning of the clan society, basic education played a pivotal role in developing the society. Evolution of human civilisation had taken place basically through widespread development of knowledge and education in different fields. New knowledge, ideas, innovations, discoveries and other related activities transformed the ancient society to present civilised society. Unfortunately, this civilised world is characterised by innumerable conflicts, differences and deprivation at different spheres and different segments. The worst sufferers are the weaker section of the society and the children. Education plays an important role in mitigating this deprivation, through the creation of general awareness, consciousness and sense of belonging of the masses in the society. Without any basic education, people cannot exercise their democratic rights and privileges properly and are unable to participate in the process of development of the country.

The scenario of Primary Education in India into consideration, the objective of the nation was to put an emphasis on Universalisation of Primary Education. To achieve this target, access to education, retention and quality of performance of the students were identified as the three key factors. To enhance the scope for an access to education followed by retention of the students in the system by minimising the "school



dropouts" as far as possible, certain well defined policy approach seemed urgent. To ensure this term end examination system at the primary level was abolished, and a "no detention" policy was prescribed. With this policy in mind, efforts were taken to ensure inclusive education without compromising with the aspect of the quality of knowledge building process. To achieve this goal, Continuous and Comprehensive Evaluation (CCE) system was introduced. The principle of CCE envisage that the students acquire knowledge in a stress free condition but at the same time appropriate remedial measures are ensured to eliminate the weakness of students in learning. This new system requires intensive orientation and proper training to all the stakeholders in general and the teaching community in particular.

At the all India level, there was a cry that "No-detention" policy followed by most of the states in Primary Education could result in children reaching next higher classes without the expected learning outcomes. A major drawback of the existing system is that, neither the teacher and the pupils nor the parents and the education planners know where they are and where they ought to be, as there is a lack of well defined criteria for measuring real progress of the student in terms of learning.

The Bengal renaissance was led by some enlightened Bengali elites who educated themselves within the colonial education system based on the Western Philosophy of Education. They played an important role in spreading education in different parts of Bengal. However, a large section of enlightened Bengalis was not always in favour of expansion of education, particularly among the rural masses. In 1919 the Bengal Primary Education Act was passed in order to provide compulsory Primary Education to the students of the municipal areas and in the Unions constituted under the Bengal Local Self-Government Act of 1885. In 1921 this Act was amended to first cover all municipalities, and later Union Boards under the Bengal Local Self Government Act of 1885. The SSM, in its first phase called Sarva Shiksha Abhiyan (SSA) was launched countrywide in 2001-2002 with the purpose of UEE and to further strengthen the DPEP. It is functional in all the educational districts including the DPEP districts of West Bengal since 2002-2003. Keeping pace with the existing structure and programmes of the Primary Education of the State Government, the SSM was launched with an objective to enroll all children in the age group of 6 to 14 years in school, to establish education guarantee centers, alternative and innovative schools by 2003 and to ensure five years quality and holistic Primary Education to all children bridging the gender and other social category gaps by 2007. The scheme was implemented initially through the "Pashchimbanga Rajya Prarambhik Siksha Unnyayan Sansthan" at the state level and then it was renamed as Paschim Banga Sarva Siksha Mission

PUBLIC-PRIVATE PARTNERSHIP (PPP)

Nowadays privatization of every sector is going to current trends. Evert sector such as - the development of airports, railways, roads, and so on. But it is no longer confined to these sectors and in this context, PPP has playing a vital role to introduce a new world of privatization. Public-private partnership (PPP) has been the latest mantra of development. It has also become a fashionable slogan in the development strategies, particularly during the last couple of decades in many developing as well as advanced countries. A public private partnership is tremendously entered in education over the last three decades across the world. In India, the 12th five-year plan introduced RTE, for 6-14 years child in elementary level irrespective of caste, creed, gender, Geographic's to provide quality education. PPP involves in many ways in the education sector such as- funding the public school with vouchers, stipends, subsidies, capitation grants, etc. Even prohibited countries (privatization) they also show interest on PPP mode. They know very well that PPP can be a good number of economies in various infrastructure development sectors, such as the development of airports, railways, roads, and so on. But it is not only confined to these sectors. It also has entered the sectors of education. Now PPP is being extended to education, including elementary education, which is regarded as a universal human/fundamental right, and also other human development sectors such as health and even to activities relating to poverty reduction.

CONCEPT AND DEFINITION OF PPP

It seems there is no proper and clear definition of PPP; but various interpretations are available. We cannot define PPP in a few words, because its scope is vast. Most countries embarking on PPP programs have attempted to provide some form of the definition of a Public Private Partnership. Such as-According to the Department of Economic Affairs, Ministry of Finance, Government of India, 2007, PPP is defined as, "A partnership between a public sector entity (sponsoring authority) and a private sector entity (a legal entity in which 51% or more of equity is with the private partner/s) for the creation and/or management of infrastructure for public purpose for a specified period of time (concession period) on commercial terms and in which the private partner has been procured through a transparent and open procurement system"

Aims & Objectives of the PPP Model in Indian Education System are To uplift the quality of the Indian education system, Helps to increasing enrolment ratio of the students, to Improve the outcomes of the education system, To maintain the coordination between Public Private and Government sector and To reduce the overload of the government.



PRIMARY EDUCATION IN WEST BENGAL - A STATISTICAL VIEW

This section presents a statistical overview of Primary Education in West Bengal based on the secondary data. As per the Census 2011 (provisional) the rural literacy rate, urban literacy rate and the total literacy rate in India was 68.91%, 84.98% and 74.04% respectively. Those for West Bengal were 72.97 %, 85.54 % and 77.08 % respectively. In respect of the district-wise literacy rate in West Bengal, it is higher in Paschim Medinipur, Purba Medinipur, Kolkata, Howrah, Hooghly and North 24 Parganas than the average rate in West Bengal. The literacy rate is very low in Uttar Dinajpur, Maldah, Murshidabad, Purulia, Bankura and Birbhum. According to Census 2011, West Bengal contributes 7.55% population in India whereas the contribution of the percentage of students enrolled in the elementary education for West Bengal is 7.03. 7.24% Girls and 6.82% Boys in India are enrolled in Primary Education from West Bengal. That for the SC and ST category is 9.42% and 4.97% respectively.

According to MHRD the Gross Enrolment Ratio (GER) in elementary education in West Bengal for all categories of students is 115.3. For boys and girls the figures are 113.7 and 116.9 respectively. GER for the SC category of students in West Bengal is 131.2 and that for the boys and the girls are 131 and 131.4 respectively. For the ST category students the figures of GER are 135.4, 134.9 and 136 for total ST students, ST boys and ST girls respectively.

The Net Enrolment Ratio (NER) in Primary Education is 98.53. In respect of Gender Parity Index (GPI) West Bengal is ahead among the majority of the states in India. GPI for all category of students in India is 1.01 and that for West Bengal is 1.03. For SC category and ST category of students the GPI are 1 and 1.01 respectively in West Bengal. West Bengal is lagging behind the other states in respect of dropout rate in elementary education. The dropout rate for boys, girls and total students for all categories of students in India are 23.4, 21 and 22.3 respectively. It is noteworthy that the dropout rate for the girl students in West Bengal is lower than both the boys and the overall dropout rate in West Bengal. Dropout rate for the girl students in West Bengal is also lower than that in India.

REVIEW OF LITERATURE

Chaudhury (1970), on the basis of field study in four different villages from four different districts of West Bengal dominated by Scheduled Caste (SC), Scheduled Tribe (ST) population, observed that illiteracy among backward castes is very high, ranging from 65% to 96%. For the female population of the backward castes, the range of the illiteracy level is between 90 to 100% for all the villages. He also observed that at the primary level, 84.11% of the total enrolled students belonged to the three upper strata of the agrarian society, namely, jotedars, rich peasants, and middle peasants who constituted only 52.24%

of the total population. Based on the data from 58 sample schools in Mohammad Bazar block in Birbhum district, Lieten (1992) observed that children from backward communities were lagging behind despite overall educational development in the state in the post land reform period. On the basis of an assessment of Minimum Learning in Primary Education in Hooghly district conducted by Basumallik (1992), it was observed that 86% of government school children, 45% of urban school children, 29% of municipal children and only 20% children from rural schools achieved the minimum expected score. Referring to the Ashok Mitra Education Commission Report (1992), Majumdar (1993) pointed out that performance of Primary Education in West Bengal is poor with respect to other states with same per capita expenditure on education.

Acharya (2002), from a study conducted in six gram panchayats in West Bengal, found that successful students generally belonged to the upper castes and upper income groups of rural hierarchy. On the other hand, the dropouts and underachievers were mainly from the lower castes and lower income groups of rural society. In the study, an overwhelming majority of the respondents opined that the standard of teachinglearning had deteriorated during 1998 to 2002. Almost 85% of guardians and 83% of school inspectors, 65% of teachers and 63% of attendance committee members opined that the standard had really fallen. He was, however, critical about the role of panchayats in developing Primary Education in West Bengal. He viewed panchayats and district level educational agencies like District Primary School Councils (DPSC), and inspectorate were practically meant for implementing the command from the above.

Pratichi (India) Trust surveyed randomly selected schools of six districts in West Bengal, twice in 2001-02 and in 2008-09. Mentioning remarkable progress, the first report based on the study in 2001-02 expressed its concern over some important issues of Primary Education in West Bengal. These are children's achievement level, infrastructure, teachers' involvement, caste, ethnic and gender discrimination and community participation. It expressed concern over the growing demand for private tuition. The Trust felt the necessity of cooked Mid-day Meal for improvement of child nutrition, positive role of Teachers" Unions, regular and constructive use of parent-teacher committees. The Report mentioned the need to revive the inspection system for schools. On the other hand the report categorically highlighted the keenness of the parents about the education of their wards.

Sen (2010), based on the major findings of Pratichi (India) Trust, expressed concern over the disadvantageous sections of the society, curricular overload, poor cooperative effort and weak collaborative understanding. He stressed on the need for a radical reform of primary school curriculum to make home tasks redundant and to eradicate the necessity of dependence on private tuition.



The State Council of Educational Research and Training (SCERT), West Bengal, in its Report (2009) stated that in West Bengal a large section of the students in the age group of 6 to 14 are quite habituated with private tuition. Students" and parents" responses indicated several causal orientations for increased interest in private tuition. These are: 1) most of the students do not get any sort of educational guidance from their families. So private tutors help and guide the students in their study. 2) Private classes help the students with their assigned home tasks of schools. 3) Students can easily communicate with private tutors. They can ask questions frequently to solve their difficulties and queries. 4) Students opined that the guiding procedure of tutorial classes help them to acquire high marks in the examinations. Students also claimed that a suggestive set of probable questions for examinations obtained from the private tutors help them to prepare for the examinations.

Banerjee and Roy (2012), after observing the activity levels of six primary schools under a gram panchayat of Hooghly district in West Bengal, had concluded that the decentralising institutes of Primary Education in West Bengal, like Village Education Committee (VEC), Parent-Teacher Association (PTA), Mother-Teacher Association (MTA) have been reduced to a mere instrument for retaining political dominance in rural Bengal.

Majumdar and Rana (2012) had observed substantial improvement in Primary Education of West Bengal. However they pointed out major trouble spots of the system, such as uneven resource allocation, poor public provision in terms of school infrastructure, irregular school inspections, shortage and mal distribution of teachers, uneven student attendance across the state. Narrow "decision space" for teachers in designing curriculum and syllabus, selecting text books, inadequate and inappropriate teacher training facilities, and curriculum overload were also identified as the hindering factors of Primary Education in West Bengal.

OBJECTIVES OF THE STUDY

To know the primary education system in West Bengal To find out the opportunities and Challenges of PPP model in West Bengal

To find out the Role of PPP in primary education in West Bengal

RESEARCH DESIGN

This present study is completed based on secondary data in nature. The secondary data has been collected from books, journals, research articles and PPP reports, West Bengal educations reports and internet. This collected data has been discussed and developed on PPP Model of West Bengal.

ADVANTAGES OF PPP MODEL IN WEST BENGAL

Advantages of PPP Model "Education is a societal duty and the responsibility not only of government, but also of civil society. The effects of our history on the fabric of our whole society, including education, have been so profound that it will take the efforts of all sectors to build a stronger education system," says Barbara Valentine, Research, and Development for Institute of Training and Education for Capacity Building"

PPP provides the good infrastructure which is fully private or fully public. Every participant does what it does best. PPP ensure adequate investment into the public sector and provide effective public resources management; PPP complete every infrastructural project very fast that's why they can reduce delays or maintain time –to completion. One of the important benefits of PPP is 'Return of the Investment' or ROI is greater than traditional or government system. In PPP project risks allocation enables to reduce the risk management. Most of the time the risk of project execution are transferred to private authority, which has more experience in cost containment. Another important benefit of PPP is it reduces government budgets and budget deficits. PPP has ensured higher quality and it also allows lower taxes. PPP has ensured higher quality and timely provision of public services.

CHALLENGES OF PPP IN WEST BENGAL

There are various types of challenges that PPP models are facing in India. These challenges are-

When you are going to start any projects sometimes carried out some risk are arising, such as- construction risk, financial risk, market risk, demand risk etc. This risk can't give you thrive properly.

In PPP projects profits are depending in so many things like assumed risk, the competitive level, complexity of the project etc.

In our country the acquisition of land is a big challenge for PPP because of various policies regarding the land issue.

Lack of proper coordination between public-private and government, the mission becomes not so fruitful.

Some project are becomes failure due to mismatch of the overall costing of the project. • And as we know that due to the involvement of too many people and processes PPP projects are always subjected to the risk of corruption.

Role of PPP in Primary Education

As we can see that Public Private Partnership is a current fashionable trend in various sector, so basically it has also a great role in education system. Various Eastern and Western country such as – Pakistan, US, England etc. have already used the PPP model in education to increases the accessibility, improve the quality of education and provide choice in underserved communities. India is not lagging behind from them, so our country also try to implement PPP model in our education sector. Well-designed PPP model makes feasible of



the school system in India. Various governments at the central, state and local level are exploring and implementing PPPs in education

Effective Utilization of Underutilized School Infrastructure: All over West Bengal, we can see that major metropolitan areas such as – rural , and urban areas have experienced almost quarter decline in enrolment in government schools last one decades. And that's why their education budgets have almost doubled. As a result, this trend makes the government school hollowing out. If we give a chance to the Private sector, obviously they can manage high-quality schools in these empty buildings. By this governments can effectively utilize of underutilized school infrastructure.

Widen access and Utilization of Existing Assets of Education: As we know that India is a rural-based country, and here some metropolitans, cities are highly decorated in school infrastructure. But on the other hand, in rural areas, India still has lagging behind in good school infrastructure particularly in the secondary space. So the accessibility of the education did not reach the certain levels. By giving the chance, PPPs can help increase access to schools. In the above mention point, we can see that, in urban areas how effectively PPP can utilize the underutilize school infrastructure. As well as in rural area, only PPPs can rejuvenate the Widen access and utilization of existing assets of education.

Lift the Quality of Education: In across West Bengal privatization of education system is still not fulfilled. In existing schools, PPPs can introduce skills and innovations within the government system. In similar condition, PPP projects in education have a high level of relevancy rate and level of funding as government schools. PPP providers are scientifically sound, flexible, innovate, and introduce better management and pedagogical techniques etc. For instance, they can use technology in teaching-learning, administration, evaluation system, or teachers can use various innovative techniques etc. All of this uplifts the quality of Indian education system.

Increase Choice for Low-Income Parents: Every Parent's desire that his son/girl becomes fluent in the English language, but our government school teaches students through a vernacular medium. That's why they are increasingly leaving the government school system. On the other hand, the enrolment ratio is increasing in private school or English medium almost 250% in the last one decade. And also we can see all national level exams are being conducted in English medium. So in generally those PPP schools, who introduce high-quality English instruction, would allow governments to provide parents the option to receive an education of their choice.

Reinforce Responsibility in the Government System: It is very easy to say that the increasing number of PPP institutions helps to increase reinforce responsibility in the government system. Parents begin to expect fair measurement of education standards and the PPP and government school systems have to respond to the demand for greater accountability

Efficiency Gains: It is argued that because of specialization in certain areas, the private sector has greater efficiency. For example, the Public-Private Partnerships in real estate including road and building have shown the expertise of private sector in the infrastructural development. For schools also the private sector may bring innovative building designs more convenient for schools.

Risk Sharing: A fundamental principle in a partnership is that any risk should be allocated to the particular partner who can properly manage the same. The various risks of PPP project may be allocated between the public and private sector optimally so that the overall risk gets reduced significantly.

Reduction of Costs: Because of greater efficiency and competition among private partners, the cost of operation is expected to be much lower than in government set up. This is due to the greater managerial efficiency in the private sector.

Quality Monitoring: In the case of PPP, the government will monitor the quality in the school as payment is related to quality. The private partner would have an incentive to raise the quality of education in the school to be eligible for payment.

Greater Flexibility: Under PPP, there will be greater autonomy and flexibility at the school level whereas the government systems have rigidity. The private partner will have much higher autonomy in hiring teachers and organizing the school. Similarly, depending upon the need, the schools processes can be modified quickly.

CONCLUSION

Infrastructure development through PPP needs much effort. India faces a very large financing gap which needs to be bridged by domestic as well as foreign private sector investments. Success in attracting private funding to infrastructure will depend partly on India's ability to develop a more sophisticated financial sector, requiring reforms that facilitate the use of diverse financial instruments by investors and address the current barriers to increased participation by both sponsors and financial institutions. From the above detail, it is clear that public- private partnership (PPP) has playing a vital role in all sectors. And nowadays PPP is also disseminating in the field of education. We cannot deny the core needs of privatization. Above discussion, we can see that PPP has become a fashionable trend of the modern era. All sectors like airways, roadways, electricity, everywhere we can see the significant role of PPP. Educational sectors are also not an exception. Well-designed PPPs can create models of innovation for the education system in India. PPP enhancing access to school, Using underutilized school infrastructure, the quality of education Strengthen accountability in the government system. And we can also see that World Bank Group (2011) has emphasizing the role of PPP in the school education system.



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INDIA'S MARITIME GATEWAY TO THE PACIFIC: SOUTH CHINA SEA

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ABSTRACT

The South China Sea interests and strategies of India are examined in this article (SCS). It begins by highlighting India's maritime interests and discussing how the SCS relates to them. The article then looks at some of the crucial components of India's expanding regional policy initiatives. According to the report, India looks to be legitimately emerging as a crucial element in the strategic discourse of this region as a result of a significant increase of its interaction with the South China Sea littoral states. If India can maintain its high economic development rate and uphold the framework of partnership that it has established in the region, it might be a beneficial security partner for a number of countries in the Asia-Pacific region.

INTRODUCTION

In a "arena of rising contention," the South China Sea (SCS) disputes are one of the most challenging regional conflicts in the Asia Pacific. In fact, some academics say that for the next 20 years, the conflict in the South China Sea would likely continue to pose the greatest danger to regional peace and security in the Association of Southeast Asian Nations (ASEAN). The roots of the SCS issues include territorial sovereignty, disagreements over energy, the importance of the location, threats to maritime security, and overlapping maritime claims. The SCS is a major topic of discussion in modern international relations and strategic studies since it is one of the most significant seas in the world from a geopolitical, economic, and strategic standpoint. Additionally, it is still perceived as a potential source of friction and is getting more tumultuous. Due to their strategic and economic interests in the SCS, both extraregional nations like India and regional nations like China, Vietnam, the Philippines, and Malaysia are concerned about security in the area. Regional and global security will be threatened by any confrontation in the SCS.

India is actively seeking a muscular marine diplomacy, but its growing role in the SCS is increasingly important to India's foreign policy. Additionally, via its consistent engagement and partnerships, India is drawing more attention from the SCS littoral states and providing these states with strategic opportunities. India has become more vocal in expressing its support for both the peaceful settlement of territorial issues between Beijing and its maritime neighbours as well as freedom of navigation in the SCS.

INDIAN MARITIME OBJECTIVES

India is dependent on the Indian Ocean due to its peninsular nature, which has a long, open coastline and a resource-rich, very productive littoral. Due to India's heavy reliance on marine trade, the sea has a tremendous impact on the country's future. Undoubtedly, the Indian Ocean serves as both a major trade route and a zone of international security. Delhi is aware of the strategic significance of the Indian Ocean and Southeast Asia for defending the Indian peninsula. Only 90 miles separate a few of India's island provinces from the Straits of Malacca.

Indeed, only maritime trade is responsible for India's success. The Indian Ocean is crucial to India since there are few land routes out of the Indian subcontinent and they offer little opportunity for commerce. India's lifelines are concentrated there, and the freedom of that large water body is essential to the country's future. As a result, India's industrial development, commercial prosperity, and stable political structure are all insured by a secure and safe Indian Ocean and the huge Indian seashore.

India is driven to look across the ocean, well beyond its own littoral, for more expansive maritime domain awareness due to its reliance on the security of the Indian Ocean and its need to monitor and, if necessary, check the naval activity of other powers. India's government views the Indian Ocean as a marine region for the Indian navy to command and police because of the country's growing reliance on imported oil and natural gas to power its economic expansion.

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INDIA'S MARITIME STRATEGIC INTEREST IN SOUTH CHINA SEA

The South China Sea is one of the most vital commercial routes in the world, stretching from Singapore and the Strait of Malacca in the south-west to the Strait of Taiwan in the northeast. Asia's coastline, which stretches from Ca Mau, the southernmost tip of Vietnam, to Taiwan Strait, the south-west coast of Taiwan, the west coast of the Philippines, which extends to Balabac Island, the north coasts of Sabah, Brunei, and Sarawak, the northern façade of Indonesia's Kepulauan Natuna, and peninsular Malaysia, form its borders. The SCS covers a total area of about 804,000 square nautical miles. The sea has important economic, geopolitical, and political importance and is full with resources.

Geoffrey Till, a professor of maritime history, claims that sea power has four essential and interrelated characteristics: the sea as a means of trade and as a resource, in terms of what is found within its waters; the sea as a means of informational and cultural exchange; and the sea as a means of dominion. All of these qualities are present in the SCS.

The SCS is a critical territory for the peace, stability, and growth of the Asia-Pacific region. There are competing claims made by many countries to territorial sovereignty. More significantly, the region is essential to the agendas of many countries, especially India, because of its abundance of natural resources and ideal location.

The SCS is an ecology that is interrelated. It is one of the world's richest oceans in terms of marine life, including coral reefs, mangroves, seagrass beds, fish, and plants. It is crucial for the fishing industry of neighbouring nations since the sea provides 10% of the yearly worldwide fisheries catch. Fish and other seafood provide the coastal inhabitants with protein, which is also how they make a living. In actuality, both pelagic (surface-dwelling) and deinersal (bottom-dwelling) species are abundant in the SCS. For the littoral states, the wide variety and ample supply of tuna and shrimp have unique significance. In order to distinguish themselves from the other biological resources taken from the oceans, these two species have given rise to entire enterprises. Additionally, tuna and shrimp are simple to process for value-added production (canning, filleting, fresh, frozen, and chilled processing), which opens up international markets. For the nations in the region, this has turned into significant foreign exchange profits and job prospects. But China has started enforcing fishing regulations in the disputed regions, raising severe maritime security issues and drawing criticism from other claimant states. China recently announced new fishing regulations that would take effect on January 1, 2014, raising concerns about its attempts to assert jurisdiction over all fishing-related disputes.

Oil and natural gas are abundant throughout the area, which has raised the possibility that the contested territory may contain large energy reserves. The SCS has proved and probable reserves of 190 trillion cubic feet (tcf) of natural gas and 11 billion barrels (bbl) of oil, according to estimations from the US Energy Information Administration (EIA). Territorial disputes and a lack of exploration make it difficult for the EIA to assess oil and natural gas reserves accurately, which results in wide variations in reserve estimates throughout the region. The SCS oil deposits are thought to contain 16 trillion cubic metres of natural gas and between 23 and 30 billion tonnes of oil, according to the Chinese Ministry of Land and Resources. Additional hydrocarbon riches might potentially exist in other uncharted territories.

Most significantly, in terms of global shipping, the SCS holds a crucial geostrategic position. It is used for the majority of energy and raw material exports. As free and secure marine commons are crucial to global trade and economy, India and many other nations have an interest in safeguarding the water lanes that pass through the region. The SCS is a crucial maritime gateway and junction for shipping between the Pacific and Indian Oceans.

According to Selig S. Harrison, the South China Sea's location makes it clear how sensitive it is as a strategic waterway. Through the Malacca Strait, it links to the Indian Ocean to the southwest, and to the East China Sea to the northeast. Oil tankers travelling from the Persian Gulf to Japan and warships travelling from the Indian Ocean to the Pacific Ocean both use the sea passage that runs between the Paracels and Spratlys.

It seems sense that India would be very interested in the SCS. More particularly, remarks made by Indian politicians and leaders highlight India's need for "access" and "stability" in the SCS. Indian policymakers have made it obvious on numerous venues how much they are interested in the SCS and how they want to approach it. Indian policymakers have made it obvious on numerous venues how much they are interested in the SCS and how they want to approach it. Jitendra Singh, India's thenminister of state for defence, spoke during the ASEAN Defence Ministers Meeting-Plus (ADMM-Plus) and said:

The maintenance of peace and security in the region is of vital interest, and sovereignty disputes must be resolved peacefully by all countries involved, in accordance with international law. The safety and security of the sea lanes of communication is of the utmost importance. According to accepted principles of international law, it is necessary to reiterate the importance of unhindered right of passage and other maritime rights. We reject the use of force or the threat of using it. We sincerely hope that all parties involved in disputes in the South China Sea will uphold the UNCLOS and the 2002 Declaration on Conduct in the South China Sea, and cooperate to ensure a peaceful resolution of all conflicts. We implore all parties involved to move these conversations forward in order to develop a code of conduct in the South China Sea based on mutual agreement.

Manmohan Singh, the prime minister of India, stated the following on October 10, 2013, in a speech at the 8th East Asia Summit in Brunei Darussalam:

For our collective regional objectives to be realised, a stable maritime environment is necessary. The fundamentals of



marine security, such as the right of passage, unhindered trade, adherence to international law, and peaceful resolution of maritime conflicts, should be reaffirmed. We applaud the concerned nations' united resolve to uphold and carry out the 2002 Declaration on the Conduct of Parties in the South China Sea and to work toward the establishment of a consensus-based Code of Conduct in the South China Sea. We also appreciate the creation of the Expanded ASEAN Maritime Forum, which will work to strengthen current marine security-related international legislation through the development of maritime standards.

These official declarations, which were previously quoted, reaffirm India's focus on "peaceful dispute settlement" in order to fulfil "common regional goals." These claims also reflect the reasoning behind India's growing involvement in the SCS, according to Indian leaders. Delhi has stated its will to work for a regional security architecture that is cooperative and governed by rules in order to sustain peace and stability. Notably, Dr. Singh stated, "It will be in our mutual interest to work for a cooperative, inclusive, and rule-based security architecture that strengthens our collective security and regional and global stability," on October 24, 2013, during a speech at the Central Party School in Beijing.

C. Raja Mohan outlined five main explanations for India's rekindled interest in the SCS in his book Samudra Manthan. First, as trade between India and East Asia has grown, India has started to appreciate the value of its sea routes of communication beyond its immediate vicinity, especially the Western Pacific. Second, India seeks to reduce its reliance on powerful nations for maritime needs in the Western Pacific. Third, India worries that China's "new assertiveness" could turn the SCS into a "Chinese lake" by vehemently asserting its territorial claims. Fourth, India wants to maintain a presence to monitor any developments that can damage its national interest in all marine domains. And finally, the Indian Navy emphasises the value of a forward maritime presence and naval cooperation in thwarting possible foes.

Since about 55% of India's trade with the Asia Pacific region goes through the South China Sea, India has wellestablished maritime strategic interests in the area. "The entire Indian Ocean region spanning from the East African coast to the South China Sea is critical to our international trade, energy, and national security interests," stated India's then-foreign secretary Ranjan Mathai in an address at the National Defence College. Added him:

The development of a regional, economic, and security architecture is taking place in the Asia Pacific area. We are taking part in the East Asia Summit process, ADMM Plus, the ASEAN Regional Forum, and other forums. The long-term interests of the region as a whole are served by an open, equitable, and inclusive regional architecture. Our long-term economic, development, and security interests are served by our strategic alliances with Japan, the Republic of Korea (ROK), and other Asia Pacific nations.

With this resurgence of interest in the SCS, certain key aspects of India's strategy can be listed.

First, the right to free navigation: India has a keen interest in preserving this right in the South China Sea. India emphasises "unimpeded right of passage" quite explicitly. It is crucial for the Asia Pacific region's stability and economic growth.

Second, peaceful dispute resolution opposes the use or threat of force in settling conflicting claims. India emphasises the necessity of upholding regional peace and stability.

Last but not least, India insists on the observance of international law, especially the United Nations Convention on the Law of the Sea, and the peaceful settlement of conflicts.

Although the SCS conflict has been ongoing for years, recent developments have raised concerns, endangering regional peace and security. The national legislation on the baseline bill by the Philippines and the submission to the Commission on the Limits of the Continental Shelf by various claimant states were two significant developments that sparked controversy in the SCS in 2009. The dispute between China and the US over China's so-called "core interest" declaration and Hillary Clinton's subsequent "national interest" counter-statement further deteriorated the situation. The SCS disagreements have all of a sudden resurfaced as a hotspot in this area, attracting attention and causing alarm in the international community, particularly India. Two specific incidents in the tumultuous waters, one on July 22, 2011, when China cautioned India's warship INS Airavat after it paid a friendship visit, and the second in September 2011, when China objected to oil exploration by India's public sector company, Oil and Natural Gas Commission Videsh (OVL), in Vietnam's territorial waters, give Delhi the impetus to deepen its engagement.

INDIA'S POLICY OF SOUTH CHINA SEA

India is aiming to deepen its connections with ASEAN nations in recognition of the strategic importance of Southeast Asia and the Indian Ocean for the defence of the Indian peninsula. As was already mentioned, the Strait of Malacca is geographically close to several of India's island provinces. K. M. Panikkar claims:

The Peninsula of Malaya is the upper jaw, and the protruding point of Sumatra is the lower jaw, making the Gulf of Malacca resemble the mouth of a crocodile. The Nicobar Islands have the ability to control the Gulf's entrance, and Singapore Island controls its narrow end.

In fact, India needs the ASEAN nations as allies.

Although economics has been the primary and apparent factor in drawing India and ASEAN together, their shared security concerns are strengthening the alliance. In order to realise ASEAN's aspirations to be a global power and defend itself from external threats, India thinks that a tight collaboration with ASEAN is necessary for its strategic interests. India's "Look East Policy" (LEP)" has led to an increase in engagement with Southeast Asian nations.31 The regional, economic, and security architecture in the Asia Pacific region is evolving.



The LEP is a crucial tool in India's foreign policy discourse to address issues brought on by China's ascent. Former Indian Foreign Secretary Kanwal Sibal writes:

As it evolved, the Look East Policy of India included a strategic Chinese component. The ASEAN nations also wanted to more effectively integrate India into the region to achieve a better balance with China's presence there. India has been conscious of the China factor in its desire to increase its footprint in this region of Asia.

India and the ASEAN nations have complementary strategic and economic objectives. The annual report of the Indian Ministry of External Affairs states:

In recent years, India's relations with the nations in South East Asia and the Pacific have seen a considerable transition. Our interaction with individual nations, both bilaterally and regionally, has gained fresh pace as a result of the expansion and strengthening of our Look East Policy, the region's consistent trend of economic growth and stability, and the ongoing geopolitical shift towards Asia.

India's relations with the nations are described as being multidimensional and forward-looking, and they have developed a strategic dimension with five of them (Australia, Indonesia, Malaysia, Singapore, and Vietnam) as well as with ASEAN. India has maintained frequent marine connections with the Indian Ocean's littoral republics. After a millennia-long pause, the LEP was an effort to revive a venerable connection. Through the LEP, India reimagined a historical reality for the new millennium, reviving a relationship that had been somewhat inactive and apathetic.

Raja Mohan says it well:

A stronger Indian contribution to peace and stability in Southeast Asia is becoming more popular in the area despite the new strategic uncertainty. Hopes for a more prominent Indian security presence in Southeast Asia have grown as a result of perceptions of India's development and rising military capabilities in the area.

In fact, India has strengthened its "strategic partnership" with a number of nations in the Asia Pacific area since the formal articulation of the strategic dimension of the LEP by External Affairs Minister Yashwant Sinha in 2003. Mr. Sinha said in his speech at Harvard University:

India's Look East Policy's initial phase was heavily invested in trade and investment ties with ASEAN countries. With ASEAN at its centre, the new phase of this policy is distinguished by an extended meaning of "east" that ranges from Australia to East Asia. The new phase also signifies a transition from commerce to broader economic and security challenges, such as coordinated counterterrorism measures and combined efforts to secure maritime lanes.

The protection of maritime routes has become a key component of India's Look East Policy. A navy is not intended for the defence of the coast, according to Mr. Panikkar. It is necessary to defend the coast from land. The goal of a navy is to establish dominance over a sea area in order to stop enemy ships from sailing toward the coast or interfering with trade and commerce. He continues by saying that the protection of the seas, which are essential to India's defence, is the Indian navy's primary duty.

From nation to nation, the content of India's partnerships in the east differs. Regular high-level political visits between India and East Asian nations to discuss broader concerns of regional and global security and to strengthen vital bilateral collaboration in the fields of defence, security, and economic activities are a significant aspect of this partnership. India has formed strategic alliances with several nations in the area, varied in depth and intensity, in addition to institutionalising routine meetings on foreign and defence affairs at the ministerial and senior official levels. India most recently established an ASEAN-India Center in New Delhi to further its efforts to cooperate with ASEAN nations. India has announced the establishment of a new mission for ASEAN and the installation of a separate ambassador for the area in order to advance this partnership.

More importantly, the Indian navy's role in the defence forces is becoming vital to India's overall policy. Nearly every nation in the East Asian region, including China, participates in frequent training exercises, visits, and other activities with the Indian navy and other armed services. India has established defence academies in some of these nations to provide ongoing training. India has begun providing the nations in the region with defence technology and equipment.

The Indian navy has more grounds to adopt an expeditionary mindset as a result of the expanding trade between India and Southeast Asian nations. In the 1990s, extensive bilateral and international interactions helped the Indian navy's new outward focus gain momentum. As previously mentioned, India increased its port calls in the region, increased its joint nava! Exercises with all of Southeast Asia, and welcomed ships from the region at its own ports. The Indian navy has taken part in a number of high-profile maritime operations in the area, including port calls, transit, combined naval drills, humanitarian aid, and disaster relief. Particularly noteworthy were the Indian navy's important contributions in the rescue efforts following the 2004 Asian tsunami and the 2008 cyclone that hit Myanmar.

India has constantly participated in cooperative naval exercises of various sizes in order to strengthen its ties in the maritime domain in a more significant way. Joint naval operations, which include multilateral operations like the biennial Milan (which includes Indonesia, Thailand, Malaysia, and Singapore) since 1995, search and rescue operations (SAREX) with Malaysia, Singapore, and Indonesia since 1997, and bilateral operations like the Singapore-India Maritime Bilateral Exercises (SIMBEX) since 1993, have become a catalyst for maritime confidence building.

The Indian navy has also been able to call at ports like Singapore, Vietnam, and other nations despite the lack of forward bases. With the opening of the "Naval Air Station" in Campbell Bay (INS Baaz) on July 31, 2012, which is seen as India's window into East and Southeast Asia, the Andaman and



Nicobar command was expanded. After INS Baaz was commissioned, Admiral Nirmal Verma, who was then the chief of the naval staff, stated that the archipelago, being 650 nautical miles away from our mainland, provides India with a critical geostrategic edge. The Islands not only give the country a strong presence in the Bay of Bengal, but they also act as our gateway to East and South East. The majority of the ships transporting important goods for East Asian economies lie astride some of the busiest shipping lanes of the Indian Ocean, he continued. INS Baaz is currently set up to fly light to heavy aircraft from a 3,500-foot-long runway for short-field operations. To allow for the free operation of all types of aircraft, including large aircraft, the runway will be gradually extended. Modern navigational aids and airfield instrumentation will also be added to the base. The increased military presence in the archipelago will give India's 600,000 sq km of Exclusive Economic Zone (EEZ), or around 30% of the nation's overall EEZ of 2.01 million sq km, a strong security shield.

Former Indian chief of naval staff Admiral (Retd.) Arun Prakash said this while delivering the Y. B. Chavan Memorial Lecture at the Institute for Defence Studies and Analyses (IDSA):

A favourable maritime environment has been created in the area thanks to the navy's international cooperation initiatives. Along with other outreach initiatives including drills, joint patrols, port calls, and flag-showing deployments, the navy also offers maritime protection upon request from its neighbours. Nearly all IOR nations have signed agreements allowing IN ships, submarines, and aircraft to quickly access refuelling and turnaround facilities.

The capability of the Indian navy is being gradually improved. The most recent and anticipated addition to the Indian navy is the aircraft-carrier INS Vikramaditya, but there have been a number of other important advancements. On August 9, 2013, in Visakhapatnam, the nuclear reactor of India's first ballistic missile submarine (SSBN) reached criticality. Three days later, in Kochi, the indigenous aircraft carrier was launched. In 2012, the Indian navy took delivery of a Russian nuclear-powered attack submarine under a 10-year lease. The Indian navy anticipates receiving seven stealth frigates, six diesel submarines, 30 additional warships, over 150 fighters, maritime patrol aircraft, and helicopters during the course of the next ten years in order to expand its maritime capability and reach. India still has a long way to go before it can be considered a trustworthy and accountable maritime force in the developing Asia Pacific security system. Indian maritime and military diplomacy is still in its infancy, as S. D. Muni rightly observes. When India's intended "amphibious warfare base" is fully completed in the Andaman and Nicobar Islands by 2020, its naval reach and capacity to share a greater security burden with its Fast Asian neighbours would be strengthened.

The Indian navy's involvement in attaining its foreign policy goals is explicitly stated in India's maritime strategy, titled "Freedom to Use the Seas: India's Maritime Military Strategy." It states that using warships to promote domestic foreign policy will be the Indian navy's primary responsibility in the twenty-first century. The Indian navy must project power and demonstrate presence during the protracted years of peace, spark collaborations with its maritime capability, foster confidence and foster interoperability through joint/combined operations, and provide international maritime support. The policy also emphasises the Indian navy's contribution to upholding tranquilly and peace in the Indian Ocean region as well as its ability to fulfil the demands of India's allies when necessary. "Our [Indian Navy's] primary maritime military interest is to ensure national security, provide insulation from external interference, so that the vital tasks of fostering economic growth and undertaking developmental activities, can take place in a secure environment," the Indian chief of naval staff claims in his foreword.

As previously mentioned, given the Indian navy's expanding presence in the Western Pacific, as evidenced by its joint naval exercises with Japan and South Korea and the import of oil and gas from Sakhalin in the Russian Far East, India's strategic interests in the SCS also stem from the importance of the sea as a crucial transit route. With various nations in the area during the past few years, including Singapore, Indonesia, Malaysia, Vietnam, Thailand, Cambodia, and the Philippines, India has signed security cooperation agreements that have opened up new avenues for cooperation. The ASEAN nations have received military training from India. Under the Indian Technical and Economic Cooperation (ITEC) programme, which also provides a defence training programme, all ASEAN nations are partners. Defence supplies and maintenance support are two aspects of India's military assistance to various ASEAN nations. India is aggressively pursuing ideas for combined defence production with Singapore and Indonesia. India is expanding its capacity and influence in order to protect its greater national interests.

More critically, Singapore, for example, has provided a favourable position for Indian forces travelling through from the Indian Ocean into the SCS, matching India's developing military relations with this region. Singapore and India work closely together on defence. They have further boosted defence cooperation with their pledge to protect open maritime routes for navigation. It portends well for a more stable and peaceful region as well as constructive interactions between the two nations. The South China Sea, a real Mediterranean of the Pacific, is under Vietnam's control, making it of tremendous strategic importance. The relationship between India and Vietnam predates any confrontation between China and Vietnam as well as between China and India, and is founded in part on a number of historical similarities. The strategic aspects of Indo-Vietnamese ties, which were first discussed in the 1980s, began to take shape in the 1990s as institutional and organised structures. With a focus on economic and strategic cooperation, bilateral ties between India and Vietnam have grown recent Years. Since the official establishment of a strategic alliance in 2007, India has gradually increased defence cooperation with Vietnam and entered into a line of credit agreement with



Vietnam for \$100 million to support the sale of strategic weapons and to enable defence procurement.

India has also committed to increase military education and support Vietnam's navy's attack capability. Vietnamese sailors are already receiving thorough underwater combat action instruction from India at the INS Satavahana in Visakhapatnam. Additionally, it might aid in Su-30MK2 fighter jet operator training for Vietnamese pilots. Vietnam is also looking at the idea of purchasing surveillance tools made in India, like unmanned aerial vehicles. India can be a huge asset in the modernization of the Vietnamese navy. However, Vietnam places a great importance on India's capabilities. Since 2000, Hanoi has embraced India's naval explorations of the South China Sea and granted frequent access to its port infrastructure. The Indian navy's strategic access in the SCS could be improved by having exclusive access to Vietnamese port facilities. In reality, India's aggressive naval engagement with Vietnam may assist advance India's interests in the area.

In 2012, Chief Admiral D. K. Joshi of the Indian Navy made the following remarks on the eve of Navy Day:

Not that we anticipate spending a lot of time in the South China Sea, but when the need arises—for instance, in circumstances where our nation's interests are at stake, such as ONGC Videsh, etc.—we will be asked to travel there, and we are ready for that. Are we getting ready for it? Are such drills being held here? The quick response is "yes"

The remarks made by Admiral Joshi highlight New Delhi's stance toward China's growing assertiveness in the SCS and show a stronger Indian maritime diplomacy.

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LIFESTYLE OF SANITATION WORKERS IN COIMBATORE CORPORATION

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ABSTRACT

The study examined the lifestyle, their salary queries, working atmosphere, problems faced and safety awareness of the sanitation workers in Coimbatore corporation. However, all this progress has a demand sideof sanitation and the supply side, especially the people who carry out sanitation work, and who are called manual scavengers, a historically designated and socially invisible class of human labours remains forgotten. They start their work very early in the morning and skip their breakfast, lunch and do all the cleaning activities. In all other countries they are treated with huge respect, whereas in India they are still treated with hesitation and their works are not recognised with proper appreciation and also with unfair salary.

KEYWORDS: Sanitation, Workers, Life, Style

INTRODUCTION

The study of lifestyle of sanitation workers in Coimbatore corporation, their salaries, petition of the sanitation workers are addressed in this study and focused for the development of sanitation workers and or their health, safety and salary hike.Sanitation workers are both men and women, who work at any part of the long sanitation chain: that begins in one flashes the toilet or disposes waste.That is not the most important job in the society, their works more than often mutually include but is not limited to empty toilet pics and septic tanks cleaning and maintaining sewers and man holds cleaning toilets and public places segregation or managing different kinds of wastes and operating pumping stations and treatment plant and all the sanitation workers remain mostly unseen and unappreciated.

OBJECTIVE

To study the lifestyle of sanitation workers in Coimbatore corporation.

PETITIONS OF SANITATION WORKERS

1. Coimbatore: A group of sanitation workersworking on contracts for the Mettupalayam municipality they have petitioned the district administration for seeking better wages after submitting the petition during the grievance redressal meeting the workers said that they are under paid by the contractor who had hired them the collector has recommended 610 a day for contract sanitation workers, the contractor is paying only 300 a day. Which has came into the focus and answer by the municipality recently, 'R. Arumugam', said the workers wages is insufficient to keep the municipality clean.

2. The another petition that the, All India agriculture workers unions (AIAWU) chapter set the workers employed under the Mahatma Gandhi National rural employment guarantee act (MGNREGA) do not get paid properly the member or give the state government to increase the number of working days under this act from 100 to 200 and hike the daily wages to 600 they also or give the state government to fix the minimum support price for their produce.

SANITATION WORKERS IN COIMBATORE CORPORATION

The Coimbatore district is located in the southern West part of Tamil Nadu, measuring 247 square miles, which is surrounded by the western Ghats . It becomes a municipal corporation in 1981.Itcomprises some 100 wards population with nearly 3,00,000 people including Hindus, Muslims ,Christians Kannadigas,Telugus,Malayalees,Dalit and also migrant workers from the other states it is also the second largest city in the Tamil Nadu with nearly 25,000 small scale industries and the manufacturing centre of textiles from motors automobiles and software doing billions of business from that it is also an education and health hub of Tamil Nadu.

Coimbatore is one of the most industrialised cities in Tamil Nadu and has the vast population of workers.The Coimbatore corporation has been kept clean only because of conservancy.There are some 2,520 permanent workers and 2,300 contract workers, there are only 5,000 sanitary workers who nearly 15,000 workers more could be appointed by the Coimbatore corporation.This has been one of the demand of the trade union like AICCTU. The permanent worker earn a salary of Rs. 20,000 a month, where as a contract worker gives only Rs.300 per day until 2016.The contract workers for

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earned only Rs.100 per day but due to the struggle of the workers it been rice to Rs. 350.

ROUTINE OF SANITATION WORKERS

Sanitation workers start from 5:00 a.m. to 11:45 p.m. and 3:45 p.m. to 5:45 p.m. Most of them work part time in the leisure hours. The state government passed general order stating that the minimum salary of sanitation workers are Rs.16000 the government has not been implemented until now.The contract workers are recruited by Vardhan infrastructure and other areas which are under the jurisdictions of rural development and the Municipal Administration of the Ministry of Tamil Nadu. The contractor have no licence to recruit anyone. The contractor will be paid by the Coimbatore corporation. Thus, the worker will be at the mercy of the unlicensed contractors, which will gain millions of rupees from the wages of these workers. The wages given to the contract workers are will below the amount guaranteed under the minimum wage act of 1948. More over most of the men and women contract workers has been working more than 10 years and the contract work Abolition and Regulation act 1970 bans appointing contract workers in perennial employment.

DURING COVID-19

During covid-19 pandemic has only aggravated the flight of sanitation workers apart from the economic crisis they have to clean the cities and work with the whole cities staying at home they will not be able to work as part time must during leisure time they will be at a full risk of infection .Over the last seven to eight years in India, sanitation has been focused on government programme

RELATED SCHEME

(Swachh Bharat) mission across India 2014 by the Narendra Modi government to eliminate open defecation and improve solid waste management. This mission changed the government in terms of giving people access to toilets. Several thousand crores have been spend on the issue and that has been progress on terms of toilets constructed. But the cleanup of toilet by workers often significant cost of them.

PEOBLEMS FACED BY SANITATION WORKERS

However not only in the cleaning of toilets, the sanitation workers also clean roads, clean garbages and their main duty is to keep our nation clean. Each statein India should have sanitation workers who cleansup all the places on a regular basis. The states cleanliness is based on the effective implementation of sanitation workers.

The major problem faced by the Sanitation workers are they are paid low salaries, some of the workers remain uncounted. They face high risk in their health, proper health measures and safety precautions or not instructed to the workers. The duty allocated for the sanitation worker includes latrine cleaning, sewer cleaning, faecal sludge handling, cleaning cleaning, school toilet cleaning, public toilet cleaning, railway track cleaning, sewage treatment plant work and domestic. Work about 40 percentage of them work in urban areas and roughly half for women.

As we see regularly the sanitation workers comes along every Street and picks of each houses wastes, and categories them into biodegradable andnon biodegradable.All these wastes are collected in a tank and it is disposed in particular area allocated, once the tank is emptied, the desludging process has to be done twice or thrice. For this, they have to collect the sludge from the household and dispose it at the faecal sludge treatment plant a number of times.

Once the process is completed, they take bath at the plant. During this process, they may have to skip their meals. When there is no trips, they clean their cesspool truck, considering the truck helps them earn their daily livelihood. Being a sanitation workers, a contractual employees of the government, they earn Rs. 300 - Rs. 400 a day.

CONCLUSION

The sanitation workers should be respected and recognised by all the people. They should get proper salary, government should take more steps in contractors who cheats the sanitary workers by giving unfair wages.

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"ENCODING" THE ROLE OF SHGS: INSIGHTS FROM INDIA

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ABSTRACT

The paper unfolds the role of Self-Help Groups in the development of the North Eastern Region of India by analyzing the outreach of the region-wise bank linkage with the SHGs in different region of the India. A comparative study has been drawn of the number of SHGs linked with different banks over the past 15 years. However, it was found that the highest number of SHGs linked with the loan disbursement was with the commercial banks and the highest amount of savings was in the southern region of India and lowest was in the north eastern region of India.

KEYWORDS: Self-Help Groups, NABARD

INTRODUCTION

Self-Help Group (SHG) is a financial committee of 10 to 15 women members. It is an informal group of women who share the same financial status and come together under the umbrella of the SHGs with the intent to improve their financial conditions. The presence of SHGs has very high in India, though sizable groups can be found in various states of South Asia. With the prime strategy of forming peer groups with similar socio-economic conditions, the origin of SHGs can be traced back to 1972 with the establishment of the Self-Employed Women's Association (SEWA) 1972. However, in 1992 NABARD officially formed the SHG Bank Linkage Project, the world's largest microfinance project.

The presence of SHG plays a very important role in India and Indian society. By offering a collateral-free loan to its members and also helping others. SHG became a savior over the past decades in India. They also happen to be an important source of financial service to the marginalized class who are times deliberately excluded from the formal financial banking sectors, especially in the rural regions. According to the Ministry of Rural Development, Rs. 11 lakh crore bank credits have been accessed by NE Region SHGs under DAY-NRLM from the FY 2020-21 and around 73 lakh crore bank credits have been accessed by the SHGs of the rest of India. However, despite being such an important tool in poverty alleviation, the NABARD reports have been showing that SHGs have been performing poorly in the NER of India.

The subsequent sections will discuss the importance of SHGs in India and particularly in the NER of India. Using time series data, a comparative analysis will be drawn of the trends of loans disbursed to the SHGs by financial institutions and also the presence of the SHGs in the Indian region, and the saving linkage of SHGs with banks.

LITERATURE REVIEW

The presence of the SHGs in the nation has been growing haphazardly, with the uneven condition of such unorganized growth of the SHGs has created more functional and organizational constants rather than fulfilling the objective of the peer groups in the improvement of the financial conditions of the members. However, the school-meal programs organized by the SHGs members to attract rural children for better quality education have contributed not only to the educational upliftment in the rural areas but also to the nutrition of the beneficiaries. Various regulatory policy has been framed such as the Pradhan Mantri Adarsh Gram Yojna, Rashtriya Gram Swaraj Abhiyan, and policies under the Ministry of Rural Development for the proper regulation and functioning of the SHGs. Though, the Y.H. Malegam Committee did lead to various constructional policy revolutions in the functioning of the banking institution such as the MFIs for the proper regulation functioning and also to address the vast marginalized community. However, the SHGs have been targeted for the biasness in the selection of borrowers to access loans from financial institutions. Some of these issues have raised concern about the corruption structure of the functioning of the group.

Although, various literature studies have been carried out on the functioning of the SHGs in India few have been done in the context of the NER of India which doesn't share the same socio-economic and political climate as mainland India. The present paper using the data from NABARD aims to fill the gap in the study by observing the trends of loans disbursed to SHGs by banks and also its percentage share in the saving linked with banks.

DATA AND METHODS

The study is based on secondary data and is collected from the NABARD. A bar graph has been constructed to observe the number of SHGs with bank loans disbursed by financial institutions. Further, a region-wise number of SHGs and savings amounts have been constructed using data from NABARD to see the outreach of the SHGs in different regions of India.

Origin and Impact of SHGs in India: Literature Evidence The origin of SHGs in India can be traced back to 1970 with the formation of SEWA. The banking linkage program in the year 1993 constitutionally framed the very functioning of the SHGs with banks to act as the key to the poverty alleviation of the poor. However, in the year 1999, Government of India,

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have introduced Swarn Jayanti Gram Swarozgar Yojna (SJSY) to encourage self-employment in various rural areas and also develop structured and skilled SHGs. Functions:

a) Employment and Income Generation:

It plays an important role in the building a community for the marginalised class in the field of employment and income generation.

b) Resolving Conflicts:

The practice of peer group collective leadership through various mutual discussions, helps in solving various conflicts in the rural areas.

c) Financial Inclusion:

Since, due to the inability of the formal banks and financial institutions in the rural areas there have been an inadequate outreach of the financial institutions and poor network community it has lead to the exclusion of the poor from the financial services. Therefore, the SHG linkage with various microfinance institutions, helps its members and the poor in the access of the financial services.

The presence of SHGs in society has contributed a lot to the development in the past decades. It has encouraged to development of social integrity in Indian society, especially amongst women who are being targeted by various social discriminations. It has been noticed that the presence of SHGs has been a voice of the marginalised section in various rural regions of India. It is also seen that the financial assistance from SHGs helped the borrowers and its members to spend more on the education, health and nutritious dietry need of the consumer.

SHGs have not only been a key instrument in rural poverty alleviation but also have been a tool in the empowerment of the women by boosting their confidence in various decision-making affairs ath both the household and community level. Howver, there is various lopeholes in the very functioning of the SHGs as it has been found that the members are not from the poorest families. Moreover, the lack of qualified and skilled personnel running the SHGs has been a major drawback in the regulation of the group.

NUMBER OF SHGS WITH BANK LOANS DISBURSED BY FINANCIAL INSTITUTIONS

To observe the number of SHGs with bank loan disbursed by financial institutions, a bar graph has been constructed using the data from NABARD.

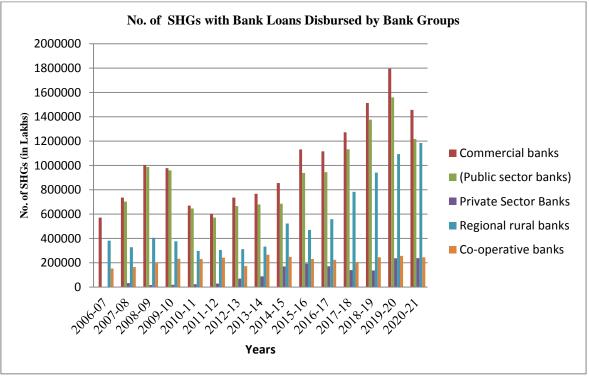


Figure 1: Number of SHGs with bank loans disbursed by financial institutions.

Source: NABARD

The above figure illustrates the number of SHGs with bank loans disbursed by different financial institutions. It has been observed that the highest number of SHGs with bank loan disbursement have been with commercial banks in the year 2019-20. However, post-COVID-19 year i.e. 2020-21, there has been a slight decline in the number of SHGs with the banks loan disbursement, which might be due to the pandemic and lack of social gathering of the SHGs.

REGION-WISE SAVING AMOUNT OF SHGS.

To analyse the outreach of the SHGs in different regions of India. The data from NABARD has been drawn and a comparative analysis has been made.



	2018-19		2019	-20	2020-21	
Regions	No. of SHGs	Savings- Amount	No. of SHGs	Savings- Amount	No. of SHGs	Savings- Amount
Northern						
Region	5,48,624	62,453	5,77,122	59,550	6,09,808	1,74,345
North Eastern						
Region	5,23,469	40,407	5,56,899	48,141	6,33,714	83,126
Eastern Region	26,54,358	6,01,155	28,11,130	6,64,333	31,22,424	7,74,912
Central Region	10,62,759	1,33,230	11,35,083	1,71,217	13,45,575	2,11,870
Western						
Region	13,88,615	2,05,275	14,73,853	2,01,880	15,50,176	3,74,023
Southern						
Region	38,36,418	12,89,928	36,89,236	14,70,085	39,61,703	21,29,485
Total	1,00,14,243	23,32,448	1,02,43,323	26,15,205	1,12,23,400	37,47,761
Mean	16,69,041	3,88,741	17,07,221	4,35,868	18,70,567	6,24,627
Max	38,36,418	12,89,928	36,89,236	14,70,085	39,61,703	21,29,485
Min	5,23,469	40,407	5,56,899	48,141	6,09,808	83,126

Table 1: Region-wise number of SHGs and saving am	ount (Rs. And no. in Lakhs)	SHGs and saving amount (Rs. And no. in Lakhs)
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Source: NABARD

The above table comparatively shows the number of SHGs present in the different regions of India. The table clearly shows that the highest number of SHGs is in the southern region of India with 21,2229,485 in the year 2020-21 and the lowest in the NER with just 83,126 in the year 2020-21. Though, there has been an increase in the number of SHGs in all the regions of India. However, the NER has been lacking behind the rest of the region, a demographic constraint might be the reason.

Region-wise saving amount of SHGs from 2018 to 2021. It has been observed that over the past three years the highest savings amount has been in the southern region with Rs.12,89,928 lakhs in the year 2018-19 and the lowest in the NER with just Rs. 40,407. However, there has been an increase in the NER in the year 2020-21 with Rs. 83,126 savings amount but still, it lacks behind the rest of the regions. The supplementary graph has been presented below using the data from Table 1.

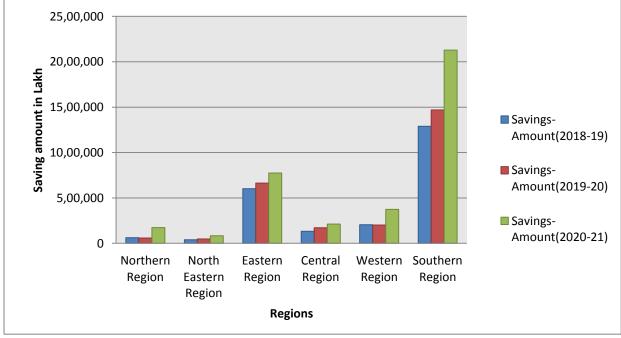


Figure 2: A comparison in Savings-Amount (2018-2021)

Source: NABARD



SELF-HELP GROUPS IN NORTH EAST INDIA: A COMMENTARY VIEW

The role and the importance of the SHGs have been thoroughly discussed in the preceding sections using both existing literature evidence and also statistical data. However, the presence and outreach of the SHGs in the NER have been an episode of debates for a long period of time. In order to address the holistic empowerment of the standard of livings, health care, education various programs and campaigns have been carried out in the NER of India to name a few is the Himalayan Self-Help Group (2015), Far-Flung hamlet of "Self-sufficiency Bordumsa under the theme and Independence" in Arunachal Pradesh. However, the demographic constraints have been raised in various studies, in the lack of outreach of the SHGs in the North East India. Therefore, a more infrastructural approach have been suggested in the concern by policy makers to combat the lack of outreach in the region.

CONCLUSION

In this paper, we comparatively analyse the impact and outreach of the SHGs in the NER of India and the rest of the India. Our study reveals that, the outreach and presence of the number of SHGs in the NER of India is very less compared with the rest of the India. It was also found that savingsamount linkage with banks is also less in the NER. Thus, from a policy suggestion view a separate body and a regulatory constitutional structure should be framed for the region to encourage more numbers of SHGs and also promotion of bank linkages.

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A STUDY OF CONSTITUTION OF INDIA

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ABSTRACT

The purpose of the paper is vision on the constitution of India is grounded on the principles of the fraternity, liberty, justice and equality. For completing goal, we have taken on a brief study of all the journals and the books which are connected with the necessities of the constitution manifest great esteem for the human dignity, pledge to equality and non-discrimination and, apprehension for the weaker section in the society. Additionally, the constitution makes it compulsory for the Govt. to protect and promote freedoms, and to guarantee every citizen a decent standard of the living. In other words, the Indian Constitution promises the rudimentary human rights to every citizen of India. This article dealt with the general Constitutional Laws of India and the amendments made into the Constitution of India. The article also exposes approximately the schemes for consciousness of the above-mentioned goals are confined in the Fundamental Rights enshrined in Part III and Part IV of the Constitution. "The right to freedom," "the right against exploitation," "the right to freedom of religion," "cultural and educational right," "right to constitutional remedies," and special necessities connecting to positive classes are some of the constitutional necessities guaranteeing human rights.

KEYWORDS: Constituent Assembly, Adequate Safeguards, Ex-Post Facto Laws, Justifiable.

1. INTRODUCTION

The Constitution of a country lays down the elementary structure of the political system under which, its public are to be administered. It creates the foremost organs of the state legislature, judiciary and executive defines their powers, demarcates their errands and controls their associations with each other and with the individuals. However, each constitution signifies the revelation and value of its formation at the rear and is grounded on the political and economic ethos and, the faith and objectives of the people. So prominently it can be renowned that the framing of the constitution of independent democratic nation is accomplished by the people for the persistence of in view of and espousing of the constituent assembly. India converted independent on 15th Aug 1947 rendering to Independence of India Act, 1947 ratified by the British Parliament. It completes an establishment for the setting up of the two independent regions in India, to be identified as India and Pakistan.

Thus, India end to end with Pakistan acquired novel international character. Nevertheless, both the new states were continual to be directed by the Govt. of India Act, 1935. The job for formulating the Constitution of India was assigned to the Constituent Assembly which met for the 1st time on 9th Dec, 1946. The assembly selected several teams to draft the dissimilar articles of the Indian Constitution. The information of these boards formed on the basis, which a draft of the novel Constitution of India was ready in Feb 1948. Its ultimate shape

was given on 26th Nov, 1949 originated into the force on 26th Jan, 1950. The Preamble of the Indian Constitution states India to be a "sovereign, secular, socialist and the democratic republic". The term "democratic" signifies that the Govt. gets its expert witness from will of the persons. The Govt. is voted through the people and, it is a body of the senates of the people. Thus, the power to workout legal in addition to political sovereignty vests in the individuals. It gives a sense that they all are alike "irrespective of their race, religion, sex, language and culture".

2. OBJECTIVES

- To study a diversity of provisions of the Indian Constitution "promoting and upholding" the human rights.
- Disapprovingly examine numerous rights enshrined in the Indian Constitution.

3. A REVIEW ON FUNDAMENTAL RIGHTS IN THE INDIAN CONSTITUTION

Investigate envisions the critical appraisal on the "fundamental rights and directive principles" of the state policy of the Indian constitution. Though, it strongminded the leeway of recital of the fundamental rights by the persons in the independent state like India.



4. HUMAN RIGHTS AND DEBATES IN THE CONSTITUENT ASSEMBLY

A written pledge of Fundamental Rights in the Indian Constitution, envisioning a Constituent Assembly for enclosing the constitution of India was known by the Cabinet Mission in the year 1946. To this end, a commendation was made to arrangement an Advisory Committee for reporting to the Assemblage on Fundamental Rights. As per the proposal of the Cabinet Mission plan, the Constituent Assembly nominated to form the Advisory Committee on 24th Jan, 1947. Sardar Patel had its chairman. The committee was to report to the Indian Assembly on list of the Fundamental Rights, the clauses for the defense of minorities etc. The sub-committee on Indian Fundamental Rights with Acharya Kripalani as the chairman had one of the sub-committees set of connections by the Advisory Committee.

This sub-committee met for the 1st time on 24th Feb, 1947, to discourse the drafted list of rights ready by Dr. B.R. Ambedkar, B.N. Rau, K.T. Shah, K.M. Munshi, Harnam Singh and the Congress Proficient Committee, along with miscellaneous notes and also memoranda on numerous aspects of rights. These lists were prolonged and comprehensive, as they were convoyed by the explanatory memoranda and they confined both negative, as well as positive rights taken from diverse sources, from both in the interior the country and outside. Balancing separate liberty with communal control, the former for satisfying specific personality and the latter for the peace and stability of the society was a very complicated problem. In spite of disagreement on procedure, there was only just any alteration on principles. So, it was unquestionable that the Fundamental Rights should be justiciable. The Rights to Freedom, requirements removing untouchability, defense against double jeopardy, by the ex-post facto laws, equality beforehand the law, the right to freely practice religion and the defense of minorities were all accepted. The English device of privilege writs, or instructions in the form of writs was the great legal method, which was comprised within the rights to secure them. Right to constitutional medications was also accepted (Lutz and Burke, in the year 1989). Though a few revisions were recognized, the content of rights and basic principles continued intact.

The rights were painstaking to be the fundamental and enforceable by the courts but they couldn't be absolute. They could be limited by the assigning provision to the specific right and by providing for the rights to be on hold in confident circumstances. Individual liberty, right to the equality, elementary freedoms etc. were passed by certain limitations. The 7 Fundamental Rights had close semblance with human rights preserved in many international human rights documents. Members alike K.M. Munshi, K.T Shah and Ambedkar were in favor of a more energetic communal programme. So, they contended on a stated time limit within which entirely the directive principles must be made justiciable. Throughout the argument on the Draft constitution (Nov-Dec, 1948) there were 2 types of the opinions - that the directives didn't go far sufficient towards launching a socialist state and, that they should have positioned greater stress on certain institutions and principles, central to the Indian practice and, to Hindu thought, principally those overestimated by Gandhi's teaching.

The amendments for growth of village life and economy and, the panchayat system of village group, making the elevation of cottage industries a govt. accountability, making it obligatory upon the government to stop the slaughter of cattle and, to progress the methods of "animal husbandry and, agriculture", amendments are calling for the nationalization of the numerous industries are manifest of these opinions. Though, most of these amendments were chosen down or withdrawn by their originators. So, the directive principles of the state policy were accepted as the part IV of the Indian Constitution by the Indian Assembly. Fundamental human rights in the logic of civil liberties with their modern attribute and, overtone is a growth more or less similar to the development of the constitutional govt, and the parliamentary institutes from the time of British rule in our country India. The motivation of their growth clearly came out of confrontation to the foreign rule when the British resorted to random acts for instance brutal stabbings on unprotected poor Indians. Nationalist Movement and, the birth of the Indian National Congress (INC) were the straight results.

The freedom movement was principally focused in contradiction of racial insight and, to fortifying basic human rights for all that the people regardless of race, creed, sex, colour, place of the birth in the matter of entree to the public places, offices and the services. The history of national struggle for the basic human rights can be outlined back to the creation of the Indian National Congress (INC), which strived to express the spectrum of the human rights back in the year 1895, when an unidentified author drafted the Indian Constitution Bill. Nevertheless, the first proper document came into presence in the year 1928, with the Report of Motilal Nehru. The rights counted by the Motilal Nehru Report - free elementary education, protection of motherhood, living wages, welfare of children -were a pioneer of the fundamental Rights and the Directive Principles of the State Policy, which were preserved in the Constitution of India 22 years later. Most significant announcement on the human rights came in the pages of the Objectives Resolution stimulated by Jawahar Lal Nehru in the year 1946. In the "Objective Resolution", it was promised to draw up a constitution for the nation in which "will be surefire and the secured to all the nation state, where adequate safeguards would be only if for the minorities, backward and, tribal areas and miserable and other classes".

The Resolution also replicated the anxiety of the formation fathers to integrate and implement the basic principles articulated in the Worldwide Declaration of the Human Rights; the Assembly combined in the Indian Constitution the element of most of these rights. The two parts: -the Fundamental Rights and, the Directive Principles of the Indian Constitution between them enclosed practically the whole field of the Worldwide



Announcement of Human Rights. Briefly, the "Objective Resolution" forms the basis for the combination of numerous requirements of the Constitution.

5. THE PREAMBLE AND HUMAN RIGHTS

The Preamble to the Indian Constitution is of highest importance and the Constitution should be recite and interpreted in the light of the impressive and noble vision stated in the preamble. The Preamble of the Indian Constitution declares: "We the people of India, having solemnly resolved to constitute India into a sovereign, secular socialist, democratic republic and to secure to all citizens: Justice, social, economic and political; Liberty of thoughts, belief, faith expression and, worship; Equality of status and of opportunity; and to promote among them all; Fraternity assuring the dignity of the individual and the unity and, integrity of the nation...". Briefly, the Preamble succinctly sets out Quintessence of the human rights, which signifies the goals of the people, who have established the Indian Constitution (Sharma, 2003).

6. FUNDAMENTAL RIGHTS AND HUMAN RIGHTS

An exceptional feature of the Constitution of India is that a great part of the human rights is baptized as the Fundamental Rights, and the right to impose Fundamental Rights itself has been complete a Fundamental Right. The Fundamental Rights in the Constitution of India establish the Magna Carta of the individual liberty and the human rights. The Fundamental Rights under the Articles 14-31 of the Constitution deliver individual right based on the "right to equality", "right to freedom", "right against exploitation", "right to freedom of religion", "right to cultural" and, "educational rights".

These are negative rights which are made enforceable in contradiction of the state, if violated. These rights can be summated up in dissimilar categories:

6.1 RIGHT TO EQUALITY (ART. 14-18)

Right to equality is the keystone of human rights in the Indian Constitution. While the Article 14 states that "the state shall not deny to any person equality before the law and equal defense of the laws in the interior the territory of India," the Article 15 verves to much more exact particulars that" the state shall not discriminate against any citizen on the grounds of religion, caste, sex, race, place of birth or any of them be subject to the any disability, liability, restriction or condition with regard to (a) admittance to shops, public restaurants, hotels and the places of the public entertainment. "Whereas, Article 16 says that "there shall be equal opportunity for all the citizens in matters relating to employment or the appointment to in the least office under the state." Article 17 and 18 directs the state to eliminate untouchability and titles separately.

6.2 RIGHT TO FREEDOM (ART. 19-22)

The rights to freedom under the articles 19-22, are the depth of the human rights in our India. Meaningfully, Article 19 states that "all citizens shall have the right to freedom of speech and expression; to assemble peacefully and without arms; to form associations or unions: to move freely all over the territory of India; to reside and settle in any part of the territory of India; and to practice any profession or to carry on any occupation, trade or business." While, Article 20 states that "no person shall be convicted of any offence except for violation of a law at the time of the commission of the act charged as an offence, nor be subjected to a penalty greater than that which might have been inflicted under the law in force at the time of the commission of the offence." Though, the most significant article of human freedom is specified in the Article 20, which states that "no person shall be deprived of his life or personal liberty apart from according to the procedure established by law."

6.3 RIGHT AGAINST EXPLOITATION (ART. 23-24)

The Constitution under the Articles 23-24, computes a list of rights that proscribes exploitation, human trafficking and the similar such exploitations. The Article 23 excludes traffic in the human beings and beggar and, other forms of forced labour. Our Indian Constitution, as a replacement for of using the word 'slavery' used a more comprehensive expression "traffic in human beings", which comprises a prohibition not only of captivity but also of traffic in women or children or crippled, for immoral or the other purposes.

Article 24 of the Indian Constitution proscribes the employment of the children below 14 years of the age in any factory or mine or in any other hazardous employment. Thus, compulsory labour is prohibited and the children have been nearing extinction as a matter of the fundamental rights.

6.4 RIGHT TO FREEDOM OF RELIGION (ART. 25-28)

The Part III of the Indian Constitution under the Articles 25-28 recommend for certain spiritual freedoms for the citizens. They comprise freedom of scruples of free chase of profession, practice and spread of religion, freedom to manage the religious affairs, freedom to payment of taxes for the promotion of any specific religion and the freedom as to attendance at religious instruction or religious worship in the certain educational institutions. In brief, these are vigorous rights of religious minorities in India.

6.5 CULTURAL AND EDUCATIONAL RIGHTS (ART. 29-30)

Article 29 and 30 of the Constitution guarantees certain cultural and the educational rights to the "minority sections". While Article 29 promises the right of any of section of the citizens residing in any part of the country having a different language, script or culture of its own, and to marmalade the same, Article 30 delivers that "all minorities, whether based on religion or



language, shall have the right to establish and administer educational institutions of their choice". In brief, these are important rights, as far the protection of human rights of minority groups in a majority society as India.

6.6 RIGHT TO CONSTITUTIONAL REMEDIES

Chapter III of the Constitution of India relating to the Fundamental Rights has a measure of judicial defense and sanctity in the matter of the enforcement of these rights. Under the Article 32, every person has been given a right to move to the Supreme Court by suitable proceedings for the enforcement of the rights conferred by Part III. Clause 2 of this Article empowers the Supreme Court to issue directions, or writs, with writs in the "nature of habeas corpus, prohibition, quo warranto, mandamus and certiorari". This right can't be adjourned excluding when a proclamation of emergency is in force.

6.7 DIRECTIVE PRINCIPLES OF STATE POLICY

The Part IV of the Indian Constitution commonly recognized as the Directive Principles of the State Policy make available a long list of human civil and the economic rights for the people of India. They form the bedrock of human rights in the India. The main determination of this charter of the positive rights is to guarantee social, political and economic justice to all by laying down basic principles of governance. These principles are envisioned to be kept in mind both by the legislatures in ratifying laws and by the executive establishments in enforcing laws. Even though these principles are not enforceable by any Court up till now they are fundamental in the governance of the country and it shall be duty of the State to apply these principles in making laws for the general welfare of their men, women and children. These rights are:

- ▶ Providing adequate means of livelihood (Article 3 9 (a)).
- Equal pay for equal work for both men and women (Article 39(d))
- ➤ Adequate protection of the health and strength of workers, men and women (Article 39(e)).
- Equal Justice and free legal aid (Article 39 A).
- Living wage, conditions of work ensuring a decent standard of life and full enjoyment of leisure and social and cultural opportunities (Article 43).
- Free and compulsory education for children (Article 45).
- ➤ Increasing the level of nutrition, the standard of living and improving public health (Article 47).
- Prohibiting the slaughter of cows and calves and other milk and draught cattle (Article 48).

7. CONCLUSION

A bottomless analysis of the Fundamental Rights and the Directive Principles make it sufficiently strong that between Constitution and its inferences, nearly the whole field of the worldwide declaration of the human rights are covered. Above and beyond, the Constitution of India, through these 2 parts (Part III and IV) has made a novel effort to balance between the enforceable rights and non-enforceable rights, allowing them to complement each other on the fundamental governance of the country. Lastly, both these rights are inter-related and vital for the nourishment of others.

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INDIAN OCEAN MARITIME SECURITY A VIEWPOINT FROM INDIA

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ABSTRACT

For a maritime nation like India, the idea of maritime security in the Indian Ocean Region (IOR) and specifically the way it is approached have a long history. The colonial era is where the present Indian Navy got its start. But it is the post-colonial age, which spans independence, the Cold War imperatives, the interim phase following the collapse of the Soviet Union, and today's strategic alliances, that has contributed to shaping the Indian perspective on marine security. This article examines how these adjustments and difficulties have impacted India's understanding of maritime security in the IOR.

India's involvement in marine security is frequently viewed as having a long history. The Indian rulers only realised the importance of the sea after it was too late, according to K.M. Panikkar. ¹ Panikkar explains the requirements that the Indian Navy had to meet, including the need to become more symbolic as the Royal Indian Navy, become a force capable of handling coastal tasks, and establish a naval tradition.² In their article on the Indian Naval Strategy in the Twenty-First Century, Holmes, Winner, and Yoshihara referred to history as an imperfect predictor of the future, difficult to understand, influential, and fourthly, interactive. Even if these four points can be agreed upon, historical considerations have guided Indian maritime thought, from the preservation of Royal Naval traditions-which are still largely observed today-through the progression of Indian maritime thinking from a coastal preponderance to a blue water navy. This evolution underlines the departure from a continental perspective that was largely prompted by the decline in British dominance, which led to a quick fall in the level of maritime security that the British supplied in the Indian Ocean following World War II and the entry of other powers.

Following World War II, the British, realising their declining influence and authority in the region, allegedly persuaded the US to invade the area even though the US had no important interests there. However, the Cold War made sure that the US-Soviet rivalry's subset of the Indian Ocean conflict remained the main emphasis. With the conclusion of the Cold War, the region became a more tranquil environment with the emergence of new powers and the emergence of new dynamics. The persistent tensions in the Persian Gulf and the South China Sea, which could have an impact on the wider region, pose a threat to the trade, economy, and freedom of navigation that are the driving forces behind these dynamics. These modifications have had an impact on the maritime domain of the Indian Ocean region's security-related issues (IOR).

This essay examines how these adjustments and difficulties have impacted India's stance on maritime security in the IOR, as well as how India has developed its response strategy.

PERIOD AFTER INDEPENDENCE AND COLD WAR

A region's marine security may be constrained by history and geography, or alternatively, it may be set free to operate in an unrestricted environment. Prior to World War II, in the context of the Indian Ocean, the maritime security issue was primarily influenced by the British colonial mindset and focused on India as the maritime hub of its Indian subcontinent-ruled territories, countries that were primarily connected to India by sea. England viewed this "British Lake" as its territory, using it to first dominate the area, then to link it to London, and last to link it to the Far East. Up until the entry of Japan into the Indian Ocean during World War II, British dominance in the region largely went unchallenged. This showed how completely dependent India's security was on maritime dominance. "Along with capturing the Andaman and Nicobar Islands, the Japanese also blasted the Indian port of Visakhapatnam on the country's east coast and halted commercial shipping in the Bay of Bengal. Additionally, Japanese submarines were assaulting shipping in the Mozambique Channel in April 1942, sinking Royal Navy ships off Colombo and Trincomalee. Indians became considerably more conscious of their nation-vulnerability state's to seaborne threats as a result of World War II."

A committee was established in the late 1940s to investigate the planning needs of the Indian Armed Forces. The committee's reports were based on three presumptions:

- Japan would lose the war.
- The main powers in the east would be the USSR and the USA.



• Up until the arrival of Imperial Forces, China and India would have enough forces to defeat a minor power and hold out against a great one.

It is significant that the committee, or perhaps it chose to disregard the idea of independence, did not account for the potential of an independent India and did not foresee the subsequent partition of the subcontinent into India and Pakistan. The report also discussed concerns that Russia would exert influence on India and described China as a long-term threat. According to G.M. Hiranandani, these anxieties revealed in the British Government's volumes covering top-secret and secret correspondence before 1947 laid the groundwork for developments in the Indian Ocean and the Anglo-American mentality in the latter half of the 20th century. In addition, Hiranandani highlights other factors that led to Anglo-American strategic anxiety:

- Russian invasion threat after the British leave.
- If India left the Commonwealth and became more open to Russian influence, there would be implications for Imperial Defense.
- Possibility of assisting Pakistan in fending off Russian and Indian threats.
- If Russia took control of India, communication with Australia and New Zealand would be cut off.
- The impact of India leaving the British Commonwealth Defense System.

At this moment, the US entered the region despite having no significant interests, as the British had before reportedly done. The British Foreign Office sent British experts, such as Sir Olaf Caroe, a former governor of the strategically important Northwest Frontier Province, to persuade the State Department of the value of Pakistan as the core of Western defence in the strategic Persian Gulf region and the southern bowels of the Soviet empire.

India experienced a new continental crisis as a result of the marking of its borders after gaining independence because it was surrounded by an aggressive Pakistan in the west and east and hemmed in by a China with expanding ambitions in the north. India was forced to consider its own protection. According to Pannikar, it is difficult to conceive that China will ignore her naval interests in the future. She is in an even better position than Japan because her bases reach as far south as Hainan. However, the early 1990s saw a clear emergence of Chinese maritime ambitions.

These challenges served as the conceptual foundation for India's first Naval Plan papers and strategy up until the end of the Cold War. The first Naval Plan documents after independence envisioned the Navy's role as being to "safeguard her shipping on the high seas from interference in war; to ensure that supplies can both reach and leave India by sea in all circumstances; to keep open her ports and coastal shipping routes; to prevent any enemy landing on her shores; and to support the Army in any operations that may be required in furtherance of the national policy." The original plan called for two light fleet carriers, three cruisers, eight destroyers, four submarines, and smaller ships as needed for auxiliary and training purposes throughout a ten-year period. The 1947–1948 conflict with Pakistan over Kashmir and the continental attitude, however, prevented the Plan from being put into action. The Indian Navy possessed a number of significant warships by 1961.

The absence of submarine acquisition and actual numbers in relation to the maritime area within India's direct jurisdiction slightly weakens the argument, even if it was seen to be a balanced force at the time. Budgetary restrictions and the priority placed on acquiring ships to counteract Pakistan's aggression in the years following the 1965 war caused the procurement of submarines to be postponed. From 1967 through 1969, the Indian Navy received its first four Russian-built submarines. First, due to the British being unable to extend credit due to a difficult financial situation; second, due to the Indonesian naval incursions into the Nicobar Islands: and third. due to a Pakistani incursion into Kutch in April 1965 that led to the 1965 War. This decision to purchase submarines, and then ships, from Russia was made. The Soviet Union was the only country willing to meet the Navy's growing demands, which were prompted by recommendations made following the Sino-Indian War of 1962 that the Navy should have a fleet with a force level of 138 ships in both the Arabian Sea and the Bay of Bengal. The Indian Navy might be seen as possessing a balanced force with these purchases to address both the security needs of the IOR and the nation as a whole.

After 1945, the Cold War made sure that the US-Soviet rivalry's subgroup in the Indian Ocean remained the main topic of attention. The West's perception of India as a Soviet ally further constrained Indian maritime discourse to developments in the Indian Ocean. The 1971 war, in which the Indian Navy was decisively deployed with creative concepts, may have been the event that first brought India's maritime capabilities to international attention. However, it wasn't until after the operations in the Somalia from 1992 to 1994 and the 1988 Maldives mission that India's Navy was acknowledged as a stabilising force in the area. This was supported by the following information:

- The US-Pakistan relationship as a sine curve.
- That majority of India's neighbours were friendly to it and was regarded by them as a strong ally and a stable country.
- India had no hegemonic goals because it only offered assistance when requested.

AFTER THE COLD WAR ERA

The four main characteristics, or ways in which the sea has been used, namely the resources it contained, utility as a means of transportation and trade, importance as a means of exchanging information, and as a source of power and dominance, can be used to summarise the sea's past and ongoing contributions to human development.



The end of the Cold War and subsequent economic boom, particularly in China and India (which also started liberalising its economy), led to a shift in attention to the Indian Ocean region as a location with significant Sea Lanes of Communication (SLOCs) and maritime trade protection, both of which were primarily related to the flow of oil. The emphasis shifted from protecting maritime trade and shipping to establishing a secure maritime environment that prioritised control of SLOCs for the exploitation of marine resources in the area. "Security of infrastructure and other assets in the maritime zones and the littoral associated to the extraction, transit, and reception of indigenous energy resources" was another consideration for littoral nations like India.

The nationalism, economic development, and cultural awakening of the littorals in the early 1990s also sparked a new process, which in turn sparked the emergence of regional organisations like the South Asian Association for Regional Cooperation (SAARC) and Indian Ocean Rim-Association for Regional Cooperation (IOR-ARC). These organisations are vulnerable to the power struggles of both local and international parties. Although the member countries have altered their alliances and positions since 1991, colonisation and the Cold War's enduring impacts have prevented these regional contacts from developing into powerful regional organisations. As a result, non-traditional problems have gradually taken precedence over the danger of international conflict. So perhaps it seems sense to call the Indian Ocean a "Sea of Uncertainty."

India established the Indian Ocean Naval Symposium in 2008 with a chair shift occurring every two years in an effort to reduce the current divide between the IOR littoral states. 35 fleets from the area were brought together on this platform to promote cooperation through ongoing discussions and consultations, with a gathering every two years to exchange views. A consistent set of ideas to improve marine security in the region have developed thanks to the vision articulated during the Symposium. This programme needs the ongoing support of all members because it has the ability to do a lot to clear up misperceptions and tensions between countries bordering the Indian Ocean. This programme has strengthened regional countries' collaboration and understanding, along with the exercises India holds with other IOR littoral states. India took on the issue of changing its strategy to strike a balance between a world dominated by the US and a multipolar environment at the end of the Cold War. Therefore,

India's grand strategy focused on two significant but seemingly incompatible goals. By pursuing a new partnership with Washington, it hopes to reduce the vulnerabilities it perceives in a unipolar world dominated by the United States. The other goal is to advance the creation of a multipolar world with India as one of the poles.

However, following the 2005 signing of the civil nuclear agreement, relations between the US and India have improved. India is frequently regarded as a powerful regional force with a friendly attitude. Its anticipated role as a net provider of security in the Indian Ocean and as a lynchpin in the US pivot to Asia is

well suited by these universally recognised qualities. Chuck Hagel highlighted this function in his 2013 Shangri-La Dialogue speech when he said:

With increased trade and transit between the Indian and Pacific Oceans, India's role as a stabilising force is becoming more and more significant. The United States views India's attempts to strengthen its military prowess as a welcome addition to regional stability.

India has the above-mentioned importance due to its central location in the IOR, which overlooks the SLOCs, and its close vicinity to the IOR's choke points, particularly the Malacca Straits, Straits of Hormuz, and Gulf of Aden. Despite the fact that India uses a variety of ships and equipment, the Malabar series of exercises has helped India and the US achieve a high level of maritime interoperability over the years. The amount of military equipment that India buys from the US has been constantly increasing. The acquisition of assets such as P-81 Poseidon maritime patrol aircraft, C-17 transport aircraft, and C-130J Super Hercules transport aircraft placed India as one of the largest customers of American weaponry in the previous ten years, despite the slight deterioration in relations caused by the US's rejection of the F-16IN aircraft it offered for the Medium Multi Role Combat Aircraft (MMRCA) deal. India has purchased \$10 billion worth of military hardware from the US since 2003. 26 The purchase of AH64 Apache attack helicopters, CH-47 Chinook heavy lift helicopters, and M-777 light howitzers is now the subject of discussions. Following the third bilateral meeting between US President Barack Obama and Indian Prime Minister Manmohan Singh on September 27, 2013, US-India relations are now prepared to advance to a new stage of defence technology transfer, collaborative research, codevelopment, and co-production.

However, relations between China and Pakistan as well as those between the US and Pakistan have an impact on the aforementioned interactions. Although the US-Pakistan relationship has been on a "sine curve," the US's earlier overtures to Pakistan have affected those relationships and will likely continue to do so in the near future. It is obvious that Pakistan would be necessary for the US's exit from Afghanistan, particularly for marine movement. The Obama Administration's request for \$1.162 billion for the fiscal year 2014, which began on October 10, 2013,28 (\$857 million for civilian assistance and \$305 million for security assistance), may be a step in that direction. The US will need to exercise prudence while providing this kind of aid because India will be holding elections in 2014.

Defense ties between Pakistan and China were established after the US cut off arms shipments to both Pakistan and India during the 1965 Indo-Pak war. Pakistan, which was most negatively impacted, contacted China and was given more than 200 tanks and 100 military planes. By the early 1980s, it was well known that China was the source of roughly 65% of Pakistan's aircraft and 75% of its tanks due to an increase in the supply of conventional armaments from China. According to SIPRI, 55% of Chinese arms exports in 2012 were to Pakistan.



Nuclear weapons and related technology also became more prevalent in the flow of conventional weapons. China gave Pakistan a nuclear bomb design that could be delivered by tactical aircraft in the middle of the 1980s. Additionally, it gave Pakistan crucial parts needed to launch a nuclear weapon. The region views the provision of nuclear technology as being particularly crucial and delicate, especially in light of the 1999 Kargil battle, which was fought in the shadow of nuclear weapons. Despite without showing any assistance for Pakistan, China could use the tense situation to thwart Indian efforts to fortify its land boundaries and improve and extend its marine capabilities and capacity. Pakistan regards China as a counterbalance to both India and the US; it believes both US and Indian efforts to achieve dominance over the Indian Ocean region are increasing as a result of their respective self-assumed geopolitical rights to do so. The increased number of joint drills between the two countries is a sign of a strengthening alliance to challenge US-India hegemony in the IOR.

This activity Shaheen 2, a follow-up to Shaheen 1, which was held in Pakistan in March 2011, was a combined air force exercise between Pakistan and China that took place in September 2013 in China's Xinjiang Uygur Autonomous Region. Pakistan has suggested annual marine drills beginning in 2014, with the first one planned for the Arabian Sea. It's interesting to note that the anticipated drills line up with China's new strategic submarine's JL-2 missile installation's initial sea trials. The strategic scenario would be drastically changed by the inclusion of these submarines in the planned exercises. Given the similarity caused by the supply of assets from China and the co-production of weapons, China might use Pakistani ports and bases as "semi-military" bases to expand its maritime, aeronautical, and military footprint. The strategically located Gwadar port, which China has once more taken control of, looks out over the Straits of Hormuz. China would benefit from using this port by gaining reciprocity with regard to the Malacca Straits as well as increased operational freedom in the Arabian Sea. An alternative to India's Malabar series of exercises and a way to test India's marine capabilities and competence could be seen in the institutionalisation of these exercises and the potential use of ports as semi-military facilities.

Thus, the US was the only major "friend" in the region that could counteract the expanding Chinese presence, and the US-India cooperation may have resulted from rising Chinese ambitions. A presence with ambitions that now extend into the maritime sphere and are affecting India's interests outside of its traditionally defined borders as well as within the IOR. India may no longer be seen to be "Pak centric," but rather "Sino challenged." The fact that China is present in the Indian Ocean and the dispute over the land border, which have polarised thinking about strategy, will dictate, albeit with a reduced continental outlook, that the greatest threat to India's security will continue to be the jehadi terrorism, with Pakistan serving as its epicentre. This is primarily due to the influence of history and geography. As a result, it is important to look more closely at the long-standing Sino-Indian competition as well as China's entry into the Indian Ocean since "the primacy of the "ocean" in the region's affairs is further highlighted by the fact that difficulties on land always find a reflection at sea." According to New Delhi, China is entering the Indian Ocean from both the north and the east via the Strait of Malacca. Acc"rding"to Indians, Beijing's ongoing continental challenges are anot"er factor in modern Chinese interest in the Indian Ocean. This strategy, which has undertones of a "Mackinder-Mahanian" combo, could weaken India's marine vision because China seems to be pressuring India to constantly examine its land borders. For instance, the 19-kilometer invasion of Chinese troops into Ladakh in Depsang and the ensuing three-week stalemate (April–May 2013) warrant notice due to the location inland from the boundary and the length of the standoff, and are indicative of this reality.

The timing of the assault could not have been better. First of all, Li Keqiang, the Premier of China, was about to visit India at the time. His first stop on his first trip abroad was to be New Delhi. Second, it lined up with a declared cut in India's defence spending. Two things stand out in particular in this regard: First, the defence budget as a share of total central government spending (CGE) is the lowest in India's history as an independent country, and second, the defence budget as a share of GDP is at its lowest level in 50 years, since 1962–1963, when it was 2.32 percent. As a result, the evolving situation may put pressure on the US to reconsider the security dilemma in the Indian Ocean and step up its presence there. Its rebalancing approach toward the Asia-Pacific region, in particular its presence in the South China Sea and East China Sea regions, may be significantly impacted by this. Perhaps because of this, the US is interacting with the island states in the area, where China has a noticeable presence. As an example, consider the recently reported Memorandum of Understanding (MoU) between the United States and the Maldives to establish a "cost free border control system." A Status of Forces Agreement (SOFA) was also reportedly signed, however the US denied establishing a military base there, and the Maldives said it had not yet decided whether to do so. It is important to note that the construction of a US military base could have a significant impact on US-Indian relations in two ways: first, India has consistently opposed the construction of foreign military bases in the Indian Ocean region, and second, and perhaps more significantly, it would lessen India's perceived role as a net provider of security in the area. The order on the sequester that US President Barack Obama signed is another matter that can have an impact on the US presence here. Even while it is too early to calculate the overall impact, it could undoubtedly lead to a reduction in important aspects like operations, training, and maintenance. According to Admiral Jonathon Greenert, the US Chief of Naval Operations (CNO), "If sequestration-level reductions persist in the years after FY 2014, the Navy of 2020 would not be able to execute the missions described in our defence strategy, the Defence Strategic Guidance," in a blog post from September 27, 2013.



As a result, it appears that maritime security in the Indian Ocean will soon enter a new phase as the US considers internal budget balance as well as asset positioning and utilisation rates. In parallel, India is also updating its navy with new ships, aircraft carriers, and nuclear-powered submarines, including ones that were constructed in-house, in order to adapt to the changing maritime security environment.

CONCLUSION

The colonial era and Cold War influences and strategic thought processes have shaped and influenced India's perspective on maritime security in the Indian Ocean. India's marine strategic vision has been influenced by factors such as the existence of extraregional countries, international ties, and the predominately unresolved border disputes. India's outlook has also changed as a result of the post-Cold War era, China's entry, and the US's current posture in the area. The perception of India as a net security provider may be diminished by any expansion of US influence and a change in strategy toward countries where both an Indian presence already exists and where Chinese interest is rising. The Indian Ocean may change from a region of relative peace to one marked by fierce competition and conflict as a result of the various problems. The option that could preserve the "peaceful" aspect of the Indian Ocean security discussion is therefore the resolution of border disputes and the creation of a cooperative security system comprising both regional and extra-regional entities.

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HYPERTROPHIC CARDIOMYOPATHY WITH OBSTRUCTION OF THE LEFT VENTRICLE

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SUMMARY

It is a septal hypertrophy, asymmetric type, causing left ventricular outflow obstruction due to thickening of the left ventricular wall; this pathology has a worldwide prevalence of 0.02-0.23%; and it is the most important cause of sudden death in young people. It is characterised by myocardial hypertrophy leading to diastolic dysfunction; epidemiologically, it occurs equally in men and women, although women tend to be more symptomatic, more disabled and present at a younger age.

The patient may be asymptomatic or may present with dyspnoea, precordial pain and syncope. For diagnosis, chest X-ray, electrocardiogram and echocardiography may be used; MRI and cardiac catheterisation only in cases to identify the aetiology and severity of the disease. For treatment, background medication such as beta-blockers may be used, or alcohol ablation techniques may be performed. However, in some cases, pacemakers or implantable defibrillators may be needed.

The aim of this literature review is to provide information on this pathology, which, despite not being so common in our environment and being more of a speciality of Cardiology, there is the possibility of presentation in young people, and that, presenting cardiac manifestations, can lead us to consider this pathology as a differential diagnosis.

KEYWORDS: Cardiomyopathy, septal hypertrophy, sudden death, diastolic dysfunction

INTRODUCTION

Around 35-60% of patients with this pathology have a mutation in the genes encoding the sarcomeres (1); mostly related to hereditary family transmission; non-genetic causes are observed in 25% of patients, possibly related to errors in metabolism, such as Pompe disease, malformations, and neuromuscular disorders, such as Friedrich's Ataxia (2) (3). In adults, the prevalence of non-genetic causes is low, but if it

were to occur, it would be related to Denon's disease, Fabry's disease, left ventricular hypertrophy associated with Wolff-Parkinson-White disease. The prevalence of this disease is estimated to be about 1 in 500 in the general population. In children it is unknown but an incidence of 0.3 - 0.5 per 100,000 is reported (4) (5). Transmission of this disease is genetic, 50% in each subsequent generation, due to mutation



of at least 1 of 11 genes; in case of no family history, transmission of the disease is generated by a new mutation (6).

PATHOPHYSIOLOGY

When this cardiomyopathy is accompanied by altered myofibrillar structure and fibrosis, it causes diastolic dysfunction, haemodynamic alteration, including asymmetric ventricular relaxation, decreased cavity filling and abnormal intracellular calcium consumption. Because the coronary vessels fill during diastole, and if there is outflow tract obstruction and ventricular stiffness, there is an increased risk of myocardial ischaemia, leading to ventricular arrhythmias and sudden death. It mostly affects the ventricular septum.

This cardiomyopathy can be classified as obstructive or non-obstructive. This cardiomyopathy can be classified as obstructive or non-obstructive. Depending on the degree of obstruction and the clinical presentation, the degree of hypertrophy depends (7)(8).

Dynamic outflow obstruction is generated by the anterior systolic movement of the anterior leaflet of the mitral valve, as the leaflets impact on the hypertrophied basal septum, causing a pressure gradient that pulls the anterior leaflet, causing an obstruction of the outflow tract, generating a turbulent flow at the time of contraction, decreasing the flow and causing mitral regurgitation. In the case of nonobstructive type, it generally has a good prognosis, with symptoms originating from diastolic dysfunction, except if there is thinning of the wall, dilatation of the left cavity and systolic dysfunction, together with secondary pulmonary hypertension, in which case it would have a poor prognosis. In 25% of patients, obstruction occurs at rest, but in 70% of patients with provocative manoeuvres, such as exercise. In more advanced stages, this may occur at rest. More commonly, it occurs with provocative manoeuvres such as exercise due to increased myocardial demand (9).

CLINICAL MANIFESTATIONS

The clinical picture can manifest itself in a variable way; it can even be asymptomatic and can be identified accidentally. However, it may manifest with Atrial Fibrillation in 1 out of 5 patients, thus presenting a risk of arrhythmias and subsequent decompensation; therefore, treatment is based pharmacologically with anti-coagulants to prevent the formation of emboli (10).

When there is significant haemodynamic obstruction, dyspnoea may occur, due to elevated filling pressure caused by diastolic dysfunction, outflow tract obstruction, mitral regurgitation and myocardial ischaemia, resulting in fatigue and syncope due to reduced blood supply, eventually progressing to heart failure (11). Ultimately, when dyspnoea, precordial pain, presyncope and syncope occur gradually, they are associated with poor prognosis in the future (12).

DIAGNOSIS

- Chest X-ray: identifies left ventricular hypertrophy.
- Electrocardiogram: shows left ventricular hypertrophy. It may also show arrhythmias, although it can often be normal.

- Echocardiography: with diagnostic accuracy of 80% for Obstructive Hypertrophic Cardiomyopathy. It can visualise the size and make measurements of the septum and left ventricular wall. It can demonstrate flow velocity along the left ventricular outflow tract.
- Colour Doppler may show mitral valve regurgitation.
- Cardiac magnetic resonance imaging: Gold standard for the diagnosis of left ventricular wall properties
- In patients with suspected Obstructive Hypertrophic Cardiomyopathy with a normal or inconclusive echocardiogram.
- Cardiac catheterisation: only to accurately determine the degree of outflow tract obstruction, the anatomy of the left ventricle, the degree of mitral valve insufficiency and the patency of the coronary arteries (13)(14).

TREATMENT

Beta-blocker therapy improves myocardial oxygen delivery, reducing ischaemia and prolonging diastolic blood filling and slowing the heart rate. If beta-blockers are ineffective or not tolerated, calcium channel blockers may provide symptomatic relief. In patients with refractory symptoms, septal reduction therapy, either with myomectomy or alcohol septal ablation, represents the second line of therapy for patients with persistent left ventricular outflow tract obstruction (greater than or equal to 50 mmHg).

The indication for alcohol-based septal ablation is: advanced age, presence of comorbidities that would increase the risk of cardiac surgery, history of previous cardiac surgery, failed myomectomy or previous stroke. Mortality 30 days after the procedure is very low (0.6%), and annually, the probability of death is the same as in the general population (15)(16)(17).

However, when myomectomy is performed and its outcome is inadequate, the need for a pacemaker is imminent post-operatively; further demonstrated in procedures performed at the Mayo Clinic in the United States, where it was shown that, at the end of the ablation procedure, there was a high prevalence of early mortality and the presence of perioperative morbidity, including the use of a pacemaker secondary to heart block, despite successful improvement of the outflow tract gradient. In the case of transthoracic septal myomectomy in young adults and adolescents, the gradient improvement was 89 mmHg, although they had systolic anterior motion with mitral regurgitation, so a decision was made between implantable defibrillator placement in 17% or permanent pacemaker in 11.7%. In addition, performing this procedure increases the prevalence of iatrogenic morbidity, thus requiring a pacemaker (18) (19).

In recent years, there has been the development of new drugs and innovative therapies, which are an important aid to the pathophysiological treatment of the disease, including:

- Diltiazem, which inhibits the entry of calcineurin into the sarcomere
- Ranolazine, which inhibits the flow into the sarcomere and increases the outflow of calcium via sodium-calcium exchange.



- MYK-461: small molecule inhibitor of myosin ATPase, which prevents the cross-bridge cycle produced by myosin.
- NAC: N-acetylcysteine, which reduces glutathionylated myofilament levels with reversal of increased myofilament calcium sensitivity, diastolic dysfunction, myocyte hypertrophy and fibrosis.
- Perhexiline: a myocardial metabolic modulator that changes cellular metabolism to promote more efficient carbohydrate metabolism by inhibiting mitochondrial free fatty acid uptake and utilization, thereby improving myocardial efficiency.
- Angiotensin receptor blockers: decreases the tropic factors of production of the renin-angiotensin aldosterone system pathway (20).

CONCLUSIONS

Hypertrophic cardiomyopathy is a pathology based on septal hypertrophy, which generates an obstruction of the outflow of the left ventricle, which generates a decrease in ventricular filling, thus generating symptoms; there is a nonobstructive form, which has a good prognosis unless risk factors are present. It is an important cause of death in women and young people. The aetiology is usually hereditary in 50% and mutations when it is not hereditary. In addition, this pathology is associated with diseases such as Fabry's disease, Denon's disease, and Wolf Parkinson White. It usually manifests with dyspnoea, fatigue, pre-syncope, syncope and atrial fibrillation, which eventually leads to progression to heart failure. Chest X-ray, electrocardiography, echocardiography and colour Doppler ultrasound are usually used for diagnosis, although MRI is the gold standard. Finally, for treatment, pharmacological measures such as beta-blockers or calcium blockers are usually used: otherwise, techniques such as septal reduction therapy with myomectomy or septal ablation with alcohol are usually performed. The implantation of a defibrillator or pacemaker is due to complications that may arise after invasive procedures. New pharmacological therapies are a good option in the case of finding alternatives to invasive procedures.

FINAL STATEMENT

This review is based on an article by Santiago Vintimilla called "Miocardiopatía Hipertrófica Obstructiva del ventrículo izquierdo", whose author authorized the translation and rewriting from the Spanish language version to the english language version.

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EFFECTS OF TWELVE-WEEKS CORE TRAINING PROGRAM ON SELECTED PHYSIOLOGICAL FITNESS PARAMETERS OF MALE MEDIUM FAST BOWLERS IN CRICKET

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ABSTRACT

The purpose of the study was to explore effects of core training on selected physiological parameters of university level male medium fast bowlers in cricket. Totally 10 medium fast bowlers were selected through purposive sampling aged 17-27 years. Pre and Post test data were collected and then compared values of all the parameters through pared sample "t" test (SPSS, V-26.0) and (sig level-0.05). The significant improvement observes in Diastolic Blood pressure, Vital Capacity, Body Fat Percentage, Resting Heart Rate (Sig. 2-tailed-.047, .013, .000, .029,.001) and only in the Systolic Blood pressure no significance differences (Sig. 2-tailed-.792) were found but some how mean differences were observed (mean difference-.5000). As a result, it could be said that there are positive effects of core strength training on selected physiological parameters of university level male medium fast bowlers in cricket.

KEYWORDS: core training, Vital Capacity, Blood pressure, Body fat percentage, Heart rate.

INTRODUCTION

Cricket is one of the most demanding and popular team sports in all over the world. It is a bat and ball sport similar to the game of baseball, usually played outdoors on natural grass fields. In cricket bowlers try to resist the batter to score, where batter try to scores maximum in the timespan of play. So, both the Skill are similarly important in this game.

Basically, bowling is two type – one is pace and another is spin. In Pace bowling various variations are found like as Fast bowling, medium fast bowling, Slow pace bowling etc. In Explosive bowling action; whereby a large amount of force must be generated in a very short period of time. medium Fast bowlers have always been identified as the type of cricket with the highest risk of injury.

Recent time in most of the cricket team specific trainers are recruited for specific purpose and also the specific coach's responsibility reduces the injury of the players. So various training program also implementing to do so and Core exercise is on of them.

According to Takanati core training is- The Exercise program that aims to strengthen muscle groups in lumbopelvic area and the deep muscles that are responsible for stabilizing spine, and done by athlete's own body weight.

Core strength trainings and their effects have been analysed by many researchers and results show that they help to development of athlete's motor skills, increasing of balance ability and prevention from sports injuries

Trainers have been directed to alternative power training methods that they can do by their own body weight, due to developmental and injury related risks that power trainings implemented with free weights may cause in athletes especially in adolescence. With the help of core exercises, controlling spine during dynamic movements is taught (Takanati, 2012). In addition, core training program shows benefits in strengthening the respiratory muscles, especially the diaphragm muscle (Özdal, 2016) which is one of the most important respiratory muscles (Özdal, 2016).

Researcher works on core training for physical fitness, skill related fitness; but less articles are found on physiological fitness.

The aim of the study is to analyse the effects of core training which is a kind of strength training, on physiological parameters in male medium fast bowlers in cricket.

MATERIAL AND METHOD

Subjects

The experimental study design to 10 university level male medium fast bowler aged 17 to 27 years, were purposively selected from Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee Vishwavidyalaya for the twelve weeks plyometric program.



Procedure

Before the 12-week training period data of selected physical fitness and physiological fitness parameters were collected as pre-test data. Then the core training program for 12 weeks and 3 days/week and 2 hours/day was introduced.

The participants were gone through a 5 minutes of warm-up session. This brief warm-up comprised of 2 min jogging, 3 min of stretching. In physiological variables Blood pressure (Systolic and Diastolic) was taken through standard Digital BP monitor, Vital Capacity was measured through Spirometry test, Body Fat Percentage was measured through Omron Body Fat Analyzer and Resting Heart Rate measures manually. Then, the Twelve-week plyometric training, done 3 days a week, was given to the bowlers, beside their regular practice session. Following 12 weeks of core training, post-readings for the physiological variables Blood pressure (Systolic and Diastolic) was taken through standard Digital BP monitor, Vital Capacity was measured through standard through standard Digital BP monitor, Vital Capacity was measured through Spirometry test, Body Fat Percentage identical to that described in the pretesting protocol, were obtained and documented.

Training protocol included:

Sl. No.	Core Stability Exercise	
1.	Plank	
2.	Bicycle crunch	
3.	Single leg squat	
4.	Warrior Balance	
5.	Short bridge	
6.	Swiss ball crunch	
7.	Rotating Deadlift	
8.	Opposite arm and leg raise	

Criterion measures

	Physiological Fitness								
1.	Blood Pressure	Blood pressure	mmHg	Sphygmomanometer, Stethoscope					
2.	Vital Capacity	Vital capacity	Litter	Spirometer					
3.	Body Fat Percent	Bioelectrical Impedance Analyzer	Percentage	Omron Body Fat Monitor HBF-306					
4.	Resting heart rate	beats numbers /minute	Manual	Stethoscope					

Statistical analysis

For analysis the collected data Pared "t" test was used through SPSS software, version 26.0. Before starting the statistical processes Shapiro-Wilk test was implemented for normal distribution control. For data sets that show non-normal distribution, Skewness and Kurtosis values were checked.

RESULTS

Measured features of participants in pre and post-tests have been examined and analysed in this section. Intra-group and intergroups comparisons are presented below.

Table: 1							
Paired Samples Statistics							
Mean N Std. Deviation Std. Error Mean							
Systolic Blood Pressure Pre-test	126.6000	10	10.24370	3.23934			
Systolic Blood Pressure Post-test	127.1000	10	5.04315	1.59478			

Table 1 shows that the descriptive statistics of the Systolic Blood Pressure. The result of the paired sample statistics shows that after getting the Core training the subjects Blood pressure decreases and performs better (pre-test mean-126.6000 & post-test mean 127.1000).

Table: 1.1						
Paired Samples Correlations						
N Correlation Sig.						
Systolic Blood Pressure Pre-test & Post-test	10	.934	.000			

In table number 1.1 shows that there was positive correlation (Corel-.934) was found in between Systolic Blood Pressure Pre-test & Post-test score (sig-.000)



Table: 1.2 **Paired Samples Test Paired Differences** Std. Error df Mean Std. Deviation Mean Sig. (2-tailed) Systolic Blood Pressure Pre-test & 1.83938 -.50000 5.81664 .272 792 Post-test

Table 1.2 shows paired sample "t" test. Where the result shows that there was no significance difference was found (sig. 2-tailed .792). comparing both pre-test and post-test mean of the Systolic Blood Pressure shows the difference was .50000. So, we can conclude that due to the Core training no effect on Systolic Blood Pressure.

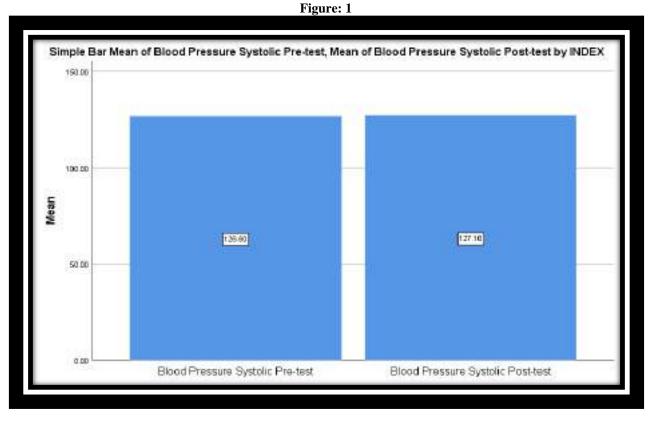


Figure 1 shows that the mean value of Systolic Blood Pressure Pre-test & (after getting core training) Post-test score of Medium fast bowlers.

Table: 2							
Paired Samples Statistics							
Mean	Ν	Std. Deviation	Std. Error Mean				
75.6000	10	7.07421	2.23706				
79.2000	10	3.04777	.96379				
-	Paired Samples Mean 75.6000	Paired Samples StatisticsMeanN75.600010	Mean N Std. Deviation 75.6000 10 7.07421				

Table 2 shows that the descriptive statistics of the Diastolic Blood Pressure. The result of the paired sample statistics shows that after getting the core training the subjects perform better (pre-test mean-75.6000 & post-test mean 79.2000).

Table: 2.1						
Paired Samples Correlations						
N Correlation Sig.						
Diastolic Blood Pressure Pre-test & Post-test	10	.808	.005			

In table number 2.1 shows that there was positive correlation (Corel-.808) was found in between Systolic Blood Pressure Pre-test & Post-test score (sig-.005)

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Table: 2.2							
Paired Samples Test							
		Paired Differen	ces				
			Std. Error				
	Mean	Std. Deviation	Mean	t	df	Sig. (2-tailed)	
Diastolic Blood Pressure Pre-test &	-3.60000	4.94862	1.56489	-2.300	9	.047	
Post-test							

In Table number 2.2 shows paired sample "t" test. Where the result shows that there was significance difference was found (sig. 2-tailed .047). comparing both pre-test and post-test mean of the Systolic Blood Pressure shows the difference was 3.60000. So, we can conclude that due to the Core training improves medium fast bowers Systolic Blood Pressure improves.

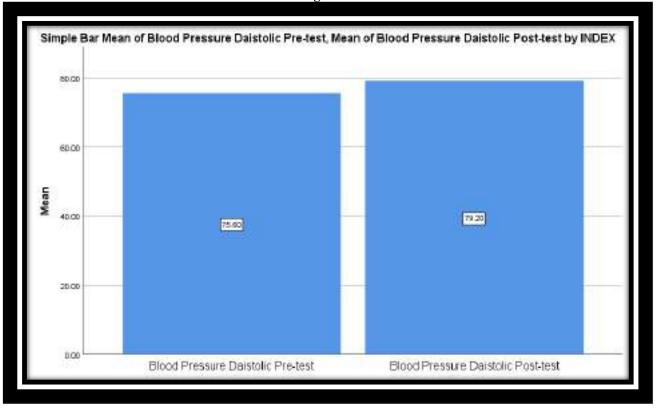


Figure: 2

Figure 1 shows that the mean value of Diastolic Blood Pressure Pre-test & (after getting core training) Post-test score of Medium fast bowlers.

Table: 3								
Paired Samples Statistics								
Mean N Std. Deviation Std. Error Mean								
4.4600	10	.27508	.08699					
4.5020	10	.24303	.07685					
	Mean 4.4600	Mean N 4.4600 10	Mean N Std. Deviation 4.4600 10 .27508					

Table 3 shows that the descriptive statistics of the Vital Capacity. The result of the paired sample statistics shows that after getting the Core training the subjects perform better (pre-test mean-4.4600 & post-test mean 4.5020).

Table: 3.1						
Paired Samples Correlations						
N Correlation Sig.						
Vital Capacity Pre-test & Post-test	10	.994	.000			

In table number 3.1 shows that there was positive correlation (Corel-.994) was found in between Vital Capacity Pre-test & Post-test score (sig-.000)

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Table: 3.2 **Paired Samples Test Paired Differences** Mean Std. Deviation Std. Error Mean Sig. (2-tailed) t df .04290 Vital Capacity Pre-test & -.04200 .01356 -3.096 9 .013 Post-test

In Table number 3.2 shows paired sample "t" test. Where the result shows that there was significance difference was found (sig. 2-tailed .013). comparing both pre-test and post-test mean of the Vital Capacity shows the difference was .04200. So, we can conclude that due to the Core training improves medium fast bowers Vital Capacity improves.

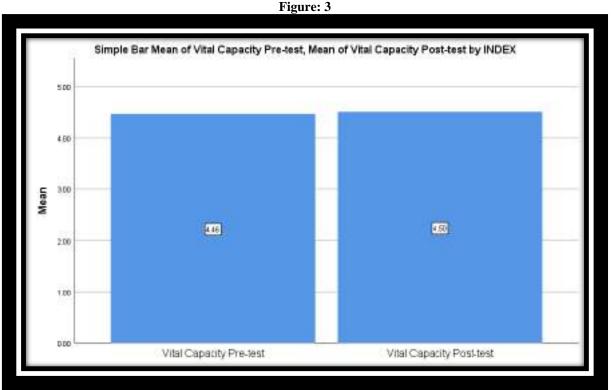


Figure 1 shows that the mean value of Vital Capacity Pre-test & (after getting core training) Post-test score of Medium fast bowlers.

Table: 4					
Paired Samples Statistics					
Mean N Std. Deviation Std. Error Mean					
Body Fat percentage Pre-test	27.2700	10	3.90869	1.23604	
Body Fat percentage Post-test	26.4300	10	3.12696	.98883	
$T_{11} = 2 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +$		/ 101	1. 6.1 . 1 1		

Table 3 shows that the descriptive statistics of the Body Fat percentage. The result of the paired sample statistics shows that after getting the Core training the subjects perform better (pre-test mean 27.2700& post-test mean 26.4300).

Table	e: 4.1			
Paired Samples Correlations				
	Ν	Correlation	Sig.	
Body Fat percentage Pre-test & Post-test	10	.982	.000	
In table number 3.1 shows that there was positive correlation (Corel982) was found in between Body Fat percentage Pre-test &				
Post-test score (sig000)				

Table: 4.2						
		Paired Samples	Test			
	Paired Differences					
	Std. Error					
	Mean	Std. Deviation	Mean	t	df	Sig. (2-tailed)
Body Fat percentage Pre-test & Post-	.84000	1.02545	.32428	2.590	9	.029
test						



In Table number 4.2 shows paired sample "t" test. Where the result shows that there was significance difference was found (sig. 2-tailed .029). comparing both pre-test and post-test mean of the Body Fat percentage shows the difference was .84000. So, we can conclude that due to the Core training improves medium fast bowers Body Fat percentage improves.

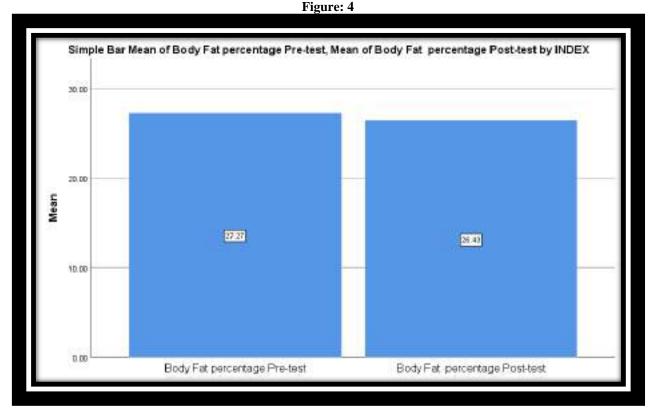


Figure 4 shows that the mean value of Body Fat percentage Pre-test & (after getting core training) Post-test score of Medium fast bowlers.

Table: 5					
Paired Samples Statistics					
Mean N Std. Deviation Std. Error Mean					
Resting Heart Rate Pre-test	73.6000	10	2.87518	.90921	
Resting Heart Rate Post-test	71.2000	10	1.68655	.53333	

Table 5 shows that the descriptive statistics of the Resting Heart Rate. The result of the paired sample statistics shows that after getting the Core training the subjects perform better (pre-test mean 73.6000 & post-test mean 71.2000) and improves their Resting Heart Rate.

	Table: 5.1				
Paired Samples Correlations					
	Ν	Correlation	Sig.		
Resting Heart Rate Pre-test & Post-test 10 .912 .000					
In table number 3.1 shows that there was positive correly	ation (Corel-912) was four	nd in between Resting H	eart Rate Pre-test &		

In table number 3.1 shows that there was positive correlation (Corel-.912) was found in between Resting Heart Rate Pre-test & Post-test score (sig-.000) Table: 5.2

Paire	ed Samples Te	st				
		Paired Difference	ces			
	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Resting Heart Rate Pre-test & Post-	2.40000	1.50555	.47610	5.041	9	.001
test						

In Table number 5.2 shows paired sample "t" test. Where the result shows that there was significance difference was found (sig. 2-tailed .001). comparing both pre-test and post-test mean of the Resting Heart Rate shows the difference was 2.40000. So, we can conclude that due to the Core training improves medium fast bowers Resting Heart Rate improves.

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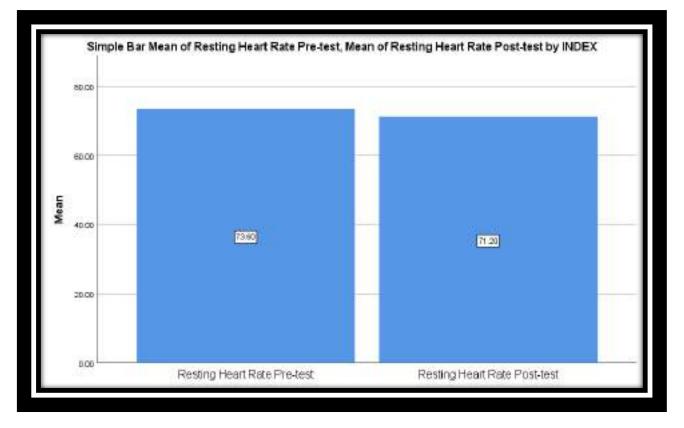


Figure:5

Figure 5 shows that the mean value of Resting Heart Rate Pre-test & (after getting core training) Post-test score of Medium fast bowlers.

CONCLUSION

The results of this study showed that after 12-week of Core training, subjects have shown a significant improvement in medium fast bowlers Diastolic Blood pressure, Vital Capacity, Body Fat Percentage, Resting Heart Rate and also improve was found but not significance Systolic Blood pressure.

All the subjects in the present study were moderately trained athletes to be given the core training program which contributed to the significant increase in the various variables observed after the training procedure. The Twelve-week core training program consists of series of functional exercises performed at high volume to simulate the movements and positions.

Following the overload principle, athletes performing the 12-week core training program experience both muscle strength and endurance adaptability. The twelve-week program consists of a group of core exercises performed intermittently with appropriate rest intervals between sets to challenge both anaerobic and aerobic capacity of the shoulder.

Reductions in body fat percentage are seen as a result of burning high amounts of calories (Koç, 2010). Power trainings cause changes on body composition by increasing fat-free body weight with anabolic effect and by decreasing body fat percentage (Harbili, 1999). Similar studies in literature point out this result (Otto et al. 2012; Gremeaux et al., 2012; Abe et al., 2014). It could be said that the significant decline in the body weight is related to the decline in the body fat percentage (p < 0.05).

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AN ANTHROPOCENTRIC VIEW ON THE FORMATION OF NAMES

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ANNOTATION

The form and meanings of the source of some simple turkic toponyms are compared with the words from other relative and non-relative languages and its place in onomastic system was anthropocentrically elucidated.

KEY WORDS: onomastics, toponym, anthropocentrism, pattern of thought, nomination, nominee, levels forming.

Though before proper nouns, especially toponyms in Uzbek language bas not learned in the condition when the term anthropocentrism was applied, today's broadly applied principles and laws were paid a great attention in their analysis. In particular, Z. Dusimov attracted our attention to this task in its time and pointed out: "Principles of designation of Khorezm toponyms and nomination laws have special features as well".¹

In toponymy it is written that first names were simple and the things were given the names which the things meant. For example, rivers and lakes were called with the words meaning "water" and mountains were called with the names meaning "mountain". In spite of these facts it is very important to discover historical characteristics of these words, (they were not formed at once, they were developed on the basis of special thinking process) and linguoculture of ethnic units of related and non-related languages. These generalities and specialities play a great role in marking thinking condition of nations.

For example, *daiza-*, *diza* in Aryan *daijha-*, *dijha-* in ancient Indian *dehi* "wall, embankment, hill, barrier"; on the basis of them *dheigho-s* "wall" was formed in Indo European languages, Greek *veixoç* "wall"; English *dike* "dam, obstacle" appeared. In Avesto language *daëza-*"a pile of soil, rock layer"; in ancient Persian *dia-a-* (in klinopis *didá-*) "fortress, stronghold" *daida-* "wall", "stronghold", in the language of mussels *dizaka-* habitant in a stronghold, kale (from Akkadian sources). In the language of mussels the suffix *-ka* made an adjective from the word *diza-* "stronghold". This suffix in the meaning of affiliation can be met with various forms in other Indo European languages.

In middle Persian diz (*de*), in Iranian texts dyz "stronghold, fortress"². So, this word was like *d*ez in ancient

Persian, in modern Persian it is dez, diz "stronghold, fortress" (the word - diz, later in the form - giz can be often met in Central Asian and Iran toponyms – Хуррамдиз, Кўҳандиз, Дарагиз). In Tajik language diz, dez mean "stronghold, castle, fortress" and they are among old words³. In Bokhtar language diz(z) "high mountain": in Parthian diz "stronghold", in Sogdian language ∂y_z , in moral writings dy_z , in Christian texts in Sogdian language dyz "fortress, city". So, the formation of the component ∂u_3 was firstly connected to with the phenomenon of soil. Later this phenomenon was spread towards the semes "fortress, castle". And it is necessary to say that the component "диз" exists in the structure of some words in Uzbek language word stock with the meaning "surrounded". The word *dupdasc* which has been considered as borrowed from Persian pari-daiza-, parä-daiza- means just "surrounded with a wall". Later this word was used with the meaning "garden". Therefore it was borrowed from Iranian into Greek in the form *napâôeiooc*, and then came to Russian like napadus ("paradise") from French. In the next stage of Avesta pairi-daëza- was used in the meanings "surrounded with wall"⁴. In ancient Persian *pari-daida*-, in classical Persian pälez, paliz "garden", in Tajik poliz "vegetables" (it was borrowed in this form into Uzbek too), in Sogdian pröyz, in Sogdian-Christian texts prdyz "garden", in Khwaresmian language *pröyzk*- "garden"⁵. So, we can say that the spreading area of this word is large.

The formation of the word $\square e Bop$ is also connected with the phenomenon soil and it was formed historically daiza- // diza- + $u\ddot{a}ra$ - "the wall of fortress", "wall". In old Persian dida-vara-, in middle Persian $dew\ddot{a}r$, in moral writings dyw'r in classical Persian $dev\ddot{a}r$, in the Dari language $d\acute{e}war$,

¹Дўсимов З. Хоразм топонимлари. – Тошкент: Фан, 1985. – Б.6.

² Расторгуева В.С., Эдельман Д.И. Этимологический словарь иранских языков. Том 3. – Москва: Восточная литература. 2003. – С.314.

³Фарханги забони точики. Дар ду чилд. Чилди 1. –

Москва, СЭ. 1969. – С. 369.

⁴Bartholomae Chr. Altiranisches Werterbuch. Strassburg, 1904. – P. 865.

Расторгуева В.С., Эдельман Д.И. Этимологический словарь иранских языков. Том 3. – Москва: Восточная литература. 2003. – С. 315.



in Tajik *devor*, *devol* (this kind of phonetic situation can be met in Uzbek either), in modern Persian *divar*, in Boxtel language *divar*, in Tot language *duvar*. This word *divar*, *divör*, *davar*, *dawar*, *diwär*, *dwar* means "door, exit" in new Sogdian language, in Khwaresmian language $\partial\beta r$, $\partial fr [<var]^6$. And it means "door" in Ossetian language with the form *dwar*⁷.

The later meaning development of this word moved to the meanings of "address", "place". Thus its meaning "door" was formed. So, this word moved to the seme "door" from the meaning "a certain address (surrounded with wall)". The usage of "door" in the meaning "house" in some dialects of Uzbek language is not random, but it is the result of ancient thinking style. Thus duar- / duär- was used in the meaning "door, gate", and "place, house". In Aryan duar-, duâr-, dur-(plural form dvârau, dvarä "doors", in Latin fores "double door", Greece ûvpâ "door", in Old English duru, in Modern English door, German Tüz "door"; in Lthuanian durys, Latin *durvis,* in Praslav sources *dvon* "castle", in Russian ∂sep_b (plural $\partial sepu$), ∂sop "castle"⁸. In the language of Avesta *dvar*-1) "door, gate"; 2) "path through mountain"; in Old Persian duvarfa)- "gate, door".9 Various forms and meanings of this word in Iranian languages are close to each other or similar: in classic Persian, Dari, and Tajik dar ("door"), in modern Persian dar, in Bokhtar der, in Tot där and etc. The event *du->b- happens in the North Western languages: in the language of Parphs bar {br} "door, gate", in Avram barä; in Huron bär; in Talish language, in Sangulujiy *bar*; in Surkhai $b\ddot{a}r^{10}$ and etc. her we observe one situation. The basis of the word балчик in ancient Turkic language in the meaning "mud" бал has general features with the above mentioned words from formal and semantical view points. Such kind of facts are the evidences of ancient generality of language and thinking among the Asian nations although they belong to different ethnic groups. The word *banux* in Old Turkic which expressed administrative-territorial division means "town" in the monument "Tunyukuk", Iranian and Turfan texts¹¹.

V.V. Bartold includes this word among the common words for all Turkic languages being based on the ancient writings. V.V. Radlov defined the meaning of this word in the form $\delta a \pi \delta \kappa$, $n a \pi \delta \kappa$ as "town" and "fortress".¹²

- 7 Абаев В.И. Историко-этимологический словарь
- осетинского языка. Т. І. М. -Л., 1958. С. 377-378.

So, this word was written in the form *балы*г in the Ibn Muhanna's dictionary which is considered as one of the oldest Turkic dictionaries.¹³ It is possible to identify from Makhmud Koshgari's writings that this word became old by the 10th and 11th centuries though it kept its meaning "city, fortress" in the toponym's structure. Makhmud Koshgari said about it like this: "the word балык meant "city" in the languages of Turks and Uygurs at the time of Jokhiliya". It is the evidence of that the largest cities of Uvgurs were called as Бэш балық. He wrote that Uygurs had called some of their cities as Янги балық – new city¹⁴. The meaning "city" is the result later formal and semantical development of the word балық and Turcologists, including S.E. Malov wrote that this word is historically made from another word i.e. it appeared on the basis of the ancient Turkic root δa_{π} in the meaning "mud".¹⁵ G. Doerfer proved that this word developed from the meaning "wall" towards the meanings "fortress, city".¹⁶ In this feature the root *ban* can be met in the Old Turkic Balasagun toponym. And so it's not random that the word *baneac* in the Mongolian language means "city". The prove of E.V. Sevortyan that the structure of this word in Mongolian is formed from same root with the Turkic балық - балқ - балақа (city) shows that its formal and semantical roots are so ancient. We shouldn't miss the S.P. Tolstov's interpretation in historical and etymological analysis of this toponym.¹

The examples show that they are suitable to the phenomenon of the object of former simple toponyms in the meanings of city, fortress, Kent. The first examples of them developed on and on this way *mynpox* —> *xasuu* (*kehm*, *kah*, кад, када, кас, кат, хас), \longrightarrow девор \longrightarrow истехком. If we pay attention to the ancient appearance of the word *waxap* with this meaning from the root xshahr in Pakhlaviy shahr (property, region), shathr (world), to its form xshathya in Avesta and to the appearance of the Old Indian word kshatra (city) from the root *xshi* – *governing*, *giving a decree*, *being* powerfull,¹⁸ we can see that this type of toponyms were formed in the later stages of historical and ideological development of humanity. So, inspite of the fact that the interpretation of proper nouns is the materials of different languages, the nominator – mankind is single. And we mustn't omit it from our attention. For example, if we observe the toponyms in which the components in the meaning oëx took part, we can see that the words meaning "leg" are the emblem

⁶ Henning W.B. The Khwaresmian Language. Zeki Velidi Togan'a Armag'an. Istanbul, 1955. – P. 426, 432.

⁸ Фасмер М. Этимологический словарь русского языка. Т. 1.– Москва: 1964. – С.487, 489.

⁹ Bartholomae Chr. Altiranisches Werterbuch. Strassburg, 1904. – P. 766.

¹⁰ Расторгуева В.С., Эдельман Д.И. Этимологический словарь иранских языков. Том 3. – Москва: Восточная литература. 2003. – С.500.

¹¹ Дадабаев Х. Общественно-политическая и социальноэкономическая терминология в тюркоязычных письменных памятниках XI-XIVвв. – Ташкент: Ёзувчи, 1991 – С.41.

¹² Радлов В.В. Опыт словаря тюркских наречий. IV. – СПб. 1911. – С.1496.

¹³ Мелиоранский П.М. Арабъ филологъ о монгольскомъ языкћ. – Санктпетербургъ: Типографія императорской академіи наукъ. Вак. Остр... 9 линія, № 12. 1903. – С.080. ¹⁴ Махмуд Кошғарий. Девону луғотит турк. Таржимон ва

^{1*} Махмуд Кошғарий. Девону луғотит турк. Таржимон ва нашрга тайёрловчи С. Муталлибов. II жилд. – Тошкент: Уз ФАН, 1960.

¹⁵ Малов С.Е. Памятники древнетюркской письменности. – М.-Л., 1954. – С.368.

¹⁶ Doerfer G. Turkische und mongolische elemente im Neupersischen. Wiesdaben, 1963. Bd. 1: Mongolische elemente im Neupersischen Gerhard Doerfer; 1963. Bd. 2: – P.257.

¹⁷ Толстов С.П. Города гузов // СЭ. №3. – С.71–73.

¹⁸ Урозбоев А. Огахийнинг тарихий асарлари лексикаси. – Тошкент: Мухаррир. 2013. – Б.90.



the ground and earth in lots of languages in the world. For instance, in Latin *crus*- "leg", in Old Indian *hruse*- "ground", in Greece $\sigma \kappa \epsilon \lambda o \zeta$ – "leg", in Lydia language *qela* – "leg", in Indo European languages *ped* – "leg"¹⁹ and etc.

Therefore, the research of the words with the meanings "water, mountain" can give important facts in marking the development steps of toponyms.

According the above mentioned facts we can come to the conclusion that the toponyms which are considered the first ones in the formation of their process gain regular step by step development in its turn.

¹⁹ Маковский М.М. «Картина мира» и миры образов (Лингвокультурологические этюды) // Вопросы языкознания. №6. 1992. – С.51.



THE MEDIATION ROLE OF CUSTOMER SATISFACTION ON THE INFLUENCE OF PRICE PERCEPTION, PRODUCT QUALITY, AND SERVICE QUALITY TO CUSTOMER LOYALTY

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ABSTRACT

The objective of this study is to examine effect of price perception, product quality, customer satisfaction, and service quality on customer loyalty. The study also examines the mediating role of customer satisfaction on the effect of perceived price, product quality, and service quality on customer loyalty of bonanza sweet corn seeds product of PT. East-West Seed Indonesia that marketed in Brebes District, Central Java of Indonesia. Quantitative research method was employed to generate 106 respondents through purposive sampling, analized with multiple regression analysis and Sobel test. The respondents are dealers (customers) of PT. East-West Seed Indonesia. Dealers have duty to make sure sweet corn seed producer fulfills their need of sweet corn seeds and in other sides, serves all needs of sweet corn seeds to farmers as their partner in that area. The study finds that perceived price, product quality, service quality, and service quality on customer loyalty of bonanza sweet corn in Brebes. Referred to these findings, it can be implied that as an effort to continuously improve the customer loyalty, management of PT. East West Seed Indonesia should implement the appropriate policies related of perceived price, product quality, service quality on customer loyalty, management of PT. East West Seed Indonesia should implement the appropriate policies related of perceived price, product quality, service quality, service quality, service quality, service quality and customer satisfaction of Bonanza sweet corn in Brebes. The future studies may replicate in other contexts and comparison of models that will give more understanding.

KEYWORDS: Perceived Price, Product Quality, Service Quality, Customer Satisfaction, Customer Loyalty.

INTRODUCTION

The agricultural sector is one of the sectors that determine national development, therefore it is necessary to empower the Indonesian agricultural sector so that the agricultural products can balance imports and exports. The implementation of the ASEAN Economic Community (MEA)/ASEAN Economic Community (AEC), has an impact on higher business competition, so it is necessary to focus on increasing the productivity of agricultural, plantation and livestock products because agricultural products have competitiveness in the free market. One of the rapidly growing agricultural industries is the maize seed industry. Many companies offer superior maize seeds to farmers. Intense competition causes companies must be able to maintain the loyalty of the farmers as customers in order to continue to buy loyally. Offering quality products and services, as well as fair prices, can increase customers' satisfaction so that their loyalty can be maintained.

Loyalty is an output related to the profitability and sustainability that businesses emphasize. Consumer loyalty is a

non-random buying behavior to make continuous buying decisions for the products or services of a selected company (Griffin, 2012). Prominent scholars in the field of loyalty research such as Rosenberg and Czepiel (1984) opinion that acquiring a new customer can be as much as six times costlier than keeping existing customers. Reichheld (1996) also agreed that retaining a customer is less costly in comparison to acquiring a new one.

The main purpose of customer loyalty programs is to build relationships with consumers so that they become loyal customers in the long term. Customer loyalty is one source that provides benefits and becomes a very important financial asset for the company.

Study of customer satisfaction and customer loyalty has been an interesting area of research for over 35 years and still interesting to be investigated. Parasuraman et al. (1988) established a causal relationship between service quality perceptions and customer satisfaction. The quality of service has an influence on satisfaction (Fullerton and Taylor, 2002; Jahanshahi et al., 2011). Reichheld and Sasser (1990)



established a causal relationship between service quality perceptions and customer loyalty. Price is an important element in consumers' purchases; therefore, it has a large influence on consumers' judgments regarding product (Herrmann et al., 2007). Previous research conducted by Nugroho and Magnadi (2018) found that product quality and service quality had a significant effect on customer loyalty, but price perception had no significant effect on customer loyalty. On the other hand, a study conducted by Kusumasasti (2017) actually shows the opposite result that product quality and service quality do not have a significant influence on customer loyalty. Furthermore, research conducted by Parthady and Rahyuda (2019) proves that price perception has a positive and significant influence on user loyalty. Based on the evaluation of several previous studies, the results were varied and inconsistent or there is research gap. Related to this, the research intends to re-examine the effect of price perception, product quality and service quality by developing a model by increasing the satisfaction variable as an intervening variable. For understanding better of the relationship among these constructs, it is imperative to understand the conceptual framework of the constructs and then, their relationship along with directional influences.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Customer Satisfaction and Customer Loyalty

Satisfaction is the consumer fulfilment response (Oliver, 1997). It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under-or overfulfilment. Johnson (2001) proposed that there are mainly two conceptualizations of customer satisfaction. The first category of conceptualization can be represented by Oliver (1980) who suggested that measurement of satisfaction should be based on particular product or service transactions which can be defined as post-selection evaluative judgements related to specific buying decisions. Another conceptualization was established by Garbarino and Johnson (1999) who perceived satisfaction in terms of a consumer's total cumulative experiences with a firm, product or service. Wheras Kotler and Keller (2012) expresses that satisfaction is a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations. Customer satisfaction can be measured by three indicators: (1) overall satisfaction, (2) confirmation of expectation, the level of compatibility between the performance expectations, and (3) comparison to the ideal, namely the performance of the product in comparison with the ideal product according to consumer perceptions (Fornell et. al., 1996).

Customer loyalty has considered as an important factor which leads to gain competitive advantage over other firms under a highly competitive and dynamic environment (Leninkumar, 2017). Customer loyalty is one of the most important customer metrics in marketing due to the profit impact of maintaining a loyal customer base (Oliver, 2010). Loyalty as the willingness of a customer to maintain a relationship with the firm, continue to purchase and use its products or services and likely to recommend the firm to others (Lovelock (1983). Similarly, Gremler and Brown (1996) defined customer loyalty as those who repeat purchase from the same product and service provider. Wheras Griffin (2005) states that consumer or customer loyalty is defined as non-random buying behavior to make continuous buying decisions for the selected company's products or services.

Several researchers (Kumar and Shah, 2004; Dean, 2007) suggested that there are two types of loyalty; behavioral and attitudinal loyalty. The behavioral aspects of the customer loyalty were characterized in terms of repurchase intentions, word-of-mouth communication, and recommendations of the organization (Zeithaml et al., 1996; Karatepe and Ekiz, 2004; Nadiri, et al. 2008;). Liu-Thompkins, et al (2010) defined attitudinal loyalty as a favorable evaluation that is held with sufficient strength and stability to promote a repeatedly favorable response towards a product/brand or a store. Whereas Zeithaml, Parasuraman, and Berry (1996) states that there are three indicators of loyalty: (1) say positive things, is to say something positive thing about the product is consumed, (2) recommend to someone, is recommending the product that has been consumed to a friend, (3) repurchase intention, is made to re-purchase a product that has been consumed.

Customer loyalty in the process caused by satisfaction, but the level of customer satisfaction that is capable of forming loyalty is actually a certain level of satisfaction that can not be provided by others, namely delight or surprising (Oliver, 1997). Marlien, Wahyujati, Alimuddin and Sutedja (2017) find that customer loyalty is an endogenous variable caused by a combination of satisfaction, so customer loyalty is a function of satisfaction. If the relationship between satisfaction and customer loyalty is positive, then high satisfaction will increase customer loyalty, otherwise dissatisfied customers tend to be disloyal by seeking alternative choice information and accepting the alternative offer. The main cause of become loyal customers is if they are very satisfied with the product/services received (Dimyati & Subagio, 2016)

Relationship between Price Perception, Customer Satisfaction, and Customer Loyalty

Price is an important antecedent of customers' satisfaction as consumers depend on price because it is extrinsic signal of quality. Price perception is the customer's assessment of the amount of financial sacrifice given in relation to specifications in the form of product quality and the suitability of a sacrifice from a customer to the value he receives after making a purchase (Kartajaya, 2000). Han & Ryu (2009) states that there are three indicators to perchieve price: (1) the prices paid is reasonable, (2) the prices paid is met the the product



provided, and (3) the price charged by this restaurant is appropriate. There is a positive relationship between price perception and loyalty (Nguyen& Leblanc, 2002; Reimer &Kuehn, 2005; Ryu & Jang, 2007; Han & Ryu, 2009). Hence, the following hypothes is proposed:

H1: Price perception has a positive effect on customer loyalty

Customers are satisfied with fairness when making price perception and realize repurchase. The price perception can create a satisfied customer as well as a dissatisfied customer (Jiang & Rosenbloom, 2004, Han & Ryu, 2009). Studies conducted in the literature show that the price perception is effective in the tendency to buy again (Bei & Chiao, 2001; Jiang & Rosenbloom, 2004). The main cause of become loyal customers is if they are very satisfied with the product/services received (Dimyati & Subagio, 2016). Hence, the following hypothes is proposed:

H2: Customer satisfaction mediates the effect of price perception on loyalty

Relationship between Product Quality, Customer satisfaction, and Customer Loyalty

Product quality is the ability of a product to demonstrate functionality, it includes overall duration, reliability, accuracy, ease of operation and product repair as well as other product attributes (Kotler and Armstrong, 2008). Several indicators be used to measure product quality in this research, including product performance, features, reliability, durability, and aesthetics (Kotler and Armstrong, 2008).

If a product fulfils the customer"s expectations, the customer will be pleased and consider that the product is of acceptable or even high quality (Jahanshahi, et al., 2011). Research on how quality affect loyalty had been held by, e.g., Garvin (1988), Gronroos (1983), and Steenkamp (1990) in pure product and by, e.g., Brady and Cronin (2001), Oliver (1997), Parasuraman et al. (1985) in pure service settings. All of them found that Product quality has a positive effect on customer loyalty. Hence, the following hypothes is proposed:

H3: Product quality has a positive effect on customer loyalty

Research on how quality affect satisfaction and loyalty in the past has focused largely in pure product (e.g., Garvin 1988, Gronroos 1983, Steenkamp 1990) or pure service settings (e.g., Brady and Cronin 2001, Oliver 1997, Parasuraman et al. 1985). (Kumar et al., 2009) also provides evidence of the positive impact of quality on company performance regarding the customer satisfaction (reduced number of customer complaints) and performance (increased profitability). H4: Consumer satisfaction mediates the effect of product quality on customer loyalty

Relationship between Service Quality, Customer satisfaction, and Customer Loyalty

Kandampully (1998) reflected that a prime objective of any business, either manufacturing or services, is to achieve economic survival by developing and providing offerings that fulfil customer needs which can be understood by analyzing customers' quality evaluations and their decision-making criteria in terms of repeat patronage and preference. Parasuraman, et al. (1985) defines quality of service as a thorough assessment or attitude concerning the superiority of the service. Kotler (2000) defines a service as any performance or action that either party can offer to the other party, which is essentially intangible and does not result in any ownership. Services can be attributed to physical products, but can also not associated with physical product. The service quality is a form of attitude, related but not the same as satisfaction, as a result of the comparison between the expectations of the performance (Parasuraman, et al., 1988). According to Parasuraman, Zeithaml, and Berry (1998), quality of service includes five dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. Cronin and Taylor (1992) stated that the relationship between service quality and customer satisfaction has a direct impact on customer's loyalty as the universal understanding that keeping a loyal base of customers is much profitable for a company than attracting new customers. Hence, the following hypothes is proposed:

H5: Service quality has a positive effect on customer loyalty

The causal relations between service quality perceptions, satisfaction and loyalty accepted the path service quality – customer satisfaction – loyalty to be valid (Cronin and Taylor, 1992; Anderson and Sullivan,1993). Caceres and Paparoidamis (2007) empirically verified the mediating role of relationship satisfaction in a business-to-business context and asserted that the relationship between functional and technical dimensions of service quality and business loyalty is mediated by relationship satisfaction. Hence, the following hypothes is proposed:

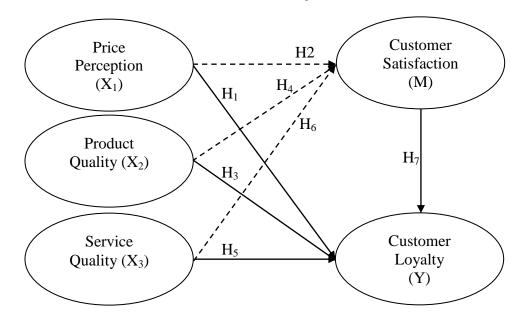
H6: Consumer satisfaction mediates the effect of service quality on customer loyalty Consumer satisfaction has a positive effect on customer loyalty

Most frequently customer satisfaction is considered as an important antecedent of customer loyalty. In other words, customer loyalty is calculated as a straight outcome to customer satisfaction. Most of the researchers (Anderson and Sullivan, 1993; Fornell et al., 1996; Rust, Zahorik, and Keiningham 1995; Taylor and Baker 1994; Asnawi, et al. 2019) clearly established a positive relationship between customer satisfaction and customer loyalty. Hence, the following hypothes is proposed:



H7: Customer satisfaction has a positive effect on customer loyalty

Based on the purpose of research and literature reviews, it can be prepared the conceptual framework of the study as presented in Figure 1.



Notes:

→ : H1, H3, H5, H7 = Direct effect relationship : H2, H4, H6 = Mediating effect relationship

Figure 1. Research Model

METHODOLOGY

Population and Sample and Population

The population in this study is the total number of PT. East-West Seed Indonesia dealers/distributoors in Brebes Ditrict, that consists of 144 dealers. They have duty to make sure the company fulfills their need for the sweet corn seeds and in other sides, serves all needs of sweet corn seeds to farmers as their partner in that area. In order to meet the minimum requirements for sampling, researchers use as many as 106 respondents of dealers as sample with 5% error sampling. Sampling in this study was carried out using purposive sampling, namely a sampling technique with certain considerations, where the researchers chose this sample technic because it's believed that the characteristics of the sample could represent the population being studied (Sugiyono, 2017). Referring to the purposive sampling technique, the respondents in this study were dealers who had used sweet corn products for at least one year and were willing to be respondents in this study. The respondents are the leader or owner of dealers.

Data Collection and Analysis

The data was collected from customers of sweet corn seed products, in Brebes district. Brebes is one of the districts in

Indonesia as the main producer of sweet corn. Thousands of farmers empower this crop. Many companies offer sweet corn seed in this area to compete for purchases from dealers and farmers (customers). One of them is PT. East-West Seed Indonesia. This company is one of the first integrated plant seed companies in Indonesia that is committed to being the best friend of farmers. PT. East-West Seed Indonesia has professional experts who have experience in the field of plant breeding and seedling. PT. East-West Seed Indonesia has produced and marketed various best quality seeds through plant breeding activities supported by advanced technology, one of which is sweet corn Bonanza Cap Panah Merah which is marketed in various regions in Indonesia including Brebes. From the results of initial interviews conducted by researchers with the management of PT. East-West Seed Indonesia obtained information that Brebes is a marketing area for sweet corn seeds Bonanza Cap Panah Merah that has good potential sales. It has 144 dealers in Brebes. Primary data were obtained by researchers through distributing questionnaires to respondents (dealers) directly regarding the variables of price perception, product quality, service quality, customer satisfaction and customer loyalty.



Validity and reliability testing are carried out to ensure that the measuring instrument made can be operationalized in this research. Researchers used the SPSS for Windows program to test the validity and reliability of the instrument. The indicators for each construct must have a significant factor loading on the construct. According to Hair, Anderson, Tatham, and Black (1998), factor loading 0.3 is considered to meet the minimum level of significance, factor loading 0.4 is considered more important, and factor loading 0.5 or more is considered practically significant. The reliability test was measured using Cronbach's Alpha with the help of SPSS for Windows. A measuring instrument is considered reliable if the value of Cronbach's Alpha is greater than or equal to 0.70, although it can go down to 0.6 in exploratory research is still acceptable (Hair et al., 1998).

Testing the hypothesis of the influence of price perception variables, product quality and service quality on consumer satisfaction was carried out using multiple regression analysis techniques with the help of the SPPS for windows program. All data must meet normality, heteroscedasticity and multicollinearity tests. Testing the mediating role of consumer satisfaction variables in this study was carried out using the product of coefficient method or the Sobel test.

Measurement

In this study, it is aimed to examined the relationship between price perception, product quality, and service quality to customer loyalty and the mediating role of customer satisfaction on those relationship in the plant seed company, especially in sweet corn seed products, in Brebes district, Indonesia. For this purpose, quantitative research method was used. The questionnaire used in the research contains 19 items. Customer loyalty construct contains three items (Zeithmal et al. 1996). Customer Satisfaction construct contains three items (Fornell et. al.,1996). Price perception contains three items (Han & Ryu (2009). Product quality construct contains five items (Kotler and Armstrong, 2008). Service quality construct contains five items (Parasuraman et al. 1998). These items were measured using the 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree) in the structured questionnaire.

RESULTS AND DISCUSSION

Validity and Reliability of Instrument

Based on the results of the validity test of the questionnaire using the product moment correlation, it was obtained that the r value of all question items from the price perception variable (X_1) , product quality (X_2) , service quality (X_3) , customer satisfaction (M) and customer loyalty variable (Y), that consists of 19 items spread from 0,635 to 0,894 greater than 0,5. Thus, all question items from all variables in this study were declared valid so that they could be used as a data collection tool.

A measuring instrument is considered reliable if the value of Cronbach's Alpha is greater than or equal to 0.70, although it can go down to 0.6 in exploratory research is still acceptable (Hair et al., 1998). It turned out that all valid indicators produced significant reliability, 0.723 for price perception, 0,901 for product quality, 0,704 for service quality, 0,862 for customer satisfaction, and 0,751 for customer loyalty. The results indicated a strong reliability of measures because Cronbach's Alpha is more than the required one, which minimum is 0.7.

Classical Assumption Test of Regression Analysis

Based on the output of the data normality test, it was obtained that the asymp value. sig. (2-tailed) Kolmogorov-Smirnov test for the standardized residual variable is 0.168 which is greater than the value of (0.05). Therefore, it can be concluded that the data used is normally distributed. The output of the Variance Inflation Factor (VIF) test shows that the VIF values of the independent variables are each smaller than 10, so it can be concluded that there is no multicollinearity in the regression model. Based on the output of the heteroscedasticity test, it was obtained that the significance value of the t-test of the price perception, product quality, service quality, consumer satisfaction is each greater than the value of 0,05. Based on this evidence, it can be concluded that there is no heteroscedasticity in the regression model.

Hyphothesis Testing

The objective of this study is to examine the mediating effect of customer satisfaction on the relationship between price perception, product quality, and service quality on customer loyalty. Some stages are needed to test the hypothesis. First, examines the regression of the independent variables on the mediating variable as the first step to get the coefficient value of the independent variable. Second, examines the regression of the independent variables and the mediating variable on the dependent variable. This step is needed to test the direct effect on the relationship between variables as hypothesized in hypothesis 1, 3, 5, and 7. Third, the researcher conducted a Sobel test (product of coefficient method) to test the mediation effect, to prove the hypothesis 2,4, and 6.

The results of the current study show that that majority of respondents are male 79 (74.53 %), while 27 (25.47 %) are female. The majority of respondents aged between 30 to 39 years are 43 respondents (40.57%), then respondents aged between 40 to 49 are 29 respondents (27.36 %), and between the ages of 20 to 29 consisted of 32 respondents (32.68%).

The result of multiple regression analysis of the independent variables on the mediating variable as the first step can be seen in Table 1. With regards to overall model fit, looking at Table 1 shows that the coefficient of determination, R Square, is 0.342, it means that approximately 34,2% of the observed variation can be explained by the model's inputs. The



regression fit is acceptable because the value of F is 17.691 with Sig. or p-value 0.001 lower than 0,05. The next stage therefore involves looking at the coefficient table to assess the regression estimates of the relationships between independent variables and mediating variable to determine if they are significant and in the expected directions. The relationship of price perception to customer satisfaction has positive coefficient 0.609 and

statistically significant (Sig. 0.001 < 0.05). The relationship of product quality to customer satisfaction has positive coefficient 0.238 and statistically significant (Sig. 0.002 < 0.05). The relationship of service quality to customer satisfaction has positive coefficient 0.296 and statistically significant (Sig. 0.005 < 0.05).

	Table 1. First Mo	del Summary of Multiple Regress	ion Analysis			
No.	Independent Variable	Coefficient Regression	p-value	Decision		
1	Price Perception (X_1)	0.609	0.000	Accepted		
2	Product Quality (X ₂)	0.238	0.002	Accepted		
3	Service Quality (X ₃)	0.296	0.005	Accepted		
R Squ	= 0.342					
$F = 17.691$ 0.000^{a}						
Deper	Dependent variable: customer satisfaction (M)					

Sources: Output of Regression Analysis

The result of multiple regression analysis of the independent variables (i.e., price perception, product quality, and service quality) and mediating variable (i.e., customer satisfaction) on dependent variable (i.e., customer loyalty) as the second step can be seen in Table 2. With regards to overall model fit, looking at Table 2 shows that the coefficient of determination, R Square, is 0.556, it means that approximately 55.6 % of the observed variation can be explained by the model's inputs. The regression fit is acceptable because the value of F is 31.637 with Sig. or p-value 0.000 lower than 0,05.

The next stage is looking at the coefficient table to assess the regression estimates of the hypothesized relationships to determine if they are significant and in the expected directions, that can be seen in Table 2. The relationship of price perception to customer loyalty has positive coefficient 0.429 and statistically significant (Sig. 0.000 < 0.05). The results of this study prove that price perception has a positive effect on customer loyalty. This relationship directly shows that the better the respondent's perception of the price, the higher the level of customer loyalty. Empirically, the results of this study are consistent with the findings of previous research (Nguyen& Leblanc, 2002; Reimer &Kuehn, 2005; Ryu & Jang, 2007; Han & Ryu, 2009; Parthady & Rahyuda, 2019). So, the H1 that states, "price perception has a positive impact on customer loyalty" is supported.

The relationship of product quality to customer customer loyalty has positive coefficient 0.138 and statistically significant (Sig. 0.007 < 0.05). The results of this study prove that product quality has a positive effect on customer loyalty.

This relationship directly shows that the better the respondent's perception of the product quality, the higher the level of customer loyalty. Empirically, the results of this study are consistent with the findings of previous research (Garvin, 1988; Gronroos,1983; Steenkamp,1990; Brady and Cronin, 2001, Oliver 1997; Parasuraman et al.,1985; Nugroho & Magnadi, 2018). So, the H3 that states, "product quality has a positive impact on customer loyalty" is supported.

The relationship of service quality to customer customer loyalty has positive coefficient 0.266 and statistically significant (Sig. 0.000 < 0.05). The results of this study prove that service quality has a positive effect on customer loyalty. This relationship directly shows that the better the respondent's perception of the service quality, the higher the level of customer loyalty. Empirically, the results of this study are consistent with the findings of previous research (Gorondutse & Hilman, 2014; Nugroho & Magnadi, 2018; Tee, 2022). So, the H5 that states, "service quality has a positive impact on customer loyalty" is supported.

The relationship of customer satisfaction to customer loyalty has positive coefficient 0.208 and statistically significant (Sig. 0.001 < 0,05). It means customer satisfaction plays an important role in customer loyalty. Empirically, the results of this study are consistent with the findings of previous research (Annamalah et al., 2011; Hassan et al., 2013; Al-Maamari & Abdulrab, 2017; Anabila et al., 2021; Desiyanti et al., 2018; Sulaiman et al., 2021). So, the H7 that states, "customer satisfaction has a positive impact on customer loyalty" is supported.

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Table 2. Second Model Summary of Multiple Regression Analysis					
No.	Independent Variable	Coefficient Regression	p-value	Decision	
1	Price Perception (X_1)	0.429	0.000	Accepted	
2	Product Quality (X_2)	0.138	0.007	Accepted	
3	Service Quality (X ₃)	0.266	0.000	Accepted	
4	Customer Satisfaction (M)	0.208	0.001	Accepted	
R Squ	are $= 0.556$				
F	= 31.637		0.000^{a}		
Deper	ident variable: customer loyalty (Y)				

Sources: Output of Regression Analysis

The mediation test reveals the result of H2 as shown in Table 3 using Sobel analysis, which indicates that customer satisfaction can mediate the relationship between price perception and customer loyalty indirectly, as depicted in the analysis by p-value 0.001 < 0.05, indicating that H2 is supported. Price perception has a significant effect on customer satisfaction and customer loyalty. The customer mediates relationship between price perception and customer loyalty.

means that with affordable prices, reasonable prices, prices according to information and the price is in accordance with the quality, it will increase customer satisfaction and further increase customer loyalty. Empirically, the results of this study are consistent with the findings of a previous study conducted by Parthady and Rahyuda (2019) that customer satisfaction mediates the effect of price perception on customer loyalty.

Input		Test Statistic	Std. Error	p-value
a. 0.609	Sobel test	2.62302009	0.04829242	0.00871541
b. 0.208	Aroian test	2.57974086	0.04910261	0.00988745
s _a . 0,141	Goodman test	2.6685533	0.04746842	0.00761787
s _b . 0.063				

Sources: Output of Sobel Test (http://quantpsy.org/sobel/sobel.htm)

The mediation test reveals the result of H4 as shown in Table 4 using Sobel analysis, which indicates that customer satisfaction can mediate the relationship between product quality and customer loyalty indirectly, as depicted in the analysis by p-value 0.024 < 0.05, indicating that H5 is supported. The results of the analysis show that product quality has a positive and significant effect on customer loyalty. This proves that the product quality must be in accordance with the needs and desires of customers. Maintaining product quality is an important thing for company, because good quality is one of the keys to success

company to retain its customers, where a good product will lead to customer satisfaction and later have an impact on increasing customer loyalty. Loyalty is a loyal attitude someone for a product, both goods and services. Customer loyalty form of continuation of customer satisfaction in using goods or services provided by a company. Empirically, the results of this study are consistent with the findings of a previous study conducted by Asgharian et al., (2012), Alfin (2013), Raharjo (2013), Parthady and Rahyuda (2019) that customer satisfaction mediates the effect of product quality on customer loyalty.

Table 4. Sobel test (mediation test of X ₂ -	Customer Satifaction \rightarrow	Customer Loyalty).
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Input		Test Statistic	Std. Error	p-value
a. 0.238	Sobel test	2.25640884	0.02193929	0.02404504
b. 0.208	Aroian test	2.2031947	0.02246919	0.02758103
s _a . 0,077	Goodman test	2.313675	0.02139626	0.02068556
s _b . 0.063				

Sources: Output of Sobel Test (http://quantpsy.org/sobel/sobel.htm)

The mediation test reveals the result of H6 as shown in Table 5 using Sobel analysis, which indicates that customer satisfaction can mediate the relationship between service quality and customer loyalty indirectly, as depicted in the analysis by p-value 0.029 < 0.05, indicating that H6 is supported. Customer satisfaction plays a role in mediating the effect of service quality



on customer loyalty, where when the customer is satisfied with the the service quality, then at that time loyal attitude from customers will arise. Empirically, the results of this study are consistent with the findings of a study from Singh & Thakur (2012), Gorondutse & Hilman (2014), Jumawan (2018), and Tee (2022) which also found evidence that customer satisfaction mediates the effect of service quality on customer loyalty.

Table	e 5. Sobel 1	test (mediation	test of	$X_3 \rightarrow$	Custo	omer Satifactio	ı →	Customer]	Loyalty).
T				1.01					

Input		Test Statistic	Std. Error	p-value
a. 0.296	Sobel test	2.17966582	0.02824653	0.02928224
b. 0.208	Aroian test	2.125336072	0.02896826	0.03355653
s _a . 0,102	Goodman test	2.23835828	0.02750587	0.0251977
s _b . 0.063				

Sources: Output of Sobel Test (http://quantpsy.org/sobel/sobel.htm)

CONCLUSION

Findings from this study reveals that the four variables, price perception, product quality, service quality, customer satisfaction have positively effect customer loyalty. The research also found that consumer satisfaction mediates the effect of price perception, product quality and service quality on customer loyalty. Referring to those findings, it can be implied that as an effort to continue to increase the loyalty of its customers, the management of PT. East West Seed Indonesia needs to set a price level its products, especially for sweet corn seed product, that are competitive than competitors and product prices are adjusted capabilities of target consumers. It's important to improve the quality of sweet corn seed products through innovation and the use of modern technology, provide high services quality based on creativity and teamwork under the professionalism and integrity of strong marketing management, as well as providing a pleasant experience to consumers regarding the performance of products and services. In addition, management may focus on the training of employees in professional service skills to improve service quality, thus promoting customer loyalty.

LIMITATION AND FUTURE RESEARCH

As is the case with every research work, this study has some limitations that may influence the reliability of the results and restrict the extent to which the findings can be generalized. First, this study is based upon simple sampling processes, thus prohibiting conclusions of a general nature. The study was carried out on a small scale, which could be expanded in future, both in different product and in different regional areas. Second, this study uses the same source of information, from only dealer manager or owner manager. This aspect can lead to a general variance bias. Multiple informants will increase the validity of research findings even though the use of single informants remains the main research method in most studies.

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DRONE DETECTION USING DEEP LEARNING

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ABSTRACT

Drones have widespread application in real life and the industry is expanding rapidly. As they are growing increasingly it is more accessible to the public at cheaper prices. They are used for espionage and can be converted into gruesome weapons. Hence it is very important to monitor and detect unauthorized drones entering into the restricted regions in order to maintain peace and prevent chaos. The Technology stack implied here is You Only Look Once (YOLO v5) which is a real time object detection system. In recent times Yolo is a profound algorithm used for real time object or image detection . The Yolo trained model is trained with pictures of drones and birds so that the trained model can differentiate between and prevent false prediction of drones . Everytime a drone is detected in the camera an alert message is sent to the higher officials so that the drone could be eliminated. This algorithm comprises 3 techniques namely: Residual blocks, Bounding box regression and Intersection over Union. The camera used here is 360 degree so that maximum area of visibility is obtained. **KEYWORDS:** Drones, real time object detection , YOLO v4.

I. INTRODUCTION

Drones have many real time uses like surveillance , detection, delivery in day to day life. As all the technological development can be exploited to use it for malicious intentions , drones can also be used in trafficking drugs , transporting the weapons and goods between borders. The main aim of our idea is to detect drones using the YOLO algorithm and alert the respective officials using Twilio API. YOLO uses neural networks to provide real-time object detection. This algorithm is popular because of its speed and accuracy. There is an increasing potential for small drones to be misused, especially by hobbyists, as well as for illegal activities such as drug smuggling, terrorist attacks, or even interfering in emergency services such as fire prevention and disaster response. The collection of drone images ,the labeling process is done and the dataset is trained. The live video feed is passed to the developed framework, thereby detecting the drones in the feed. When a drone is captured, our proposed system will detect them and notify the officials by sending sms(Twilio API). Twilio is a Cloud communications Platform as a Service company that, among many other features, offers an API that allows to programmatically send SMS.

II. EXISTING WORK

There exists a system which uses CNN-based network architectures such as Zeiler and Fergus (ZF) and the Visual Geometry Group (VGG16) to transfer learning and to detect drones. Their results showed that VGG16 with Faster R-CNN performed better than other architectures did on a training dataset containing five MPEG4-codec videos taken at different times. Another system proposed an audio-based drone detection technique using CNN, a recurrent neural network, convolutional



recurrent neural network algorithms, and the unique acoustic fingerprints of flying drones. Their dataset consisted of audio recorded samples of drone activities. Their dataset contained more than 10,000 images of different categories of drones. An OpenCV-based drone detection system was proposed, achieving 89% accuracy. A dataset contained 2088 positive and 3019 negative examples, used YOLOv3 to achieve better detection accuracy and obtained more accurate bounding boxes.

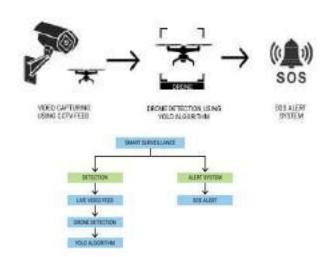
III. PROPOSED SYSTEM

The proposed solution has three parts, capturing the video in real time using the 360 degree CCTV, detecting the drone in the video using the trained model. In this study, we have chosen to use the state-of-the-art in object detection, the YOLO-v4 algorithm, because of its real-time detection capabilities, high speed, and accuracy. To train this neural network architecture, we collected images of birds as well as drones from public resources. We prepared our own drone dataset to verify the drone detection capability. We chose to use bird images due to their similarity to drones. We used mean average precision (MAP) as our evaluation metric to evaluate the object detector's performance. Using the collected and prepared dataset, the trained YOLOv4 neural network was evaluated in terms of its detection ability, location precision, and mAP. YOLOv4 follows a one-stage detector architecture consisting of four parts: input, backbone, neck, and dense prediction or head. The input is the set of data we want to detect. The backbone is responsible for extracting features and uses the image dataset to make the object detector scalable and robust.

Bag of Specials

YOLOv4 introduces a set of strategies called BoS to improve object detection accuracy by increasing a small amount of inference costs. Various techniques are incorporated in order to implement BoS, but the most significant improvements include Mish activation, CSP connections, SPP-block, and PAN path-aggregation block. Mish activation considers the negative information, thus solving the dying ReLU phenomenon and providing strong regularization effects during training to overcome the overfitting issue.

The trained YOLOv4 was evaluated using mAP, precision, recall, and F1-score.Primarily, an evaluation was performed for the testing images of birds and drones. In addition, our testing was performed considering a complex background, different weather conditions (cloudy, sunset, etc.), and multiple objects in one image. After the collection of drone images ,the labeling process is done and the dataset is trained. The live video feed is passed to the developed framework, thereby detecting the drones in the feed. When a drone is captured, our proposed system will detect them and notify the officials by sending sms(Twilio API).



V. RESULT AND CONCLUSION

In this research, YOLOv4 was trained to detect drones. Our model performed better than those of previous similar studies. Drone detection is necessary, considering that drone intervention is frequent in unauthorized and emergency tasks. However, detecting drones at various altitudes can be difficult, especially due to their small size and high altitude and speed as well as the existence of drone-like objects. Drone and bird image databases were compiled in this research by collecting images from available public resources. Using those collected images, a YOLOv4 model was trained and evaluated via our own drone videos. This study was limited to YOLO implementation only since various object detection algorithms require datasets to be labeled in certain formats, which is time consuming. In addition, speed was one of our considerations while choosing algorithms. In future work, a more diverse image dataset will be used to further improve the results. Thus, we will further use this version to see if the speed and accuracy improve. In this study, YOLOv4 performed better due to the capability of detecting objects in real-time. The YOLO algorithm predicts a class with localization using only a single pass over an image. In this study, YOLOv4 performed better due to the capability of detecting objects in real-time. The YOLO algorithm predicts a class with localization using only a single pass over an image.





VI. FUTURE SCOPE

In future drone detection will be used to prevent illegal use of drones in order to prevent security breaches and to ensure public safety. The drone industry is expanding rapidly. They are growing increasingly more accessible to the public and at cheaper prices . According to their payload capability, drones can be used for various purposes, such as inspection, delivery, monitoring, photography, and among other uses. However, drones can also be misused, generating safety concerns. There is an increasing potential for small drones to be misused, especially by hobbyists, as well as for illegal activities such as drug smuggling, terrorist attacks, or even interfering in emergency services such as fire prevention and disaster response. Drones can also be converted into dangerous weapons by loading them with explosive materials. However, they are not easy to detect when in the air. Small drones transmit very limited electromagnetic signals, making it very difficult for conventional radar to detect them. Conversely, object detection using deep learning has achieved substantial success due to its high accuracy and available computing power. In fact, the "You Only Look Once" (YOLO) algorithm has surpassed other object detection algorithms such as the Region-Based Convolutional Neural Network (R-CNN) and the Single-Shot Multibox Detector (SSD) because of its highly precise real time detection capability . YOLO is superior in terms of both accuracy and speed.

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WHAT'S NEW IN RELATION TO STROKE?

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SUMMARY

Introduction: A cerebrovascular event is a pathology that affects brain tissue by an interruption of blood flow, which may result in irreversible injury. If there is spontaneous recovery of symptoms and no brain damage, it is called a transient ischaemic attack. Early diagnosis and treatment can reduce the likelihood of sequelae in stroke patients (1).

Aim: The aim is to mention therapeutic novelties, both pharmacological and non-pharmacological, about stroke management, based on review articles and original articles from 2017 to the present.

Methodology: This review was conducted by searching for information in Cochrane Library, Google Scholar, Science Direct and PubMed. The documents found were in Spanish and English. Some articles were excluded due to lack of relevance and not corresponding to the time needed.

Results: For the initial approach to stroke, we have: acetylsalicylic acid, clopidogrel, statins and initiate thrombolysis or thrombectomy as soon as possible. Therapies such as carotid endarterectomy are vital to avoid recurrences. For the rehabilitation of patients with sequelae we have: speech and language therapy, mental practice, electromechanical trainings, mirror therapies, and above all the improvement of health services.

Conclusions: Strokes need to be diagnosed early. Computed tomography or magnetic resonance imaging can help in diagnosis. There are pharmacological and non-pharmacological therapeutic alternatives. Pharmacological therapies are used in acute phases of stroke, while non-pharmacological therapies are more directed towards rehabilitation therapies.

KEYWORDS: Stroke, Thrombolytic Therapy, Endarterectomy, Stroke Rehabilitation, Transient Ischaemic Attack.



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ABSTRACT

Introduction: Stroke, also called cerebrovascular event, is a pathology affecting brain tissue caused by an interruption of blood flow in an area of the brain, which may produce an irreversible lesion. If there is spontaneous recovery of symptoms and there is no brain injury due to ischemia, it is called a transient ischemic attack. In general, if the diagnosis (symptomatology and simple cranial tomography) and early treatment are reached, the probability of sequelae in the patient with stroke can be reduced (27).

Objective: The aim of this review is to mention therapeutic updates, both pharmacological and non-pharmacological, about stroke management, based on review articles and original articles from 2017 to present.

Methodology: This review was carried out by searching the Cochrane Library, Google Scholar, ScienceDirect and Pubmed databases. The documents found were in Spanish and English. Some articles were excluded due to lack of importance for our review and because they did not correspond to the proposed time of analysis (2017 - 2022).

Results: The drugs most commonly recommended in the initial approach to patients with suspected stroke are: acetylsalicylic acid, clopidogrel, statins and initiating thrombolysis or thrombectomy as soon as possible. Therapies based on endarterectomy are vital to avoid recurrences. Some non-pharmacological therapies that have been implemented in the rehabilitation of patients with motor sequelae of stroke are: speech and language therapy, mental practice, electromechanical training, mirror therapies, and above all the improvement of health services.

Conclusions: Strokes have a symptomatology and manifestations that it is important to diagnose early. Diagnostic imaging such as CT or MRI can help in the diagnosis. Several therapeutic alternatives are currently available, both pharmacological and non-pharmacological. Pharmacological therapies are used in the acute phases of stroke, while non-pharmacological therapies are aimed more at rehabilitation therapies for possible sequelae.

KEY WORDS: Stroke, Thrombolytic Therapy, Endarterectomy, Stroke Rehabilitation, Transient Ischemic Attack.

INTRODUCTION

Patients between 70 and 79 years of age are mostly those who have a predominance of stroke; this is due to increased dyslipidaemia, endothelial dysfunction. In addition to this, the presence of arterial hypertension (the most important risk factor) and hypertriglyceridaemia, smoking, together with patients with diabetes are other important risk factors, which increase the probability of suffering a stroke by 2 to 4 times. In relation to diabetes, patients are more likely to have recurrences. It has been shown that the presence of a prolonged corrected QT on the electrocardiogram is a strong predictor of mortality in these patients because it generates an autonomic alteration at the cardiac level, which leads to an elevated risk of death (2). The activation of the stroke code is a fundamental part of the initial management of these patients. The most important element to consider is the time before arrival at the emergency department (3).

The symptoms of stroke patients depend on the area where the flow reduction is generated, ranging from aphasia, hypoaesthesia and paresis in middle cerebral artery involvement, to amaurosis fugax, homonymous contralateral hemianopsia in posterior cerebral artery involvement. In case of basilar vertebral involvement, it usually presents with bilateral sensory or motor dysfunction, total or partial loss of vision. After evaluation of symptoms and suspicion of stroke, vital signs are assessed and laboratory samples and imaging tests (simple cranial tomography or magnetic resonance imaging) are taken. All patients have a window period of 4.5 hours for thrombolysis and up to 6 hours for mechanical thrombectomy. The treatment of stroke depends on whether it is ischaemic or haemorrhagic; if it is ischaemic, a tissue plasminogen activator must be administered, which dissolves the clot that generates the pathology. A haemorrhagic stroke

must always be completely ruled out if tissue plasminogen activator is to be administered. In a haemorrhagic stroke, the first thing to be done is to lower the blood pressure (the first cause of haemorrhagic stroke). In some cases, drainage of the blood by brain surgery is required. In the case of aneurysm rupture, aneurysm clipping surgery or endovascular coiling is performed (4).

METHODOLOGY

This literature review was prepared based on the selection of 66 review articles and original articles taken from various databases and journals, among which we have: Cochrane Library, Google Scholar, Sciencedirect, Recimundo and PubMed. After this selection of articles, 30 scientific articles were selected. The selection criteria for these reviews were the general description of this pathology, the different novelties in relation to current procedures and therapies for the treatment of stroke, together with elements different from what is usually found in the medical literature, in order to avoid this bibliographic review being different in wording and approach; and the time of the articles (2017 - 2022). The information collected served to demonstrate the different pharmacological and non-pharmacological therapeutic modalities for stroke. The exclusion criteria were instead the time of publication of the reviews (prior to 2017), and the repetition of some scientific articles related to common and basic concepts; since, in this literature review, we tried to focus on not so well known novelties in relation to cerebrovascular events. The aim of this review and the selection of these reviews was to show the ways in which therapies have advanced to the point where other elements exist for both the acute management of a cerebrovascular



event and procedures that are useful for patients who manifest sequelae following a cerebrovascular event.

RESULTS AND DISCUSSIONS

As mentioned, there is a need for the most accurate determination of stroke patients and their possible treatment; therefore, scales are needed to determine this. Therefore, it was determined that ambulance physicians should use the Cincinnati Prehospital Stroke Scale (CISS) for its high sensitivity, although the Recognition Of Stroke In The Emergency Room (ROSIER) or the Melbourne Ambulance Stroke Scale (MASS) scales can also be used for their higher specificity. In emergency rooms, the ROSIER scale is preferred, as it has been shown to be more effective than the FAST (FACE, ARM, SPEECH, TIME) scale (5).

Pharmacological Interventions

Administration of anticoagulants decreased the likelihood of recurrent stroke, pulmonary embolism or deep vein thrombosis; however, it increases the risk of bleeding (6)(7). The same effect could be observed with the use of antiplatelet drugs; the use of 2 antiplatelet drugs prevents early stroke recurrence, but increases the risk of side effects, especially bleeding. However, the benefits of 2 antiplatelet agents given after a cerebrovascular event outweigh the risks after the first month (8).

It is true that recanalisation therapy (either with thrombolysis or thrombectomy) in stroke patients is one of the preferred techniques to improve functional prognosis and, above all, survival. However, cerebral haemorrhage has to be considered as a possible adverse effect. Therefore, it is of vital importance to be able to thoroughly analyse the patient's suitability to proceed with this therapy (9). On this basis, endovascular thrombectomy is recommended because of the increased likelihood of functional survival of the patient, with the reduced possibility of cerebral haemorrhage (10)(11).

One of the interventions that should be performed is carotid endarterectomy to prevent future cerebrovascular events, although this procedure is not without risk. Nevertheless, carotid endarterectomy has been found to decrease the risk of a new stroke in patients with significant stenosis; this is evidenced by the benefit to patients with symptomatic stenosis of 50-69%; and it is very beneficial for patients with stenosis of 70-99% (12).

Another important element in terms of medication that can be administered to stroke patients is antiplatelet agents, such as aspirin. A dose of 160-300 milligrams of acetylsalicylic acid is recommended within 48 hours of stroke symptoms; this results in reduced mortality and reduced risk of stroke recurrence within 2 weeks (13). In contrast, the administration of clopidogrel and acetylsalicylic acid to patients with cardiovascular disease was shown to be associated with a decreased risk of cerebral vascular events; however, this association was shown to result in an increased likelihood of haemorrhage (14). Shifting to the analysis of another drug, it was found in 10 trials of a total of 4281 patients with acute ischaemic stroke that administration of Citicoline had no benefit or influence on disability, functional or neurological recovery (15). In patients with hypertension who have had a stroke, a considerable benefit has been established for the administration of antihypertensives to prevent the likelihood of a new cerebrovascular event or transient ischaemic attack (although the evidence is more directed to studies with ACE inhibitors or a diuretic) when administered at least 48 hours after a cerebral vascular event or transient ischaemic attack (16). Following this perspective, it has also been shown that the use of statins to keep LDL below 70 (especially in patients with cardiovascular disease), reduces the likelihood of a cerebral vascular event by approximately 28-31% and of a new stroke by 33% (17).

There are currently several therapeutic approaches surrounding the treatment of people suffering from stroke. One of them is stem cell transplantation in ischaemic stroke; there is usually evidence that giving stem cells to patients reduces neurological deterioration, although there is no functional improvement (18).

Non-pharmacological interventions

The management of patients in specialised units for cerebral vascular events (also called organised inpatient care) has been shown to produce greater benefits in stroke patients, especially in reducing the sequelae and maintaining a good quality of life in patients, regardless of severity, gender or even age of the patient (19). Speech and language therapy is vital and very important to treat patients with aphasia as a sequelae of stroke. High-intensity therapy has been shown to help patients in everyday life and improve aphasia (20). Within this same aspect, mental practice (repetitive mental rehearsal of an action without physically performing it) has been shown to be beneficial in post-stroke hemiparesis patients in improving upper limb mobility and functionality, along with other physical rehabilitation therapies (21). In addition, patients who receive electromechanical training (shoulder, elbow or hand rehabilitation aids) improve activities of daily living, muscle strength and functionality of the affected limb (22). In relation to gait, several elements and devices have been developed for this purpose. The use of electromechanical gait training devices, combined with physiotherapy, increases walking speed, allowing the patient to walk autonomously (especially in the first 3 months) (23).

Apart from this rehabilitation therapy, one has to mention mirror therapy, where a mirror is placed between the patient's arms and legs; this mirror covers the affected limbs and reflects the actions of the unaffected limbs. This therapy helps the movement of the affected limbs, pain and motor deficits; all these effects were maintained for 6 months (24). Motor imagery (imagining movement of the affected limb without actually moving it) has been used for relearning movement; however, there is so far no sustainable evidence to support the use of this rehabilitation therapy (25). In addition, all patients who have suffered a cerebral vascular event should be recommended to undergo cardiorespiratory training, such as walking and strength exercises, to improve fitness, balance and walking ability. In addition, this has been shown to decrease hospitalisation for cerebral vascular accidents by up to 7% (26). In parity with this condition, occupational therapy has been found to slightly improve cognitive performance and sustained visual attention, along with thinking and working

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memory (27). Another therapy that is practised in this type of patient is circuit training. This group therapy is based on specific practices and tasks. This therapy has been shown to improve walking ability, with greater autonomy, and to improve balance (28). A separate form that has been studied is constraint-induced movement therapy for the upper extremities; this is characterised by preventing the unaffected arm from moving to stimulate movement of the affected limb. This technique has been shown to be beneficial in increasing the usability of the affected limb, as well as improving limb movements (29).

Apart from this, a good intervention in the health services of physicians is very important for patients with stroke sequelae, as this leads to improvements in the control of associated risk factors, such as blood pressure, glycosylated haemoglobin, lipid profile, among others (30).

CONCLUSIONS

Strokes generally have very serious sequelae that significantly compromise patients' quality of life. Therefore, the patient needs to be treated as early as possible to avoid major sequelae. This can be achieved by properly identifying patients and administering the appropriate medication or, failing that, referring them for a surgical procedure. After this, rehabilitation of the possible consequences of this pathology, whether it is language or motor activity, needs to be initiated. Therefore, there are currently some alternatives related to the improvement of the motor or language aspect of patients with sequelae caused by stroke. Although it is true that some therapies need more studies to demonstrate their effectiveness, these techniques mentioned here are routinely used.

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Data availability

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Conflict of interest

The authors report no conflicts of interest.

Consent to publication

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Ethical approval and consent to participate

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NONLINEAR ABSORPTION OF POLARIZED RADIATION IN CRYSTALS WITH A COMPLEX BAND

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ABSTRACT

The matrix elements of one- and two-photon optical transitions from the subbands of the valence band and the spin-orbital splitting band to the conduction band are calculated, expressions are obtained for them depending on the polarization vector and light frequency, as well as on the band parameters of the crystal.

Expressions are obtained for the spectral-polarization and spectral-temperature dependences of the coefficients of interband twophoton absorption of light and linear-circular dichroism in semiconductors of tetrahedral symmetry in the three-band Kane model.

It is shown that in the spectral-polarization dependence of the total coefficient of two-photon absorption of linearly and circularly polarized light in InSb: firstly, all spectral-polarization dependences have an oscillatory character; secondly, as the light frequency increases, the oscillation amplitude increases; thirdly, for circularly polarized light, the oscillation becomes aperiodic.

KEYWORDS: spectral, temperature and polarization dependence, optical transitions, linear-circular dichroism, two-photon absorption of linearly and circularly polarized light.

INTRODUCTION

At present, nonlinear optical phenomena occurring in crystals are widely used in practice [1-3]. In this context, the study of nonlinear absorption of polarized light is relevant both from the physical point of view and from the point of view of application. We note that in the case of single-photon absorption of light, optical transitions do not occur through virtual states. Therefore, in single-photon optical transitions in crystals of cubic and tetrahedral symmetry, linear-circular dichroism is not observed.

The first work on two-photon interband transitions in crystals was carried out in the early 1960s shortly after the advent of lasers [1-3]. When calculating the matrix elements of two-photon transitions in crystals, perturbation theories with respect to the field of an unpolarized electromagnetic wave [2, 3] were used, where the two-band Kane model was used.

In [4-7], linear circular dichroism $(LCD)^1$ of two- and three-photon absorption of light in crystals of cubic symmetry was studied both theoretically and experimentally.

Multiphoton absorption of light in a semiconductor with a complex valence band, which is due to direct optical transitions between heavy and light hole subbands and depends on the degree of light polarization, was studied in [8–17]. Nonlinear interband single-photon absorption of polarized light in Weyl semimetals was studied in [18]. In these works, it is assumed that the nonlinearity in the dependence of the single-photon absorption coefficient on the light intensity arises due to resonant absorption saturation [19]. This saturation in both interband [18] and intraband [9, 10, 16, 17] light absorption is due to the photoinduced change in the distribution functions of current carriers in the region of momentum space near the surface, which

¹ Two-photon linear-circular dichroism due to interband optical transitions of electrons was predicted by EL Ivchenko in [4].



is determined by the law of conservation of energy and the relaxation time, the reciprocal of which is equal to reciprocal relaxation times in energy and momentum.

In [8, 11, 14], multiphoton linear-circular dichroism (LCD) in p-Ge was studied in the regime of developed nonlinearity, when n-photon processes with $n = \begin{pmatrix} 1 & 5 \end{pmatrix}$ make a comparable contribution to absorption. In [16, 17], four-photon processes in semiconductors due to optical transitions between subbands of the valence band were studied with allowance for the effect of coherent saturation.

In the present work, in contrast to [7], we carry out LCD calculations of interband two-photon light absorption (TPLA), as well as on the spectral dependence of the TPLA coefficient in semiconductors of tetrahedral symmetry in the three-band Kane model, where we take into account the contributions to the multiquantum process of intermediate states in the subbands of light and heavy holes and in the zone of spin-orbit splitting, as well as in the conduction band, taking into account the effect of coherent saturation.

Two-Photon Interband Absorption of Polarized Light in Narrow-Gap Semiconductors

Following [14, 16] in further calculations of the spectral and temperature dependence of the two-photon light absorption coefficient $K^{(2)}$, where the light wave vector is neglected, i.e. we assume that $k' = k_{1,2} \cong k$ $(k'(k \text{ and } k_{1,2}))$ is the wave vector of current carriers in the final (initial and intermediate) state). Then

$$K_{V,\pm1/2;V,\pm3/2}^{(2)} = \frac{2\pi}{\hbar} 2\hbar\omega \frac{1}{I} \rho(2\hbar\omega) F(\beta,2,\omega) \sum_{m'=\pm1/2,\ m=\pm3/2} \left\langle \frac{\left| M_{m'm}^{(2)}(\vec{k}) \right|^2}{\sqrt{1 + 4\frac{\alpha_{\omega}}{\hbar^2 \omega^2} \left| M_{m'm}^{(2)}(\vec{k}) \right|^2}} \right\rangle$$
(1)

or

$$K_{hh,lh}^{(2)} = \frac{2\pi}{\hbar} 2\hbar\omega \frac{1}{I} \rho(2\hbar\omega) F(\beta, 2, \omega) \times \left(\frac{\left| M_{V,\pm 1/2; V,\pm 3/2}^{(12)}(\vec{k}) \right|^{2}}{\sqrt{1 + 4\frac{\alpha_{\omega}}{\hbar^{2}\omega^{2}} \left| M_{V,\pm 1/2; V,\pm 3/2}^{(2)}(\vec{k}) \right|^{2}}} \right) + \left\langle \frac{\left| M_{V,\pm 1/2; V,\mp 3/2}^{(2)}(\vec{k}) \right|^{2}}{\sqrt{1 + 4\frac{\alpha_{\omega}}{\hbar^{2}\omega^{2}} \left| M_{V,\pm 1/2; V,\mp 3/2}^{(2)}(\vec{k}) \right|^{2}}} \right\rangle \right), \qquad (2)$$

1

where $\rho(2\hbar\omega)$ is the density of states of current carriers involved in two-photon optical transitions, where the law of conservation of energy is taken into account, $F(\beta, 2, \omega)$ is the distribution function of current carriers in the initial state, $\beta^{-1} = k_B T$, k_B is the Boltzmann constant, T is the temperature of sample: $F(\beta, 2, \omega) = \exp\left[\beta\left(\mu - E_{L=hh}(k_{lh,hh}^{(2\omega)})\right)\right]$, $E_{hh}(k_{lh,hh}^{(2\omega)}) = \frac{m_{lh}}{m_{hh} - m_{lh}} 2\hbar\omega, \quad \rho(\hbar\omega) = \frac{m_{lh}}{m_{hh} - m_{lh}} k_{lh,hh}^{(2\omega)} / (\pi^2\hbar^2) \text{ and it is also taken into account that } 2\hbar\omega >> k_B T.$

Now it is required to perform the angular averaging of the modules of squares of the considered matrix elements

$$\left\langle \frac{\left| M_{V,\pm1/2;V,\pm3/2}^{(2)}(\vec{k}) \right|^2}{\sqrt{1 + 4\frac{\alpha_{\omega}}{\hbar^2 \omega^2} \left| M_{V,\pm1/2;V,\pm3/2}^{(2)}(\vec{k}) \right|^2}} \right\rangle + \left\langle \frac{\left| M_{V,\pm1/2;V,\mp3/2}^{(2)}(\vec{k}) \right|^2}{\sqrt{1 + 4\frac{\alpha_{\omega}}{\hbar^2 \omega^2} \left| M_{V,\pm1/2;V,\mp3/2}^{(2)}(\vec{k}) \right|^2}} \right\rangle,$$
(3)

here is the contribution of the coherent saturation effect to the coefficient of two-photon absorption of light by precisely these radicals of the last relations. That, calculations without taking into account the contribution of the coherent saturation effect to the coefficient of two-photon light absorption is described by the expression: $\left\langle \left| M_{V,\pm 1/2;V,\pm 3/2}^{(2)}(\vec{k}) \right|^2 \right\rangle + \left\langle \left| M_{V,\pm 1/2;V,\mp 3/2}^{(2)}(\vec{k}) \right|^2 \right\rangle$, so in

further calculations we will take into account both cases and analyze the theoretical results obtained for each type of optical transitions.

Two-photon optical transitions between subbands of heavy and light holes

If we assume that optical transitions occur from the heavy hole branch to the light hole branch, where the intermediate states of the current carriers are in the subbands of the valence band, then the matrix element of the two-photon optical transition is determined by the relation



$$\left|+3/2\right\rangle \rightarrow \left|m\right\rangle \rightarrow \left|+1/2\right\rangle = \frac{M_{+1/2;+3/2}^{(1)}M_{+3/2;+3/2}^{(1)}}{E_{hh} - E_{hh} - \hbar\omega} + \frac{M_{+1/2;+1/2}^{(1)}M_{+1/2;+3/2}^{(1)}}{E_{lh} - E_{hh} - \hbar\omega} + M_{+1/2;+3/2}^{(2)} = \frac{M_{+1/2}^{(1)}}{E_{hh} - E_{hh} - E_{hh} - \hbar\omega} + M_{+1/2;+3/2}^{(2)} = \frac{M_{+1/2}^{(1)}}{E_{hh} - E_{hh} - E_{hh} - E_{hh} - \hbar\omega} + M_{+1/2;+3/2}^{(2)} = \frac{M_{+1/2}^{(2)}}{E_{hh} - E_{hh} - E_{hh} - E_{hh} - \hbar\omega} + M_{+1/2;+3/2}^{(2)} = \frac{M_{+1/2}^{(2)}}{E_{hh} - E_{hh} - E_{hh}$$

$$=\frac{M_{+1/2;+3/2}^{(1)}M_{+3/2;+3/2}^{(1)}}{\left(-\hbar\omega\right)}+\frac{M_{+1/2;+1/2}^{(1)}M_{+1/2;+3/2}^{(1)}}{\left(\hbar\omega\right)}+M_{+1/2;+3/2}^{(2)}=-5\sqrt{3}\left(\frac{eA_{0}}{c\hbar}\right)^{2}Be_{+}^{\prime}e_{z^{\prime}},\qquad(4)$$

where $M^{(1)}(m \to m') = M^{(1)}_{m'm}(\vec{k}) \left[M^{(2)}(m \Rightarrow m') = M^{(2)}_{m'm}(\vec{k}) \right]$ is the matrix element of one (simultaneously absorbing two) photonic optical transition (OT), from which we obtain the expression for the square of the modulus of the optical

transition of the $|\pm 3/2\rangle \rightarrow |m\rangle \rightarrow |\pm 1/2\rangle$ type, we have $75\left(\frac{eA_0}{c\hbar}\right)^4 B^2 |e'_+e_{z'}|^2$, and for the optical transition of the $3(eA_0)^4 p_2(a_2 - 2 + t)^2 + t^2)$

$$|\pm 3/2\rangle \rightarrow |m\rangle \rightarrow |\mp 1/2\rangle$$
 type, we have $\frac{3}{4} \left(\frac{eA_0}{c\hbar}\right)^2 B^2 \left(36e_{z'}^2 |e'_+|^2 + |e'^2_-|^2\right)$

If intraband optical transitions occur between the subbands of light and heavy holes, then the intermediate states are both in the conduction band and in the spin-orbit splitting band. Then the matrix elements of these optical transitions are described by the expressions:

a)
$$|+3/2\rangle \longrightarrow |c,m\rangle \longrightarrow |+1/2\rangle + |+3/2\rangle \longrightarrow |\Delta,m\rangle \longrightarrow |+1/2\rangle =$$

$$= \frac{M_{V,+1/2;c,+1/2}^{(1)}M_{c,+1/2;V,+3/2}^{(1)}}{E_c - E_{hh} - \hbar\omega} + \frac{M_{V,+1/2;c,-1/2}^{(1)}M_{c,-1/2;V,+3/2}^{(1)}}{E_c - E_{hh} - \hbar\omega} + \frac{M_{V,+1/2;SO,+1/2}^{(1)}M_{SO,+1/2;V,+3/2}^{(1)}}{E_{SO} - E_{hh} - \hbar\omega} + \frac{M_{V,+1/2;SO,+1/2}^{(1)}M_{SO,+1/2;V,+3/2}^{(1)}}{E_{SO} - E_{hh} - \hbar\omega} + \frac{M_{V,+1/2;SO,+1/2}^{(1)}M_{SO,+1/2;V,+3/2}}{E_{SO} - E_{hh} - \hbar\omega}$$

b)
$$|-3/2\rangle \rightarrow |c,m\rangle \rightarrow |+1/2\rangle + |-3/2\rangle \rightarrow |SO,m\rangle \rightarrow |+1/2\rangle =$$

$$=\frac{M_{V,+1/2;c,+1/2}^{(1)}M_{c,+1/2;V,-3/2}^{(1)}}{E_{c}-E_{hh}-\hbar\omega}+\frac{M_{V,+1/2;c,-1/2}^{(1)}M_{c,-1/2;V,-3/2}^{(1)}}{E_{c}-E_{hh}-\hbar\omega}+\frac{M_{V,+1/2;SO,+1/2}^{(1)}M_{\Delta SO+1/2;V,-3/2}^{(1)}}{E_{\Delta}-E_{hh}-\hbar\omega}+$$

$$\frac{M_{V,+1/2;SO,-1/2}^{(1)}M_{SO,-1/2;V,-3/2}^{(1)}}{E_{\Delta} - E_{hh} - \hbar\omega} = -\left(\frac{eA_0}{c\hbar}\right)^4 \frac{1}{2\sqrt{3}} \left(\frac{p_{cV}^2}{E_c - E_{hh} - \hbar\omega} - 9\frac{B^2k^2}{E_{SO} - E_{hh} - \hbar\omega}\right) e_+^{\prime 2}.$$
 (6)

The remaining matrix elements are defined in a similar way. That, the matrix elements of these optical transitions can be represented as the following matrix

$$\tilde{M}^{(2)} = \frac{1}{2} \sqrt{\frac{1}{3}} \left(\frac{eA_0}{c\hbar}\right)^4 \frac{p_{cV}^2}{E_c - E_{hh} - \hbar\omega} \begin{bmatrix} 2e'_z e'_- & e'^2_- \\ -e'_+^2 & 2e'_z e'_+ \end{bmatrix} - \frac{\sqrt{3}}{2} \frac{1}{E_{sO} - E_{hh} - \hbar\omega} B^2 k^2 \begin{bmatrix} 2e'_z e'_- & 3e'_-^2 \\ -3e'_+^2 & 2e'_z e'_+ \end{bmatrix}$$

Since both the coefficient of two-photon linear-circular dichroism and the coefficient of two-photon light absorption are determined by the square of the modules of the composite matrix elements, the form of which for the above optical transitions is

$$\left|\tilde{M}^{(2)}\right| = \begin{bmatrix} \Re_{1}e_{z}^{\prime 2}\left|e_{-}^{\prime}\right|^{2} & \Re_{2}\left|e_{-}^{\prime}\right|^{4} \\ -\Re_{2}\left|e_{+}^{\prime}\right|^{4} & \Re_{1}e_{z}^{\prime 2}\left|e_{+}^{\prime}\right|^{2} \end{bmatrix} - \begin{bmatrix} \Re_{1}e_{z}^{\prime 2}\left|e_{-}^{\prime}\right|^{2} & \Re_{2}\left|e_{-}^{\prime}\right|^{4} \\ -\Re_{2}\left|e_{+}^{\prime}\right|^{4} & \Re_{1}e_{z}^{\prime 2}\left|e_{+}^{\prime}\right|^{2} \end{bmatrix},$$
(7)

where

+

$$\Re_{1} = \left(\frac{eA_{0}}{c\hbar}\right)^{4} \frac{1}{3} \left(\frac{p_{cV}^{2}}{E_{c} - E_{hh} - \hbar\omega} - \frac{3B^{2}k^{2}}{E_{so} - E_{hh} - \hbar\omega}\right)^{2} e_{z}^{\prime 2} \left|e_{-}^{\prime}\right|^{2}, \tag{8}$$

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$$\Re_{2} = \frac{1}{12} \left(\frac{eA_{0}}{c\hbar} \right)^{4} \left(\frac{p_{cV}^{2}}{E_{c} - E_{hh} - \hbar\omega} - 9 \frac{B^{2}k^{2}}{E_{SO} - E_{hh} - \hbar\omega} \right)^{2} \left| e_{-}^{\prime 2} \right|^{2} .$$
(9)

Matrix elements of two-photon transitions occurring from the spin-split band to the conduction band, where the virtual states of current carriers are located in subbands of the valence band, in the conduction band, as well as in the zone of spin-orbit splitting of the semiconductor, which are shown in Fig. 3 and are defined in the same way as in the above cases.

Thus, interband two-photon OTs were classified in a narrow-gap crystal and expressions were obtained for matrix elements depending on the band parameters, the degree of polarization, and the light frequency.

Spectral-Polarization Dependences of the Coefficient of Two-Photon Light Absorption and Linear-Circular Dichroism

Let us now analyze the spectral-polarization dependence of the coefficient of two-photon absorption of light, which is determined using the functions \Re_1 and \Re_2 . To do this, we rewrite expressions (2) taking into account (7). Then it is easy to verify that for a *GaAs* crystal the spectral-polarization dependence of the coefficient of two-photon absorption of light both without taking into account (see Fig. 1) and taking into account the contribution of the coherent saturation effect (see Fig. 2), as well as the two-photon linear circular dichroism (see Fig. 2.3), caused between the subbands of light and heavy holes, where the intermediate states are in the conduction bands and spin orbital splitting (see Fig. 1) and has an oscillatory character with respect to the angle between the polarization vectors and current carriers for linear polarized light and relative to the angle between the wave vectors of the photon and current carriers for circularly polarized light. It can be seen from Fig. 1 that the amplitude, period, and phase of the oscillations are different in this case. Note here that the coefficient of two-photon linear-circular dichroism in *GaAs* is less than unity.

When the contribution of the coherent saturation effect to the coefficient of two-photon linear-circular dichroism is taken into account, expressions (8) and (9) take the form

$$\tilde{\mathfrak{R}}_{1} = \left\langle \frac{\xi_{1} |e_{z}'^{2} |e_{-}'|^{2}}{\sqrt{1 + \zeta_{1} |e_{z}'^{2} |e_{-}'|^{2}}} \right\rangle, \quad \tilde{\mathfrak{R}}_{2} = \left\langle \frac{\xi_{2} |e_{-}'^{2}|^{2}}{\sqrt{1 + \zeta_{2} |e_{-}'^{2}|^{2}}} \right\rangle, \quad (10)$$

where the Rabi parameters are

$$\zeta_1 = 4 \frac{\alpha_{\omega}}{\hbar^2 \omega^2} \xi_1 , \ \zeta_2 = 4 \frac{\alpha_{\omega}}{\hbar^2 \omega^2} \xi_2 , \tag{11}$$

$$\xi_{1} = \left(\frac{eA_{0}}{c\hbar}\right)^{4} \frac{1}{3} \left(\frac{p_{cV}^{2}}{E_{c} - E_{hh} - \hbar\omega} - \frac{3B^{2}k^{2}}{E_{\Delta} - E_{hh} - \hbar\omega}\right)^{2}, \quad \xi_{2} = \frac{1}{12} \left(\frac{p_{cV}^{2}}{E_{c} - E_{hh} - \hbar\omega} - 9\frac{B^{2}k^{2}}{E_{\Delta} - E_{hh} - \hbar\omega}\right)^{2} \left|e_{-}^{\prime 2}\right|^{2}.$$

Comparing the data in fig. 1 and 2, we find that taking into account the contribution of the coherent saturation effect leads to a decrease in the oscillation amplitude with increasing light frequency, regardless of the angle between the polarization vectors and the wave vector of current carriers for both linearly polarized and circularly polarized light. This is due to the fact that the spectral-polarization dependence for linearly polarized light is described by the angle between the vectors of polarization and current carriers, and for circularly polarized light - the angle between the vectors of a photon and current carriers. Quantitative calculations were carried out at $\zeta_{1,2} = 0, 2$.

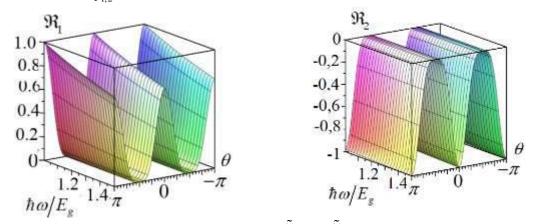


Fig.1. Spectral polarization dependence of the quantities $\hat{\Re}_1$ and $\hat{\Re}_2$, which are used to determine the spectral polarization dependence of the two-photon light absorption coefficient in *GaAs* under illumination with linearly polarized light, without taking into account the contribution of the coherent saturation effect.



Calculations show that for *GaAs*, as the light frequency increases, the contribution to the total coefficient of two-photon linear-circular dichroism of the term proportional to \Re_1 decreases with respect to the contribution of the term proportional to \Re_2 regardless of the angle between the vectors \vec{e} , \vec{k} , \vec{q} : if the light frequency increases by a factor of 1,4, then this the contribution decreases by a factor of 2,5 where, \vec{e} is the light polarization vector, \vec{k} (\vec{q}) is the wave vector of the current carriers (photon). This is due to the fact that the first contribution does not depend on the frequency of the light, while the second contribution depends on the frequency as $\propto (\hbar \omega)^{1/2}$. Therefore, the second contribution increases with frequency of the light.

To compare the theoretical results, below we performed calculations on the spectral-polarization dependence of the coefficients \Re_1 and \Re_2 , which are used to determine the coefficient of two-photon absorption of linearly and circularly polarized light in *InSb*, which is caused between the subbands of light and heavy holes for two values of the Rabi parameters $\zeta_1 = 0, 2; 0, 5$ and $\zeta_2 = 0, 2; 0, 5$, where the

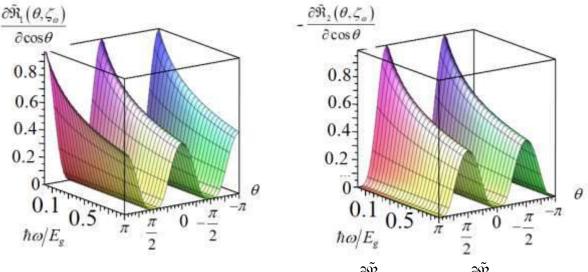
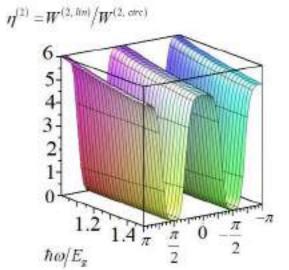


Fig.2. Spectral-polarization dependence of the coefficients $\Re_1 = \frac{\partial \tilde{\Re}_1}{\partial \cos \theta}$ and $\Re_2 = \frac{\partial \tilde{\Re}_2}{\partial \cos \theta}$ for two-photon absorption of linearly polarized light in GaAs with allowance for the contribution of the coherent saturation effect, where $\zeta_1 = 0, 2$.

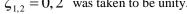


Intermediate states are in the conduction and spin-orbital splitting bands, taking into account the contribution of the coherent saturation effect (see Fig. 3). Fig. 3 shows that in the spectral-polarization dependence of the total



of two-photon linear-circular dichroism in InSb, caused between the subbands of light and heavy holes, taking into account the contribution of the coherent saturation effect.

coefficient $v \Re_1 + \Re_2$ for both linearly (a, b) and circularly polarized light (c, d) by polarized light, which is used to determine the coefficient of two-photon absorption of linearly and circularly polarized light in InSb, due to between the subbands of light and heavy holes, where the intermediate states are in the conduction and spin-orbital splitting bands, taking into account the contribution of the coherent saturation effect for two values of the Rabi parameter: first, all the spectral-polarization dependences have an oscillatory character; secondly, as the light frequency increases, the oscillation amplitude increases; thirdly, for circularly polarized light, the oscillation becomes aperiodic; fourthly, as the values of the Rabi parameter increase, the amplitude values of the oscillation dependences decrease. In calculations, the maximum value of the spectral-polarization dependence of the twophoton coefficient of linear-circular dichroism at $\zeta_{1,2} = 0, 2$ was taken to be unity.



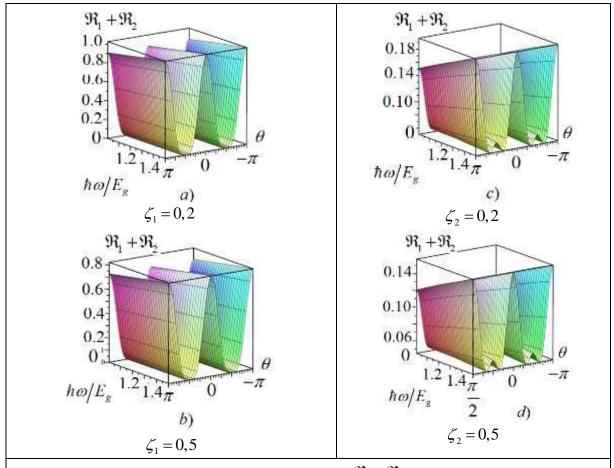


Fig.3. Spectral-polarization dependence of the total coefficient $\Re_1 + \Re_2$ for both linearly (a, b) and circularly polarized light (c, d), which is used to determine the coefficient absorption of two-photon polarized light in InSb, taking into account the contribution of the coherent effect saturation for two values of the Rabi parameter.



On fig. 4 shows the dependence of the two-photon linear-circular dichroism in *InSb*, which is caused between the subbands of light and heavy holes, where the intermediate states are in the conduction bands and the spin-orbital splitting, taking into account the contribution of the coherent saturation effect, is equal to 6 at $\zeta_{\omega} = 0, 2$. We note here that, in contrast to the wide-gap *GaAs* crystal in the narrow-gap semiconductor InSb, the coefficient of two-photon linear-circular dichroism is greater than unity. From fig. 2.6 c shows that as the Rabi parameter increases from $\zeta_{\omega} = 0, 2$ to $\zeta_{\omega} = 0, 5$, the maximum value of the spectral-polarization dependence of the coefficient of two-photon linear-circular dichroism in *InSb*, both for linear and circular polarization, increases by 23%. Therefore, the spectral polarization dependence of two-photon linear-circular dichroism of the effect of coherent saturation, is almost independent of the value of the Rabi parameter and the amplitude value of the two-photon linear-circular dichroism coefficient is no more than 6.

The quantitative values of the band parameters were taken from [24].

CONCLUSION

In conclusion, we note that in the three-zone Kane approximation:

- 1. The matrix elements of interband two-photon optical transitions in a semiconductor are classified depending on the light polarization vector.
- 2. Both with and without allowance for the effect of coherent saturation, the polarization and spectral dependences of the coefficients of two-photon linear-circular dichroism and light absorption, which differ from each other by the type of intermediate states, are calculated.
- 3. A theory has been developed for linear-circular dichroism coupled by interband two-photon optical transitions in narrowgap semiconductors in the Kane approximation.

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THE SIGNIFICANCE OF 'SAPTAGRAM', THE PORT CITY OF MEDIEVAL BENGAL, IN THE WRITINGS OF BIPRADAS PIPILAI AND MUKUNDARAM

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ABSTRACT

In this proposed paper I shall be engaged in an analytical study of the importance of the port city, Saptagram, in Medieval Bengal and how its significance represented in the writings of two contemporary celebrated writers ----- Bipradas Pipilai and Mukundaram. From the writings of these two poets we acquire enormous knowledge about Saptagram, its emergence and the eventual downfall of the port city. Therefore, this paper intends to demonstrate the history of Saptagram and its significance as a trading centre in Medieval Bengal, with the help of the writings of the two poets of that period.

KEY WORDS: Saptagram, Bipradas Pipilai, Mukundaram, Port City, Trading centre, Medieval Bengal

The cities or towns of ancient and medieval Bengal were developed mainly for two reasons ------ one, as an administrative centre; and two, as a commercial centre.¹ Naturally, their location was along the land routes and on the banks of the rivers. Similarly, two reasons worked behind the disappearance of these cities or towns; the deterioration of political power or the change in the direction of the rivers. We find mention of two ports of ancient Bengal, better said pre-Sultanic Bengal ------ one is Tamralipti or Tamralipta; and the other one is Gangeya.² Although nothing special is known about the latter, the famous ancient port city of Tamralipta is mentioned in ancient scriptures.³ However, from the first century to the twelfth century, traces of Tamralipta can be found from various sources. Absence of reference of Tamralipta in later Bengali literature proves that this port city lost its prosperity and significance after that. Perhaps the main reason for the loss of significance of Tamralipta is the change in the coastal area. Later, Saptagram of Hoogly district became famous as a port city in this region that is South West Bengal. Saptagram was a medieval village on the south bank Saraswati river, near the confluence of Bhagirathi, and three and a half kilometres from Triveni, the pilgrimage town of Bengal. There is a saying that it is called Saptagram because it consists of seven villages. Although disputed, it is generally accepted that these seven villages are Vasudevpur, Banshberia, Khamarpundar, Devanandpur, Shivpur, Krishnapur, and Trishbigha.⁴ Among them Trishbigha village is currently considered as Adisaptagram, which was the centre of Saptagram in the middle ages, although Acharya Dineshchandra Sen has a different opinion about it. According to him, "this village was named Saptagram after the seven sons of a king of ancient Kanoj."⁵ The town of Saptagram was extended from Bhagirathi to Triveni where the Yamuna and Saraswati flowed out. Saptagram was the Satgaon of the muslims.6

At the end of 1204, Saptagram was conquered long after the invasion of Nadia. According to historian Rakhaldas Bandyopadhyay, Zafar Khan Gazi captured Saptagram in 1298. Although he tells us that Saptagram was a big city before that. If his view is accepted, it is very clear that before 1298, Saptagram became a city⁷. A reference to Zafar Khan Ghazi's mosque in Triveni, dated 1298 AD, proves that Muslims had gained dominance in Satgaon-Triveni by the end of the thirteenth century.⁸ Triveni and Saptagram are considered to be the same in the earliest inscriptions from this region. But there are considerable differences between these two cities. Triveni is a pilgrimage town of ancient Bengal; but it was by no means a 'city' in that sense. And Saptagram was a trading city. So its characters are also very different. Moreover, Saptagram was about two miles away from Triveni.⁹ The late fifteenth century poet, Bripradas Pipilai has clearly explained that Saptagram and triveni are two different places. Late 16th century poet, Mukundaram has also shown Triveni and Saptagram as two separate places. Kabir Manas Saudagar used to go to market in Saptagram by tying a boat at Triveni ghat. From this it is quite clear that even at the end of 16th century there was a big market place in Saptagram.

Notably from the 14th century onwards, Saptagram, the capital of South Bengal, emerged as an important port city.¹⁰ According to Dr. Niharranjan Roy, Saptagram emerged as a flourishing city at the end of the fifteenth century. He states that 1475 AD was the ultimate stage of development of Saptagram.¹¹ He noticed a political reason behind this massive development of Saptagram. And that is the rise of Gaur as the capital of in the middle of 15th century. The importance of Saptagram as a trading port increased when the capital was shifted to Gaur at that time. Saptagram became the main port of the entire Eastern India during that time. Besides, since the end of the 15th century, the political turmoil increased due to the invasion of Arakan and Tripura in Chattagram. During that time, a bloody battle was going on around Bengal, Arakan, and Tripura. As a result of this, the



importance of Bhagirathi increased and Saptagram emerged as a major trade port. By the end of the 15th century, in the writings of the poet Bipradas Pipilai, Saptagram emerged as an open port, where Ganga, Saraswati and Yamuna flowed together; and there resides Devi Uma and Maheshswa. He writes ------- "Ganga Aar Saraswati/ Yamuna Nibose Tathi/ Adhisthan Uma-Maheshwar."¹² Mainly due to this reason, the commercial revival of Saptagram became possible. As a result, the population of Saptagram gradually began to increase from the end of the 15th century and Saptagram stated to grow as a city. Poet Bipradas Pipilai has described Saptagram extraordinarily in his poetry. He talked about rows of houses decorated with various flag in Saptagram city. Almost every house was Hindu, because each of them had Hindu idols. He said -------

"Abinava Surapuri Dekhi Ghar Sari Sari
 Proti Ghore Konoker Jhara.
 Nana Ratna Abishal Jyotirmoy Kanch Chal
 Gaja Mukto-Pralabmbir Bara.
 Sove Debe Bhakti Oti Proti Ghore Nana Murti
 Ratnamoy Sokol Prasade.
 Anonde Bajay Baddi Shankha Ghonta Mridangadi

Dekhi Raja Boroy Promode."¹³

After that the poet, Bipradas, said that Muslims also lived there; and among them he mentioned about the Mughals, who had not yet came to India. Hence, some consider this as a projective text. He said that many Muslims lived in Saptagrama and among them were Mughals, Pathans and many other; and there he worshipped Devi Manasa and asked to rescue him. He writes ------

"Nibose Yaban Joto Taha Na Bolibo Koto

Manghal Pathan Mokadin.

Chaiyod Molla Kaji

Dui Bhakta Kore Tachlim.

Majid Makam Ghore Chelam Namaj Kore

Ketab Koran Baji

Foyota Koroye Pityo-Loke.

Bodiya Monasa Devi Dwijo Bipradas Kabi

Udhyariho Bhakat Sebake."14

Notably, Bipradas never mentions about any port here. Later the same idea can be found in Chaitanya biographer Brindabandandas's "Chaitanya Bhagavat' and in Jayananda's 'Chaitanyamangal'. Although they did not say anything about the port, they did refer to the rich merchants. These rich merchants must have been patrons of Vaishnavism, because Chaitanya Dev himself came to their house. Nityananda, one of the greatest followers of Vaishnavism, received the unstinting support and patronage of the merchant community of Saptagram. To save the merchant community, Nityananda Dev spent a lot of time in Saptagram -------

"Banik Torite Nityananda Avatar.

Saptagrame Nirabadhi Koren Bihar."15

In describing the prosperity of the Bengali merchants of Saptagram, the poet, Jayananda, in his book 'Chaitanyamangal' gave details of precious cloths and precious gems of the merchants. He said that Nityananda lived happily in the house of the merchants of Saptagram and there were lots of gold, diamond, pearl and silver and very costly cloths in their houses -------

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"Saptagrame Nityananda Banike Ghore

Mahamahatsobe Ratridin Nitya Kore.

Subarna Heera Mukta Rajat Bistore.

Deho Manahar Patbastra Shobha Kore."¹⁶

Even in the late 16th century, KabiKankan Mukundaram described Saptagram in a good way, while not depicting the whole Rarh region nicely. He said that among the Rarh regions, only Saptagram is exceedingly beautiful; and because of that Dhanpati Saudagar, the main protagonist of his book, rested there for two days ------

"Rarha Majhe Saptagram Oti Anupam. Dina Dui Sadhu Tahe Korilo Bishram."¹⁷

At that same time, he also said that the merchants of Saptagram had not to go anywhere, they stayed at home and earned enough wealth ------

"Saptagramer Banik Kothah Na Jay. Ghore Bosya Suk Mokkho Nanadhan Pay."¹⁸

The poet's figurative merchant, Dhanapati Saudagar, bought goods from Saptagram and embellished his Saptadinga and went to the confluence point of the sea through Saraswati river. So, from the writings of Mukundaram, it seems that there was no port up to the confluence point of Saptagram then. Hooghly had not become a port city during the time of Mukundaram, because Hooghly was not even mentioned for once in his writings. But there are mentions of Garifa (Gouripur), the other side of Bhagirathi river, and Halishahar. So, there is no doubt that Saptagram was the main sea port in Gaur.

It is generally said that after the arrival of the Portuguese in Bengal in the early 16th century, due to their demands, the trade of Bengal grew enormously. Saptagram was the 'Port Picano' meaning the main port for the Portuguese. Arabian, Indian, Portuguese and many other foreign merchants used this port of Saptagram. The condition of Saptagram port probably got worsened from the third decade of the 16th century.¹⁹ At the same time, the water of Saraswati river stated flowing through Adiganga. As a result of this, large Portuguese ships can no longer come to Saptagram through Saraswati river. The big ships came to Betor and took the goods to Saptagram by boats. The biggest proof of this is that there is no mention of the Betor in the writings of Bipradas Pipilai and Bijaygupta; but mention of Betor can be traced in the works of Mukundaram in the late 16th century. The flourishing trade has been fading away in Saptagram, and that can be found from the description of the traveller Caesar Fredericki in 1567. By 1567, Caesar Fredericki noticed thirty ships in the port of Saptagram carrying cloth, sugar, gains etc. He also mentioned the arrival of big ships up to Betor. But Saptagram was still prosperous and populous. The fact that the water of Saraswati was gradually decreasing, can be understood from the actions of the Portuguese. In 1579, they created an alternative port on the Hooghly river with the consent of Emperor Akbar. From this, it can be understood that the water of Hooghly river had increased then. But nothing was said about whether the big Portuguese ships could have come to that river immediately. After that, traveller Ralph Fitch in 1583 and the Persian traveller Vincent Le Blanc in 1575 called Saptagram flourishing, but no one talked about the port anymore. The late 16th century poet, Mukundaram says that the merchants of Saptagram do not go anywhere, all the trading goods come to Saptagram. And he also gives a list of the countries, from where all the goods were coming; and most of these traders were from South East Asia. So, it can be said that the foreign trade was not very satisfactory then, but its internal trade was keeping the city alive and bustling. So, it is very clear that the Saraswati river near Saptagram was losing its flow by the end of the 16th century. Historians assume that the connection with Bhagirathi gets separated near Betor.

The fate of Saptagram has been repeatedly determined by the capital city of Gaur. Once with the rise of Gaur as the capital, Saptagram emerged as a trading city. Similarly, the decline of Saptagram was associated with the decline of Gaur. After 1565, when the capital moved further to the west from Gaur to Tanda, Saptagram's foreign trade came to an end. After Shershah and Humayun attacked Gaur, the political instability in the capital increased. From the middle of the 16th century, the bloody battle began among Sultans and Afghans, Mughals, and Portuguese. When Mehmud III of the_Hushen-Shahi dynasty gave permission to collect revenue and tax from Saptagram region, the political rights of Saptagram port got transferred from the Sultans. Muhammd Shah Gazi took control over Saptagram in 1542 during the reign of Islam Shah Sur. In 1550, the last coin was found in Saptagram.²⁰ Therefore, it can be understood that the importance of Saptagram as the main provider of the capital in decreasing by the end of the 16th century.



CONCLUSIONS

We have seen earlier that the city of Saptagram continued to grow even when the foreign trade had stopped. By that time Hooghly port emerged on the banks of Bhagirathi, and foreigen trade of Saptagram started passing through Hooghly port. Despite this, the city of Saptagram continued to grow and had a flourishing market which we have not seen before. Therefore, it is clear that the city of Hooghly was growing due to its growing trade, and it became possible because Saptagram served as a supplier of that trade. In fact, Saptagram survived because its internal trade was supplying for Hooghly. But as a result of the battle of Palashi, Kolkata emerged as a port city and Hooghly port started to lose its significance; and consequently Saptagram also left abandoned.

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OBJECT DETECTION USING UNMANNED AERIAL VEHICLE: A REVIEW

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ABSTRACT

Artificial intelligence researchers are very interested in computer vision in drones. Many real-time problems will be solved by providing intelligence to drones. Object identification, tracking, and counting are all important computer vision tasks for monitoring certain situations. However, altitude, camera angle, occlusion, and motion blur make it a more difficult endeavour. Methodology: A thorough literature evaluation concentrating on object recognition and tracking utilising UAVs in various applications has been undertaken in this work. This study reviews previous research publications' conclusions and indicates research needs. The object detection algorithms used in UAV photos are categorised and further upon. There is a collection of UAV datasets for object detection tasks. Existing research studies in various applications have been summarised. Finally, in precision agriculture, a secure on board processing system based on a strong object detection framework is presented to address identified research needs.

KEYWORDS: UAV, Object Detection, Deep Learning, Precision Agriculture.

1. INTRODUCTION

Computer vision has already made amazing advances as a result of advances in deep learning techniques, system requirements, and dataset availability. The most common research activity performed by researchers is object detection since it has so many uses. The goal of object detection is to recognise things from a certain category (for example, humans, dogs, automobiles, motorbikes, or cats) in a photograph and, if found, report the area and extent of each occurrence of objects. It serves as the foundation for complicated and high-level computer vision tasks including object tracking, segmentation, event detection, picture captioning, scene understanding, crowd monitoring, and activity recognition [1]–[4]. Researchers began to address the difficulty of developing universal object identification systems capable of detecting categories of things similar to human ones. Object detecting technology has advanced significantly. However, object identification in drone applications remains a work in progress. From surveillance to agriculture, all applications require excellent object detection to function properly.

Precision agriculture is predicted to expand significantly faster than other applications, as the usage of unmanned aerial vehicles (UAVs) becomes one of the most important components of managing agricultural activities. It is a set of strategies for tracking crops, gathering data, and performing educated crop management activities such as optimal water delivery and pesticide choices [5], [6]. Farm monitoring to evaluate crop growth and health, as well as planning and assessing agricultural plantations, are just a few of the many tasks that UAV may help farmers with. The advantages of employing airborne services in agriculture supported the spread of aerial fertiliser use in 1940 to other operations such as top dressing. Single-rotor UAVs may carry large payloads, but their mechanical complexity results in expensive costs. Multirotor UAVs are popular because they can be used by both experts and laypeople. It can hover or move along the supplied destination. Although fixed-wing UAVs may fly quickly and carry large payloads, they require a runway for take-off and landing. The hybrid UAV is an enhanced version of the fixed-wing, however it is still in the works. In addition to their aerodynamic designs, the UAVs may also be classified according to their autonomy standard. When the pilot provides references to each aircraft actuator, he or she may be classed as tele operated.

In drone videos, the camera is mounted at a greater height, and the scene has more contextual information. However, variations in view point and size make object recognition in drones more difficult than standard object detection [7], [8]. Drones capture traffic from the air in a traffic surveillance scenario. This has the advantage of being able to capture vehicle traffic from a height of 100 metres. For the following reasons, detecting objects from a bird's eye viewpoint is more difficult than from a front-parallel view.



- The dynamic movement of moving things.
- Modifications to the aspect ratio and picture scale.
- Rapid camera movement.
- Extremely severe perspective distortion.

- Blurred motion.
- The high object density.
- A complicated backstory.

In addition to these challenges, object identification investigations in aerial view face the biased dataset problem. To circumvent this issue, the dataset should be annotated to represent real-world applications. As a result, it is fairly uncommon for object identification algorithms learnt from standard photos to be inappropriate for aerial images.

2. TYPES OF DRONES

Drones are becoming more and more popular nowadays due to its wide range of applications like defence, agriculture, photography, deliver products etc. It's because of its convenience and quality of data that it provide from very challenging areas like mountains, forests. These flying machines are classified based on the size, flying time, range, area on application and number of rotor. The most obvious classification are made from the rotor blades as shown in the figure 1.

(a) Fixed Wing Drone

Fixed Wing Drones are the drone which doesn't have any propeller. Its fly by its own due to its forward motion (thrust) which is generated by the motor or the conventional IC Engines. In addition to that the fixed wing drone operates in very less power than any other drone because of the elimination of rotor. Due to that the UAV can operate on other power sources like solar power and wireless power sources like lasers. It is very efficient among other drones [9]–[11]. This type of drone have the ability to take a more payload as it does and rotating parts to carry. But for agricultural purposes this type of drone is useless because it needs a separate runway for its flight to take off, and also the control of this UAV is also very difficult for precise operations like agriculture.

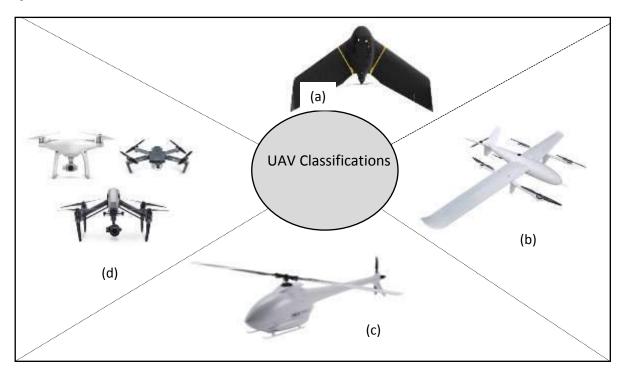


Figure 1. (a) Fixed Wing Drone (b) Fixed wing VTOL Drone (c) Single Rotor Drone (d) Multi Rotor Drone

(b) Fixed Wing VTOL Drone

Fixed wing VTOL drones are hybrid type drone because it have the benefits of both fixed wing drone (good flight time) and the rotor drone (take-ff and landing). This type of drones are new to the market. These type of drones are very costly as compare to multi rotor drone. Large manufacture companies are using this type of drone for field monitoring. The Amazon Prime delivery project is based on this type of drones.

(c) Single Rotor Drone

Single rotor drones are actually a helicopter but unmanned and it is controlled by a Ground Control System (GCS). This drone consist of single rotor and the top for take-off. The tail end having a rotor which is used for the control of Drone. It has



longer range than the multi rotor drone but less than the fixed wing drone. It is used for military applications. These type of drones are not popular like multi rotor drones. Because of its high complexity and high operational risks.

(d) Multi-rotor Drone

Multi-rotor Drones are the one which has two or more rotors for the operation. This type of UAV are having the same rotor as that of other in terms of pitch. So that it generates a necessary lift force to tackle the gravity and the drag which is acting on the drone. One of the greatest advantages of this type of drone is the greatest manoeuvrability at a very precise rate. So that's make I one of the most suitable systems for the agriculture [12]–[14]. This system enables them to fly in areas which other drones can't even imagine to go over there. Anyhow they can't operate for long hours due to the efficiency of the drone. These types of UAVs are used in various applications especially in precise agriculture.

3. OBJECT DETECTION METHODS

The object detection methods are classified into two namely, traditional image processing methods and deep learning methods

3.1. Traditional Image Processing

Background removal is a widely used technique in most traditional image processing jobs. It concentrates on highlighting foreground items by removing pixels from background scenes [4], [15]. This procedure comprises three steps: background startup, background upkeep, and background pixel categorization. The first step is to compute the temporal frame difference (Eq. (1)).

$$FD_t = [P_t(x, y) - P_{t-1}(x, y)]$$
(1)

Where $P_t(x, y)$ represents the pixel value of the t frame and $P_{t-1}(x, y)$ represents the pixel value of the t-1 frame. If the motion of pixels approaches the threshold T, it is regarded important and is referred to as a foreground (Eq. (2)).

$$FG_t = 1 \qquad \begin{cases} 1 & if FD_t > T \\ 0 & othewise \end{cases}$$
(2)

If there is no significant movement, the pixels are called steady or background pixels. The background difference frame is denoted by (Eq. (3)),

$$BD_t = [P_t(x, y) - BM_{t-1}(x, y)]$$
(3)

Where $B_{t-1}(x, y)$ is the background model. Finally, the pixels are classified as foreground or background by applying the equation (Eq. (4))

$$FG_t = \begin{cases} 1 & \text{if } D_t(x, y) > T \\ 0 & \text{othewise} \end{cases}$$
(4)

CAMShift is an important color-based object tracking system. It was initially suggested to monitor human faces in a user interface framework, using a mean-shift tracking technique as its main emphasis. This method has the advantage of allowing you to customise the search window. The mean-shift approach is a step-by-step procedure that picks a search window and provides us with a history of the object's position, type, shape, and size [16], [17]. The centre of mass of the window is established and converges with the centre of the window. Before the window closes, the processes are repeated. The following stages are used to calculate the CAMShift algorithm:

- 1) Choose the search window's initial location.
- 2) Perform a mean-shift
 - a. Determine the average position in the search window.
 - b. The search window is positioned using the mean position determined in the preceding phase.
 - c. Repeat steps 2.a and 2.b until convergence is attained.
- 3) Set the search window size to equal the zero moment function mentioned in Step 2.
- Search window size is calculated using (Eq. (5))

$$s = 2 * \sqrt{\frac{m_{00}}{256}}$$
 (5)

Where, m_{00} is the Zeroth moment.

The drone captures images in BGR colour format, which is then transformed to HSV colour format. Objects that do not match the hue of the intended object are rejected at this step. The outcome is a binary picture. Finally, the object's location and angle are determined in order to track it. In [18] suggested a surveillance object identification and tracking methodology. The algorithm is designed to detect unexpected events in drone recordings. Phantom UAV captures the video sequences. Adaptive background subtraction is used to accomplish object detection. Cam Shift and Lucas Kanade techniques are used for object



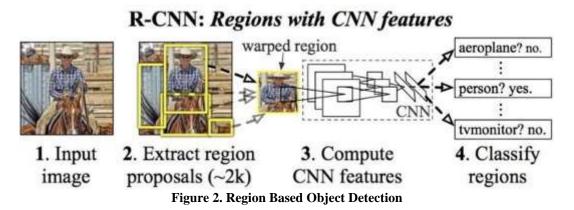
tracking. In [19] suggested an individual human colour-based detection approach. The first layer uses local cues to classify UAV photos as fixed or moving. For object hypothesis, methods such as moving feature clustering and appearance-based segmentation are used in the second layer. Finally, the Kalman filter is used to track objects in the third layer. This approach achieves higher detection and tracking accuracy. In [8] author suggested a feature extraction approach based on moments rather than colour, corner, or edge for moving object recognition.

3.2 Deep Learning Methods

Object recognition methods based on deep learning approaches in UAV photos have seen a number of advancements in recent years. The key problem for object recognition algorithms is the variance in view point in pictures due to the dataset being recorded from a top view perspective. It's also tough to understand the characteristics from many perspectives, and it's not transportable. The most critical phase in deep learning is data preparation. In [20] addressed improved pre-processing strategies for deep learning-based classification. Deep learning algorithms for object detection are categorised into two types: region-based detection and single-shot detection.

3.2.1 Region Based Detection

Objects are identified in two steps using region-based detection. Each level produces and classifies areas of interest in a deep learning network. The regional proposal technique is used by region-based detection algorithms to define areas of interest (ROI) for item detection [20]–[22]. The model of Selective Search (SS) begins with each pixel as a separate group. It begins by measuring the texture of each category and then combines the following two. To prevent a single field, it is best to group a smaller group first. The model will continue to combine areas until they are entirely integrated. Using a unified CNN network, previous object identification algorithms learned diverse tasks such as localization, classification, and prediction of bounding boxes. Later, in the object detection task, RCNN exhibits a significant improvement as shown in figure 2. RCNN determines the position of objects and crops them. Finally, each item is categorised with the help of a deep learning. Faster R- CNN has been suggested to shorten training's computational time.



3.2.2 Faster R-CNN

The Faster R-CNN network is built on a feature extraction network, which is often a pre-trained CNN. Following that are the two trainable sub networks as shown in figure 3. The Region Proposal Network, as its name suggests, is used in the first to create object proposals, while the Actual Class Prediction Network is utilised in the second to forecast the actual class of the item. The primary distinction between Faster R-CNN and traditional R-CNN is that RPN is introduced after the final convolutional layer [6], [23]–[25]. This process aids in the generation of region ideas without the use of a selective search approach. The upstream classifier, the bounding box regressor, and ROI pooling are subsequently attached after this stage. R-CNN that is faster outperforms other region-based detectors. The most difficult difficulty in computer vision is detecting things at different sizes. The Feature Pyramid Network (FPN) can construct semantically strong multi scale feature representations at high resolution levels.



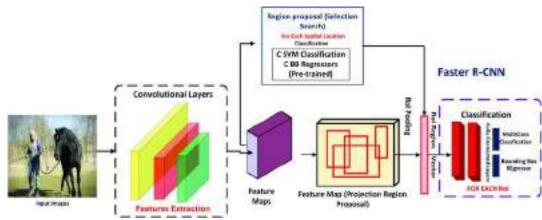


Figure 3. Methods Involved in Faster R-CNN

3.3 Applications

3.3.1. Disaster Response and Recovery

Disaster data is critical for efficient disaster management. Drone data collecting is inexpensive. It simultaneously generates high-resolution photos. The biggest difficulty in employing drones for disaster management is processing a significant volume of visual data and quickly mapping the target area. In [26]–[28] proposed the Volan2018 aerial video dataset. The authors used the YOLO method to detect objects. The learning model is trained via transfer learning. The YOLO model is first pre-trained with the COCO dataset before being trained with the Volan2018 dataset. Height, balanced data, and weights were also investigated by the writers. This project produced better outcomes in less time [16], [29].

3.3.2. Surveillance

Sien et al. [1] (2019) suggested a hybrid drone surveillance system to track human behaviour. Human activity identification is extremely useful for monitoring and detecting unusual behaviours for security issues. SSD extracts the spatial data, while LSTM extracts the temporal feature. The model is run on the KTH dataset. Google Cloud Platform is used for the computing both online and offline. This technique yields promising results with streaming data. The key limitation is that the model is dependent on human angle position. When humans are seen from a fresh viewpoint, the model has failed to recognise them in the video.

3.3.3. Bird Detection

The health of humans is dependent on ecosystems. An aberrant alteration in ecosystems can have an impact on human life. As a result, monitoring birds is critical for studying their habitats and population [30]. Migrant birds, in particular, should be observed since they may be the source of animal disease transmission. Traditional techniques of bird monitoring include dropping counts, line-transect counts, total ground counts, and aerial counts as shown in figure 4 (a). The aerial count method is regarded as an important approach since it covers all locations where human access is impossible. However, aerial photography with large planes is costly. Drones are utilised for airborne photography and bird monitoring to solve this issue.

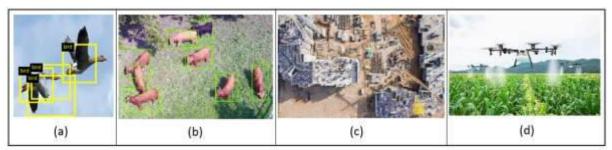


Figure 4. (a) Bird Detection. (b) Cattle Detection. (c) Construction Applications (d) Agricultural Drone 3.3.4. Cattle Detection

Cattle identification and counting are two examples of grazing cattle management duties as shown in figure 4 (b). Farmers must be aware of the position of cattle where it gazes. Manually monitoring and counting animals is a time-consuming process. As a result, an autonomous livestock management system overcomes this issue. In [7] captured photographs of livestock in Japan using DJI. Using Yolo v2 for livestock detection, the author additionally implements cattle counting by combining the detection's findings. Livestock counting is considered a challenging task since it is difficult to count both moving and stationary cattle. Rivas (2018) presented a real-time detection and counting system for cattle. The system consists of a multi rotor drone, a Ground Control System, and software that displays the detection model's results. 3.3.5. Civil Industry



Building detection can be beneficial in an emergency. In (2018) [31] suggested a deep learning-based method for detecting structures along the river's edge. For semantic segmentation, a deep architecture known as SegNet is employed. The picture datasets were gathered in China using the DJI drone. These datasets are annotated and divided into three groups: training, validation, and testing. SegNet includes an encoder, decoder, and classification layer based on pixels. The authors employed early halting and data augmentation techniques to prevent over fitting. The model was trained on a regular desktop computer. This approach yields higher precision, but it is incapable of detecting tiny buildings as shown in figure 4 (c).

3.3.6. Precision Agriculture

The usage of drone systems in agricultural productivity has expanded, owing to the lower cost of drones and simple RGB cameras. UAV data with high resolution has become a significant source for various agricultural activities such as plant identification, plant tracking, yield calculation and spraying as shown in figure 4 (d). In 2020 [32] suggested a method for detecting Hokkaido Pumpkin fruit and estimating its size and weight based on classical image analysis. The UAV image data is collected using a drone with an inbuilt RGB camera. The drone flying height is set at 46 metres above ground. The suggested technique consists of five steps: pre-processing, identification, structural filtering, single fruit identification evaluation, and fruit quantification. The acquired UAV photos are utilised to construct an orthophoto mosaic in the first stage. As part of the pre-processing procedure, image stitching and geo-referencing are also performed. Random forest is used to classify fruits. Morphological filters are used to correct misclassifications. The suggested approach is resistant to changing lighting conditions.

4. CONCLUSION

Drone object identification is an essential topic of research since it has various real-time applications. Existing research efforts are examined in this review study. The works are classified based on their applications and techniques. This research investigates the use of deep learning and classical image processing approaches for drone object recognition. Despite the fact that drones are tiny and have limited power, it is critical to create an efficient deep learning system for drone object recognition. Another key problem that the object detection algorithms must solve is the viewpoint of variations. Precision agriculture is concerned with carefully monitoring fields through data collection and analysis. UAVs are less costly than satellites for acquiring aerial photographs. It is crucial to look at object recognition in UAV aerial photos for precision farming.

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EXPERIMENTAL VALIDATION OF A THEORY OVER THE ESTABLISHED HYPOTHESIS OR IN CASEWISE DEPENDABLE CONJECTURES FOR ℓ -COEFFICIENTS NORMS FIVE-PARAMETRIC $\partial \times \partial$ ORDER MATRIX

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ABSTRACT

This paper would provide a coefficient ℓ for a $\partial \times \partial$ matrix where it has been established over 5 – parameters α , β , γ , σ , ρ that in temporal evolution over every single parameter concerned there is a dependency from the before parameter to the after in a chainwise-order being non-trivially satisfied and extrapolated from the development of a theory to the development of the mathematics needed for that theory to the amalgamation of the theory and mathematics which in either case could be established via experiment or not in the extreme being a conjecture proven at later times throughout the supposedly time taken as a map \bar{t} .

KEYWORDS: *Mathematics – Conjecture – Experiment – Repetition*

INTRODUCTION

Any matrix of order $\partial \times \partial$ such that $\partial = n - 1$ for $n \equiv [0,1]$ where $0 \in t$ and $1 \in T$ for t is the initial time and T is the final time with the condition $T \neq \infty$ as any temporal evolution when leads to infinity then it's completely inaccessible to determine the fate of the evolution. Denoting as the coefficients over five way parameters $(\alpha, \beta, \gamma, \sigma^{\wedge}, \rho)$ [For the general purpose we will drop the ^ *indices in* σ^{\uparrow}] taking the form $\ell(\alpha, \beta, \gamma, \sigma^{\uparrow}, \rho)\bar{t}$ for $\ell\alpha$ being the development of the theory according to the observation of thought procedure, $\ell\beta$ being the initiation of the mathematics necessary to concrete that theory, $\ell\gamma$ being the inclusion of the mathematics into the theory to develop the associated physics in a suitable structure, $\ell\sigma$ being the validation of all that through experiment, $\ell \rho$ being the theory where the experimental validation proved to be inaccurate till date or till the present time but can be proven in future for parameter θ^+ and there can also be a chance of failure or not at all being proven or making it happen through experiment for parameter θ^- where iff the taken parameter θ^+ justifies then the revert norm $\ell\sigma$ being satisfied throughout one can get a relation^[1-3],

$$\ell = \int_{t}^{T} (\alpha, \beta, \gamma, \sigma^{\wedge}, \rho) \bar{t} \, d\bar{t} \, \exists \, \bar{t} : t \longrightarrow T$$

For the matrix,

$$\begin{aligned} \ell_i \epsilon_j \ \equiv \begin{bmatrix} \ell_1 \epsilon_1 & \dots & \ell_1 \epsilon_{n-1} \\ \vdots & \ddots & \vdots \\ \ell_i \epsilon_1 & \dots & \ell_i \epsilon_{n-1} \end{bmatrix}_{\partial \times \partial} \\ where \ j \equiv n-1 \ \forall \ \epsilon_j = (\alpha, \beta, \gamma, \sigma, \rho) \bar{t} \end{aligned}$$



RELATIONS

This in turn would induce a 4 – fold relation among the concerned parameters $(\alpha, \beta, \gamma, \sigma^{\uparrow}, \rho)$ for time \bar{t} with coefficient $\ell^{[4-6]}$,

- [1] ∑ ^ is the number of times the experiment performed till success ∃^∈ ℝ⁺ – As it's difficult to say with certainty "how many times the experiment would yield something fruitful or a perfect result for the validation of the theory' – any such experiment has to be conducted numerous times for paving the way to establishing the theory where the earliest validation by any experiment could come from a theory being hypothesized where it is less abstract and least less in-depth to the domain of modern theoretical physics; in the other cases like the strings or the quantum nature of reality for any dependency of scale– invariant nature – the experimental validation is not only limited but also difficult to be proven in much later times.
- [2] $\gamma = \alpha \cup \beta \forall \alpha$ happened earlier than β In general, a theory has been developed first till mathematics would takeover it and the final physics coming from that theory is a union among the former two depending on the temporal parameters for all the philosophy being established earlier before mathematical takeovers.
- [3] $\sigma = \gamma \cap (\alpha \cup \beta)$ Any final physics that is being developed can be taken as the intersection among that fully furnished (developed) physics with the union of theory and mathematics because there lie other domains beyond the intersection points being classified into 2 categories,
 - 1. There will be some exclusion in the union domains of $\alpha \cup \beta$ being intersected with γ where not all can be taken to produce new physics as some might prove redundant or exclusive being there in the domain of $\alpha \cup \beta$.
 - 2. There will be some exclusion beyond the intersection domains of $\gamma \cap (\alpha \cup \beta)$ that lies on the side of γ where the reason for this can be [Point 1.] also with another being some of the associated physics being developed taking some parts of $\alpha \cup \beta$ into account with the other parts that come from something being observed or some that come anew apart from those domains of $\alpha \cup \beta$.
- [4] $\rho = \begin{pmatrix} \theta^+ \\ \theta^- \end{pmatrix} \exists \rho \theta^+ \cong \sigma \text{ and } \rho \theta^- \ncong \sigma$ Here it has been taken over two parameters of 'theta' – the positive and the negative where positive would yield a validation of a theory through experiment while negative would yield a failure either to conduct an experiment or (as preferred here) – the inaccurate or inaccuracy of the experiment to establish the proper

validation. Thus, there is always a chance or a higher degree of probability that any experimental failure at present can be established through repetitions [as mentioned in Point [1]] in the future (in extreme cases – some theories might not be proved at all through experiments even through repetitions).

Cases: The mathematical form of philosophy is physics. Any theory that an individual or an observer made by observing nature – he gives his best to produce his observations in terms of a theory which is a philosophy where there lie two important $aspects^{[7, 8]}$,

- [1] A observation when accompanied by (non abstractness) then that goes on to be the established parameters of a conjecture or a hypothesis that to be proved later, centuries or years later by some other scientists to make it a proof where the non – trivial part of all of this lies in the establishment of the proof via experiment (and this is rather too rare in modern society of theoretical physics because of the extreme obscurity and abstractness of the domain of observation that is involved in digging down the deepest part of nature for accurate observation - but that observation tends to divert away from accuracy or in many cases tends to become a source of disbelief top the society where many won't agree to the inert and deep - structured rigorous mathematics involved in constructing that theory - but the percentage of the agreed – accuracy goes on to mass if that can be established by experiment (to repeat – this is very rare in modern theoretical physics but might proven experimentally in future with increment of Kardashev scales).
- [2] A observation when accompanied by simple and provable terms then that can be easily established to the mass where the experiment holds a greater degree than the associated mathematics and doesn't move towards a conjecture (this doesn't indeed mean that any conjecture when chalked own experimentally gives a proof – there can also be non - experimental mathematics and proofs associated with the establishment of the conjecture as a theorem (proven)).

Thus the associated cycle takes two foundations where in terms of an order (say, a co-chain being assumed here trivially) establishing point [1] in time \bar{t} as the map taking up $3 - \text{relations}^{[9, 10]}$,

Case (A) – Proved via experiment being less significant abstract analysis of modern theoretical physics,

$$\bar{t}: \alpha \to \beta \to \gamma \to \sigma$$

Case (B) – Proved via experiment but not at an initial stage rather at a later stage where mathematics played an important role for that mathematics to be proved via experiment (with success) in later times,

$$\bar{t}: \alpha \longrightarrow \beta \longrightarrow \gamma \longrightarrow \rho \theta^+ \longrightarrow \sigma$$



Case (C) – There exists a limitation to be proved via experiment where that limitation can be due to the abstractness and modern–day technological limitations of theoretical physics to be proven otherwise in the case concerned it's difficult to say when exactly or if at all the mathematics could be established experimentally (with success),

$$\bar{t}_{\sim}: \alpha \longrightarrow \beta \longrightarrow \gamma \longrightarrow \rho \theta^- \longrightarrow \gamma$$

 $\longrightarrow \epsilon_i \exists \sim \text{signifies the limitation}$

Thus, with these 3 - cases; everything that has been considered is justified for this paper for either the validation or the not - validation of a theory with an experiment being conducted.

RESULTS

The relations being taken for the associated parameters that have been chalked out throughout this paper where it has been shown that – for validation there lies certain things to obey and for not – validation there lies certain constraints to obey where those constraints can be recovered or removed in due time through repetitions. In the other cases or extremes of a conjecture where the abstractness of a theory is too much along with the associated mathematics – that the physics being developed even if accurate still it's difficult to get validated through experiments for the results being discussed in detail throughout this paper.

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THE EVOLVING MANAGEMENT OF CYSTIC FIBROSIS

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SUMMARY

Introduction: Cystic fibrosis is a genetic pathological condition, affecting chromosome 7, which encodes the CFTR protein. This pathology is characterised by abundant mucus production, which in turn leads to blockage of the airways and blockage of the digestive tract.

Objective: The aim of this literature review is to gather the largest available amount of information related to cystic fibrosis and analyse it in detail, indicating the results and expectations that have been had with the use of some drugs over time in patients with cystic fibrosis. It is also intended to mention updates of procedures and their effectiveness.

Methodology: a systematic and complete search was carried out using the Cochrane Library database, with the term Cystic Fibrosis. The documents found were in Spanish and English. Some articles were excluded due to lack of updated information.

Results: Inhalation Dornase alfa alfa is a useful drug for airway improvement and mucus viscosity reduction, as are bronchodilators. Pancreatic enzymes and ursodeoxycholic acid are beneficial in the gastrointestinal area, reducing intestinal symptomatology. In patients with diabetes, Insulin is preferred. Only glutathione has a beneficial effect in patients with cystic fibrosis. Rehabilitation and management of postural abnormalities is vital to improve patients' lives. In patients with nutritional deficiencies, nasogastric tube placement or gastrostomy is preferred to improve their nutrition.

Conclusions: Cystic fibrosis is a disease that has an inevitable progression. The treatments studied here show that they only help quality of life and pulmonary and gastrointestinal functions temporarily. Further studies are needed to determine therapies that can significantly improve patients, both physically and psychologically; and who knows, some therapy or therapies that may lead to a cure for this disease.

KEYWORDS: Cystic fibrosis, exacerbation, rehabilitation, bronchodilators, antibiotics.



INTRODUCTION

Cystic fibrosis (CF) is one of the most common autosomal recessive genetic life-shortening diseases, with around 100 000 people affected worldwide. CF affects multiple systems, primarily the lung; the leading cause of death in people with the condition is respiratory failure. Other body systems are also affected, particularly the digestive and reproductive systems. This disease is due to mutations in the CFTR (cystic fibrosis transmembrane conductance regulator) gene, located on the long arm of chromosome 7, which encodes a transmembrane protein involved in the regulation of transepithelial transport of chloride ions (Cl-). The most frequent mutation is the deletion of amino acid 508 (phenylalanine), termed F508del. Absence or dysfunction of the CFTR protein results in a defect in Cltransport and increased salt and water reabsorption, particularly in the bronchial epithelium, leading to a reduction in bronchial surface fluid. This generalised exocrinopathy leads to the production of "viscous mucus" which clogs various sites in the body, in particular the respiratory system, the digestive tract and its adnexa (1-3). The condition is subsequently directed towards the epithelial cells located in the mucous glands of the intestine, sweat glands, gall bladder, pancreas, liver and airways, where chloride transport is impaired along with elevated sodium and water reabsorption, inducing the formation of very thick mucus (4,5).

METHODOLOGY

A total of 44 scientific articles from the Cochrane Library, Pubmed and Star Pearl databases were analysed and the review focused on the most important therapies and the benefits they can provide to patients with cystic fibrosis. Fifteen papers related to cystic fibrosis were eliminated because none of these articles provided adequate information for this review.

RESULTS AND DISCUSSION

Inhalation Dornase-alpha is a drug currently used as a pulmonary mucolytic in cystic fibrosis. It reduces the viscosity of mucus in the lungs, promoting better clearance of secretions as this drug decreases sputum and its viscosity. Even children with cystic fibrosis with preserved lung function can be given Dornase alfa via inhalation prior to airway clearance techniques for greater benefit (6,7). When pulmonary involvement is present, fibrosis can lead to significant lung damage.

The potential beneficial effect of inhaled corticosteroids on reducing inflammation in patients with cystic fibrosis has been evaluated. Reducing lung inflammation is one of the goals of cystic fibrosis treatment. Inhaled corticosteroids are often used to treat children and adults with cystic fibrosis because of their potential to reduce lung damage arising from inflammation, as well as their effect on symptomatic wheezing. Unfortunately, no significant benefit in reducing inflammation has been conclusively demonstrated; and, in addition, use in children may slow their growth at high doses (8).

Short- and long-acting bronchodilators are prescribed for most people with cystic fibrosis to dilate the airways and improve symptoms. The effect of long-acting inhaled bronchodilators (beta-2 agonists such as salmeterol and muscarinic antagonists such as tiotropium) was evaluated in a study involving a total of 1,082 people aged between five months and 70 years, over a period of 28 days to 12 weeks. Beta-2 agonists were shown to produce some improvement in lung function measured as forced expiratory volume in one second (FEV1) compared to placebo. In contrast, studies comparing tiotropium with placebo found little difference in FEV1 between treatment and placebo (9).

People with cystic fibrosis often have altered gut bacteria and inflammation. Probiotics are known to be live bacteria that will provide a health benefit to the individual. Probiotics are commonly used by people with cystic fibrosis and can improve intestinal inflammation and overall health. In a study of 464 patients with cystic fibrosis who were given probiotics, it was observed that they had an improvement in their health status; ultimately, a reduction in cough, sputum and dyspnoea (lung exacerbations) was found. At the intestinal level, probiotics reduce faecal calprotectin, a marker of intestinal inflammation, in children and adults (10).

The use of pancreatic enzymes in cystic fibrosis patients is important because the pancreas of these patients cannot produce them; the effect of non-production is malnutrition, abdominal pain, frequent and foul-smelling stools with steatorrhoea (11); moreover, an important condition caused by cystic fibrosis is diabetes due to lack of insulin production. Therefore, gastrointestinal symptoms improve with the administration of pancreatic enzymes. The use of pancreatic enzymes in the form of extended-release microspheres is recommended, as they produce less steatorrhoea in the stool and reduce the frequency of abdominal pain (12). There is even limited evidence that acid-reducing agents improve intestinal absorption and improve gastrointestinal symptomatology (13). However, the increased mucus in the intestine caused by the disease, coupled with the lack of pancreatic enzyme action in the intestine, allows this mucus to mix with the faeces, producing a mass, which leads to partial or total occlusion of the intestine, a pathology known as Distal Intestinal Obstruction Syndrome. The patient may also present with vomiting, abdominal distention, and abdominal pain. Unfortunately, in these cases, pancreatic enzymes are ineffective (14).

Cisapride has been used in patients with this syndrome and has been shown to decrease gastrointestinal symptoms (15). Although oral hypoglycaemic therapy is preferred in cystic fibrosis patients with diabetes, according to the American guidelines of the Cystic Fibrosis Foundation, insulin is preferred (16).

The administration of vitamin K, due to the deficiency in the absorption of fat-soluble vitamins, is a subject for discussion, since patients who consume it have a lower probability of hip fracture, thanks to the decrease in osteocalcin decarboxylase (a substance that indicates the risk of hip fracture) (17).

Another important factor in these patients is bile and its tendency to produce liver disease, due to an increase in the consistency of the bile, as it becomes obstructed and can lead to cirrhosis. Therefore, ursodeoxycholic acid at a dose of 20 mg/kg per day has been used to prevent progression of liver disease



(18). Although the evidence is rather limited, omega-3 consumption has reduced the risk of pulmonary exacerbations and antibiotic use. In addition, a decrease in the amount of sputum is observed, along with an improvement in lung function (19).

Airway infection leads to progressive lung damage in cystic fibrosis and oxidative stress has been implicated in the aetiology. Therefore, supplementation with antioxidant micronutrients (vitamin E, vitamin C, β-carotene and selenium) or glutathione may potentially help to maintain an oxidantantioxidant balance. In relation to the consumption of dietary supplements, there is no difference between the consumption or not of dietary supplements and lung function (20,21). There appears to be conflicting evidence regarding the clinical efficacy of antioxidant supplementation in cystic fibrosis. According to the available evidence, glutathione administered orally or by inhalation appears to improve lung function in some cases and decrease oxidative stress; however, due to the very intensive antibiotic and other treatments that cystic fibrosis patients receive, the beneficial effect of antioxidants is very difficult to assess in chronically infected patients without a very large, longterm population sample (22).

Physiotherapy in patients with cystic fibrosis is a key element in improving respiratory function. One technique used in physiotherapy is postural drainage. When postural drainage is performed at 30 degrees and head up, patients have a lower risk of reflux and fewer respiratory complications (23).

Mycobacterium abscessus and Mycobacterium avium are a type of mycobacterial species most frequently found in patients with cystic fibrosis. Therefore, clinical practice guidelines for their treatment should always be followed (24). Other bacteria present in these patients are: Stenotrophomonas maltophilia and Pseudomona aeruginosa; these bacteria should be treated based on clinical judgment (especially if found incidentally, as these bacteria are present in these patients and are resistant to antibiotics (25- 28). However, studies have reported that administration of inhalation antibiotics in Pseudomonas aeruginosa infection improves lung function and reduces the likelihood of exacerbations, especially with the use of Aztreonam over Tobramycin. However, both drugs can be used equally well (29).

Even if inhaled and oral antibiotics are administered, significant improvement is obtained. In relation to inhaled Tobramycin in children, when receiving a regular course of inhaled Tobramycin, fewer patients develop Pseudomonas aeruginosa from their sputum (30). However, there is no such benefit between the use of Aztreonam and the presence of Burkholderia cepacia infection (31). In the case of pulmonary exacerbations, administration of aminoglycosides in 1 dose per day has been found to be effective in the treatment of pulmonary exacerbations, as well as having a lower risk of nephrotoxicity (32).

A condition that indicates progression of cystic fibrosis is the presence of postural abnormalities. Therefore, in these patients, the decision is made to initiate muscle stretching and strengthening therapies, which is important as it can improve quality of life and reduce pain in patients with these abnormalities (33). Physical training can even improve lung capacity and quality of life (34). Muscle training by generating a 60-80% maximal effort in patients leads to improved lung function (35). A less common technique, such as singing, can help improve peak expiratory pressure and quality of life (36).

All cystic fibrosis patients inhaling hypertonic saline before or during airway clearance is more effective than inhalation after airway clearance. In addition, a long-term benefit has been shown when inhaled twice daily (37). Hypertonic saline-based nebulisations improve lung function and reduce the likelihood of pulmonary exacerbations. Furthermore, the use of hypertonic saline as an effective adjunct to physiotherapy is a very beneficial technique in patients with acute pulmonary exacerbations (38). Inhaled mannitol has also been used; this drug improves lung function by clearing mucus from the airways (39).

The F508del variant lacks significant cystic fibrosis transmembrane conductance function, so corrective therapy may benefit many people with CF. A relatively new technique has been the development of drugs that target the cystic fibrosis gene; specifically the F508del protein. The aim of these proteinmodifying drugs is to allow salt exchange to resume and, therefore, correction of the chronic problems of cystic fibrosis. When evaluating the effects of cystic fibrosis transmembrane conductance regulator (CFTR) correctors (with or without enhancers) on clinically important beneficial and detrimental effects in CF individuals of any age with CFTR class II mutations (most commonly F508del), it was observed that corrector monotherapy had no clinically important effects. Dual therapies (lumacaftor-ivacaftor, tezacaftor-ivacaftor) resulted in similar improvements in quality of life and respiratory function with lower rates of pulmonary exacerbation. This effect was most beneficial with the tezacaftor-ivacaftor combination. Lumacaftor-ivacaftor was associated with an increase in early transient shortness of breath and long-term increases in blood pressure, not observed with tezacaftor-ivacaftor. In children, lumacaftor-ivacaftor had a significant impact on respiratory function with no apparent immediate safety concerns. For triple therapy with elexacaftor- tezacaftor-ivacaftor, the evidence indicates high quality of clinical efficacy with probably little or no difference in adverse effects in CF patients with one or two F508del variants aged 12 years or older (40).

People with CF often have malnutrition and stunted growth. Adequate nutritional supplementation does not optimally improve growth and therefore an anabolic agent, recombinant human growth hormone (rhGH), has been proposed as a possible intervention to improve weight, height, bone density, as well as to improve lung function, quality of life and clinical status in children and young adults with CF. Studies with this therapy indicated that when compared to no treatment, rhGH therapy is effective in improving intermediate outcomes in height, weight and lean body mass. Some measures of lung function showed moderate improvement (41).

Progressive lung damage causes most deaths in cystic fibrosis. Nonsteroidal anti-inflammatory drugs (NSAIDs) (such as ibuprofen) may prevent progressive lung deterioration and morbidity in cystic fibrosis. In evaluating the effectiveness of



oral NSAID therapy in cystic fibrosis, it was shown that ibuprofen, at high doses, can delay the progression of lung disease in CF, especially in children, suggesting that strategies to modulate lung inflammation may be beneficial for people with cystic fibrosis (42).

For people with severe CF and advanced lung damage, lung transplantation is an available and viable option. However, graft rejection is an important potential consequence after lung transplantation. Immunosuppressive therapy is necessary to prevent episodes of graft rejection and thus reduce subsequent morbidity and mortality in this population. There are several classes of immunosuppressive drugs that act on different components of the immune system. In a study comparing tacrolimus with cyclosporine in all lung transplant recipients (not restricted to those with cystic fibrosis) no significant differences in mortality and risk of acute rejection were observed. However, tacrolimus use was associated with a lower risk of bronchitis obliterans syndrome and hypertension and an increased risk of diabetes mellitus (43).

Finally, when patients present with significant malnutrition due to lack of calorie absorption, nasogastric tube feeding or gastrostomy feeding is routinely used in many cystic fibrosis centres when oral diet and supplementation fail to achieve adequate nutritional status. However, although there are benefits such as nutritional and respiratory improvement, these are costly and may have a negative effect on patients' self-esteem and body image (44).

CONCLUSIONS

Cystic fibrosis is a pathology that affects both the gastrointestinal and respiratory systems. Its effects can be temporarily alleviated; however, its progression is inevitable. Several therapeutic alternatives are currently available to slow its progression, and in some cases, even cure it. However,

more clinical studies are needed to determine definitive therapies for the cure of this pathology or, failing that, to find the most appropriate therapies with the least adverse effects to improve the pulmonary and gastrointestinal capacity and, above all, the quality of life of patients.

FINAL STATEMENT

This review is based on an article by Santiago Vintimilla called "La evolución del manejo de la Fibrosis Quística. Revisión Bibliográfica", whose author authorized the translation and rewriting from the Spanish language version to the english language version.

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WELLENS' SYNDROME: A DANGEROUS HEART INFREQUENCY

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SUMMARY

Wellens syndrome is an acute coronary syndrome with a high risk of life-threatening myocardial ischaemic disease. It should be emphasised that it is not always an acute process, and may manifest itself over periods of weeks and result in an Impending Acute Myocardial Infarction of the anterior wall.

The aim of this research lies in the importance of detecting this pathology in a timely manner, because, although it is infrequent, it has a high mortality rate in patients who present it and do not have an early detection.

KEY WORDS: wellens syndrome. inverted t-waves. coronary revascularisation. acute myocardial infarction.

INTRODUCTION

Wellens syndrome is the presence of chest pain, plus T wave changes in the precordial leads; minimal or no changes in markers of myocardial damage, absence of Q waves and R wave progression in the precordial leads; along with minimal

or no ST segment elevation.

Briefly, electrocardiographic changes can manifest, even without chest pain; in addition, there are 2 patterns in the electrocardiogram that can be identified: the most frequent is the presence of negative T waves, known as type 1, with a



frequency of 76%, and evident in V2 - V3 in most cases of Wellens Syndrome; the other electrocardiographic pattern is type 2, where isodiphasic T waves are found⁽¹⁾⁽²⁾. This syndrome correlates with severe proximal stenosis of the Anterior Descending Artery. ^{(3)(4)(5).}

This pathology is an antecedent period of Acute Myocardial Infarction associated with obstructions in the Left Anterior Descending Artery, in the proximal segment⁽⁶⁾⁽⁷⁾.

The causes of Wellens syndrome are similar to any condition that causes heart disease, such as:

- Atherosclerotic plaque
- Coronary artery vasospasm
- Hypoxia
- Increased cardiac demand⁽⁸⁾.

The risk factors for Wellens Syndrome are identical to those for acute coronary syndrome, such as: diabetes mellitus, hypertension, advanced age and family history of coronary heart disease, hypercholesterolemia, hyperlipidaemia and metabolic syndrome⁽⁹⁾⁽¹⁰⁾.

DEVELOPMENT OF THE DISEASE

Wellens syndrome results from a temporary obstruction of the anterior descending coronary artery, usually caused by rupture of an atherosclerotic plaque leading to occlusion of the anterior descending coronary artery, with subsequent clot lysis or other disruption of the occlusion before a complete myocardial infarction has occurred. The electrocardiogram changes in Wellens syndrome are presumed to be generated by coronary artery spasm. Another hypothesis is caused by repetitive transmural ischaemia-reperfusion leading to myocardial oedema.

The spectrum of this pathology is very broad, and knowledge and high clinical suspicion for its diagnosis, especially in its rare biphasic T-wave presentations, is the key to avoid catastrophic consequences. Criteria for diagnosis are: previous history of chest pain, no elevation of cardiac markers or elevation 2 times the normal limit of reference values, isoelectric or slightly elevated ST segment, no precordial Q waves, no loss of R waves in the precordial leads and symmetrically inverted T waves or, less commonly, biphasic T waves in the precordial leads⁽¹⁾.

DIAGNOSIS AND THERAPEUTIC MANAGEMENT

The clinical manifestations may resemble unstable dyspnoea, diaphoresis, angina, accompanied by however. nausea/vomiting. presyncope/syncope; the likelihood of this pathology increases when the patient has cardiovascular risk factors⁽¹²⁾. In the electrocardiographic pattern, T-wave abnormalities may be evident in the anterior leads, inverted, deep and symmetrical in leads V2 and V3; although occasionally it may be found in leads V1, V4, V5 and V6, or biphasic T-waves in leads V2 and V3 and slightly elevated or isoelectric ST segment⁽¹³⁾. Early diagnosis and intervention leads to good outcomes⁽¹⁴⁾⁽¹⁵⁾⁽¹⁶⁾.

Pharmacological management of this pathology is not sufficient, as 75% of patients with this syndrome will develop an acute anterior wall myocardial infarction. An important point is not to take the patient to a stress test, as this may lead to an acute anterior wall myocardial infarction⁽¹⁷⁾.

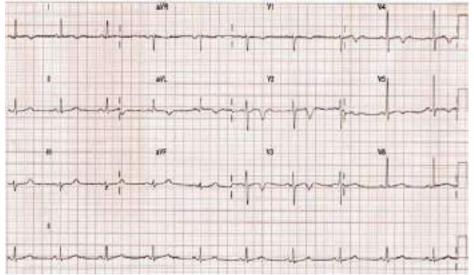
Once this syndrome is recognised, general measures such as the use of nitrates, beta-blockers and the use of antiplatelet therapy with P2Y12 receptor inhibitors should be initiated urgently, coordinated with Cardiology for treatment with invasive coronary angiography and followed by coronary revascularisation. Although T-wave abnormalities in patients with Wellens syndrome are seen in asymptomatic patients, and although they respond adequately to pharmacological treatment, they ultimately require revascularisation. If significant occlusion of the anterior descending artery is evident, percutaneous coronary intervention or coronary artery bypass surgery should be performed to prevent acute anterior myocardial infarction. When treated with pharmacological therapy alone, 75% of patients with this syndrome develop anterior wall infarction within one week⁽¹⁸⁾⁽¹⁹⁾.

CONCLUSIONS

This pathology has a significant impact on patients with the presence of comorbidities, and also has an anterior presentation with not so subtle electrocardiographic changes, so it is imperative to consider the admission of patients with the presence of unstable angina and the performance of an electrocardiogram, since with this, the clinical manifestations and the presence of comorbidities, this pathology can be diagnosed and treated in a timely manner; therefore, both clinical and electrocardiographic diagnosis will define early diagnosis and appropriate and timely management.

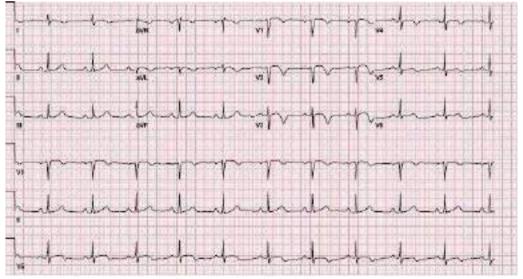
IMAGES TO CONSIDER

Electrocardiogram of Wellens syndrome, type 1, with T wave inversion in V2, V3, V4 and V5.



Source: Martínez-Losas, Viana-Tejedor, Freitas-Ferraz, & Ruiz-Mateos. Wellens syndrome (1)

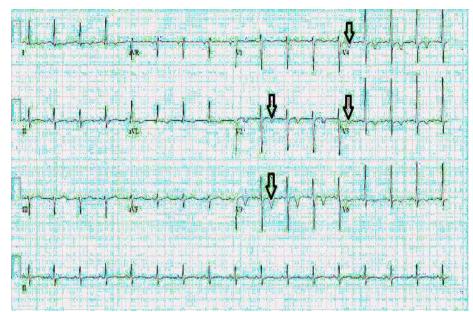
Figure 1. Electrocardiogram demonstrating the Wellens Syndrome pattern in leads V1 - V6, with greater depth in V2 and V3.



Source: Miner B, Hart EH. StatPearls Publishing (8).

Figure 2. Electrocardiogram with demonstration of T-wave inversion from V2 to V5.





Source: Udechukwu N, Shrestha P, Zeeshan M, Donato A. Wellens' syndrome: a close call (20).

FINAL STATEMENT

This review is based on an article by Santiago Vintimilla called "Síndrome de Wellens, una infrecuencia de peligro", whose author authorized the translation and rewriting from the Spanish language version to the english language version.

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THE CONCEPTUAL ANALYSIS OF TASKS USED IN INTERNATIONAL EVALUATION RESEARCH

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ABSTRACT

In the article, the conceptual analysis of assignments used in international assessment studies, their comparative analysis with existing educational assignments, as well as the content of assignments in the case of natural sciences are analyzed. **KEY WORDS:** international assessment studies, natural sciences, academic assignments, literacy.

INTRODUCTION

Tasks used in international evaluation studies have been the object of many scientific and practical programs. Tasks of international assessment studies are being integrated into the content of the national education system of the participating countries and are recognized as an educational goal [6, 3]. In addition, the implementation of tasks of the level of complexity of the program tasks is determined in the form of necessary knowledge, skills, qualifications and competencies directly related to the content of educational standards, curriculum and programs.

RESEARCH METHODS

In the educational process, the introduction of tasks similar to these tasks is considered as a necessary condition for the formation of competences related to the main basis and subjects. Assignments of international evaluation studies are developed by testologists of three international institutes of the international consortium. After that, the opinions of the national experts of the countries participating in the program are studied and appropriate changes are made. In addition, each participating country will supplement the tasks of this program with tasks and questionnaires in order to implement them at the national level.

RESULTS AND DISCUSSIONS

In general, international evaluation research assignments require the following basic and subject-related competencies and their components: reading scientific texts; interpretation of graphic, pictorial, sketch assignments; drawing conclusions from data; creating mental models; justification of theses, creation of hypotheses and comparison of opposites; purposeful verbalization of problems, taking a position and evaluating facts. Tasks used in international assessment studies focus on the application of student

knowledge, mutual integration of interdisciplinary knowledge, decision-making skills, self-assessment, and error detection. Tasks used in research are not limited to a specific topic of study. Also, the assignments test the student's literacy at the time of the assessment program, not the learning process. Assignments are developed in relation to society, environment, natural phenomena, engineering and technology, human development, health, global and daily life, situations, situations, information and problems related to modern sciences. Examples include current issues such as global climate change, epidemics, digitization, etc., in the context of assignments. In the PISA international assessment study, in addition to the basic competencies, students' technological competencies, financial literacy, creative thinking, and "learning in the digital world" (2025) competencies are evaluated in different years.

International evaluation research assignments consist of a number of units. Each part of tasks in turn contains up to 4 tasks (Items). Part tasks are related to each other in terms of content and structure and complement each other. A picture, table, or graph in one assignment will be relevant to all part assignments and tasks. Contextual information is provided when tasks are posted, and this information is shared across all subtasks. Partial assignments require all aspects of the assignment as much as possible, including guessing, probabilistic, visualizing, reacting, deciding, summarizing, analyzing, and making recommendations. There are 5 different types of tasks in the partial assignments. In particular, they are as follows: tasks with a number of correct answers; assignments with one correct answer; short answer assignments; two closed-form assignments; includes multiple choice tasks [7, 266].

The effective organization of training sessions depends on the professional approach of the teacher, the selection of assignments in accordance with the educational



goals, didactic justification and didactic tools that guide the educational goals. Assignments serve as a didactic tool that serves the formation and development of subject-related and basic competencies specified in the state educational standard. The teacher should achieve adaptability and completeness of the learning process through tasks. Tasks used in the educational process are divided into training and control tasks. Educational tasks are created for the purpose of learning a new topic independently or in class. Students will be able to share and compare learning assignments, discuss problem solving methods, and compare solutions. Educational tasks are used to form the student's ability to use the methods indicated in advance. In the textbooks, the tasks are assigned according to the level of complexity. Completion of tasks of a high level of complexity determines that the student has mastered the subject well. The individual literacy of the student is evaluated through control assignments. In most cases, control assignments consist of a combination of several educational assignments and include several assignments related to the topics covered at a certain time. Cross-topic assignments are rare in these assignments and mostly consist of subject assignments. Students often solve these types of assignments during end-of-term or grade-by-grade tests.

The main purpose of the tasks used in the educational process is to consolidate the acquired knowledge, to repeat it, to support it in different situations, to evaluate the acquired knowledge. Most assignments are one-step assignments that consist of explaining a question or term and performing an action. The analysis of educational and control assignments shows that many assignments do not serve as a sufficient tool for the formation of the student's basic and subject competencies. In practice, assignments are edited as questions and developed only in accordance with the mastered topic. Educational tasks serve as an indicator that determines the achievement of the goal of the lesson. Learning and control tasks determine the possibility of checking the achievement of learning outcomes. Control tasks require the student to accept the tasks as a test process, not a learning process, and the student's current level of knowledge is determined.

The tasks used in the educational process differ from the tasks of international evaluation studies in the following aspects:

1. Knowledge of a certain subject is systematically taught in training sessions, and topics are organized from simple to complex. This sequence ensures that students get systematic knowledge, the first topic and the second topic are organically connected. Tasks are also formed according to this principle. The lack of this systematicity is expressed in the student's general idea of science and certain sections of science at the end of this section or chapter.

2. In addition to systematization, great attention is paid to knowledge, questions, and terms related to exams and tests. These topics, terms, and assignments similar to exam papers are reviewed as often as possible.

3. Reinforcement assignments are also given as homework. A student's complete and quality completion of all assignments given by the teacher is a condition for a good grade.

4. Students are rarely encouraged to engage in independent research related to practice, daily life, or global life, and assignments that develop student creativity and research competencies. The reason why such tasks are not given is that the final solution is not always reached, they are not directly related to the lesson topics, and the educational process is organized based on a strict plan, which does not allow using such tasks. In practice, it is rarely observed that the teacher uses assignments that are not related to the textbook and the given topic. Today's educational activities are "focused on memorizing and retaining information, which hinders the development of critical thinking, independent information search and analysis skills, and other skills"[5]. In most cases, students are not given a full, complex task, but parts of this complex task or "part tasks" in educational activities. In most cases, assignments are used only to assess students.

Recent research on pedagogy suggests that the expansion of international assessment research has increased the focus on tasks used in the learning process. One of the educational strategies of the countries participating in the evaluation program is the wide implementation of tasks similar to the tasks used in international assessment studies in the educational process and thereby forming the basic competencies of students, and several scientific studies are being conducted on the tasks.

Below we will analyze the tasks on the example of natural sciences. In international assessment studies, literacy in natural sciences is described as "being able to apply knowledge of natural sciences in practice, understand problems of natural sciences, develop conclusions using scientific resources, understand decisions about nature and changes in nature caused by the human factor" [7, 266] we can say. If we analyze this description, science literacy is indirectly examined in relation to everyday life, various socioeconomic and political issues in society. The student is required to think independently, make independent decisions and evaluate his own results.

To create confidence in students to study the environment, to observe and analyze processes and phenomena in nature, to be able to use tools, tools, and methods in the study of natural phenomena correctly, to be able to express terms, concepts, laws, quantities with mathematical formulas, achievements in the field of science, their development of students' scientific worldviews through practical implementation, respect for the creators of science and technology in the correct use of the achievements of science and technology for humanity in the future, careful preservation of spiritual and cultural heritage, and education of elements of universal culture in them.

In natural sciences, tasks are used in most cases in the repetition and examination phases of training [4,9]. Assignments are mostly used to assess students. Evaluation is seen as a tool for the teacher to motivate students to be active. At the same time, R. Duit [3,23] analyzed the tasks in physics textbooks and came to the following conclusion: "The tasks in physics textbooks consist of repetitive formal tasks and this is 90%. Tasks related to everyday life are rare. Such assignments



usually allow students to observe daily life, connect with the knowledge they are learning in the classroom, and help develop their problem-solving competence. Tasks with several answers are rarely found in physics textbooks." On the basis of this analysis of the scientist, it is possible to conclude as follows: In the physics class, it is intended for students to deal with the algorithm for solving certain tasks and to repeat this algorithm by memorization. In some cases, more complex assignments require students to solve or modify a formula or equation. Being able to work on these types of tasks does not mean that students have fully understood the content of the subject. Due to this, students' interest in science decreases. For students, science is seen as an abstract, rare science in life. If the tasks assigned to the students are connected to the information they have seen, known, and encountered in practice, they will increase their motivation to understand the importance of science and learn it. According to N. Sheker and J. Gerdes, "constantly repetitive tasks included in the scheme provide the opportunity to apply the learned knowledge in a limited amount" [9,61]. Furthermore, these researchers conclude that "students learn to solve tasks, but rarely learn to solve problems." Judging from the abovementioned points, the function of tasks given in educational sessions requires the change of students' attitude towards problem solving.

It is desirable that tasks should be at the center of educational activities in natural sciences. This means that most of the students are taught in the training sessions not to complete assignments, but to teach them as a tool, a resource that can be used in practice. Also, the teacher should develop and use assignments that should not only direct the student to the correct solution, but should also make the student think through this assignment and provide a different approach to the assignment. When developing these types of assignments, it is appropriate to develop assignments based on the example of the area where the students live and know well.

Observations show that a student who is unable to complete a specific task tries to solve it using sample tasks. Tasks in this case can be used in the educational process, especially in mathematics, when working on formulas or solving equations. In the sciences of natural direction, the assignments should cover more information, it is necessary to extract the necessary information from a large amount of this information and to complete the assignment using the appropriate formula. This develops students' independent research skills.

Another important factor in the development of the "assignment tradition" is the development of students' independent explanation skills [5, 9]. In the tasks, it should be assumed that the information presented to the students is not ready-made, but that they find information by independent search, repetition and comparison with other tasks. Tasks should become more complex depending on the progress of the educational process.

According to H. Gudjons [4,13], knowledge becomes systematized by performing increasingly complex tasks. By performing the tasks related to its application in practice, it is integrated with other knowledge and becomes connected to

the basic knowledge. Also, the teacher should explain the new topic and give the students the opportunity to solve tasks related to this topic independently and present their solutions. In this case, the teacher evaluates the "current state" and "potential state" of the student. The teacher pays attention to methodological aspects in explaining the topic and tries to explain the most important parts of the topic in detail, taking into account the "current situation" of the students [10, 11]. Dealing effectively with student errors is one of the most overlooked aspects of task design. And error solutions are the main motivation to solve tasks with continuous and persistent errors in mind. Students should not be afraid of making mistakes while solving the task, but should be encouraged to come to the final correct solution through mistakes. P. Heuslur and G. Lind stated this situation in their scientific program that "whoever knows what kind of error occurs, knows what the right solution will be" [5, 10]. From the pedagogical point of view, the elimination of mistakes is not accepted as a necessary or unavoidable solution, but it should be seen that it is possible to learn from and through mistakes [8, 21].

From the point of view of didactics of science, it is recommended to explain the errors on the basis of tasks corresponding to this error. For example, a task worked on in a certain group or by an individual student is purposefully made wrong, and this wrong solution is critically discussed in the training session. It is one of the tasks of the teacher to form and systematically develop students' opinions on identifying mistakes and why they are mistakes. Through this, students' competencies of critical thinking and finding constructive solutions are formed.

In the development and improvement of tasks, special attention is paid to the development of multi-solution tasks in the following years. Solving tasks in natural sciences involves an approach based on one or several laws. For example, in physics, problems related to mechanics can be worked through the law of conservation of energy or the law of balance of motion. It is a simple and elegant way to explain the solution of the problem in one way. This is also a less time-consuming way for the teacher. It does not develop students' ability to find alternative solutions to a given task when limited tools, resources, or information are available. It encourages students to think narrowly and not to solve tasks with only one solution and not to look for other solutions [5, 4]. In particular, the use of constructive tasks in the educational process is becoming more popular. Through these tasks, students design a specific product, item or structure.

CONCLUSION

The educational policies, educational processes, educational and regulatory documents, and the content of education of the countries that have achieved high results in international evaluation studies have begun to be thoroughly studied by other countries. In particular, the results achieved in the programs of Singapore, Hong Kong, Canada, Finland, and Japan are becoming the program object of many pedagogical researches. The program tasks, in turn, started the tradition of "task development" [6, 2] in the participating countries. The concept of "assignment tradition" means



purposeful and acceptable use of assignments in educational training [2,105]. According to C. Aufshnayter, "systematic application of tasks in educational training has a decisive influence on the optimal educational process".

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COMPARATIVE STUDY ON POSTPARTUM DEPRESSION MANAGEMENT BETWEEN AYURVEDA DOCTORS AND COMMON WOMEN IN KOLLAM

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ABSTRACT

Postpartum depression (PPD) is a mental illness. This study was conducted among Ayurveda doctors and common women to evaluate the management of PPD. Its effect on their future life was also analyzed. It is evident from the study that women educated about PPD could manage the disease. No related studies were done on this topic or subject groups.

INTRODUCTION

The journey to motherhood is a crucial phase of womanhood. Women have to face a lot of physical and mental changes. Mental issues vary, like postpartum blues, postpartum depression, or postpartum psychosis. Nowadays, the incidence of postpartum depression (PPD) is high among mothers. PPD may occur due to physical, mental, genetic, and social factors. Ineffective management of it may lead to the fatality of either maternal or newborn or both. Later in her life, there are chances of getting a severe mental illness.

The bodily and psychological trauma due to parturition will recover in the first six weeks after childbirth. Mother-infant bond and developmental milestones are also initiated during these days in the infant. So inappropriate management of PPD would affect the child also. Besides treatment, the support provided by her family and society will ease her retrieval to normal life. Thus, education on PPD can influence society's view and thereby could lower its rate and stigma. The importance of PPD education for the whole family must be considered for healthy motherhood development.

PROBLEM STATEMENT

The leading cause of the increased amount of PPD cases is the unawareness of the disease and its treatment. If the doctors could manage the condition to a particular extent, it would be with the help of their knowledge of it. So, raising education standards on this topic would reduce its incidence.

OBJECTIVES

- 1. To analyze the rate of incidence of PPD in Ayurveda female doctors and ordinary women
- 2. To evaluate the rate of PPD management in both groups.
- 3. To examine the methods adopted by them for management.

4. To analyze the percentage of their mental and social well-being after one year of delivery.

GENERAL BACKGROUND POSTPARTUM DEPRESSION

After childbirth, most women have immense physical and psychological changes. Postpartum blues mainly occur within the two days of parturition. It had symptoms like slight mood swings and anxiety. It is manageable with support and care given by near ones. Most of them would develop PPD if their management were improper. Women who had a history of despair, any mental illness, suffered from trauma, or had limited social support in life are at greater risk of affecting. As per the study by Ravi et al. (2017), it was found that pregnant women who were in urban outskirts had a more proportion of PPD symptoms. Also, he included that those who were physically healthy would not approach health facilities and did not get the opportunity to share depressive symptoms with their consultants "During pregnancy, progesterone and estrogen increased ten times more than normal period. After delivery, there was a sudden drop in these, but the scientific reason behind the cause of PPD is unknown" (Debra, 2020). The prevalence rate in Kerala was 29.4% in a study conducted at a tertiary care teaching institute (Heera et al., 2019). It could be effectively managed with behavioral therapy, psychosocial support, and counseling.

SCALES FOR SCREENING

Health professionals widely use the Edinburgh Postnatal Depression Scale (EPDS) to diagnose PPD. It has been validated in different populations and languages. Depression symptoms like sleep problems, fatigue, anhedonia, and suicidal thoughts were included as factors for rating.



Assessment of social relationships was conducted with the Social Adjustment Scale-Self Report. "It covers six areas of functioning including work, social and leisure activities, relationships with extended family, role as a marital partner, parental role, and role within the family unit" (Rzepa, Weissman, 2014).

RESEARCH METHODOLOGY

The case study was done on groups of Ayurveda doctors and common women. Both groups had ten participants who completed one year postpartum. Ayurveda doctors finished their five- and half-year undergraduate program at a well-known Ayurveda college in Kollam district, Kerala. Their curriculum had a topic related to postpartum depression, and they had read it in the third year of the course. They are currently doing clinical practice. The second group of women were well educated and employed. Participants of both groups were randomly selected from four districts of southern Kerala. They did EPDS after childbirth and had mild to moderate symptoms. The survey was done from 30th June 2022 to 2nd July 2022.

ASSESSMENT SCALE-1

Management of PPD was assessed in this study with the help of a structured scale. Based on its etiology, treatment, and prognosis of disease, eight concepts were identified, each was given three ratings, and a new scale was developed. It was administered to mothers of both groups through an online survey method and interviewed, and then the results were evaluated.

MANAGEMENT ASSESSMENT SCALE

The management of PPD was assessed with the following scale.

 the management of FFD was assessed with the following scale		
Score		
1	I did undergo depression screening	
2	Occasionally engaged in but did not follow the	
	course	
3	Did not undergo	
1	I am adequately educated on the causes and	
	prognosis of depression	
2	I only learned about it through social media	
3	I did not know about depression	
1	I was aware that it was curable	
2	I knew that illness could be cured, but I kept it	
	a secret out of social anxiety	
3	I did not know its treatment	
1	I told to partner or parents about my anxieties	
	during the postpartum	
2	I told them, but they refused to listen	
3	I did not consider telling anyone else about this	
1	I talked with my friends to reduce daily stress	
2	I tried to communicate, but my friends were	
	unsure of how to handle it	
3	I had never discussed this with my friends	
1	I could recognize the early signs of relapse and	
	control them	
2	Relapse happened unexpectedly, and I was	

	unable to manage it
	0
3	I did not know relapses
1	I adopt healthier habits like yoga/ meditation/
	healthy food habits
2	I adopt practices and regimens which are
	usually followed in society
	I never did think about adopting healthier
3	habits as I am worried about myself
1	I formed a healthy bond with the infant
	I rarely interacted with the baby
2	I had no idea that interacting with the baby was
3	so important

Later, evaluations on current mental well-being and social relationships were conducted on them. It was rated with the Social Adjustment Scale Self-Report (SAS) through the same platform.

DATA COLLECTION AND ANALYSIS

Data were collected from the selected twenty women. Information obtained through the survey and interview was interpreted in the below charts. The first two scores were taken, and the third score was avoided in the chart as its percentage is negligible in the result.

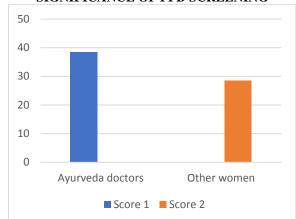
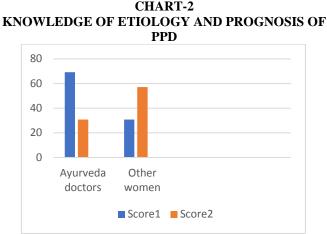


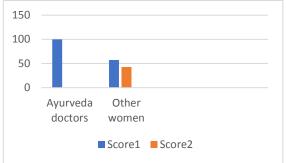
CHART-1 SIGNIFICANCE OF PPD SCREENING

38.46% of Ayurveda doctors and none of the common women underwent screening during postnatal visits. The percentage of Ayurveda doctors and other women who occasionally did screening was 0% and 28.57%, respectively.



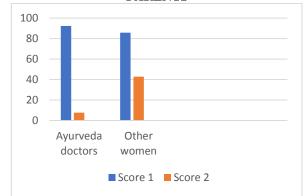
69.23% of Ayurveda doctors and 42.85% of common were adequately educated on the disease. 30.76% of Ayurveda doctors and 57.14% of common women depend on social media for information.

CHART-3 KNOWLEDGE OF CURABILITY OF ILLNESS



Participated Ayurveda doctors were fully aware of its cure, and the percentage of other women on the same was 57.14%. None of the Ayurveda doctors hid the disease, and 42.85% of other women hid their illness despite knowing it. Ayurveda doctors are majority attentive to its etiology, treatment, and prognosis.



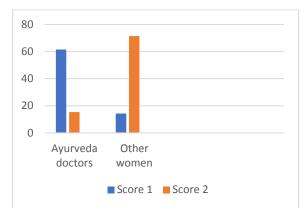


92.30% of Ayurveda doctors and 85.71% of common women shared anxieties with their partners or parents. Among those Ayurveda doctors and common women who tried to communicate on the above topic, 7.69% and 42.85% were unsuccessful, respectively.

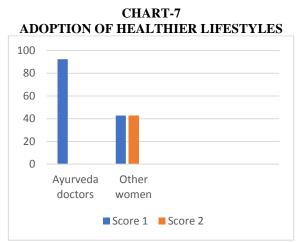


This chart detailed the importance of discussing mental stress with friends who also had the same situation. 92.30% of Ayurveda doctors and a few common women discussed it with friends who had the same situation. The percentage of Ayurveda doctors and common women who tried communicating with their colleagues was 7.69% and 100%, respectively.

CHART-6 MANAGING EARLY SIGNS OF RELAPSES

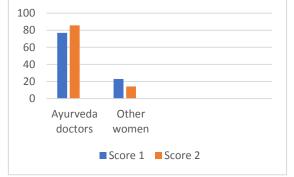


This chart illustrates recognizing and managing early signs of relapses. 61.53% of Ayurveda doctors and 14.28% of common women were able to tackle relapses. 15.38% of Ayurveda doctors and 71.42% of common women were unable to manage it, as it happened unexpectedly.



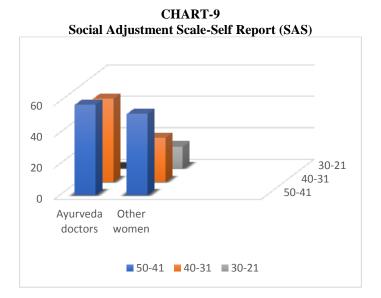
92.30% of Ayurveda doctors and 42.85% of common women adopted healthier lifestyles such as yoga, meditation, and healthy food habits. The percentage of Ayurveda doctors and common women who adopted practices usually followed in society was 0% and 42.85%, respectively.

CHART-8 MAINTAINING A HEALTHY BOND WITH INFANT



76.92% of Ayurveda doctors and 23.07% of common women adopted it, and 85.71% of Ayurveda doctors and 14.28% of common women rarely interacted with babies.

From the above data, it was clear that Ayurveda doctors could manage PPD scientifically to a better extent than the common women population.



50-41 Socially adjusted 40-31 Borderline 30-21 Moderate

Below 20-Severely impaired

This chart delves data on the rate of mental and social well-being after one year from the date of delivery. 58% of Ayurveda doctors could be socially adjusted, and the percentage of adjusted other women was 52%. 53% of Ayurveda doctors and 28% of common women were borderline. 14% of common women and none of Ayurveda doctors showed moderate symptoms in this case- study. There was no severity of disease reported in both groups.

CONCLUSION

It was found from the survey that PPD is an emerging mental illness in mothers irrespective of factors such as age, education, and economic assistance. The way of managing determines its rate of recovery and non-occurrence in the future. Understanding the relapses would prevent the situation from getting worse. The health-regaining process will happen postpartum. Adoption of unhealthy habits will affect physical and mental health. It could imbalance the functions of endocrine glands and result in diseases such as obesity, diabetes mellitus, and PCOD in her later life. Pranayama and meditation described in yoga will help to control her conscious mind. Thus, she can control her tension, emotional outbreaks, and sleep difficulties. Modified yoga postures for them can alleviate low back pain, incontinence, and incidence of uterine prolapse in the future. Neglecting the baby, a symptom of PPD will affect the mental and physical health and consequences sleeping, eating, and behavioral problems in the baby (CDC, 2022). These cause the chances of developing adolescent depression in them. The wellmanaged mothers can maintain human relations and overcome mental distress in daily life.



RECOMMENDATIONS

- Government should consider policies for the mental wellbeing of new mothers. Free and compulsory screenings must be made available through health centers. Their improvement in illness should be evaluated with the help of Accredited social health activist (ASHA) workers.
- The undergraduate education curriculum should include classes on PPD, irrespective of gender.
- The public and private sectors should support PPDdiagnosed women by providing adequate leave with pay.

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CLOUD BUSINESS INTELLIGENCE AS A SOLUTION FOR EMPOWERING SMEs

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ABSTRACT

The concept of Business Intelligence has garnered popularity due to its immense predictive and analytical capabilities. It is being used by organisations worldwide to extract information from piles of data to take critical business decisions. However, such systems are difficult to maintain and costly to establish and are mostly catered towards large scale organisations. To expand the reach of this tool to organisations belonging to the SME sector which is quite significant in every economy and to allow them to contribute even more towards a nation's growth and development, steps have been taken recently to provide Business intelligence solutions as a service over the internet using the cloud computing platform. This paper seeks to explore the factors responsible for choosing cloud business intelligence solutions from an SMEs perspective, the expected benefits and the associated challenges.

INTRODUCTION

Small and medium enterprises (SMEs) make up the backbone of any economy, supporting its growth and development by providing services, providing employment to the masses, rural development, and contributing to the government's foreign exchange revenue through exports.

Businesses generate massive amounts of data about the environment in which they operate. Data generated by organisations is frequently disorganised and may not yield meaningful results. To convey meaning, data must be converted into information. Manually sorting data in a complex modern organisation and then transforming it into information is a timeconsuming and laborious task.

This is where Business Intelligence (hereafter BI) emerges. BI entails sifting through massive amounts of data and compiling it to deliver relevant information to the organisation so that critical business decisions can be made, all through the use of information technology. BI includes broad categories of systems and solutions for collecting, integrating, analyzing, and granting access to data to enable better decision making by businesses.

Given the competitive advantage that business intelligence provides, there are some factors that discourage organisations from investing in it, particularly Small and Medium Enterprises (SMEs). As a result, in order to empower SMEs in their economic growth journey and to enable them to reap the benefits of BI, the concept of offering cloud-based BI solutions has emerged, which frees an organisation from installing any equipment on-site, provides the scalability during the peak periods and is economic to the user as it a pay as you use model.

LITERATURE REVIEW

Patil and Chavan (2020), conducted a study on Cloud BI, its advantages and challenges. They found that cloud BI solutions offer significant benefits to a business such as lower implementation costs and impacts organizations positively. Organisations can leverage cloud BI solutions to compete in the global market.

Raj et al. (2016), investigated the challenges when implementing a BI solution within an SME in the UK. It was discovered that SMEs lack the expertise required to select the correct combination BI tools, also limitations of financial resources prevent an SME in investing in large scale BI solutions.

Gurjar and Rathore (2013), focused on the factors driving cloud BI evolution, various models for deploying BI components on the cloud, the impact of its implementation, and the challenges It was discovered that with the help of these solutions, organisations of any size can capitalise on market opportunities. Cloud BI has the potential to increase BI adoption, improve end-user experience, provide opportunities for improved analytics, and reduce reliance on IT infrastructure.

Menon et al. (2012), studied the factors and challenges relating to Cloud BI. They found that cloud is the future of BI and offers several benefits to its users. Also, they found that cloud technologies were initially meant for small size organisations with lack of IT infrastructure and spending capacity, it is now being used even by the large companies to add new business solutions and make additions to the already present data center capacity.

Rostek et al. (2012), examined the opportunities and threats posed by Cloud Business Intelligence system when used in the SME sector. They concluded that BI system in the cloud opens up new possibilities for SMEs, other organisations, who



need effective support when taking management decisions, and are not able to implement and maintain BI system.

Thompson and Walt (2010), investigated how could cloud computing be used to provide BI solution to businesses over the internet. They found that data mining tools in the cloud could help businesses make more accurate and timely decisions. Moving huge data sets to the cloud can be expensive, and security is an issue while using cloud solutions.

OBJECTIVES

To understand the motives behind selecting cloud based BI solutions from the viewpoint of SMEs and the benefits and challenges associated with it.

DISCUSSIONS

Business Intelligence

Business intelligence (BI) software collects and presents business data in user-friendly formats such as reports, dashboards, figures, etc. Business users can use BI to access various types of data, including historical and current data, thirdparty and internal data, semi-structured and unstructured data. Users can use this data for gaining insight into company performance, identifying issues , discern market trends, and discover new revenue or business opportunities.

With the help of BI, the data relevant to the organization which is scattered at different locations within an enterprise and outside it and which may impact an organisations decision making capabilities are brought at one common place.

The ultimate goal of BI initiatives is to make better business decisions that enable companies to increase revenue, improve operational efficiencies, and gain competitive advantage over competitors. To achieve this goal, BI involves combining analytical, data management, and reporting tools, as well as various methods for managing and analyzing data.

Business Intelligence and SME

The SME sector contributes towards a sizeable portion towards the GDP of any country. It is also a major contributor in the socio-economic development of any country. In India, an organization is labelled as a small or medium depending on the level of turnover which is Rs. 50 crores to be considered as small and Rs. 250 crores to be tagged as medium.

The benefits of business intelligence (BI) should also be made available to SMEs so that they are better equipped in making important business decisions, but lack of financial resources to invest in BI solutions and human resources trained in handling such state-of-the-art equipment prohibit SMEs to exploit BI solutions. Another reason could be the lack of BI solutions which are compatible with the level of operations in an SME. Most BI solutions are designed keeping in mind large organisations and it may incompatible with the existing IT resources in an SME.

For addressing this problem large software giants have begun developing specialized BI solutions catered towards the SMEs. These do not require heavy investment in hardware, software, data warehouse, various assets and are compatible with their level of operations. Among these the most suitable option from an SMEs perspective is cloud based BI solutions.

Business Intelligence on the Cloud

The basic concept behind Cloud BI or BI on the cloud is to provide BI solutions to enterprises by leveraging cloud computing infrastructure. Cloud computing is a platform that provides computing resources primarily related to data storage, networking, software, analytics, and intelligence as a service over the internet without requiring users to maintain much physical infrastructure on their premises. In this model, users pay the cloud service provider based on their usage; in other words, cloud computing is a pay as you use model.

By combining the power of BI with the flexibility of cloud computing, a revolutionary concept cloud BI has emerged, which involves delivering BI solutions as a service over cloud architecture at a much lower cost and with greater flexibility than traditional onsite BI solutions.

As this system is cost-effective for SMEs and does not require trained personnel, cloud BI solutions are becoming more popular among SMEs. The advantages and challenges of using cloud BI solutions by a SME are discussed below.

Advantages of Cloud BI

Lower Cost- Users only pay for what you need in BI on the cloud, which lowers the total cost of your BI system by reducing overhead resources. The cloud also lowers the cost of maintenance and administration.

Flexibility-Employees can access data and services from anywhere using their devices in cloud computing. Businesses can use the public cloud with a hybrid cloud solution as and when demand spikes.

Easy to implement - The cloud business intelligence model is faster to implement than traditional BI tools because it does not require additional hardware or software installations. It is also convenient for users to set up, operate, and navigate. This also means additional cost savings as a result of fewer resources or less involvement from the in-house IT team.

Agility -Many SMEs are now benefiting from the cloud BI's agility and accessibility in providing relevant information. Because cloud BI applications are accessible from any web browser or mobile device, end users can gain easier access to the system. The cloud infrastructure's scalability also allows multiple users to access the system at the same time without affecting the system's speed or performance.

Challenges in implementing Cloud BI solutions

Problem of transferring data to cloud - Moving a large amount of data over the internet in a reasonable amount of time will be difficult for an organisation. Moving data will take a long time if the network is slow. Because the organisation may be concerned about the confidentiality of its data, the process of moving data must be more secure.

Data Security - Concerns about data security, including confidentiality, integrity, and availability, is primary to the cloud. Concerns about security may be a factor in some



organisations. Nonetheless, as it is expected that as more organisations migrate to the Cloud, the worries will fade. In quite a instances, cloud providers provide a more secure atmosphere than what is currently available on the client's premises.

Vendor Maturity - Because there are numerous cloud BI providers with varied offerings, it can be difficult to select the appropriate vendor based on desired user requirements and vendor capabilities.

Integration with on premise data – Integrating data on the premises with cloud components is difficult because it still exists in silos and requires access to data behind the firewall.

CONCLUSION

BI is a futuristic tool that gathers all relevant data in one place, allowing a clear indication of the trend of organisational performance to be visualised. This enables a company to make critical business decisions while staying one step ahead of its competitors. Despite all its positive aspects, BI is not widely used by SMEs due to its implementation cost and lack of skilled personnel to manage such systems. To address this issue and increase BI adoption among SMEs, BI solution developers are now focusing on providing the same solution via a cloud-based platform. Cloud BI solutions have been designed with scalability, ease of implementation, and affordability in mind. Keeping aside the challenges in its implementation, this will indeed prove to be a boon for SMEs and support them in their endeavour for economic and development.

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KLIPPEL-FEIL SYNDROME

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SUMMARY

Introduction

Klippel-Feil Syndrome is a complex condition, characterized by fusion of cervical vertebrae 2 and 3; however, it has been shown in several studies that fusion of the vertebrae also affects different cervical vertebrae. It is caused by a failure of the normal division or segmentation of the cervical vertebrae in early fetal development. This anatomical variant can lead to chronic headaches, limitation of neck movement and pain in the neck muscles. In addition, it may manifest neurological symptomatology (1)(2).

The aim of this literature review is to consider this malformation as one of the main differential diagnoses in patients who present neurological symptoms or a history of trauma; since, as has been shown, the presence of this malformation can be confused with the presence of a cervical fracture; therefore, patients who present with clinical or imaging alterations need to be carefully evaluated to confirm or rule out the presence of this pathology.

Conclusions

Klippel-Feil, being a very rare pathology, is often forgotten, so the doctor must remember the most important clinical-epidemiological characteristics, since this pathology can be considered as a differential diagnosis in patients with a pathological condition located in the cervical region; in addition, this pathology should be considered when the patient has systemic pathologies, especially of the renal type. **KEY WORDS:** Klippel-Feil syndrome, cervical spine, congenital spinal fusion, radiological abnormalities.

INTRODUCTION

This pathology occurs due to defective segmentation, occurring between the 3rd and 8th week of embryonic development at gestation, caused by failure of normal segmentation or formation of the cervical somites. Interestingly, approximately 50% of patients with Klippel-Feil

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will have concurrent scoliosis. Fifty percent may have atlantoaxial instability, 30% will have renal disease and 30% will be deaf (3)(4).

AETIOLOGY

It has been hypothesized that vascular abnormality, global fetal insult, primary neural tube complications or related genetic factors may lead to the development of this condition. In addition, mutations in the GDF6, GDF3 and MEOX1 genes may cause this pathology; for example, GDF6 properly forms bone, while GDF3 is necessary for bone development. MEOX1 regulates the separation of the vertebrae. Therefore, GDF6 and GDF3 abnormalities are inherited in an autosomal dominant pattern, and MEOX1 mutations are autosomal recessive (5).

EPIDEMIOLOGY

This syndrome occurs in approximately 1 in 40,000 to 42,000 newborns, with a slight preference for females. It should be mentioned that asymptomatic pediatric patients, who do not undergo radiological imaging of the neck and have no obvious physical deformity, are likely to grow into adulthood unaware of their condition (6).

CLINICAL MANIFESTATIONS

This includes a clinical history, physical examination and a detailed family genetic history. It should be remembered that this syndrome may predispose to congenital spinal stenosis, whereby a relatively low impact or low energy injury can lead to significant neurological deficits (7).

Physical examination usually demonstrates a shorter neck stature and a lower hairline. Neurological symptoms that may manifest are radiculopathy and myelopathy (8). There is a classic clinical triad present in up to 40-50%: low hairline, short neck and restricted neck movement; however, this is only present in 50% of patients with Klippel-Feil syndrome. (9)

Laboratory tests are used to rule out other conditions and assess organ dysfunction. These include tests for cardiac, gastrointestinal and urinary disorders; along with this, an echocardiogram, renal ultrasound and intravenous pyelogram, respectively, may be performed. An audiological evaluation is also important (10).

Imaging evaluation of the cervical spine is performed with X-ray, computed tomography and magnetic resonance imaging. A thorough evaluation of the cervical spine is important before proceeding with procedures in the cervical region due to the risk of atlanto-axial subluxation and craniovertebral dislocation to avoid spinal cord injury (10).

X-Rays

This study demonstrates fusion of the vertebral bodies, facets and even the spinous processes. The examination should include anteroposterior, lateral and odontoid projections in flexion and extension. These studies assess the stability of the atlanto-axial, atlanto-occipital and sub-axial joints. Imaging of the thoracic and lumbar spine should be performed, as these may illustrate scoliosis, spina bifida or hemi-vertebrae (10).

Magnetic Resonance Imaging

It is useful to assess the integrity of the spinal cord, disc space, nerve tracts, ligaments and other soft tissue structures or when neurological deficits are present; or to rule out other spinal cord anomalies such as Chiari malformations and diastematomyelia (10).

Computed Axial Tomography

Diagnosis by tomography is very good, especially when used with 3D reconstruction, as it allows the characteristics of Klippel-Feil Syndrome to be highlighted and manifested, among which are mainly the anomalies of the vertebrae and ribs (11).

TREATMENT

Non-operative management consists of symptom management. For patients with 1 or 2 level fusions below C3, monitoring and conservative treatment is sufficient. When there is fusion above C3, especially at the occiput, contact sports should be avoided and are more likely to be symptomatic and prone to risk of spinal injury. Operative management is only performed in patients with persistent neurological symptomatology, myelopathy, new onset muscle group weakness and documented spinal instability are candidates for surgery. Spinal deformities and instability drive surgical decisions (12) (13).

The prognosis of the disease depends on the Samartzis classification:

- Type I: congenital single level fusion of the cervical segment
- Type II: multiple congenitally fused, non-contiguous, congenitally fused segments
- Type III: multiple congenitally fused contiguous segments in the cervical region.

Samartzis et al. noted that, over an eight-year period, approximately two-thirds of patients with Klippel-Feil syndrome had no symptoms. Those with a type I deformity had more axial symptoms, and with type II and type III were the patients who developed myelopathy and radiculopathy (13) (14).

SOME CLINICAL STUDIES AND CASES TO CONSIDER

In a retrospective, linear, descriptive and observational study of patients with Klippel-Feil syndrome, it was found that, of the 46 patients, 24 were female and 22 male, with an average age between 1 month of birth and 14 years, and all cases were sporadic. As for the relationship with heart disease, after performing an echocardiogram, it was found that the most frequent were: Atrial Septal Defect, Ventricular Septal Defect and Pulmonary Stenosis. No patients were found to have died as a result of this pathology (15).

A clinical case reports a 5-year-old female patient with a physical examination showing a short neck, low posterior hairline, limitation of lateralisation movements, for which a cervical X-ray was performed showing fusion blocks between C1-2-3, C4-5 and C6-7; the study was complemented by a computerized axial tomography of the thorax showing multiple hemi-vertebrae in the upper third of the thoracic vertebrae corresponding to ribs I-IV (14).



The clinical case report of a 26 year old female patient with a history of hypothyroidism and hiatal hernia, with the following symptoms: retronasal mucous secretion and swallowing problems, with a physical examination showing: low posterior hairline, short neck and some limitation

The patient was suspected of having Klippel-Feil syndrome. A simple lateral neck X-ray was performed, where fusion of the vertebral bodies and posterior cervical arches at the level of C5-C6 was identified. The diagnosis was confirmed with a computed axial tomography of the neck and skull, which showed fusion of the cervical vertebrae and a left Haller's cell was identified as an anatomical variant, respectively. In addition, cardiac, pulmonary, nervous and renal malformations were ruled out (16).

Another clinical case report of a 52-year-old woman with a history of arterial hypertension and recurrent episodes of cervicalgia, with no history of trauma, with the following symptoms: cervicalgia of one month's evolution with mechanical characteristics, non-radiating, which improved with rest and associated dizziness. Physical examination revealed: short neck and pain on palpation of the cervical musculature, without cervico-dorsal paravertebral apophysalgia on palpation. Limitation of cervical hyperextension and rotation. A simple X-ray of the cervical spine was requested, showing synostosis at C6-C7, confirming the diagnosis of Klippel-Feil syndrome. Magnetic resonance imaging confirmed the diagnosis and showed the absence of neurological complications secondary to the anatomical alterations due to this syndrome (17).

CONCLUSIONS

Although Klippel-Feil syndrome is a very infrequent pathology, it is necessary to always keep it in mind and take it into account, because it is characterized by being a differential diagnosis of several entities that a patient may present. In most cases, this cervical alteration is usually diagnosed occasionally, sporadically and independently of the reason for the patient's admission and treatment. However, the patient may develop symptoms related to this syndrome, which is why the corresponding speciality (traumatology, cardiology and neurosurgery) must always be consulted for its control and management.

FINAL STATEMENT

This review is based on an article by Santiago Vintimilla and María Antonieta Flores called "Síndrome de Klippel-Feil. Revisión Bibliográfica", whose authors authorized the translation and rewriting from the Spanish language version to the english language version.

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THE INDO-PACIFIC QUAD FACTOR AND INDIA'S POSITION

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The Quadrilateral Security Dialogue, or Quad, gained momentum during this same crisis as the Covid-19 outbreak brought the world to a halt. Although it is a top priority for the Quad, opposing China now seems to be the main agenda due to the changing security landscape. That is to say, even if the Quad has not explicitly acknowledged this, China is unquestionably the major issue. The entire logic for the creation of the Quad is quantified by Beijing's exclusion from the four-member grouping. In this situation, the Quad can be viewed as a novel type of security partnership for the twenty-first century.

The growing polarisation brought on by the US-China conflict, in which each country calls for others to "join" its side, adds to the grouping's complexity. The Quad is being compelled by the expanding contingencies to play a bigger part in battling both conventional and unconventional security challenges. Following are the crucial questions: Is there a "fire-fighting" mode for the Quad? If so, does China become concerned? What part does India play in the Indo-Pacific region?

QUAD STRATEGICALLY TURNED OFF THE VIRTUAL MODE IN TOKYO

Since the group's relaunch in November 2017, the United States, India, Japan, and Australia hosted the second Quad Foreign Ministers' Meeting in Tokyo on October 6, 2020. It was the second virtual meeting of its kind following the first one in June and the first high-level Quad gathering since the 2019 foreign minister-level meeting that took place in New York in conjunction with the UN General Assembly meeting. The Tokyo summit was held as a "in-person" event during the epidemic, demonstrating its significance by rejecting the new norm of virtual meetings, while it was undoubtedly not symbolic in orientation.

The time and setting of the meeting—amid mounting worries about Beijing's assertive behaviour and escalating rumours about China's management of the COVID-19 outbreak in Wuhan—added to the significance of the Tokyo gathering. In response to what Washington has referred to as China's "exploitation, corruption, and coercion" of smaller states in the area, the delegates called for intensifying coordination to realise a free and open Indo-Pacific. In addition, US Secretary of State Mike Pompeo said, "Once we've institutionalised what we're doing, the four of us together, we can begin to build out a true security framework." During the news conference.

Beijing continues to accept the outdated Asia-Pacific framework rather than adopting the new Indo-Pacific nomenclature because it views the Quad as a united front against China from a Cold War mentality. China, as was expected, voiced its displeasure with the Tokyo summit, railing against "forming exclusive cliques," "targeting third parties or undermining third parties' interests," and insisting that such cooperation should "contribute to regional peace, stability, and development rather than doing the opposite."

With these systemic dynamics at work, one can argue that while the pandemic has forced the Quad to take additional action on nontraditional security objectives—aiming at human security against fighting the virus—on the other hand, the situation has also stretched the Quad's security envelope, given the need to counter China's growing adventurism and "wolf warrior" diplomacy.

Undoubtedly, one may argue that the pandemic's impact on global health has strengthened regional and external powers' strategic alignment as they work to increase their influence and fend off external threats, as demonstrated by the Quad's active participation in COVID-19.

QUAD IN ACTION: CHINA IS THE ROOM'S UNSEEN ELEPHANT

The rise of China, the expansion of India's economic and strategic clout, and—most importantly—the increasing significance of the Indian Ocean as a strategic trade corridorwhich transports nearly two-thirds of the world's oil shipments and a third of bulk cargo-have necessitated a shift in the security architecture from the Asia-Pacific to the Indo-Pacific. These circumstances have caused regional stakeholders to become more vocal about the need for a free and open Indo-Pacific, which has resulted in the Quad's re-establishment. The commitment of member states to uphold a free, open, inclusive, peaceful, and prosperous Indo-Pacific region based on a rulesbased international order, supported by ASEAN centrality, the rule of law, sustainable and transparent infrastructure investment, freedom of navigation and overflight, mutual respect for sovereignty, and peaceful resolution of disputes forms the basis of their shared Indo-Pacific vision. It should be



noted that Australia was one of the first nations to formally adopt the term Indo-Pacific in its 2013 Defence White Paper. Nevertheless, the phrase gained popularity after US President Donald Trump called for a "free and open Indo-Pacific" during his 2017 trip to Asia, a region where independent nations could "thrive in freedom and peace" and all states "play by the rules."

The tsunami of "2004 gave the grouping of the four Indo-Pacific democracies the initial impetus to urge for cooperation in humanitarian aid and disaster relief activities. The coalition has changed over time, though, becoming one with a strategic vision centred on the escalating worries about free and open seas and a rules-based order. After a 10-year break, the formal dialogue between the four countries was resumed in late 2017 with a meeting in Manila on the fringes of the ASEAN and East Asia Summits. Since then, the Quad has met twice a year, with the "Quad Plus video-conference" being held frequently during the pandemic to include additional interested states in the dialogue. This demonstrates how the Indo-Pacific has evolved from its original idea as a geographical construct to one that is now seen differently by many nations as a political and strategic construct.

The gathering upgraded the dialogue to that of a foreign minister or secretary of state in 2019, which is noteworthy. The group was elevated to "Quad Plus," adding three new Indo-Pacific nations-New Zealand, South Korea, and Vietnam-as well as some overseas stakeholders-Israel and Brazil-as COVID-19 became a major priority. The logic of convergent security interests under the pandemic and working together to determine a course of action is what motivates this expansion. Additionally, the Ouad's security and political discourse has been heavily influenced by the China factor, since each member is currently experiencing heightened tensions with China. For instance, a bilateral trade war and subsequent diplomatic repercussions have put Washington and Beijing at odds since 2018. Since April 2020, India and China have been fighting militarily along the Line of Actual Control. On June 15, 2020, a violent clash in the Galwan Valley caused the first casualties in more than 45 years. Canberra and Beijing are at odds diplomatically as a result of a number of defence, trade, and foreign policy disagreements. Similarly, as China's assertiveness in the area has increased, tensions between Japan and China in the East China Sea have gotten worse.

The goal of the gambit was to show symptoms of conflict with China while battling a forceful and aggressive China that was characterised by unilateral behavioural tendencies. This is evident in China's increased island-building activities and militarization of the South China Sea, the establishment of the Senkaku Islands' air defence identification zone in the East China Sea, the Belt and Road Initiative's (BRI) debt-trap lending, the military standoffs in Doklam in 2017 and eastern Ladakh in 2020, and China's expanding footprints in the Indian Ocean region (IOR).

Despite these unilateral Chinese actions, the Quad has consistently insisted that it is not hostile to any nation, but rather that the expansionist tendencies of China are a manifestation of the Quad's growing anti-China stance. As was mentioned, China is no longer the unknown menace. This was made clear at the Tokyo meeting, where participants sharply criticised Beijing for COVID-19 and its increasing adventurism in the Indo-Pacific. The implications of this new anti-China stance are significant, making the security of the Indo-Pacific region a top priority. The South China Sea, Taiwan, the East China Sea, and the Himalayan border are poised to be the most likely catalysts for a direct conflict with China.

THE QUAD WORRIES CHINA

China's once-fantasy worries about the Quad are now valid. The Quad's rising power is what fuels this. The Quad's key political and strategic dimensions are also becoming more important and gaining momentum. Australia's participation in the India-led 24th Malabar Naval Exercise in November 2020, alongside the United States, Japan, and Australia, created a precedent, making it the grouping's first-ever joint military exercise and demonstrating their commitment to cooperating for common security objectives. Australia had been excluded from the exercise since 2007, when the first iteration of the Quad had collapsed. Previously, Malabar exercises were held with the United States since 1992 and with Japan since 2015. Australia's involvement in the 2020 exercise thus seemed to put to rest concerns about the members' dedication to the reorganised grouping.

Given that China's great-power aspirations in the Indo-Pacific fall short because it is not a major participant in the IOR, this display of force in the Indian Ocean heightens Beijing's concerns in the area, particularly in the maritime domain. Beijing has taken a number of proactive initiatives to increase China's presence in the IOR. First, China has stationed ships and submarines from the People's Liberation Army Navy (PLAN) in the western Indian Ocean and conducted live-fire drills there as part of anti-piracy operations. Beijing's intention to defend its strategic interests in the Indian Ocean is reflected in these actions. Second, China claims that it has constructed its first overseas permanent naval military facility in Djibouti as a support base for executing its escorting, peacekeeping, and humanitarian relief missions in Africa and West Asia. Third, the expansive "21st Century Maritime Silk Road," a component of the BRI, has improved China's maritime connectivity to the IOR and essentially filled the gap left by its "offshore" status. Under this initiative, China has a hand in developing ports in countries like Pakistan, Sri Lanka, and Myanmar, including Gwadar, Hambantota, and Kyaukpyu. The current situation is being drastically altered, and more importantly, the new Indo-Pacific security architecture is being shaped as a result.

Given these factors, one can convincingly claim that COVID-19 has strengthened the Indo-Pacific security architecture, as evidenced by the Quad's increasing activism, which is indeed giving China more cause for concern than ever. The supporters of a free and open Indo-Pacific are more motivated than ever to band together in order to combat shared dangers, both conventional and unconventional, since the global tide is shifting against China.



INDIA'S GREATER CONTRIBUTION TO THE INDO-PACIFIC

China's expanding influence in the Indian Ocean is tempered by India's geographic and geopolitical importance in the Indo-Pacific. The need for such a counterbalance is primarily motivated by India's security concerns, which are primarily focused on China's encirclement policy through port facilities in India's neighbourhood, particularly Gwadar and Hambantota, as well as the desire to maintain and protect open and free sea lanes of communications against concerns regarding China's chokepoint in the South China Sea and increasing maritime presence in the Indian Ocean under the guise of antipiracy operations.

India's strategic importance in the Indo-Pacific can be seen as having four components. The Indo-Pacific architecture, in contrast to the Asia-Pacific architecture, offers New Delhi the chance to transcend its long-described middle-power status. This is supported by India's entry into the club of superpowers, specifically that of the United States and Japan, and by the development of close strategic ties with Washington and its regional allies. This greatly strengthens India's desire to become a great power and its capacity to project power throughout the Indo-Pacific region and beyond.

Second, India's Act East Policy and Extended Neighborhood Policy are automatically strengthened by New Delhi's active participation in the Indo-Pacific region. New Delhi's improved ties with ASEAN members like Vietnam, Singapore, Thailand, and Myanmar serve to support this development.

Third, the growing defence relationship between India and the US serves as a potent counterweight to India's adversaries. The four foundational agreements signed by New Delhi and Washington, including the General Security of Military Information Agreement (GSOMIA, 2002), the Logistics Exchange Memorandum of Agreement (LEMOA, 2016), the Communications Compatibility and Security Agreement (COMCASA, 2018), and finally, the Basic Exchange and Cooperation Agreement (BECA, 2020), which encourages interoperability, serve as an example of this. Most crucially, the improved ties give India's military a considerable boost, especially when it comes to hitting targets with pin-point precision, which is crucial for India to monitor Chinese operations along the Himalayan border and gauge its expanding presence in the Indian Ocean.

Additionally, American weaponry exports to India have increased from being insignificant to 15 billion USD. Additionally, more frequent military drills between India and the US, such Tiger Triumph, the first bilateral triservice amphibious drill between the two countries, have significantly improved interoperability and camaraderie. Being a member of the Blue Dot Network also gives New Delhi a compelling alternative to China's BRI.

Fourth, the India-Australia relations, which were upgraded to a Comprehensive Strategic Partnership in 2020,

significantly strengthen India's strategic importance. In addition, Canberra and New Delhi inked nine agreements, two of which the Defence Science and Technology Implementing Arrangement and the Australia-India Mutual Logistics Support Arrangement—provide a foundation for further defence collaboration between the two nations.

Fifthly, and most critically, India demonstrated its ability to act quickly in a crisis by giving medical assistance to its close neighbours, including the Seychelles, Mauritius, Sri Lanka, and the Maldives, during COVID-19. Indeed, such aid was given on a larger international basis, with New Delhi helping Iran and Italy, two of the nations most severely affected by the pandemic. In order to improve their readiness for combating the epidemic, India also sent medical fast response teams to Comoros and Kuwait. Nine citizens of the Maldives were also evacuated by India from Wuhan, China, the location of the coronavirus outbreak.

Additionally, India promoted virtual summits such as the South Asian Association for Regional Cooperation (SAARC) web conference (15 March 2020) and the "Extraordinary Virtual G20 Leaders' Summit" in order to create a worldwide reaction to combat the pandemic (26 March 2020). A SAARC Emergency Response Fund was also established in New Delhi for COVID-19, with an initial donation of 10 million USD from India. The Indian Armed Forces have also been actively involved in advancing India's mission abroad. A relief aircraft from the Indian Air Force (IAF) evacuated 76 Indians and 36 other persons from Wuhan in February. The Indian Navy's warship INS Khatri (5,600-ton landing ship) deployed under Mission Sagar, carrying medical teams, consignments of essential medicines, and food supplies to Maldives, Mauritius, Madagascar, Comoros, and Seychelles. In collaboration with the Indian Army, the IAF launched the 18-hour Operation Sanjeevani to deliver 6.2 tonnes of essential medicines and hospital consumables to the Maldives.

In addition, as nations want to move production away from China, India is considered as one of the new "preferred" investment destinations in the world. India is a popular option because of the vastness of its market and, most crucially, the low cost of labour. Notably, Samsung of South Korea closed its operations in China and moved its manufacturing facilities to India, while Apple created a manufacturing facility in conjunction with Foxconn in that country. India is looking for land parcels all around the nation to facilitate these anticipated investments in response to these changes. This strengthens India's position in the system of supply chains around the world.

There is little debate about India's rising role in the Indo-Pacific, both as a significant participant and a responsible actor. India has already taken on more responsibility in the area with its active engagement, which calls for a bigger and more significant role in the post-COVID era. As a result, India will likely have more room to manoeuvre in the post-COVID international system, where it is thought to be one of the major forces in setting policy and safeguarding allies' interests in the Indo-Pacific. The Quad framework has in fact been expanded by



COVID-19, enabling important stakeholders to actively participate in addressing urgent traditional and nontraditional regional concerns.

CONCLUSION

The Quad is undoubtedly becoming one of the most important multilateral for a devoted to an increased security collaboration in the post-COVID-19 world order, given the escalating pace and scope of the group's operations. An active Quad also helps eliminate the long-held myth that the Indo-Pacific region is essentially inactive. Each of the Quad's four members must take on larger roles in balancing the dangers and power struggles in the Indo-Pacific because the stakes are higher than ever. Each step the Quad takes will make it more difficult for Beijing to realise China's aspirations to become a big power. China would undoubtedly become uneasy if the Quad emerges as a united front that supports a free and open Indo-Pacific. Furthermore, if China keeps pushing the boundaries of security and tests the commitment of the Quad members, the alliance will develop into precisely the kind of anti-China unit that Beijing fears.

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THE IMPORTANCE OF THE INDO-PACIFIC: A STUDY OF THE GEOPOLITICAL EFFECTS ON CHINA AND INDIA

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ABSTRACT

The Indo-Pacific region is currently a catchphrase that various nations use to describe their outlooks or visions of the future. India will need to manage its ties with China and Japan if it hopes to achieve its goal of a stable Indo-Pacific. The centres of the world's economic growth have shifted to Asia, first to the Asia-Pacific region and then to the Indo-Pacific region, which includes South Asia. One could argue that the more expansive Indo-Pacific definition of Asia and the Asia-Pacifi prefer the natural evolution of commerce, investment, and energy flows over the more restrictive boundaries. The significance of the Indo-Pacific area is the study's main topic. The majority of these problems are geopolitical in nature, like domination in the area. We mostly relied on secondary data for this analysis, which we acquired from a variety of books, journals, reliable internet sources, academic literatures, and websites. The report attempts to outline ways to reduce the strategic issues that India is now facing. This study will be beneficial to academics, decision-makers in foreign policy, security, and border influence strategy.

1. INTRODUCTION

It's a modern idea; the Indo-Pacific region first came up for discussion around ten years ago, albeit its emergence was hardly remarkable. The Indian and Pacific Oceans' association as tactical theatres is one of the most important factors in this phrase's popularity. (Academy, S. 2019-04-07). Additionally, the centre of gravity shifted toward Asia (Kamraju, M. 2019). The Indian and Pacific Oceans, which offer the sea lanes, are the cause of this. A large portion of the world's commerce travels through these routes. The universe's centre of gravity once lay across the Atlantic, meaning that trade still largely came from that region, although that was before the Cold War. India was previously not included in the term "Asia Pacific," which was widely used during the Cold War. India's importance to the new structure is demonstrated by the switch to the phrase "Indo-Pacific." Given its geopolitical and geostrategic significance, the Indo-Pacific region evolved into a hub of power politics in the twenty-first century. Due to its marine connectivity between the Pacific and Indian regions, it continues to be a centre. Meadows (Chacko, P. 2016). The phrase "Indo-Pacific" is interpreted variably by various groups. India views the area as being inclusive, transparent, integrated, and impartial. India is still concentrating on the potential, difficulties, and tactical links between the Indian and Pacific Oceans. The United States of America views the Indo-Pacific as free and open, highlighting the importance of the regional laws or moral standards in an effort to restrain China's influence there. The Association of Southeast Asian Nations views the Indo-Pacific region as a

consociative model that offers China both stakeholders and opportunities for cooperation. (Academy, S. September 7, 2019) Gurpreet Khurana, a marine strategist and executive director of the New Delhi National Marine Foundation, coined the phrase "indo-pacific" in 2007. He recently stated In the Washington Post that the new phrase has changed the new strategic mind map since China's "reform open up" in the 1980s (Japan. N.d.) 6 (Khurana, G. 2017)

2. PURPOSE OF THE RESEARCH

This essay's main goal is to highlight how important the Indo-Pacific area is to both China and India.

3. INFORMATION AND TECHNIQUE

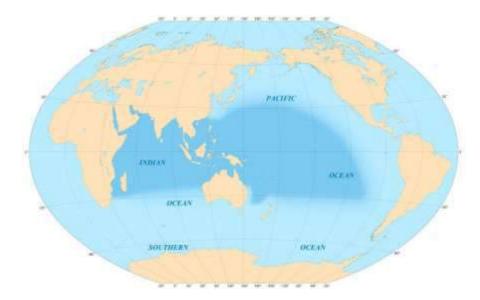
Secondary data from a variety of sources, including books, published journals, newspapers, government regulations, reliable websites, and the internet, has been used to write this research. An effort has been made to consider the general goal of the research when analysing this publication.

4. STUDY SUBJECT

The Indo-Pacific region, sometimes known as the Indo-Western Pacific or Indo-Pacific Asia, is a biogeographical area of the Earth's oceans that includes the tropical waters of the Indian, Western, and Central Pacific Oceans, as well as the seas that connect them in the general area of Indonesia. It excludes the temperate and polar regions of the Indian and Pacific Oceans, as well as the tropical eastern Pacific along the American Pacific coast, which is likewise a separate maritime domain.



Indo Pacific Region



Source: Wikipedia

5. CONCEPTUALIZING THE INDO-PACIFIC REGION

The Indo-Pacific is often a newly coined term in the realm of international law. It expresses the interests of the Indian and Pacific Oceans' littoral regions. Establishing the federal integrated system's legitimacy in the area. Understanding the architecture of the Indo-Pacific region is crucial for answering questions about the area between the Indian and Pacific Oceans. An estimated 35.7% of the world's population lives in the Indian Ocean region, which takes approximately 20% of the planet's ocean surface. It is the third-largest Ocean, behind the Pacific and the Atlantic. It is somewhat smaller than the Atlantic Ocean and half the size of the Pacific Ocean. (Braun, 1982). The Indian subcontinent, the Arab Peninsula, and the African Continent all share borders with the northwest portion of the Indian Ocean Region. Thailand, Indonesia, and North West Australia border the eastern portion. Australia's coast and Antarctica's boundaries are both shared by the south. Additionally, the Indian Ocean region has marine boundaries with almost 38 coastal states (Michel & Sticklor, 2012).

Despite having maritime boundaries together, the area was overlooked throughout the Cold War era due to rivalry over superpowers. Due to the naval advancement of other regional countries, the region is currently at the focus of global politics (Prabhakar, 2016). Major checkpoints are also located in the Indian Ocean region, including the Suez Canal/Horn of Africa, the Strait of Hormuz, Bab Al- Mandeb, the Strait of Malacca, the Sunda Strait, and the Lombok Straits (Michel, & Sticklor, 2012). Thus, the Indian Ocean is the centre of interest in Asian politics due to its powerful regional influences and its geostrategic and economic significance.

German geographer Karl Haushofer coined the phrase "Indopazifischen Raum" in 1920 as part of the geopolitical and geographical debate (Saha, 2016). However, the phrase was frequently used by the Australian Fisheries Council after the Cold War to establish the Indo-Pacific Fisheries Council (hence, IPFC) in 1948. (Singh, 2014).

Similar to how China has emphasised the term "Indo-Pacific," India has done the same. Former Indian Prime Minister Jawaharlal Nehru had foreseen this since World War II. According to his 1944 book "The Discovery of India," India would play a crucial role in the emerging regional dynamics as the Asia-Pacific region becomes a geostrategic entity in world politics (Mishra, 2014).

Additionally, in 2011, the word was used by former foreign secretary Shyam Saran to express US acknowledgment of the Pacific and Indian Oceans as a connected geopolitical region. India, however, has quite different goals for the Indo-Pacific than do the United States, Japan, and Australia. It sees the Indo-Pacific as a geostrategic chance to establish Indo-Pacific region regionalism and update its own prior foreign policy plan (Chacko, 2012).

Even though it is only one of the world's major oceans, India depends heavily on the Indian Ocean. This region is where India's marine safety is focused, and its independence is reliant on the water's surface. India cannot achieve industrial advancement, economic expansion, or a stable political system unless its coastlines are protected (Ballabh, 2013).

Man Mohan Singh, a former prime minister, used this phrase during the 2012 India-ASEAN summit. Additionally, former American Indian ambassadors like Nirupama Rao and later Jai Shanker have used the expression in diplomatic contexts.

Arun Prakesh and Devendra Joshi, both former naval officers, have also spoken the statement at various points in time. The former director of the Defense and Intelligence Agency, in a similar vein, also focused Indian interests outside the Indian Ocean region on establishing geostrategic proximity



to Indo-Pacific coastline states. (Scott, 2012) Over the past two decades, India has mostly faced non-traditional security concerns from the area. It has so taken steps to revive the historical, cultural, economic, and maritime linkages of the area. Due to its proximity to the region and its current bilateral and multilateral littoral responsibilities, it is likewise stepping up its protection and defence. However, the geostrategic importance of the Indo-Pacific area also attracts other international and regional powers, including the US, China, Russia, Japan, and Australia. In this scenario, regional countries like Australia and Japan are likewise increasing their geostrategic and security engagement with the South East Alliance.

6. INDIA'S VIEW ON THE INDO-PACIFIC

The US, Australia, Japan, and Indonesia are just a few of India's particular allies that view the Indo-Pacific as Asia Pacific plus India (Academy, S. 2019, September 07). India is being incorporated into the strategic Asia Pacific framework. In order to effectively combat China, they want India to be present in the South China Sea and the East China Sea. India does its best to work with other nations to provide a framework for national security and peace. For there to be shared wealth and security, the nations must negotiate a regional regulatory framework. The Indo-Pacific region represents a free, open, and welcoming space for India. All of the regional countries are included, as well as those who have an interest in it. India takes into account the region's physical dimensions, from the coasts of Africa to those of America.

The rule-based, free, equitable, and secure trade environment in the Indo-Pacific region, which raises all countries on the tide of trade and investment, is promoted by India. The nation's expectations for the Comprehensive Regional Economic Partnership (RCEP) 22 are the same. India is working toward a united ASEAN rather than a fractured one, in opposition to China. China pursues a conquest strategy of "divide and rule," pitting some ASEAN members against one another. India disagrees with the US Indo-Pacific version, which aims to restrain Chinese dominance. Instead, India is searching for opportunities to work with China.

The region is being democraticized by India. Before, the location resembled a lake in the United States. However, there is worry that the land will now turn into a Chinese lake. One instance of this is the battle surrounding Scarborough Shoal. India opposes any participant in the area seizing power. India is seeking to prevent China from having influence over the region by trilateral alliances with nations like France-Australia-France and Indonesia-Australia-Indonesia.

7. CHINA: A CHALLENGE OR A THREAT

China now poses a threat to the countries of the Asia Pacific and even the interests of the Indian Ocean. A few hundred miles off the coast of India, China still controls the port of Hambantota (Sri Lanka). China colonises the region by providing military hardware to its neighbours, including submarines to Myanmar, frigates to Sri Lanka, equipment to Bangladesh, and equipment to Thailand.

Because several ASEAN members were ruled by China, there is a risk that ASEAN's unity in the Indo-Pacific region will be compromised. However, given that China is ASEAN's biggest commercial partner and cannot be eclipsed by the entire organisation, India's relations with the grouping are further jeopardised.

India and China's interests align on matters like globalisation, climate change, etc. despite many differences. India and China are also a part of other international organisations including the BRICS, SCO, etc. China is therefore perceived as more of a threat to India's influence in the Indo-Pacific than a challenge to its role in the area.

The growing Indo-Pacific framework is riddled with inconsistencies. The US supports respect for the rule of law and international conventions, as well as freedom of navigation and overflight. Despite the Treaty not having been ratified, it upholds several UNCLOS principles.

China is referred to as an economic and strategic rival in the 2018 United States Asia Reassurance Initiative Act (ARIA), which emphasises the Indo-Pacific vs Asia Pacific. However, it also contains a substantial portion devoted to "promot[ing] US values in the Indo-Pacific area." China currently defends its expanding excursions into the IOR by asserting a historical right to the Indian Ocean. The lack of an important neighbouring nation like India is eroding the legitimacy of China's Belt and Road Initiative (BRI).

8. CONCLUSION

International law stipulates that nations in the area should have equal access as a right to use open areas in the air and on the water, including unrestricted trade, freedom of movement, and the peaceful settlement of conflicts.

Respect for sovereignty and territorial integrity, consultation, good governance, accountability, viability, and sustainability should be the cornerstones on which connectivity in the region is constructed. MDA is crucial for the security of the Indo-Pacific region. MDA presumes thorough knowledge of any maritime-related operation that might have an impact on the environment, economics, or safety.

The region needs security, stability, and rules that all the nations in it follow. Additionally, this will enable multipolarity in the region. The smaller states in the area hope that India will step up and provide them more alternatives, both militarily and economically. India should make an effort to meet its standards.

India requires strong naval capabilities, multilateral diplomacy, and economic integration with other countries to tackle the challenges of the Indo-Pacific region. SAGAR – Security and Growth for All in the Region is one example of how India should continue to pursue its vision for the Indian Ocean.



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IMPORTANCE OF PAPANICOLAOU STAINING IN GYNECOLOGIC CYTOLOGY

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ABSTRACT

As we all know pap staining also known as the universal smear is one of the most important procedures in cytology as it is used in gynecologic and non-gynecologic cytology smear. It is one of the most widely used stains in cytology, as it has reduced drastically the diagnosis of cervical cancer by 70% in highly developed countries. Pap smear is very important because it reveals the structure of the cell to be examined. examples include, the cytoplasm, nucleus and all cellular granules.

KEYWORDS: PAP Staining, Cytology, Importance, PAP smear, cervical

1. INTRODUCTION

A multicolored cytological staining procedure which was developed by **George Papanicolaou** in **1942[1].** This stain is said to have helped pathologist and laboratory researchers in making diagnosis worldwide. It is mainly noted for its viral detection of cervical cancer (3) formulations of this stain were published in 1942,1954 and 1960[2]. During the course of studies, it was noticed that there could be an improvement in our procedure for staining cervical and vaginal tissues [3]. It became a determinant for the diagnosis of premalignant and malignant lesions of the cervix. Malignant lesions on the cervix became the constant cause of death in women therefore making it one of the most common cancers in females.

The Papanicolaou[pap] test is a screening test done involving the uterine tissues and cells, it is considered to be simple, quick, painless and cost-effective [4].

2. USAGE

Pap staining is used to differentiate cells in smear preparation from various parts of the body, these specimens include;

- Sputum
- Synovial fluids
- Urine
- Cerebrospinal fluids
- Abdominal fluids
- Pleural fluids
- FNAC and other loose specimens containing smear

3. PRINCIPLE

The stain comprises of both basic and acidic dyes, while the basic dye stains the acidic cell components, the acidic dye stains the basic cell components. This occurs based on the ionic charges of the cell's constituents alongside the principle of attraction and repulsion of ions and dyes.

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five different dyes are used in three solutions as the main reagents used in the stain they include:

• **Hematoxylin:** This natural dye stains the cell nuclear blue with its affinity for chromatin attaching itself to sulfate groups on the DNA molecule [5].

Harris' hematoxylin is known to be one of the most common dyes used cytological due to its efficiency [6]

- Orange green 6: known as the first acidic counterstain that stains the cytoplasm of matured and keratinized cells. The targeted structures are stained orange in distinct intensities [7]
- EOSIN AZURE: This is the second counterstain and it is a combination of eosin Y, light green SF and Bismarck brown. EOSIN Y stains the cytoplasm of matured squamous, nucleoli, RBC and cilia. The most commonly used staining solution in cytology are EA 31, EA 50, EA 65.
- LIGHT GREEN SF: Stains the cytoplasm of active cells like columnar cells, intermediate squamous cells and para basal squamous cells [8].
- **BISMARCK BROWN Y:** Oftentimes, it is disregarded because it stains nothing[9].

Composition and reagents of pap stain

Harris' hematoxylin: Hematoxylin = 5g

Ethanol = 50ml Potassium Alum = 100g Distilled Water(50) = 1000ml Mercuric Oxide =225g Glacial acetic acid = 20ml[10]

• Orange green 6

Orange Green (10% aqueous) = 50ml Alcohol = 950ml Phosphotungstic Acid = 0 - 15g

• EA 50

0.04 M light green SF = 10ml 0.3M eosin Y = 20ml Phosphotungstic acid = 2g Alcohol = 750ml Methanol = 250ml Glacial acetic acid = 20ml N.B ensure to filter all stains before use.

4. PROCEDURE OF PAP STAIN(METHODOLOGY)

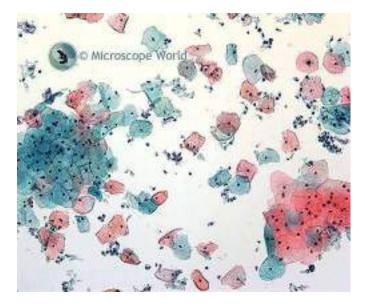
- Fix smear using 95% alcohol for 5-15 mins
- Rinse with tap water[hydration]
- Apply Harris hematoxylin dye for 1-3mins
- Rinse using tap water
- Dip in 95% alcohol [10 dips]
- Apply orange G-6 stain for 1.5 mins
- Dip in 95% alcohol [10dips]
- Apply eosin dye or other applicable dye for 2.5 mins
- Dip in 95% alcohol [10 dips] 2 changes
- Dehydrate in absolute alcohol[methanol] 1min
- Clear with xylene 1min[11]



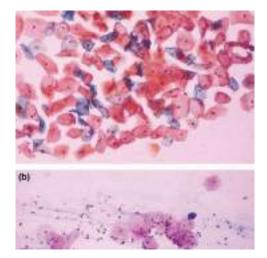
5. RESULTS

The dyes would stain different cell components with varying intensities and color

- Nuclei: blue
- Cytoplasm: different shades of red, pink, yellow green-gray
- Acidophilic cells: pink
- Eosinophils: orange or red
- Basophilic cell: green to blue-green
- Rbc's: orange to dark pink
- Superficial cells: pink
- Parabasal or intermediate cell: green
- Candida[fungi]: red[12]



Pap smear test for cervical cancer seen under a microscope.



Normal cervical showing cytoplasmic green staining of intermediate cells and orange staining of superficial cells [13]



6. CONCLUSION

Times are changing making it easy to diagnose cervical cancer at its early stage with the help of pap staining, thereby reducing the morbidity and mortality rate of women with cervical cancer. Awareness should be created on the important diagnostic procedure to help save lives.

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SYSTEMATIC REVIEW ON EFFECTIVENESS OF LYCOPENE IN THE TREATMENT OF PERIODONTITIS

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ABSTRACT

Aim: To assess the effectiveness of Lycopene as one of the interventions for the treatment of periodontitis.

Methodology: A systematic review of controlled trials was performed. Electronic and hand searches retrieved 186 records, and 184 were screened. Three studies were included in this systematic review. The intervention and outcomes were assessed in the study included in the systematic review.

Result: Three results were included in the systemic review, of which all are clinical trials. Where Lycopene shows efficacy in the treatment of periodontitis. The outcome and results were positive in the studies above, showing that Lycopene significantly reduces probing depth, bleeding on probing, and reduction in plaque.

Conclusion: In the present study, the applicable confirmation recommends that Lycopene may be competent in the management of periodontitis. The studies revealed that Lycopene is a promising candidate in the treatment of periodontitis as an anti-oxidative therapy.

KEYWORDS: Lycopene, Periodontitis, Intervention, Clinical trials.

INTRODUCTION

Lycopene is a carotenoid, a natural pigment that gives some vegetables and fruits their red colour. It's held by a class of compounds known as the carotenoids, which are the vellow, orange and red pigments synthesized in plants. The five principle carotenoids found in human plasma as the result of ingesting plants, including alpha and beta-carotene, betacryptoxanthin, lutein and Lycopene. The biggest known source of Lycopene are tomatoes. There is a positive key relationship between lycopene consumption and a reduction in the risk of development of degenerative diseases succeeded by free radicals, such as cancer, cardiovascular diseases, asthma, arthritis, stroke, hepatitis and also periodontitis. Studies have been enthusiastically conducted with Lycopene, whereas it could be an alternative to safeguard patients against the harmful effects of free radicals. There is deficient information in the studies regarding the effect of Lycopene on periodontal health.

The name "periodontitis" is defined as inflammation around the tooth. Microorganisms such as bacteria cling to the surface of the tooth and in the pockets surrounding the tooth, and they multiply, where the immune system reacts, and toxins are released, inflammation begins. Untreated periodontitis will gradually result in tooth loss. Commonly resulting in poor tooth alignment, receding gums, pockets between the teeth, sensitivity, etc.

Carotenoids are dominant AO agents which are important in the maintenance of the overall health of an individual and have a defensive role against cancer, heart diseases, and oral malignancies and diseases, etc. Including the carotenoids, Lycopene is the most potent AO. Thus, also enhancing the effect of other carotenoids. It also possesses antibacterial and anti-fungal properties. It is an adjuvant in the treatment of periodontitis along with oral prophylaxis. Lycopene exerts potent anti-fungal activity against Candida albicans by causing significant damage to the cell membrane.

In order to treat this condition, Lycopene is considered a powerful antioxidant, and the main carotenoid in tomato products contains the greatest quenching ability of singlet oxygen among the various carotenoids and is effectual in protecting blood lymphocytes from radical damage. Hence,



the aim of the present study is to investigate the effectiveness of Lycopene in the treatment of periodontitis.

MATERIALS AND METHODS STUDY DESIGN

A systematic review of the effectiveness of Lycopene in the treatment of periodontitis.

SEARCH STRATEGY

The following electronic databases were used to find published articles on the effectiveness of Lycopene in the treatment of periodontitis PubMed, Cochrane Library, Ovid midline, Elsevier science direct, Wiley online library, Grey literature, Cinahl, Prospero, OSF, Scopus. Each database was searched to obtain the articles using Mesh representation. The mesh term used was "Lycopene in Periodontitis". After the search, a total of 186 articles were obtained, among which three articles were finalized for further studies.

ELIGIBILITY CRITERIA

- Inclusion criteria:

- Studies published in English
- · Articles on the effectiveness of Lycopene in periodontitis
- Clinical trial studies
- Full-text articles
- Publications over the years

- Exclusion criteria

- · Articles published in other languages
- Only abstracts available
- Unrelated articles
- Animal studies
- In-vitro studies

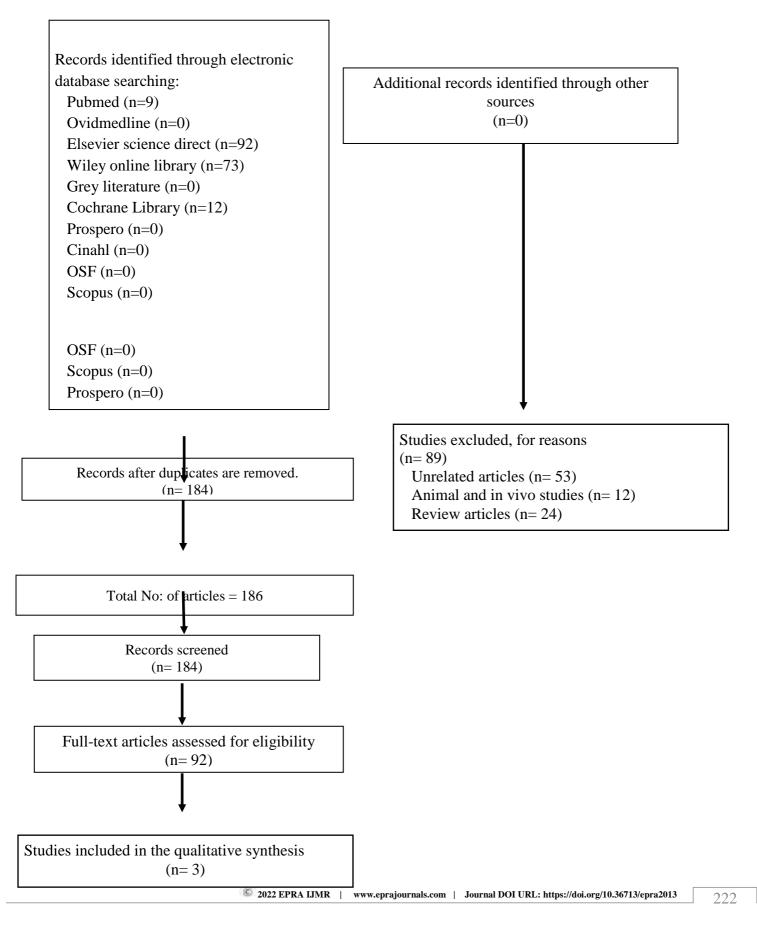
SEARCH ENGINES

- PubMed
- Ovid medicine
- Elsevier Science Direct
- Wiley online library
- Grey literature
- Cochrane library
- Cinahl
- Prospero
- OSF
- Scopus

After the search using the appropriate mesh terms, a total of 186 articles were found from the online databases. After duplicate removal, 184 articles were screened, and 92 full-text articles were available. Inclusion-exclusion criteria were applied, and the final three articles were selected for further assessment. Figure 1 shows the flow diagram of a number of studies identified, screened, assessed for eligibility, excluded and included in the systemic review.



Figure 1: Flow diagram showing the number of studies identified, screened, assessed for eligibility, excluded and included in the systematic





RESULT

AUTHOR	YEAR	PATIENT SELECTION	DURATION	PREPARATION USED	INTERVENTION
Sphoorthi Anup Belludi, <i>et al.</i>	2013	10 patients of the age group (30 + 41.6 years) with mild to moderate periodontitis	2 weeks	4 mg lycopene/day	Groups A and B were randomly distributed: A- 4 mg lycopene/day for 2 weeks with oral prophylaxis B- Receiving only oral prophylaxis.
Pragya Tripathi, <i>et al</i> .	2019	30 patients with generalized periodontitis with	45 days	Oral Lycopene and green tea extract	Two groups: A- Received oral lycopene and green tea extract B- Received full mouth oral prophylaxis
Manasa Ambati, <i>et al.</i>	2017	20 patients with chronic periodontitis were recruited.	2 months	8 mg Lycopene daily	Interventional single-arm study.

Table 1: CHARACTERISTICS OF THE INTERVENTION IN THE INCLUDED STUDIES

Table 1: Shows the characteristics of the intervention in the included studies. In all the above studies, the effectiveness of Lycopene in the treatment of periodontitis was reviewed and

compared. Trials were conducted in patients with mildmoderate periodontitis. Trial duration (1-2 months) and preparations used varied in each study.



AUTHOR	YEAR	OUTCOME	RESULT
Sphoorthi Anup Belludi, <i>et</i> al.	2013	Bleeding on probing, clinical attachment loss and probing depth scores were found to be statistically non significant in control group A.	The outcome suggests that Lycopene may be of benefit in the treatment of periodontitis.
Pragya Tripathi, <i>et al.</i>	2019	Both treatment groups demonstrated a statistically highly significant reduction in plaque and SBI.	The outcome suggests that Lycopene with green tea extract is a promising adjunctive prophylactic and therapeutic modality in the treatment of periodontitis patients.
Manasa Ambati, <i>et al</i> .	2017	On recording clinical parameters after 2 months, a significant reduction in probing depth and clinical attachment loss.	The outcome suggests that there was a reduction in oxidative stress and improvement in clinical parameters following systemic antioxidant therapy (Lycopene).

Table 2: OUTCOME DATA	AS REPORTED	IN INCLUDED STUDIES
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Table 2: Shows the outcome and result of the effectiveness of Lycopene in the treatment of periodontitis in the abovementioned studies. The outcome and results were positive in the studies above, showing that Lycopene significantly reduces probing depth, bleeding on probing, and reduction in plaque.

AUTHOR	RANDOM SEQUENCE GENERATION	ALLOCATION CONCEALMENT	SELECTIVE REPORTING	INCOMPLETE OUTCOME DATA	BLINDING OF OUTCOME ASSESSMENT	BLINDING PARTICIPANTS AND PERSONALS
Sphoorthi Anup Belludi, <i>et al</i> .	++	-	++	++	++	++
Pragya Tripathi, <i>et al.</i>	++	-	++	++	-	-
Manasa Ambati, <i>et al</i> .	++	_	?	_	-	?

Table 3: BIAS ANALYSIS OF INCLUDED STUDIES

Table 3: Shows the biased analysis of all the included studies. It is categorized as the following:

LOW RISK- (++) HIGH RISK- (-) UNCLEAR- (?)

Categorization was done according to the Cochrane risk of bias tools for randomized controlled trials.



DISCUSSION

Periodontitis is an inflammatory condition representing the response of the periodontal tissues to lipopolysaccharide derived from Gram-negative anaerobic bacteria. Inflammation is known to be a protective response that focuses on the removal of the stimuli responsible for damage to the tissues, thereby leading to the restoration of health.

There is an increasing body of evidence available to implicate reactive oxygen species (ROS) in the pathogenesis of a variety of inflammatory disorders, of which periodontal disease is no exception. A variety of ROS (e.g. superoxide and hydroxyl radicals, hydrogen peroxide, and singlet oxygen) can generate substantial tissue damage by initiating a free radical chain reaction. Modulation of the free radical fabrication is indispensable for the suppression of tissue destruction, and treatment with drugs that the production of free ROS or block its effects is therapeutically valuable.

Recent investigations on animal models suggest that antioxidant therapies, which interfere with ROS, may be of benefit in the treatment of periodontitis. Many chemotherapeutic agents used in periodontics, in addition to their antiseptic and antimicrobial effects, are known to have an anti-oxidative activity against spontaneous oxidation. Among the common carotenoids, Lycopene stands as the most potent antioxidant. Lycopene exhibits the highest physical quenching rate with singlet oxygen and is at least three-fold more effective than β -carotene in preventing cell death by quenching NOO-radicals. Lycopene minimizes cell damage by:

- 1. Limiting free-radical formation
- 2. Destroying the free radicals or their precursors
- 3. Stimulating antioxidant enzyme activity
- 4. Repairing oxidative damage
- 5. Stimulating repair enzyme activity
- 6. Reversing DNA damage induced by H2O2.

A randomized, placebo-controlled, split-mouth study of periodontitis was performed by Chandra *et al.* (2007) on 20 healthy subjects with clinical signs of periodontitis. The treatment group (n = 10) was augmented with 8 mg/day of Lycopene, whereas the control group (n = 10) received a placebo daily for two weeks. In this study, the patients encountering the lycopene treatment showed statistically significant reductions in periodontitis and bleeding index. This study compared the effectiveness of Lycopene as an effective treatment to mechanical therapy.

CONCLUSION

In conclusion, the results show that Lycopene is a promising candidate in the treatment of periodontitis as an anti-oxidative therapy; however, further research is needed to clarify its potential function in human oral health according to the following criteria:

- Factors influencing the uptake of Lycopene in the diet, including the way it interacts with other carotenoids.
- Human metabolism is based on the possible function of the metabolites.
- Studies are based on pieces of evidence of treatment in human beings.

- Mechanisms of lycopene deposition in human tissues.
- Lycopene affects the immunological system.

LIMITATIONS

The limitation of this study is based on fewer clinical trials included in the systematic review. The long-term effectiveness of Lycopene has not been established in the studies. Sometimes, the effect of Lycopene was dependent on oral prophylaxis. Thus, further studies show minimizing the effect of these limitations by evaluating these carotenoids in randomized placebo-controlled clinical trials and reporting on long-term follow up.

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PAUL'S CONCEPT OF POLITICS IN ROMANS 13:1-7 AND ITS IMPLICATIONS ON EVANGELICAL CHURCH WINNING ALL (ECWA)

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ABSTRACT

Politics is the art of governance and as such a responsibility for every citizen to participate in it. The Church in Rome finds it extremely difficult to understand the concept of politics. This may be due to the cruelty of the wicked Emperor at the helm of affair during the apostolic era. Apostle Paul's concept of politics about Christians and civil authority is a point of reference for generations. Nigeria Constitution adjudge every citizen to be responsible to the constituted authority. ECWA as a Church denomination is quiescent about participation of staff and members in partisan politics, but gratifying the dividends. This may not be unconnected with some part of ECWA Bye-laws that forbids active political participation especially of persons under her employment. Since no church's Constitution and Bye-laws can be greater than biblical injunctions, the researcher undertakes to study Paul's Concept of Politics as enshrines in Romans 13:1-7 in relations to ECWA policies on membership political participation. The study employs historical, analytical and exegetical methods. Findings reveals that ECWA policies on political participation arose from a misconstrue notion that politics is a dirty game bedeviled with devilish activities. The study concludes that since Apostle Paul admonished the Roman Christians to submit to constituted authority and play their roles in carrying out their civil responsibility to the political policies of rulers of his time, politics itself might not be as dirty as they assumed. The study recommends a review of ECWA Constitution and Bye-laws.

KEYWORDS: Partisan Politics, ECWA, Concepts, Constitution and Bye-laws.

INTRODUCTION

Paul had a teaching on the relationship of Christians and civil authority which the Church should study keenly to fulfill obligation to God and the society. The authorities that exist have been established by God, consequently, he who rebels against what God has instituted will bring judgment on themselves. So, God ordered every soul to submit to the higher authority. It means there is no power but of God, the powers that are ordained by God. If then those who resist the authority sin against God, there is punishment for the offenders, perhaps through the established authority. Paul noted that, "For rulers hold no terror for those who do right" (Rom. 13:3). On recognizing the civil authority, Tertullian, one of the early Church fathers wrote: "The Christian is the enemy of no man, least of all the emperor, for we know that he has been appointed by God, it is necessary that we should love him, and reverence him, and honour him, and desire his daftly together with that of the whole Roman Empire. Therefore, we sacrifice for the safety of the emperor."¹ Christians are not exempted from civil responsibilities, participation in partisan politics is part of the civil responsibility. Darrell Dow wrote, "for the Christian, all government begin with self-governments. The regenerating work of the Holy Spirit is the starting point of all selfgovernment."²

History of the background that inform Paul

Pauline theology is one the main focuses in the New Testament. This can only be understood through the knowledge of Paul's background, that is, his conversion, calling, vision and then, his mission. Paul hailed from Tarsus, a city in Cilicia. He was a Jew by birth (Acts 22:3). The date of his birth was not mentioned in the Bible, but scholars assumed it was at the same time with Jesus' birth, 4 B.C. H.T. Sell explained, "The date of Paul's birth is nowhere recorded, but from certain dates given in the Acts, from which we reckon back, it is thought that he was born about the same time as Jesus Christ."³

Paul's concept of politics in Romans 13:1-7 was not advocating absolute obedience to men at the expense of the word of God. If the authority enacted any law contrary to the word of God, Christians are left with no option than to disobey the constituted authority. Paul wrote in respect of the recognition given to human government in general, it is a legitimate authority. At the same time Christians cannot use their faith as an excuse for civil lawlessness. Paul addressed this letter to Christians in Rome. "The government of Rome ruled much of the known world at the time. It was led by Emperor Nero from AD 54-68. Nero is famous for his cruel and unfair treatment of Christians, among other groups. We



must not assume that Paul is writing these words lightly. He was aware of the implications of his teaching."⁴ Christians have the audacity to protect their lives and properties and to also protest against any authority that is against God. Robert J. Karris quotes Luke Timothy Johnson when he wrote, "If all the civil authority is from God and ordered under God, then it equally follows that a Civil authority that does not respond to God's will can be considered disqualified as a true authority, and so could be resisted for conscience's sake."⁵

EXEGESIS OF ROMANS 13:1-7.

¹Let everyone be subject to the governing authorities, for there is no authority except that which God has established. The authorities that exist have been established by God. ²Consequently, whoever rebels against the authority is rebelling against what God has instituted, and those who do so will bring judgment on themselves. ³For rulers hold no terror for those who do right, but for those who do wrong. Do you want to be free from fear of the one in authority? Then do what is right and you will be commended. ⁴ For the one in authority is God's servant for your good. But if you do wrong, be afraid, for rulers do not bear the sword for no reason. They are God's servants, agents of wrath to bring punishment on the wrongdoer.⁵ Therefore, it is necessary to submit to the authorities, not only because of possible punishment but also as a matter of conscience. ⁶This is also why you pay taxes, for the authorities are God's servants, who give their full time to governing. ⁷Give to everyone what you owe them: If you owe taxes, pay taxes; if revenue, then revenue; if respect, then respect; if honor, then honor (NIV).

Keywords- υποτάσσοντα- submissive, κυβερνητικέςgovernmental, εξουσία-authority, επαναστατεί- rebel, κρίνουν-they judge, άρχοντες-rulers or lords, υπηρέτης του Θεού- servant of God, public servant of God, τιμωρήσουν-punishment, φόρους-taxes.

- i. $v\pi o \tau \dot{\alpha} \sigma \sigma o \tau \tau \alpha$ It is a verb present mid-imperativeto be submissive or to subject oneself: is a hierarchical term which stresses the relation of a person to his or her superiors; in Classical Greek it means "to place under." Gerhard Delling points out that the subordination which *hypotassō* connotes may be either voluntary or compulsory.⁶ It appears from the context of chapter 13 that the mark of a Christian is selfless love for the other. The argument of 13:1-7 itself is that the Christian should voluntarily submit himself in love to divinely instituted authorities.
- ii. $\kappa \upsilon \beta \varepsilon \rho \upsilon \eta \tau \iota \kappa \dot{\varepsilon} \zeta$ This is participle present, active participle, dative-plural-feminine- meaning 'to having authority' or governmental. Apostle Paul was referring to human beings in positions of authority as ordained by God.
- iii. $\varepsilon \xi o v \sigma i a$ Noun, dative-plural feminine- meaning authorities. In Classical Greek, *exousia* refers to an ability to perform an action and the right or permission to perform that action. It appears that

Paul had human powers in mind when he wrote to the Roman Church.

- iv. $\varepsilon \pi a v a \sigma \tau a \tau \varepsilon i$ rebel. Paul, aware of the possibility of the Church in Rome to rebel against the constituted authority, argued that as an extension of the love they have for one another, the Jewish Christians in Rome must accept the rule of the empire and not rebel or provoke persecution and expulsion from the cities.
- *Αντιτασσομενος* opposing- participle presentmiddle-participle normative -singular-masculine.
 Paul's argument may have been difficult for a Jewish Christian in Rome, or elsewhere for that matter, to accept.
- vi. $K\rho\mu\alpha$ Noun accusative-singular-neutermeaning judgment. "For it is God's servant for your good. But if you do what is wrong, you should be afraid, for the authority does not bear the sword in vain! It is the servant of God to execute wrath on the wrongdoer." Romans 13:4. The judgment connotes divine standard of God carried out by man in authority.
- vii. $\dot{\alpha}\rho\chi ov \tau \varepsilon \varsigma$ noun nom-plural-masculine. Meaning rulers, chiefs or lords who are assigned by Romans Government to administer in the Roman Empire, either by election or political appointment.
- viii. $\nu\pi\eta\rho\epsilon\tau\eta\varsigma$ $\tau\sigma\nu$ $\Theta\epsilon\sigma\delta$ normative -singularmasculine. This is 'Servant of God' or 'Public servant of God,' the same word applicable for deacon and minister. Paul affirmed the Gentiles' rulers are servants of God, perhaps under the permissive will of God.
- ix. $\varphi \delta \rho o v \varsigma$ noun accusative-singular-masculine-Meaning taxes or toll. Paul was advising against anti-Roman and Palestinian nationalist sentiments among the Jewish Christians in Rome. They were to submit to the governing authority (the Roman Empire) because its authority was derived from God. This includes the payment of taxes or toll, remitting revenue (έσοδα) and show of respect (σεβασμός) and honour (τιμή) to people in authority.

EXPOSITORY ANALYSIS OF ROMANS 13:1-7

Paul's argument is in verse 1a, the recognition of governing authority as God's institution, "Let everyone be subject to the governing authorities." Paul then supports his message by appealing to different reasons why the Roman Christians are to submit to the authorities.

- 1. First, no authority exists except from God, and all authorities that exist have been instituted by God (13:1b).
- 2. Second, rulers are not a terror to good conduct but rather to bad (13:3a).
- 3. Third, the authority/ruler is God's servant in three ways: for the Romans' good, to execute wrath on the wrongdoer, and by collecting taxes (13:4a,4c,6b).



Paul intersperses his reasons with examples and consequences, such as at 13:2 where he notes the results of resisting authority. All (godly) political activities are ordained by God. He also makes a noticeable shift from making statements of fact (the indicative mood) to a command "pay to all what is due them" (the imperative mood) at 13:7, thus connecting submission to the authorities with a duty to pay taxes and offer revenue. The reasons (facts) for submission to the governing authorities are fundamental to Paul's command that the Roman Christians fulfill their civic responsibilities.

There are numerous reasons for Christian's participation in politics; it is an integral part of Christian Mission, it is a tool of service to God and humanity, it is part of wholistic ministry and to the glory of God.

- i. Politics as Integral Christian Mission: Christian's mission is to reach the world with the gospel of truth, "You will know the truth and the truth shall set you free." John 8:32. It is expected of Christian politician to treat every citizen with the concept of truth and justice.
- ii. Politics is service to God and humanity: Paul rightly said, "Let everyone be subject to the governing authorities, for there is no authority except that which God has established. The authorities that exist have been established by God." Romans 13:1 (NIV). No one ascends the leadership position without the approval of God. Vongdip again added, "Every Leader is ordained by God to rule on His behalf."⁷ A politician administers as duty to be accounted for before the Lord.
- iii. Politics is wholistic ministry: One of the significant examples of Jesus Christ followed by Apostle Paul is doing the wholistic ministry. Jesus was going about preaching the gospel and healing the sick. He was also meeting their physical basic needs; he fed five thousand people with just five loaves of bread and two fishes after preaching the message of the kingdom of God to them. Luke 9:10-17 (NIV).
- iv. Politics should be done to the glory of God. Fawenu said, "The agenda for righteousness that Christians in politics must uphold is not party biased. Therefore, dividing ourselves along party lines and labelling Christians in a particular party as enemies of the Church is reading the game wrongly and putting the wrong foot forward."⁸ Christians must be exemplary in conducts of life careers, politics is God-given opportunity to serve and bring glory to him, it must not drag the name of Christ to mud.

THE IMPLICATIONS OF ROMANS 13:1-7 FOR ECWA

Romans 13:1-7 is the only place in Pauline Epistle where Christians relationship with civil authority is effectively stressed. The passage is a template for the Church to navigate the unfolding events in the Church and society. The following facts explain in brief the implications of the passage for ECWA;

- 1. The reason Paul commands the Roman Christians to submit to the authorities is because civil authority is God's institution and as such will punish wrongdoers and praise those who do good (13:1-5). ECWA should concur that politics is God's institution to govern the society.
- a. Paul commands the Roman Christians to submit to civil authority because God has appointed that authority (1-2a). Politics is God ordained tool, as such ECWA should wholeheartedly embrace partisan politics by allowing her clergy men, staff and members who are led to actively participate in it.
- b. Paul commands the Roman Christians to submit to civil authority because the civil authorities will punish those who resist them (2b-3a) and praise and do good to them that obey (2b-4). All members of ECWA, Pastors inclusive should be responsible in their commitments to civil responsibility, politics inclusive.
- c. Paul commands the Roman Christians to submit to civil authority because of the punitive action of the state (i.e. wrath) and also because of conscience (5). Patriotism is imperative as far as Paul was concern. If righteousness of God, justice and tranquility will take place in the society, the Church must be fully involved in the administration of good governance.
- 2. The way in which Paul enjoins submission to civil authorities who gave themselves to collecting taxes is by giving back to them whatever is owed, whether taxes, dues, respect or honor (13: 6, 7).

RECOMMENDATIONS

The following recommendations are made to encourage the participation of ECWA clergy, employees and members in partisan politics in Nigeria:

- 1. ECWA Ilorin DCC as a District in the denomination should suggest to ECWA to amend her Constitution and Bye-law to give room for effective participation in politics by her Pastors and employees.
- 2. ECWA clergy and members in Ilorin DCC should take into consideration Apostle Paul's advice and demonstrate patriotism and loyalty to the constituted authority.
- 3. ECWA leadership in Ilorin DCC should engage in politics and participate in civil authority, the overlying thought is that God sanctions the government and as Christians, we have the responsibility to obey, support and participate in it.
- 4. ECWA in Ilorin DCC should desist from viewing politics as dirty game but to see the constituted authority as God-ordained venture.

CONCLUSION

The failure of ECWA as a Church to play active role in politics pose a dangerous threat to the sanity of the political system of the society. This kind of careless and parochial attitude has relegated ECWA members and clergy who supposed to be at the lime-light of nation building to the back



side of the line thereby creating a dilemma to the development of the society. The aim of this paper is to stimulate the Church to have role to play in partisan politics. Politics is part of the responsibility of the church to the state. The misconception of political involvements is archaic and unscriptural. It is the responsibilities of Christian politicians to be honest and be Christ's ambassadors in partisan politics.

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A STUDY ON AWARENESS AND CHALLENGES RELATED TO HEALTH INSURANCE FOR SENIOR CITIZENS

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ABSTRACT

Every person on this earth living in any country must have the chance to live a long, healthy and happy life. Having said that the environments in which we live can sometimes not be conducive to the same. The socio-cultural and physical environment that we live in exposes us to various risks as well as access to services like health and social care.

Technology and modernization have led to improvements in diet, health awareness, medical facilities, and life expectancy. The death rate has also decreased and hereby we are faced with an increasingly ageing population.

The Elderly face social, emotional and financial problems which are peculiar to their age and situation in life. Their financial status is directly connected with their financial independence.

However, their financial condition and their financial planning can make old age a tolerable and even enjoyable period of their lives.

This is where health insurance comes to the rescue. By defraying the cost of expensive quality healthcare, health insurance can indeed contribute to a peaceful, risk-free and healthy life for our elderly adults.

This research study is an effort to gauge the awareness levels and challenges faced by elderly citizens in subscribing to health insurance plans.

KEYWORDS: Pandemic, Health Insurance, Socio-economic, Senior Citizens, Challenges

1.1.1 INTRODUCTION

The Pandemic has forced people to realize the importance of health insurance having experienced how medical, hospitalization and post-hospitalization expenses have eaten into their life-long savings.

Having said that even today very few Indians have health insurance. India is one of the top-most countries in the world in terms of out-of-pocket spending on medical costs.

A survey conducted in early 2021 reveals that nearly 71 per cent of people now consider health insurance to be a necessity as compared to only 20 per cent in the Pre-pandemic era^{1} .

The Health Insurance sector in India can be said to be a few decades old. Medical Insurance in India started with the launch of Employees State Insurance Scheme in 1948. General Insurance Corporation (GIC) launched India's first Mediclaim policy in 1986.

The Insurance sector received a boost with the privatization of the Insurance sector after the Indian Government embraced liberalization and introduced the new economic policy in 1991. The Insurance Regulatory and development Authority (IRDA) Bill was passed in Parliament and this was the turning point in Insurance Sector in India.

The Health Insurance space in India has achieved high rates of growth since the period after liberalization due to few reasons such as

1. Opening of the sector to private insurance players

¹ https://www.etmoney.com/blog/post-covid-health-insurance-trends-a-survey-by-max-bupa/



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- 2. A marked focus on health among various sections of society
- 3. An increase in the disposable income of households.
- 4. More customer-friendly approach by the Health Insurance Companies, agents and employees.
- 5. Price and service competition between health insurers and absence of bureaucratic attitude in health insurance employees.

1.2 PROBLEMS FACED BY ELDERLY

Ageing is an inevitable and eventuality with all of us. No one can escape the process of ageing. Ageing is accompanied by a loss in productivity and as a consequence some elderly citizens also face loss of confidence.

When people get older, they face a number of issues, such as deteriorating health, retirement, money issues, loneliness, and dependency on others.

Most of the elderly persons are leading retired lives. They either get occupied in some kind of honorary work, or manage the household chores through obtaining assistance from the caregivers or they follow their daily routine.

Income levels of the elderly are impacted due to the technological advancements in modern times. Elderly educated or skilled people may find it difficult to get alternate or reasonable sources of employment or profession after their retirement. Many of them may not be financially savvy and prefer to invest their money in safe avenues though the returns may be modest.

A disconnect is observed in many families between the elderly members and the younger generation. The latter are devoting lesser time and effort to maintain their relationships as a result of their increased intellectual and professional interests.

With the disintegration of the Joint Family system in most communities of India the aged people prefer to live independently with their spouses and end up making decisions on their own and managing their money on their own.

Most of the time, elderly people only use technology to converse on the phone, watch television, or listen to music and religious programming on the radio or on their mobile phones. This shows that they frequently don't know how to use technology to carry out different jobs and responsibilities.

1.3 BRIEF LITERATURE REVIEW

Joshi, Manish (2016) in their study have identified various factors influencing consumer when taking health insurance. Number of young professionals with higher spending capacity is increasing nowadays resulting in buying health insurance on the basis of financial affordability. This gives tax benefit as an added advantage. These professionals prefer to buy individual health insurance than group health insurance because they keep changing their jobs for professional growth. Senior consumers are more concerned about their health and prefer to have annuity benefit on each and every type of investment, policy or saving tool. Online health insurance business can be increased by providing easiness in virtual environment. Availability of online claim lodgment facility is a must in online health insurance contract execution².

Ellis et al (2001) indicate that mediclaim has provided a model for health insurance for the middle class and the rich. It covers hospitalization costs, which could be catastrophic. But given that the premium is on higher side, it has remained limited to middle class, urban tax payers segment of the population. There is also element of adverse selection problem as the scheme is voluntary. As the scheme reimburses charges without limit, it also will push up the prices of services in the private sector. Analysis of mediclaim data from one centre indicates wide variation of charges for same operation in the same city. Anecdotal evidence from doctors also indicates that charges are increased if patients are insured. All these effects will tend to increase the prices of private health care thus hurting the uninsured.³

A Study conducted by Deloitte (2015) on "healthcare outlook India" estimated that spending on health care in India was 5% of GDP in 2013 and is expected to remain level. Government's low spending on health care is burdening the patients and their families. Healthcare sector in India is facing several problems like lack of proper infrastructure, shortage of medical staff. Health insurance sector are providing different plans for poor and employees for better accessibility of health care.

R Anbu (2014) in his study has concluded that that the health insurance policies are bought more by the older respondents than by the younger respondents and it is mostly true among the males. This indicates the fact that the younger respondents are satisfied with the group policies which are provided by their companies or organizations, while the older respondents prefer to go for individual policies, the insurance agents or advisors find it easier to sell the health insurance policies among those who are older than among the younger population. Health insurance should be made simpler and less complex, coverage of ailments should be standardised and so

² Joshi Manish (2016), "Factors Influencing Consumer Behavior for Health Insurance", INSTITUTE OF MANAGEMENT STUDIES DEVI AHILYA VISHWAVIDYALAYA,

³ Ellis R.P., Alam M, and Gupta I., (2001), "Health Insurance in India: Prognosis and Prospectus", Boston University, Boston and Institute of Economic Growth, Delhi, pp. 11-16.



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also tariffication Moreover, new standalone health insurance companies should be allowed to enter the market to broad base the coverage of health insurance⁴

1.4 **OBJECTIVES OF THE STUDY**

- 1. To study the need for health insurance status among the senior citizen population in the country.
- 2. To study awareness and perceptions of health insurance among the sample of senior citizens selected.
- 3. To bring out some of the challenges faced by senior citizens in subscribing to medical insurance.

1.5 **RESEARCH METHODOLOGY**

This research study is based on secondary and primary data. Secondary Data has been collected and analyzed from sources like books, magazines, newspapers, journals, publications by Government agencies and websites. An attempt was made to conduct a poll of senior citizens from Mumbai. A questionnaire was created to collect information from elderly adults in the age group above 60 years in the Mumbai Metro Region. Purposive and snowball sampling were used to collect data. About 49 people responded, and 42 of the questionnaires were deemed to be complete and eligible for study. The data was analysed and presented in tables and graphs after a thorough examination.

1.6 **DATA AND RESULTS**

1.6.1 **Descriptive Statistics:**

The frequency distribution of the demographics of the sample data is as given below:

Gender					
		Frequency	Percent		
	Female	17	40.5		
Valid	Male	25	59.5		
	Total	42	100		

Table 2. Brief Profile of the Respondents

Source: Primary Data Collection 2022

Educational Level

		Frequency	Percent	
	Less than High School	1	2.4	
	Matriculation	8	19	
Valid	Graduate	19	45.2	
	Post-Graduate	6	14	
	Professionally Qualified	8	19	
	Total	42	100	

Source: Primary Data Collection 2022

Annual	Income	Level
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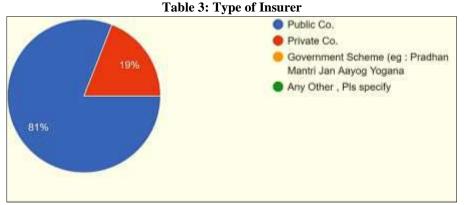
	Frequency	Percent			
Upto 250,000	5	11.90			
250,001 to 500,000	15	35.71			
500,001 to 750,000	9	21.43			
750,001 to 10,00,000	2	4.76			
10,00,001 & above	11	26.19			
Total	42	100			

Source: Primary Data Collection 2022

⁴ R Anbu (2014), "MARKETING OF HEALTH INSURANCE POLICIES: A COMPARATIVE STUDY ON PUBLIC AND PRIVATE INSURANCE COMPANIES IN CHENNAI CITY," UNIVERSITY OF MADRAS

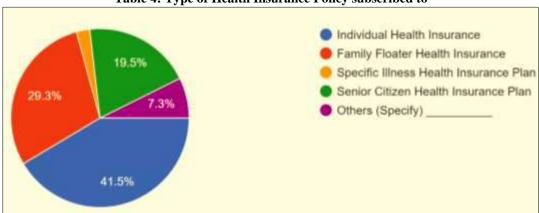


1.6.2 AWARENESS LEVELS ABOUT HEALTH INSURANCE AND PREFERENCES



Source: Primary Data Collection 2022

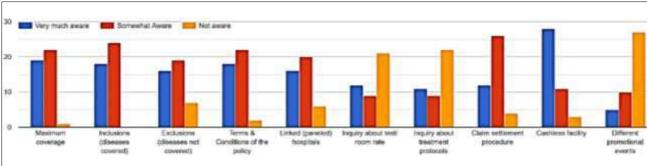
Public Insurers seem to be the preferred choice for nearly 81 Percent of the respondents.





Source: Primary Data Collection 2022

Individual Health Insurance Policies seem to be the preferred choice for nearly 42 Percent of the respondents, followed by Family Floater 30 percent and 19.5 % going for Senior Citizen health insurance plan.

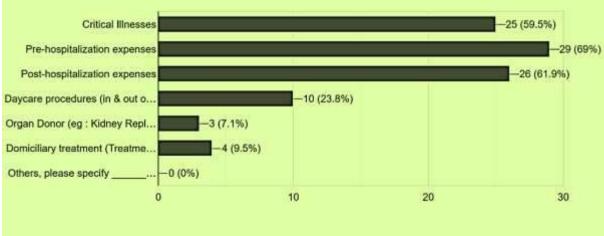




Source: Primary Data Collection 2022



From above Table 5, we can infer that among the sample surveyed, awareness levels about the different aspects of health insurance policy seem to be good. However, the respondents sampled reported low or No awareness about test room rates, treatment protocols, and different promotional events.





Maximum respondents had pre and post hospitalization Coverage. Whereas Daycare procedures, organ donation and domiciliary treatments (Treatment at home) were less popular.

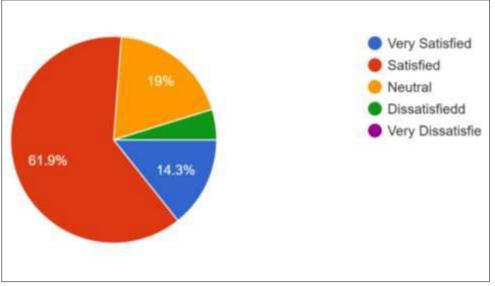


Table 7: Satisfaction Level of Health Insurance

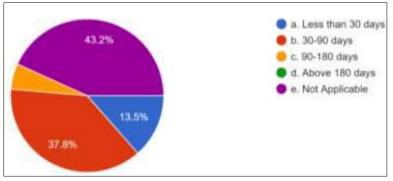
Source: Primary Data Collection 2022

From above Table 7, we can say that satisfaction level seems to be quite high and a small Percentage (19%) were neutral in their opinion.

Source: Primary Data Collection 2022



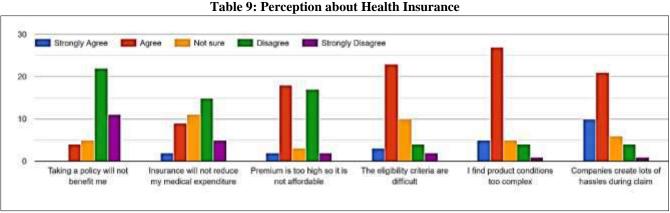
Table 8: Time Taken for Claim settlement



Source: Primary Data Collection 2022

Most of the respondents surveyed had not filed a claim (43 per cent) whereas 38 per cent reported claim settlement period of 30 to 90 days, and only 14 per cent reported prompt claim settlement ie. less than 30 days.

1.6.3 CHALLENGES OR PROBLEMS FACED IN HEALTH INSURANCE



Source: Primary Data Collection 2022

From above Table 3, we can infer that among the sample surveyed, majority of the respondents did perceive that taking a policy benefits them. Majority of them also responded that Eligibility criteria are difficult. A majority of them found product conditions too complex and agreed that companies do create lots of hassles in claim settlement.



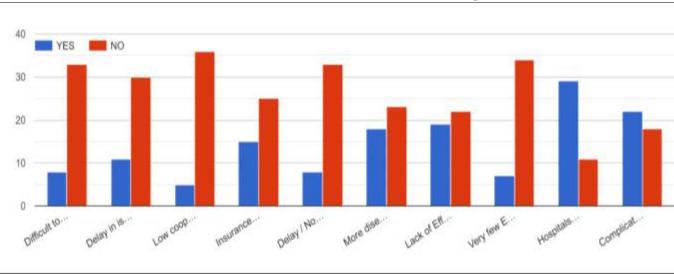


Table 10: Problems faced in Health Insurance subscription

Source: Primary Data Collection 2022

The problems listed were as follows:	No. of
	respondents in
	agreement
Difficult to get policy due to age and medical history	8
Delay in issue of policy	11
Low co-Operation of the Executives	05
Insurance policy was not clear and transparent	15
Delay / Non-Settlement of Claim	08
More Diseases out of coverage	18
Lack of Efficient Complaint redressal system	19
Hospitals charge higher rates from Insured people	29
Complicated and Excessive Paper-work	22

Source: Primary Data Collection 2022

So, the major problem as we can see is Hospitals charging higher rates from Insured people, Complicated and excessive paper work and Lack of Efficient Complaint redressal system

A Lack of clarity and transparency in policy is recorded as a problem as well as a higher list of diseases out of coverage.

1.6.4 SUGGESTIONS RECEIVED FROM RESPONDENTS

In the process of Data collection from the respondents, a few valid suggestions were received and the same are indicated in the table below.



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Table 4: Suggestions about Health Insurance

A gist of the suggestions as received from the respondents is as below

- There must be least hassles during a medical event, and professional claim procedure.
- Insurance companies should refund full claim amount without any deductions
- There must be Hassle free cashless admission and prompt settlement without unfair deductions.
 - It is the need of the hour to have good coverage, easy claims and quick settlement
- There must be promptness, clarity and honesty in dealing.
- There should be lower premium charging from senior citizen
- Companies not ready to cover senior citizens and this is more so if they have a history of medical illness. This needs to be changed.

Source: Primary Data Collection 2022

1.7 LIMITATIONS OF THE RESEARCH STUDY

This research study has the limitation of relying only on limited secondary and primary data. Customer satisfaction, actual claim settlement and other important parameters could be measured more accurately on the basis of a larger primary data which this study has not able to gather due to time and resource constraint. In that sense, these are the limitations of this study and these form the basis for future research in this area.

1.8 CONCLUSION

In the words of Ms. S. Gupta, Chairman and Managing Director, National Insurance Co Ltd, inadequate health insurance awareness, gaps in understanding the product, and the value of return on investment of health insurance purchased are some of the key issues for its low penetration in India⁵

Senior Citizens are the category of the population that is the most vulnerable to life-threatening diseases and ailments. These are the people who need the maximum healthcare facilities. Yet it is ironical that this section of the society finds it the most difficult to avail of good health insurance schemes.

The Health Insurance Sector has the massive responsibility to cover this section of our society so that they can age and live gracefully, and live happy, healthy and dignified lives without the fear of huge medical costs.

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- 5. https://www.thehindubusinessline.com/

⁵ https://www.thehindubusinessline.com/



FRIEDREICH'S ATAXIA AND ITS CARDIOVASCULAR MANIFESTATIONS

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SUMMARY

Friedreich's Ataxia is a disease characterized by modification of the FRDA gene on chromosome 9q13. Affection of this protein induces altered expression of frataxin. When this is altered, molecular changes and cell death arise due to iron accumulation in the mitochondria and elevation of reactive oxygen species.

The damage occurs mostly in neurons, causing neuronal impairment; however, alterations also occur in the heart, causing cardiac fibrosis. Symptomatology presents in adolescence, with peripheral sensory neuropathies, vestibular changes, hyporeflexia, myoclonias and dysarthria. Systemic manifestations include cardiomyopathies, diabetes mellitus and foot deformity. Specifically in the heart, the myocardium becomes hypertrophic with thickening of the ventricular walls, which subsequently progresses to heart failure and death.

The aim of this bibliographic review is to inform the scientific community of the presence of systemic manifestations, especially cardiovascular, in Friedreich's Ataxia; since this disease is not only characterized by the presence of neurological alterations, but also of affections to different apparatuses and systems of the human body, such as the heart, due to the cellular alteration that Friedreich's Ataxia causes.

KEY WORDS: Cardiomyopathy, Friedreich's ataxia, heart failure, frataxin, mitochondria, mitochondria



INTRODUCTION

Friedreich's ataxia is an autosomal recessive neurodegenerative disease, most prevalent in adolescents and young adults. A large number of patients usually present with left ventricular hypertrophy. It should be noted that the life expectancy of these patients is significantly low, reaching 40 years, and 60% of patients die of cardiac causes (1). This disease causes loss of motor skills and the inability to walk within 10 to 15 years from the onset of the disease due to neuro-degeneration of the dorsal ganglion root, the manifestations of which are based on debilitating scoliosis and the onset of severe hypertrophic cardiomyopathy (2).

Aetiology

This pathology is mostly caused by expansion of the GAA gene triplet and loss of function in the frataxin gene on chromosome 9q21.11 (3). There is a correlation between the GAA triple repeat and the onset and severity of symptoms; while a normal gene would have between 7 and 34 repeats, there can be as many as 66-1700 trinucleotide repeats, being associated with more severe disease and the presence of cardiomyopathy. Larger GAA expansions are associated with earlier disease onset, faster progression of muscle weakness, higher frequency of cardiomyopathy and upper limb areflexia.

Repetitions between 34 and 100 rarely cause disease. However, uninterrupted repeats are considered pre-mutations and can expand to more than 300 repeats in a single generation. In relation to frataxin, iron accumulates within mitochondria, reacting with oxygen to generate free radicals and at the same time reducing mitochondrial antioxidant capacities. Frataxin deficiency ultimately results in cell death, particularly of neurons, cardiomyocytes and pancreatic beta cells. These repeats lead to reduced transcription of the frataxin gene, which silences it and reduces frataxin production. Studies have shown a link between frataxin deficiency and the inactivation of iron and sulfur clusters in mitochondria. Thus, the mechanism of mitochondrial iron homeostasis is altered by the decrease in fraxatin, which translates into decreased energy levels and the subsequent degree of cardiac hypertrophy that this can cause. However, this is not the only cause. Iron deposition in cardiomyocytes has been shown to contribute to hypertrophy, suggesting oxidative tissue damage mediated by iron toxicity (4)(5).

Prevalence

Friedreich's Ataxia is the most common ataxia, accounting for 50% of all cases of ataxia and 75% of patients under 25 years of age. It is most common in patients of Western European descent. Worldwide, the prevalence is 1 per 40,000 people. The carrier rate of this type of ataxia is 1 in 75. As an autosomal recessive disease, it affects males and females equally. The age of onset is usually in adolescence, most commonly between 8 and 15 years of age (5).

Pathophysiology

The hallmark of Friedreich's Ataxia is reflected in the abnormality in the central sensory pathways, which are found in the posterior column of the spinal cord, the spinocerebellar tracts, the cerebellar efferent pathways and the distal portion of the corticospinal motor tracts. Other abnormalities include atrophy of cerebellar regions, such as the dentate nucleus.

Peripheral nerves show a loss of long myelinated sensory fibers, resulting in the loss of primary sensory neurons in the dorsal ganglion root of the spinal cord; the result of which may progress to cerebellar-like alterations and sensory ataxias, which characterize this disease. Cardiac involvement is caused by a mitochondrial disorder (mentioned above), resulting in mitochondrial proliferation, loss of contractile proteins and subsequent development of myocardial fibrosis. In addition, left ventricular involvement is such that the left ventricle becomes thickened and manifests as hypertrophy (symmetrical or asymmetrical) or dilated cardiomyopathy (6) (7) (8).

Cardiovascular clinical manifestations

Heart disease occurs in 2/3 of all patients with Friedreich's Ataxia and is a frequent cause of death, especially hypertrophic cardiomyopathy (9)(10). Rarely before neurological manifestations, and even if the patient is referred to a cardiologist, the neurological manifestations will be evident first; however, these manifestations precede the cardiac manifestations. However, the absence of cardiovascular symptoms in the presence of neurological manifestations leads us to suspect mosaicism of the GAA triplet expansion and somatic instability of the tissue. Cardiovascular symptomatology manifests with hypertrophic cardiomyopathy or left ventricular hypertrophy in 28-100%.

Cardiac angina and cardiac ischaemia are uncommon. Asymmetric septal hypertrophy or dilated cardiomyopathy are less common, and rather, are a progression of hypertrophic cardiomyopathy (11). Fifty-six percent of patients with Friedreich's Ataxia are characterized by heart failure within 6 months. The cardiomyopathy present in these patients is characterized by left ventricular hypertrophy and a normal or near-normal ejection fraction, associated with symptoms of heart failure caused by left ventricular diastolic dysfunction, either by impaired relaxation or increased left ventricular stiffness. Progression of left ventricular dilatation coupled with systolic dysfunction is associated with a worse prognosis (12)(13).

Diagnosis

Diagnosis is based on the detection of pathogenic variants of FXN.

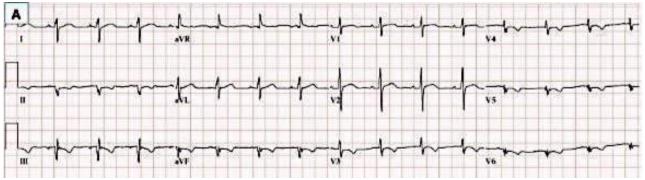
- Normal alleles: 5-33 GAA repeats. More than 80-85% of alleles contain less than 12 repeats and approximately 15% have 12-33 repeats. Normal alleles greater than 27 GAA repeats are very rare.
- Normal mutated alleles: 34 65 GAA repeats. Although the exact frequency of these alleles has not been formally determined, the frequency of occurrence is less than 1%.
- High penetrance alleles: 66 to 1300 GAA repeats. Most expanded alleles contain between 600 1200 GAA repeats.
- Borderline: 44 66 GAA repeats. The length of the

repeat has not been clearly determined whether or not the disease is present (14).

Cardiovascular Diagnosis

Electrocardiography: Electrocardiography is abnormal in almost all cases. The rhythm is usually sinus rhythm, including tachycardia, although the patient may present with supraventricular arrhythmias, particularly atrial fibrillation, atrial flutter, or atrioventricular reentrant tachycardia. The most common finding is T-wave inversion at the infero-lateral or generalized level. Other findings include ST-segment abnormalities, such as ST-segment elevation or depression, as well as T-wave abnormalities with T-wave flattening. When left ventricular hypertrophy is found on the electrocardiogram, the echocardiogram will always show hypertrophy. Axial deviation is very often found deviated to the right (15)(16).

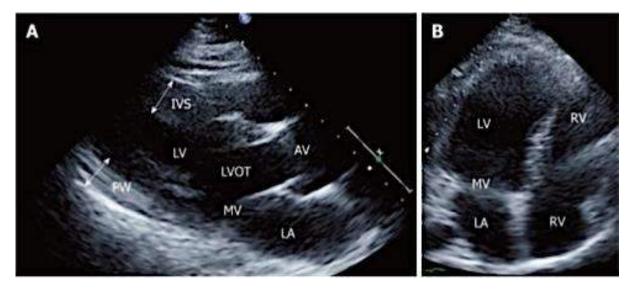
Illustration 1. Electrocardiogram with inferolateral Q-waves



Source: Cardiomyopathy in Friedreich's Ataxia. Salazar P, Indorkar R, Dietrich M, Farzaneh-Far A. Eur Heart J. 2018;39(7):631

Echocardiography: This study most frequently demonstrates concentric left ventricular hypertrophy, but may also show asymmetric septal hypertrophy in other cases. Altered systolic function with relative preservation of ejection fraction may also be evident. However, the ejection fraction decreases with increasing age. In addition, papillary muscle hypertrophy is demonstrated (16).

Two-dimensional echocardiogram in a patient with Friedreich's Ataxia, with evidence of thickening of the posterior wall and interventricular septum in Figure A. Figure B shows dilatation of the left ventricular cavity.

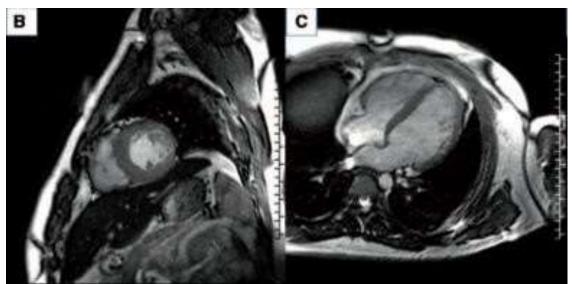


Source: Heart disease in Friedreich's ataxia. Hanson E, Sheldon M, Pacheco B, Alkubeysi M, Raizada V. World J Cardiol. 2019;11(1):1-12.

Cardiac MRI: The study relates the number of GAA triplet repeats to the degree of cardiac remodeling, and even to the age of onset of the pathology. The mass of the left ventricle decreases with the amount of time since the onset of the

disease (more than 15 years), which leads to the presumption of cardiac thinning as the disease progresses. Adenosine can also be used in this study to determine the degree of myocardial perfusion, which in these patients with Friedreich's Ataxia is diminished. Another characteristic that is evident in these patients is the presence of fibrosis of the cardiac tissue, which is corroborated by the concomitant thinning of the left ventricle in advanced stages, which leads to the conclusion that this fibrosis is a common feature of these patients during the progression of this disease (16).

Cardiac MRI, with evidence of ejection fraction of 45% and mild asymmetric septal hypertrophy (17).



Source: Cardiomyopathy in Friedreich's Ataxia. Salazar P, Indorkar R, Dietrich M, Farzaneh-Far A. Eur Heart J. 2018;39(7):631

Treatment

Disease-Modifying Therapies

Clinical trials have focused on treating frataxin deficiency, specifically considering its role in oxidative stress and iron accumulation in Friedreich's Ataxia; therefore, antioxidants and iron chelating agents have been used and evaluated for use in monotherapy and in combination, with inconsistent results. There are other drugs that are based on ameliorating frataxin deficiency, e.g. histone deacetylase inhibitor, which is a promising therapeutic strategy.

A trial with nicotinamide, a class III histone deacetylase inhibitor, has shown sustained increases in frataxin levels in patients with Friedreich's Ataxia. The moTreatment for cardiac symptomatology depends on the presenting condition. It should always be remembered that the use of negative inotropic or pro-arrhythmic drugs is prohibited, because the heart is structurally impaired or even in heart failure. The decision to use anticoagulants should be based on the CHA2DS2VASc2 score. Supportive therapy is not necessary in patients with normal ejection fraction or no signs and symptoms of heart failure. If the patient has baseline heart failure and decreased ejection fraction, treatment should be initiated.

Angiotensin-converting enzyme inhibitors or angiotensin receptor blockers and a beta-blocker are suggested, as their use results in reduced mortality and hospitalization. If they present symptoms of heart failure, diuretics should be added, such as mineralocorticoid receptor antagonists, especially if there is a decrease in ejection fraction of less than 35% and the NYHA scale is III or IV. Digoxin may be considered depending on symptomatology and ejection fraction. Patients with ejection fraction less than 35%, electrocardiogram with QRS greater than 0.12 seconds, and sinus rhythm, device therapy such as cardiac resynchronisation therapy should be considered (19)(20).

CONCLUSIONS

Friedreich's Ataxia is a neurodegenerative pathology with a genetic aetiological component that affects cells at the molecular level, leading to neurological alterations; however, the alterations are not only focused on the nervous system, but also affect the heart; therefore, it is necessary to take into account that these patients should always be monitored at a multidisciplinary level, especially at the cardiovascular level; this is vital, because patients with advanced progression of the disease, usually manifest mainly cardiovascular problems.

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GUILLAIN-BARRÉ AND SARS-COV2

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SUMMARY

Guillain-Barré is one of the most common syndromes causing acute flaccid paralysis worldwide, usually starting with a motor component and spreading upwards; the most common organism causing this pathology is Campylobacter Jejuni. However, due to the pandemic, the presence of this neurological pathology has been reported in patients with SARS-CoV2. The process by which this disease is produced is due to the interaction between the immunological processes produced by the activation of autoantibodies that triggers an affection at the level of the peripheral nerves(1)(2)(3).

In this literature review, we intend to mention the scientific evidence related to the presence of the coronavirus (or COVID-19 vaccines) and its relationship with Guillain-Barre disease.

KEYWORDS: Guillain-Barre, SARS-CoV2, Central Nervous System

RECENT STUDIES ON GUILLAIN-BARRÉ DISEASE AND SARS-COV2

In a study conducted in 2021 in Taiwan, the presence of Guillain-Barré symptoms was found to occur within 11.4 days after vaccination against SAR-CoV2 virus, with the presence of symptoms such as myalgias, parentheses, facial paralysis and paraparesis. In addition to this, dysautonomias were also present, which led to these patients being hospitalised for monitoring. Out of a total of 39 patients who underwent lumbar puncture, 30 of these patients were found to have albuminocytologic dissociation. The clinical features of these patients included an inflammatory demyelinating polyneuropathy, followed by motor and sensory neuropathy. All these patients received intravenous immunoglobulins and



only 2 received plasmapheresis. One patient died and nine required mechanical ventilation (4).

Two systematic reviews conducted in 2020 and 2021, mention that the most frequent clinical manifestations are: areflexia, lower limb weakness, facial paralysis, dysphasia, paraparesis, quadraplegia, along with SARS-CoV2 related symptoms such as: fever, diarrhoea, respiratory failure, anosmia and ageusia. All these symptoms manifested 10 to 21 days after diagnosis of SARS-CoV2. These patients were also treated with immunoglobulins, as well as antiretroviral therapy and hydroxychloroquine. Ultimately, two patients died from these studies (5)(6).

In addition, a 2020 study reported that 30% of patients with Guillain-Barré without SARS-CoV2 infection developed respiratory failure and the need for mechanical ventilation. One of the factors associated with respiratory failure is respiratory muscle weakness, with autonomic nerve involvement and progressive bulbar palsy. Patients requiring mechanical ventilation are those with progressive motor deficits and ineffective cough. In these patients, mechanical ventilation is used to prevent aspiration pneumonia and for emergency intubation in cases of life-threatening complications. Early tracheostomy results in improved feeding, oral hygiene and mobilisation of the patient (7).

A study conducted in Tasmania in 2021 showed four clinical cases related to this association of SARS-CoV2 and Guillain-Barré. One case involved a 51-year-old patient who, 2 weeks after receiving the first dose of aztrazeneca vaccine, presented with diplopia, bifacial weakness, diplopia, areflexia, areflexia, quadriparesis, progressing to respiratory failure, and was admitted to the intensive care unit. With evidence of albuminocytological dissociation, the presence of Guillain-Barré was determined, and the patient was managed with immunoglobulins and plasmapheresis. Another case we found was of a 65-year-old patient who. 1 week after his first dose of aztrazeneca vaccine, developed weakness of both lower limbs, which spread to the upper limbs in 1 week. In addition, he presented with diplopia, loss of distal sensation, hypotonia and areflexia, more pronounced in the upper limbs, and respiratory distress requiring intubation. The diagnosis of Guillain-Barré was made by electrophysiology which showed а demyelinating polyneuropathy. After administration of immunoglobulins, a remarkable improvement was evidenced. A third case reported a 72 year old patient who developed a picture of lower limb weakness and loss of sensibility at distal level 3 weeks after administration of the first dose of Aztrazeneca vaccine. The picture evolved with upper limb weakness, quadriparesis with loss of vibration and proprioception, together with sensation of paraesthesia. After demonstrating presence of albuminocytological the corresponding dissociation, Guillain-Barré, to immunoglobulins were administered with considerable improvement. The last case was a 66-year-old patient who developed back pain and bilateral distal paresthesia 1 week after administration of the first Aztrazeneca vaccine. The paraesthesias ascended to the upper limbs, together with right infranuclear facial paralysis, with subsequent development of areflexia and right facial motor weakness. After performing a

lumbar puncture and demonstrating the presence of albuminocytological dissociation, the presence of Guillain-Barré was determined. This patient was administered immunoglobulins, which led to an improvement (8).

A study in 2020 showed that a total of 31 patients were found to have Guillain-Barré after 11.92 days of infection with COVID-19. Symptoms manifested themselves between 3 and 24 days. The mean age was 57.26 years, the most common symptoms were paresthesia in the hands and feet, symmetrical lower limb weakness, facial paralysis, tetraparesis and pain in all 4 limbs. The most frequent variant in these patients was acute inflammatory demyelinating demyelinating polyneuropathy. All patients were given intravenous immunoglobulins (9).

A 2021 study in Israel showed that five patients out of 40 who were previously vaccinated with one dose of BNT162b2 vaccine for COVID-19 developed paraesthesias, tremor and seizures. One of the patients had a history of Guillain-Barré and was managed with plasmapheresis without neurological sequelae. This patient was admitted to hospital after his second dose of COVID-19 vaccine for increasing lower limb weakness and paraesthesias. Plasmapheresis was administered and his improvement was remarkable, although he retained some minimal proximal weakness (10).

A 2020 study in the journal Clinical Neurology and Neurosurgey mentions the case of a 60-year-old patient with a history of migraine, who presented with fever, non-productive cough, myalgia and dysgeusia of 10 days' duration. A PCR-RT study was performed with a positive result. She was treated with oxygen, azithromycin and hydroxychloroquine. 22 days after the aforementioned clinical picture, the patient suddenly presented lumbar pain, numbress of the lower limbs and weakness of the same; the picture progressed 48 hours later with increasing weakness of the upper and lower limbs, requiring her to be bedridden in the hospital. The condition progressed with respiratory distress, requiring 8 litres of oxygen per minute. The neurological clinical picture showed grade 2/5 weakness and areflexia in the upper and lower muscle groups. A study of cerebrospinal fluid showed albuminocyte dissociation. Treatment was started with intravenous immunoglobulins at a dose of 0.4 g/kg/day for 5 days together with 30 mg enoxaparin every 12 hours. One week later, the patient's clinical picture improved. Two months later, during clinical follow-up, neurological sequelae, such as persistent neuropathic pain in the lower extremities, became evident (11).

It is important to mention that the interaction between the microorganisms and the host indicates an immune response, which leads to autoreactivity. The undesirable part is the fact that no autoimmunity develops, so it is thought that there are environmental and genetic factors that produce susceptibility in the individual. When it was discovered that there is a link to Guillain-Barré syndrome, it was decided to investigate this factor. However, the pathogenesis remains unknown (12).

In a review that analysed articles up to December 2020, it was determined that the presence of Guillain-Barré in patients with COVID-19 was due to a secondary immune

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reaction, as no evidence of the virus was found in cerebrospinal fluid when tested for the presence of SARS-CoV2 virus (13).

A 2021 study found that few cases of this syndrome have been demonstrated following administration of the first dose of COVID-19 vaccines. One of the theories by which it can be concluded that Guillain-Barré syndrome may occur is due to antibody cross-reactivity at the time of immunisation to SARS-COV2. However, it is estimated that a total of 1 to 2 cases per 100,000 people per year of Guillain-Barré can be found for each dose of COVID-19 vaccine. However, it should be remembered that cases can be caused by other factors independent of vaccination (14)(15).

One review mentions a clinical case of a 76-year-old patient presenting with a 9-day presentation characterised by progressive weakness of all 4 limbs. Two weeks prior to admission, he had received the second dose of CoronaVac vaccine. Physical examination revealed motor weakness of 3/5 in the lower limbs and 4/5 in the upper limbs, accompanied by areflexia. An electromyographic study showed a reduction in the amplitude of the motor and sensory nerves. After treatment with immunoglobulins, the clinical picture evolved favourably (16).

There is another clinical case report of a 12-year-old female patient who presented to the emergency department with weakness in all 4 limbs and a feeling of paraesthesia 2 weeks after receiving the Pfizer COVID vaccine. On physical examination the only complaint was 4/5 muscle weakness in the hip flexors. A PCR test for COVID-19 was performed with negative result. In the cerebrospinal fluid, albuminocytological dissociation was found. Therefore, a diagnosis of Guillain-Barré was made and immunoglobulins were administered intravenously (17).

CONCLUSIONS

Guillain-Barré syndrome is a pathology characterised by viruses, including Campylobacter jejuni. This literature review demonstrates that the presence of Guillain-Barré is associated with COVID-19 vaccines. However, it is necessary to mention that the number of clinical cases presented, either by vaccination against COVID-19 or by the presence of COVID-19, is very low. In one of the studies we have mentioned that the number of cases of patients with Guillain-Barré syndrome related to COVID-19 is 220 in total; this number may represent a minority, but we must remember that there is an association between the presence of Guillain-Barré and COVID-19. Finally, this is an important point to note because the presence of the COVID-19 virus cross-reacts and produces this Guillain-Barré syndrome, as can any other virus.

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MORPHONOLOGICAL PHENOMENA AS A MEANS OF MANIFESTATION OF THE CONCEPT OF FUSION IN THE RUSSIAN LANGUAGE

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ABSTRACT

The article discusses the place of the Russian language in the general typological classifications of languages. The leading trend in the morphological structure of the Russian language is fusion. It is opposed to agglutination and is defined as a close connection of polysemantic affixes with a changeable root. Morphonological characteristics such as alternations of phonemes, alternations of stress, and affix variability are the indicative of fusion.

KEY WORDS: type of language, fusion, agglutination, morphonology, alternation, affix.

INTRODUCTION

The question of the typological classification of languages has become the subject of linguistic research since its formation as an independent science. With the development of linguistics, typological classifications of languages also developed. Karl Wilhelm Friedrich von Schlegel, August Wilhelm von Schlegel, Wilhelm von Humboldt, Edward Sapir, Joseph Harold Greenberg, and many others dealt with this problem at different times. Various classifications involve the separation of different types of languages, based on certain essential differential features that form the basis of the classification.

This article considers the place of the Russian language in the classification of languages based on the type of their morphonological structure. We are especially interested in contrasting the morphological characteristics of the Russian language as a fusional language with agglutinative languages. Since the identification of their structural differences is important when teaching the Russian language to native speakers of agglutinative languages, which is a very urgent issue.

AIMS AND OBJECTIVES

Aim

To study the manifestation of the fusional characteristics of the Russian language at the morphonological level.

Objectives

To study the place of fusion in various general typological classifications of languages.

Determine the main features of fusional languages.

Consider how morphological characteristics demonstrate the fusional nature of the Russian language.

RESULTS

W. von Humboldt's general classification

Fusion and agglutination as the leading trends in the morphological structure of languages were first contrasted within the framework of the general typology of languages by W. von Humboldt. The classification of W. von Humboldt can rightfully be considered the first scientific general typology of languages. Despite the fact that the classifications of the brothers F. Schlegel and A. Schlegel chronologically preceded the typology of W. von Humboldt, they were largely prescientific in nature [1].

Features of the use of various types of morphemes formed the basis of Humboldt's classification. He divides languages into 4 types: isolating, incorporating, agglutinative and inflected. This classification has 3 levels; on each level one type of languages is opposed to the remaining ones according to some important feature [2; 19]. At the first level, W. von Humboldt contrasts isolating languages that do not have a developed system of morphological affixes with others that have such a system. At the next level, among languages that have a developed system of morphological affixes, W. von Humboldt separates incorporating languages with "sentence-words" from agglutinative and inflected languages. Finally, at the third level, there is a dichotomy between agglutinating languages, in which the combination of affixes occurs mechanically, and inflectional languages, which are characterized by a close combination of morphemes in the lexeme.

Thus, isolating languages are at one extreme, and inflected languages at the opposite. V. von Humboldt considered the Chinese language to be the final destination of isolating languages. The most developed inflected language, in his opinion, is Sanskrit: "...among all the languages known to us, Chinese and Sanskrit form two clear final points, similar to each other not in their adaptation to spiritual development, but only in the internal consistency and perfect logic of their



systems..." [3; 244]. Also, W. von Humboldt refuses the concept of the so-called "pure" types of languages, believing that they all belong to one type or another, based on the predominance of some properties over others. No language has been able to fully implement the inflectional method in itself: "... none of the real languages reached the peak here" [3; 160].

However, V.P. Danilenko believes that Humboldt's typology has certain shortcomings in the. "The distinction between agglutinative and inflectional languages is a weak point in Humboldt's typology of languages" [1]. Fusion as the main criterion for distinguishing between inflectional and agglutinating languages is only outlined in his classification, but not clearly defined. "Agglutinative languages differ from inflectional ones not fundamentally, as they reject any indication of grammatical categories through inflection" [3; 125].

The place of fusion in the E. Sapir's classification

E. Sapir in his works develops a general typological classification of languages. The advantage of his classification is that the concepts of fusion and agglutination are understood more deeply and receive a more important place in it. E. Sapir presented 4 general typological classifications of languages, the concept of "fusion" is most fully explained in the second of them. According to this classification, E. Sapir identifies four types of languages: isolating, agglutinative, fusional and symbolic. Isolating languages are treated here in the Humboldtian tradition. From Humboldt's inflected languages E. Sapir singles out symbolic languages, which have internal inflection as a central feature, and fusional ones. E. Sapir refuses the term "inflected" in favor of the term "fusional", as inflection may be characteristic of some agglutinating languages as well. Thus, the presence of inflection in this classification is not a defining typological property. E. Sapir introduces a new concept of "fusion" as the main feature that distinguishes agglutinating and fusional languages.

E. Sapir sees the main difference between fusional and agglutinative languages in the degree and nature of the connection between root morphemes and affixes. "We may designate the two types of affixing as "fusing" and "juxtaposing." The juxtaposing technique we may call an "agglutinative" one, if we like" [4; 124]. In addition, E. Sapir defined fusion as a tendency of morphological structure, characteristic not only of fusion languages, but also of agglutinative ones. That is why, for example, he regarded Bantu as an agglutinative-synthetic language, and French as a fusional-analytical one [5]. E. Sapir's classification had significant drawbacks: it did not cover all the existing languages, excluding incorporating ones. However, regarding the understanding of the nature of fusional languages, the work of E. Sapir was an undoubted step forward.

J. Greenberg's method of distinguishing fusion and agglutination

J. Greenberg, developing the ideas of E. Sapir, offers his own classification using the method of numerical indices: "instead of intuitive definitions based on general impressions, an attempt is made to characterize each feature used in this classification in terms of the ratio of two units, each of which receives a fairly accurate definition by calculating a numerical index based on the relative frequency of these two units in segments of the text" [6; 60-95].

J. Greenberg sees the method of connection as the main criterion for distinguishing between fusional and agglutinating languages. He contrasts agglutination, which involves the combination of meaningful elements in a word without a significant change in their phonemic composition, and fusion, which involves the mutual modification or merging of elements. As a numerical parameter for distinguishing between these two tendencies, he introduces the agglutination index, which is expressed through the ratio of the number of agglutinative structures to the number of morphemic sutures. The agglutination index is calculated by the formula A/J, where A is the number of agglutinative structures, and J is the number of boundaries between morphemes [6; 60-95].

J. Greenberg, following E. Sapir, understands fusion only as a close connection of morphemes, leading to the blurring of boundaries between them. However, the modern understanding of fusion is different. Therefore, for example, A.A. Reformatskii identifies the following properties of fusional languages: polysemantic and non-standard affixes, indistinct boundaries between morphemes, non-independence of certain stems. In contrast to fusion, agglutination is characterized by monosemantic standard affixes, a clear distinction between morphemes, and the independence of each stem [7; 52-76]. It follows that the definition of fusion and agglutination only through a simple ratio of the number of morphemes to the number of morphemic sutures is incomplete and does not take into account all the features of fusion and agglutination.

Fusional characteristics of the Russian language at the morphonological level

The fusional characteristics of the Russian language are manifested in derivation and inflection. Thus, in the word $\partial oma'$ ('doma' – houses) morpheme -a expresses the grammatical meaning of the plural. In the Uzbek language, which is agglutinative, a similar meaning is expressed by the affix -лар ('lar') – уй ('ui' – house) + лар (plural suffix) => уйлар ('uilar' – houses). The suffix -лар (lar) in the Uzbek language expresses only the meaning of the plural, while in the Russian language the morpheme -a in the word $\partial OM\dot{a}$ ('domá') also expresses the meaning of the Nominative case. It should also be noted that in the Uzbek language the meaning of the plural is expressed only by the suffix -*nap* ('lar'), whereas in the Russian language the meaning of the plural can also be expressed by other morphemes. In the Russian language, derivational meaning is also often expressed by more than one derivational affix. So the meaning of the person performing an action can be expressed by the suffixes -чик, -щик, -ник, -еи, -ист, -ант, -ент, -ер (-тер), ор (-тор), -онер (-ионер), -ар (-яр) ('-chik', '-shchik', '-nik', '-ets', '-ist', '-ant', '-ent', '-er (-ter)', '-or (-tor)', '-oner (ioner)', '-ar (-yar)') and others. At the same time, the choice



of a derivational affix with this meaning is not random, but depends on the accent and alternational characteristics of the producing word. Affixes are considered as variants in the paradigm of affixes with a given meaning, which, in turn, is their invariant.

DISCUSSION

Thus, fusion is characteristic of the morphonological system of the Russian language. Morphonological units of alternation of stress and alternation of phonemes are traditionally referred to as indicators of fusion. Here we can also include the variability of affixes within the framework of the paradigm of affixes with a certain meaning. Hence, morphological characteristics are an indicator of fusion.

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HUMAN RESOURCES DEVELOPMENT ASPECTS OF QUALITY OF WORK LIFE IN TEXTILE INDUSRTY

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Quality of work life is an indicator of how free the society is from exploitation, injustice, inequality, oppression and restriction on continuing growth of human beings leading to their fullest development. The concept of quality of work life covers both job content and participation in decision-making. The essence of QWL is the opportunity for employees to have substantial influence over their work environment by participating in decision making. There by enhancing the selfesteem, and job satisfaction.

The objectives of quality of work life among these includes improvement in learning new skills for the development of human resources, career planning and development, promotion, job rotation and enlargement.

Job design aspects of quality of work life play significant role in enhancing the development of human resources through learning new skills, career planning and development, job rotation and job enlargement in traditional industries. The stagnation in growth of traditional industries and consequent human resources obsolesces can be arrested largely by introducing various aspects of QWL. This is more so in textile industry in India.

But the studies on HRD aspects QWL are rear to find in textile industry in India. Hence, an attempt is made to conduct a study on HRD aspects of QWL in textile industry.

THE OBJECTS OF THE STUDY ARE

- 1. To enquiry in to the ability of the job to provide the opportunity for learning new skills.
- 2. To study the career planning and development and promotion opportunities offered by the job.
- 3. To analyze the extent of incorporation of job rotation and enlargement as HRD options.

Three-textile industrial unit's viz., pre-cot spinning mills, Hindupur(AP) representing private sector, Nellore cooperative spinning mills ltd., Nellore representing cooperative sector and Thirupathi cotton mills ltd., Renigunta representing public sector units are selected for the study.

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Two hundred workers-121 private sectors -56 cooperative sector -23 from public sector units have been selected to collect the primary data and information for the study. In addition, secondary data were also collected from the reports and records of the companies.

LERNING NEW SKILLS ON THE JOB

Repetitive work makes worker perfect over the machinery and result in shaping the skill in order to have command over it. The worker will learn new skills with the involvement of his supervisors and technical experts in the process. In this study, the workers response in learning new, skills on the job in the three sectors are recorded. To, assess the real conditions of workers, according to the strength in their responses and these are presented in the Table 1.

The details relating to the extent of learning the new skills on the job and using skills properly, consultation before decision making and workers participation in management are presented in the table. About all these aspects the workers responses in the three-sector viz., the public, the private and the cooperative sectors are presented. It is observed from the table 1 that 58%, 64% and 79% of the workers in the private the cooperative and the public respectively agreed that they always learn new skills on job, while 19 to 20% of the workers in the private and the cooperative sectors respectively disagree and learning new skills on job. On the other hand only 11% dissatisfied in the public sector and 9 to 10% in the public and the cooperative sectors remained neutral in giving their opinions. Whereas in the private sector 22% of the respondents are neutral about learning on the job.

Regarding using of the worker's existing skills properly more than three - fourths of the workers in all the three sectors in formed that management was not using existing skills properly. Only 5% of the workers in the public sector, 6% in each private, and the cooperative sectors remain non-reactive.

Management consultations in decision-making with workers in three sectors are analyzed in following lines. One-



quarter of the workers in the private sector agreed that the management is consulting them in decision-making, on the other hand, nearly one-half the workers in the public sector agreed that the management is consulting them in decision-making and 64% of workers in the cooperative sector responded positively that management is consulting in decision-making. One-quarter and one fourth of workers in the private and the cooperative sectors are dissatisfied, while 41% in the public sector are dissatisfied about management consultation for decision-making. Nearly one-fourth of the workers in the private sectors remain disinterested and 10 to 16% in the cooperative and the public sector workers are not interested in this matter.

The participation of the workers in management is the new approach to manage workers to create interest and to make workers responsible about work in the factory for quality and quantity aspects of production. So, in this nearly one-half the workers in the public and the cooperative sectors expressed that the management is encouraging workers participation in management. On the other hand 45% of the workers in the three sectors have opined that they are not been given change to participate in the management and 10 to 13% are remained not interested in participation in the management in the public and the cooperative sectors, 18% of the workers not interested in the private sector to participate in the management. On the whole, it is found to be at low in ebb the new skills acquired on job, using existing skills in management, consultation of the workers in decision-making by the management and the workers participation in the management. In the learning new skills the cooperative sector is providing more chances followed by the private sectors. In using existing skills from the three sectors workers responded almost in similar manner that the managements are utilizing workers and extracting work properly. About three-fourth workers and less than one-quarter of workers viewed that the managements are not, using workers' skills properly. With regards to consultation, the cooperative sector is giving more chance to the workers in consultations as expressed by 64% of the workers followed by the public sector 50% and only 25% in the private sector. Sectors are giving same opportunity as expressed by 50% of the workers. Whereas the private sector provides this opportunity to the extent of 25%.

CAREER PLANNING AND DEVELOPMENT

Opportunities for growth are limited either due to educational barriers or due to limited number of jobs at the higher level. Career planning and development provides opportunity for continuous growth and security by expanding one's capabilities, knowledge and qualifications. As for as career planning is concerned, it is important to note that the worker formulates career plans for himself. Further, the management formulates succession plans through promotions and gradations. Sometimes human up resource managers/supervisors formulates plan for the worker to look after the workers wellbeing. Most of the companies are taken care of their employees career development i.e., provision for career planning, communicating and counseling with the employees about the opportunities and career education and development. The career planning should be made by the worker himself i.e., single handedly working towards his own career development regarding either for promotion or for education orfor knowledge.

In the survey undertaken for assessing the career planning and development, the opinions and responses of the selected workers are recorded and classified in a set of tables. The observations made on the aspect of textile workers are discussed hereunder. To assess the conditions of the workers very near to their reality appropriate weights have been assigned to the opinions of the workers according to the strength in their responses of the workers in the three sectors. It is observed from Table 2, that there are about 80% of the workers in the cooperative and the public sectors who formulate career plans for themselves. On the other hand, one-half of the workers in the prepare career plans for private sector informed that they themselves. While only 9 to 11% of the private, the cooperative and the public sectors opined that their companies provide and take care of the workers career plans. In the private sector one quarter remained not worried not worried whereas 7 to 10% in the cooperative and the public sectors remained not worried about their career planning.

The opinions about the superiors preparing career plans for the workers are analyzed. One-half of the workers both in the public and the private sectors expressed that their company superiors prepare career plans for them. On the other hand, an opinion of one-quarter of the workers in the cooperative sector is positive. While one-half in cooperative, one-third in the public sector and one-fourth of the workers in the private sector responded negatively and 30% in private, 18% in the cooperative and 10% of the workers in the public remain not at all thinking about career planning. About company taking care of career development, the opinions of the workers in the public sector and one-quarter in the private sector opined positively, on the other hand one-half and one-quarter of the workers in the cooperative and the public sector opined negatively. While onehalf in the private sector, one third in the public sector and only 6.8% in the cooperative sector remain not interested about this matter. Regarding whether the worker strives single handedly about his career development three-fourth of the workers in public, the private and the cooperative sectors responded that they prepare career plans single handedly. On the other hand only 5% in the cooperative and private sectors workers response is negative and 13.3% in the public sector response was also negative. While one-fourth in the private sector and 10% to 15% in the public and the cooperative sectors remain not worried about it.

Regarding career counseling, one-half of the employees in the cooperative sector responded that it is true, on the other hand, one-fifth of the employees in private and the public sectors told it is true. While nearly one-half of the workers in the public sector told they did not agree with this statement, whereas



one-third of the workers both in the cooperative and the private sectors, the responses was negative (i.e., career counseling is provided by company) and one-third in the private sector and one-fourth in the public sector and only 6% in the cooperative sector remain not at all interested.

BASIS FOR PROMOTION

Promotion is the upward reassignment of an individual in an organization hierarchy, accompanied by increased responsibilities, enhanced status, and usually with increased income, though not always so. The basis for promotion differs from position to position in the organization. The basis for promotion includes merit, experience and merit-cum-experience. In an enquiry (Table 3), it is found that the basis for promotion in the public sector and cooperative sector nearly two-thirds employees expressed their opinion that experience is the basis for promotion. While one-fourth of the workers responded with the similar opinion, whereas other one-fourth employees are with different opinions that promotion is based on merit-cumexperience and only 6% of the workers expressed that merit is the only the basis for promotion.

NUMBER OF PROMOTIONS

In the career of an employee there is scope for getting number of promotions, but some employees are not having scope to get even single promotion. Table 4 reveals that 61.98% of the respondents did not get even a single promotion in the private sector while 23% respondents got one promotion, 15(12.39%) respondents got to promotions and 8(6.61%) respondents got three promotions. In the public sector the workers are having wide scope to get promotions for more number of times. It shows that 65.22% of the respondents got three promotions and there are only 8.69% of respondents did not even get single promotion. There is better scope for promotions in the cooperative sector also. It indicates that 66% of respondents got four promotions and 17% of employees got three promotions, 8.93% of the employees have got two promotions and 3.57% respondents only one promotion.

JOB ROTATION AND ENLORGEMENT

Quality of work life (QWL) includes various motivational factors which satisfying the employees as well as increases production. Frederick Herzberg in his motivation theory emphasized on motivators. The job rotation and enlargements are part of these motivations. Job rotation means shifting the employee from one job to another job in particular time-periods. So, that the employee will always feel interest on the new job. On the other hand, the job enlargement means the deliberate up graduation of responsibility, scope and challenge in work.

Job rotation, job enrichment and job enlargement helps the employee to broaden his skills and understanding. Thorough job enrichment higher order needs like pride, and ego can be satisfied job rotation transfers knowledge and gives idea of different jobs, it gives employees respect and scope for demand job enlargement gives scope for increasing work and carrying a sense of achievement and recognition to increase interest and motivation. No doubt, provided job rotation, enrichment, enlargements, workers can contribute more towards the company.

In the survey under taken in the textile industrial units for assessing the quality of work life and various aspects in this are job rotation and enlargement, benefits of job rotation, enrichment and enlargement, relations and communications between line workers staff, social relevance of work, interest in work and pressures on the workers according to Walton criteria for measuring QWL. The opinions and responses of the selected workers are recorded and classified in a set of tables. To assess the quality of work life and quality of life very nearer to their reality appropriate weights have been assigned to the opinions of the workers according to the strength in the tables.

Table 5 presents the details relating to quality of work life workers in textile industry in sectors of public, the private and the cooperative industrial units. Three fourth of the selected workers in the public sector expressed their opinion that they were often rotated among different jobs. While one-third of the selected workers said that they were never rotated among different jobs, others remain not worried much. On the other hand one-half of the workers said that they were rotated among different jobs often. While one-third of the selected workers of the cooperative and the private sectors said that they were never rotated among different jobs.

When asked about job enlargement and enrichment, three-fourth of the workers from the cooperative sector and 62 % from the public sector said that it was done often and only fourth in the private sector. While 40% in the private sector opinion that it was done rarely and one-third of the workers in the private and the public sectors remain not interested about this aspect to comment.

As per training before job enlargement and enrichment in concerned three-fourth in the private sector and one-third from cooperative and the public sector said that it was given often. While one-third of the workers from the cooperative sectors and one-fourth in the public sector said that it was given rarely and one-fourth of the cooperative and the private sectors one-third from the public sector remain not worried much.

It is found that job rotation is done well in the sectors. But equal in private, the cooperative sectors that is 25% less than the public sector. About job enlargement/enrichment, the cooperative management, first place goes to in the cooperative and second to the public sectors and less in the private sector (25%). The training in the private sector it is given often (70%) but very less in the cooperative and the public sectors.

BENEFITS OF JOB ROTATION, ENRICHMENT AND ENLARGEMENT

When the scheme of the job rotation, enrichment and enlargement is implemented in the organization, it contributes to



the overall growth of the employees. The employees may feel more responsive about their job and also the feeling of achievement. Table 6 reveals that over three-fourths of the respondents from the cooperative sector and 90% from the public and the private sectors are strongly agreed that job rotation, enlargement and enrichment help in general growth of the employee. While 18% from the cooperative sector disagreed with the above aspects. Only 3% to 6% from the private and the public sector did disagree: others remained not worried much. About 90% of the respondents agreed or strongly agreed that they could contribute more if the scheme of job rotation, enlargement and enrichment is implemented in the organizations. While only 2 to 4 % from all the three sectors disagreed, others constituting 7 to 11 % of the three sectors remained not thinking much. It is found that the benefits of job rotation, job enrichment and enlargement in all the three sectors, workers opinion was favorable. They help in overall growth of an employee and provisions excellent in the three sectors for these aspects.

CONCLUSIONS

Job design provides autonomy and challengeable work to the employees. These aspects significantly contribute to the increasing the level of QWL. The analysis of the data indicates that the job design provides adequate scope for the employees to learn and acquire new skills on the job. However, the management is unable to utilize even the present skills of the employees. This practice in turn the-motivates employees to acquire additional skills though the job design provides the opportunities. Further, it is observed that though the job design offer scope for career planning and scope for promotion to the higher levels, the nature of the industry (i.e., the sun setting industry) hinders the growth of the employee. Added to this both job rotation and enlargement are embodied in the job design in practice the workers are rarely rotated among the jobs. Hence, it is suggested that the managements of the textile industry should view the benefits of the QWL and make use of their concept for the revival and development of the industrial units by improving the quality of work life.

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FUTURE OF ONLINE EDUCATION

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ABSTRACT

Educators are delivering good quality education to more and more students from their remote places at a less cost as compared to that of offline education. Online education, thus making education more affordable these days. The demand of learners is also increasing because people are coming across that education is the future and most of colleges have limited number of seats and which very less as compared to learners demand. Online education can meet the learners demand in the coming future solving the problem of limited seats. The proposed prototype can be applied by universities so more and more people can enrol themselves with courses and can get educated.

I. INTRODUCTION

Education is a necessity these days, it transforms lives of students and teachers both together synthesize information in respect to various subjects of their interest. As covid started with disruption in the field of education so educators were not having any means to deliver education to students and they somehow managed to do so with limited resources [8]. The outbreak of covid threw some light on the accessibility of education by all so the centre is planning to establish a "Digital University", this statement is given in union budget 2022. Digital means everything online, students were used to with physical mode of education earlier which comprises of physical classes, libraries, labs but the enrolment ratio was not good enough and attendance was a major concern but with the system of online education enrolment ratio has increased and now education is more accessible to students[7]. Online learning benefits the environment(Airport College). Online education solves the problem of timings of working students as they can enrol in the slot of their choice and upgrade themselves whenever required making education accessible to them so that they can simultaneously continue their work. E-learning is time-saving. Corporate e-learning takes 40% to 60% less time to complete(eLearning Industry). It was observed in these years from 2020 till now that standing infrastructure requires more number of years but online education is time efficient. Students can learn a course in less duration of time as compared to regular mode and easily up skill themselves. In regular mode of education number of seats are limited. There are 723 Universities, 36634 colleges and 11664 Stand Alone Institutions and out of them 702 Universities, 29330 Colleges and 6860 Stand Alone(Key Results of the AISHE 2013-14) and some students loose the chance to continue with the choice of their course at times, but with the introduction of online mode more and more students can enrol in a course and can get quality education.

II. Literature Survey

University Name	Courses	Fee Structure	Duration	Top Companies
Amity Online[1]	. MBA with specialization in Digital Marketing Management	Rs 2,55,000 /-	2 Years	TCS, HCL, JIO,
	2. MCA with specialization in ML & AI	Rs 1,64,000/-	2 Years	BYJUS, etc.
	3. Bachelor of Arts	Rs 79,000/-	3 Years	
Manipal	1. Bachelor of Commerce	Rs 80,000/-	3 Years	A
University[2]	2. Master of Computer Applications	Rs 1,50,000/-	2 Years	Accenture, Bajaj Finserv, Amazon, etc.

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	3. Master of Business Administration	Rs 1,50,000/-	2 Years	
Lovely Professional University[3]	1. Master of Business Administration (MBA)	Rs 1,42,000/-	2 Years	
	2. Bachelor of Commerce (B.Com)	Rs 1,32,000/-	3 Years	Wipro, OYO, Pantaloons, LIC, etc.
	3. Master of Computer Applications (MCA)	Rs 1,06,000/-	2 Years	cit.
Vignan	1. MBA with Elective in	Rs 80,000/-	2 years	
University[4]	Human Resource Management			
	2.			Facebook,
	3. MBA with Elective in Marketing	Rs 80,000/-	2 years	Google, EY, ICICI Bank, etc.
	4. MBA with Elective in Finance	Rs 80,000/-	2 years	
Mizoram	1. B Com E-Commerce	Rs 42,600/-	3 years	
University[5]	2. MBA – Marketing	Rs 48,400/-	2 years	
	3. M Com E-Commerce	Rs 40,400/-	2 years	
Chandhigarh University[6]	1. Bachelors of Business Administration	Rs 1,56,000/-	3 years	
	2. Masters of Commerce	Rs 1,30,000	2 years	
	3. Masters of Business Administration	Rs 2,00,000	2 years	

III. PROPOSED DIGITAL COLLEGE PLAN

a. OBJECTIVE: Virtual Education

Conversion of the regular/physical college into online mode and make courses available for various students by using the technology and Innovation approach.

- How to increase enrollment ratio
- Reaching students from remote places
- Providing education to working students
- Setting infrastructure in limited time
- Limited number of seats

b. Problem Statement

As covid started with disruption in the field of education so we were not having any means of delivery of education to the students and we managed with limited resources. But as necessity is the mother of invention, even after covid we have to realise the importance of online education. Center is planning to establish a "Digital University", this statement was given in 'Union Budget' 2022. Let's understand this statement

- Digital means everything online: We are used to of physical mode of classes, library, labs but online mode increase the total enrollment ratio and accessibility of education to more students
- Provide quality education to students from remote places.
- Adjust timings problem of working students.
- Standing infrastructure requires more number of years but online mode can educate more students in less time as compare to regular mode.
- Solving the problem of limit on number of seats



c. Prototype of our proposed system

The following page will be the very first page[figure 1] of our website and it shows how the user can contact us and enquire about the course of his interest.

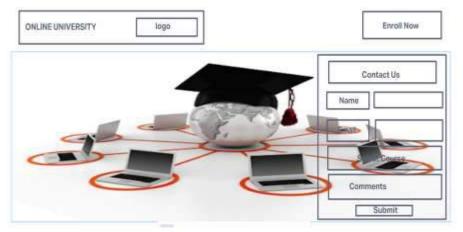


Figure 1: Home Page

The next section of our home page is the course section [figure 2] where the user can have a look on various course provided under the bachelor's and master's section. He can look for the details of each course and enrol in the course of his interest.



Figure 2: Courses Offered

The next section of the home page is about us [figure 3] section where we will provide the information about us. Here we also display the company logo which come to us for placements.



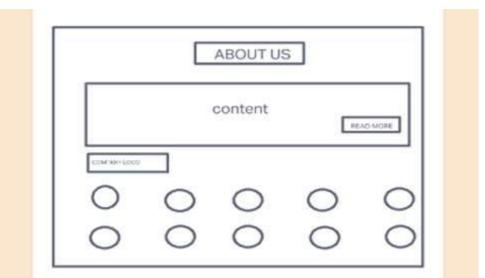


Figure 3: About us

The last section of this page displays the benefits [figure 4] of enrolling into our courses.

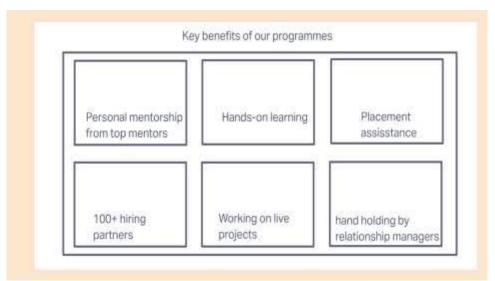


Figure 4: Benefits of our programmes

This is the student dashboard [figure 5] where students can see their courses, examination details, and attendance, due fees, achievements and marks. Students can easily access everything without visiting the campus.



HOME MY COURSES	Attendance	
EXAMINATION		
STUDENT DOCUMENT		
FEE DETAIL	MY CLASSES	ATTENDANCE
SECURITY REFUND		
MIGRATION		
COMPREHENSIVE		
EXIT SURVEY		

Figure 5: Student Dashboard

In the faculty panel [Figure 6] the faculty can upload assignments, test papers, ppts, videos and notes. This is the faculty dashboard where students and faculty can see their test papers, PPTs, Videos, Notes, Assignment, Announcement and Web links. Students can access these facility but editing is not allowed.



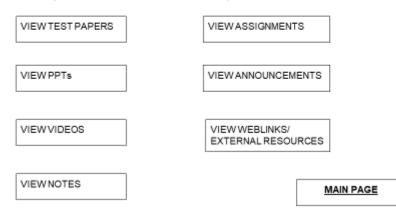


Figure 6: Faculty Dashboard

This is the faculty dashboard where faculty add test papers, PPTs, Videos, Notes ,Assignment , Announcement and Weblinks for students [figure 7,8] . It is available for every course.



WELCOME <fac (ADD RESOURCES)</fac 	ULTY NAME>
ADD TEST PAPERS	ADD ASSIGNMENTS
ADD PPTs	ADD ANNOUNCEMENTS
ADD VIDEOS	ADD WEBLINKS/ EXTERNAL RESOURCES
ADD NOTES	MAIN PAGE

Figure 7: Faculty to upload tests and ppt

ADD NEW TEST		
TITLE		
		BROWSE
	OR	
		PASTELINK
	UPLOAD	MAIN PAGE

Figure 8: Faculty screen to add test

CONCLUSION

Online education is likely to become the future of education, Covid-19 impacted the world education adversely and online education helped millions of people to gain education from their respective places. Past few years shown us how powerful online education is how it reshaped world education system with just internet connectivity and modern technology. We all are well aware that online education will increase its presence in coming future and will deliver facility of education all around the world. Because of its affordability and flexibility it is gaining immense popularity especially for people who cannot enrol them in university courses due to schedule crashes and location. Throughout this study our prime objective was to discuss how online education has helped millions of people gaining education and how it is going to grow. Our study started with the overview of online education than we studied upon various universities who have already implemented the idea of providing online education through their websites and lastly we proposed a prototype which can be implemented to provide online education.

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THE IMPACT OF THE HEADMASTERS' TRANSFORMATIONAL LEADERSHIP STYLE ON TEACHERS' ORGANIZATIONAL COMMITMENT AT TAMIL NATIONAL PRIMARY SCHOOLS IN KEDAH, MALAYSIA

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ABSTRACT

In this technological era, educational institutions are facing many challenges to improve their performance of the institutions through successful leadership behavior. Effective leaders play an essential and important role in accomplishing the target goals for the betterment of organizations through making subordinates committed. The aim of this study is to investigate the impact of headmasters' transformational leadership style on teachers' organizational commitment in Primary Tamil Schools in the state of Kedah, Malaysia. The measuring instruments used in the study were Multifactor Leadership Questionnaire (MLQ Form 5X) and the Three-Component Model (TCM) survey for organizational commitment. The stratified random sampling technique was used to collect data from 346 teachers from primary Tamil schools through a survey method. Data were analyzed descriptively by using Statistical Package for the Social Sciences (SPSS) and utilized the Structural Equation Modeling technique on higher-order constructs to test the hypotheses of the study by using Smart PLS statistical software. The study's findings revealed that headmasters' transformational leadership style has a significant impact on teachers' organizational commitment. This study also contributes empirical evidence for leaders (Headmasters) to enhance their leadership attitudes to be a more efficient and suitable relationship with teachers' organizational commitment.

KEYWORDS: Transformational leadership, organizational commitment, structural equation modeling, attitudes, stratified random sampling technique.

INTRODUCTION

Leadership is an art that motivates a group of people to act towards achieving a common goal. School leaders, namely headmasters, can improve teaching and learning performance indirectly through their influence on staff motivation, commitment, and working conditions. Teacher commitment is empirically supported as one of the influential factors in school effectiveness, teacher satisfaction, and teacher retention (Fresko, Kfir, & Nasser, 2017; Nir, 2012; Singh & Billingsley, 2018); job performance (Tsui & Cheng, 2019); staff absenteeism and turnover (Ware & Kitsantas, 2011), their ability to innovate and integrate new ideas into leadership practice (Park, 2015). The quality of transformative leadership is important in increasing the level of commitment of members of the organization (Teharaja, A., & A. Hamid, A. (2021).

Leadership plays an important role in creating a comfortable environment for subordinates to work in. Headteachers must provide themselves with organizational leadership knowledge. This emphasizes that the leadership style of head teachers is very important to curb teacher problems. (Teharaja, A., & A. Hamid, A. (2021).

The basic aim of this study is to determine the impact of principals' transformational leadership style on teachers' organizational commitment in Tamil National Primary Schools of Kedah. Many previous studies have been conducted on leadership style and its effect on organizational performance, but in this research, the effects of organizational leadership performance have been studied (Bass & Avolio, 1994; Cardona, 2000; Avolio & Gardner, 2005; Limsila & Ogunlana, 2008; Peterson et al., 2012). Therefore, the impact of subordinate leadership is still poorly studied with employee organizational commitment (Whiteley & Jonson, 2012). From the perspective of the importance of leadership style on teacher's organizational commitment and to fill gaps in existing literature reviews in the context of primary and organizational education, this study focuses on the impact of transformational leadership style on teacher's organizational commitment. This theoretical paradigm has not been studied in the context of Tamil schools in Malaysia. This study is expected to fill the research gap in existing research. This study also fills in the research gap, according to Bass (1999: 23-24), that "although the concepts of transformational and transactional leadership are universally



available, there is still much to be learned about how they are influenced by the context in which they occur".

According to a study conducted by Sharif (2002), the leadership style of the principals and the commitment of rural primary school teachers in Malaysia show that average levels of teacher commitment in the organization are an unhealthy phenomenon if the country aims to develop holistically. Teachers' commitment to their profession needs immediate and serious attention. Leadership plays an important role in creating a comfortable environment for subordinates to work. Indeed in the success of the education system in any country is highly dependent on the commitment of teachers and the leadership style of head teachers in schools. (Teharaja, A., & A. Hamid, A. (2021).

In the context of education at Tamil schools in Malaysia, not much research has been found that uses the theoretical paradigm of transformational leadership to study the impact of the transformational leadership style of headmasters on the organizational commitment of teachers at Tamil schools. According to Northouse (2010), only a few studies have been conducted on the impact of different leadership styles in non-Western cultures and contexts. This research focuses on the impact of leadership style on the paradigm of transformational leadership theory on the organizational commitment of teachers in Tamil Schools of Kedah State. In the Malaysian context, there have been many studies of transformational leadership styles on teacher organization commitment. Yet no studies have been conducted in Tamil schools across Malaysia on the leadership style of teacher organization commitment.

This has prompted the researcher to carry out this study in the Tamil Schools of Kedah to look at the impact of transformational leadership on teachers' organizational commitment among Tamil school teachers. Transformational leadership has been identified as one of the best leadership styles for implementing change in school organizations (Musa, Yusof, Yunus, & Hamid 2014).

In recent times there have been several issues that have affected the organizational commitment among school teachers. Among them, there have been complaints from teachers that their workload has increased. It was also pointed out by Rahman (2000) that increased workload, the disempowerment of employees, and stress. Recent studies have led researchers to study the relationship between transformational leadership style and organizational commitment among Tamil school teachers. Various styles of leadership are practiced but transformational leadership is used in most excellent organizations (Musa et al., 2014). According to Northhouse (2010), several types of research have been found to detect different leadership styles in western cultures and contexts. Through conducting this research, researchers can identify leadership styles based on the theoretical paradigm of transformational leadership on teacher organization commitment in Tamil schools.

In the Malaysian context, there is a need to study the impact of transformational leadership on organizational

commitment in education. After review, all national and international related literature researcher finds a gap. Therefore, this study is the first effort to investigate two theoretical paradigms including transformational leadership and organizational commitment in Tamil schools in Kedah.

LITERATURE REVIEW

The concept of transformational leadership presented by Burns (1978) was further developed by Bass (1985) with an argument regarding the full acceptance of the concept of transactional leadership. The term change leadership was later replaced by Bass with transformational leadership, and he claimed that different leaders could easily transform their followers to become more active by using different types of motivations for different achievements. A transformational leader is determined to achieve his goals through his followers, he, therefore, supported them by honoring them and giving them loyalty and trust to improve their performance (Bass, 1985; Bass & Avolio, 1994). For leadership style differences, Bass provides a model for measuring leadership behavior, and Bass and Avolio subsequently improve and develop the MLQ (Bass and Avolio, 1998; Bass and Avolio, 1994; Bass and Avolio, 2004). In 2004, leadership development models were introduced for different training sessions to facilitate transformational leadership.

Leadership is considered an important organizational factor. Positive and transformational leadership behaviors increase commitment among workers and they feel satisfied and committed to their institution (Mowday, 1982). Many that transformational leaders researchers have found significantly impact employee organizational commitment and satisfaction and build a strong relationship between workers and organizations (Walumbwa & Lawler, 2003). Positive leadership performance enhances positive organizational commitment to a productive and effective environment (Bass, 1985; Bass & Avolio, 1994; Allen & Meyer, 1996; Cardona, 2000). In a metaanalysis by Keskes (2014), it was found that workers working under the supervision of transformational leadership have some unique attitudes towards their organizations, such as how committed they are to achieving their career goals. Supervisors should provide organizational support to their employees (Leider et al., 2016); Effective leadership significantly impacts the role of organizational leaders and is crucial to improving or improving job satisfaction among their employees (Asencio & Mujkic, 2016).

Kim and Kim (2014) argue that transformational leadership enhances existing psychological conditions related to employee organizational commitment, ie. employees have an emotional connection with the organization and feel proud to be members of the organization as well as work in organizational activities. Employees of the Korean Spilled off company were surveyed for research purposes. Structured equation modeling was used to test the study hypotheses. The findings of the study indicate that there is a significant relationship between transformational leadership style and affective organizational



commitment. Rowold et al. al. (2014) explored the study that transformational leaders who inspire employees offer a clear vision and increase cohesion, ie. involve employees to create teamwork to achieve goals or objectives for the sake of organizational progress. Transformational leadership seeks commitment from their subordinates to conform to their beliefs and values. Employees feel committed when they perform tasks under the supervision of transformational leaders because their leaders involve them in the decision-making process.

Further, Yunus and Ibrahim (2015) argue that transformational leaders can make a positive impact among followers through their charismatic behavior to be committed to the organization. Through a survey of 122 employees, the findings show the characteristics of leaders that allow followers to identify leaders who can be followed, including those who inspire teachers and other staff about working to achieve institutional goals and achieve target objectives by conveying expectations. having a visionary sense of purpose, makes subordinates feel free to share ideas and allows employees to feel a more emotional bond with their work and organization.

Allen, Attoh, and Gong (2017) conducted a study in the United States to investigate the impact of transformational leadership on the affective commitment of 218 employees in two private universities. A multi-mediated serial model was used to analyze the data. The transformational leadership paradigm was used to test transformational leadership behaviors through the use of the Multi-Factor Leadership Questionnaire (Avolio & Bass, 2004). An affective commitment was measured through a scale developed by Allen and Meyer (1990) and used to assess participants 'affective organizational commitment through eight items. The findings of this study indicate that leaders with transformational leadership behaviors can make their subordinates emotionally related to their work.

Shurbagi (2014) stressed that transformational leadership behaviors increase organizational commitment among workers in Libya. SPSS software was used to test the hypothesis through the application of Spearman Correlation and Multiple Regression statistical techniques. The results of the study indicate a positive and significant relationship between transformational leadership style with job satisfaction and organizational commitment. The study also found that leaders of national oil companies direct their followers through transformational leadership behaviors and this attitude results in increased commitment among the employees of those organizations.

In a recent study, Eyal (2017) examined the impact of transformational leadership on teachers 'organizational commitment to education. The findings of the study revealed that leaders with transformational leadership qualities can develop emotional relationships with their staff so that their staff can understand the vision of the institution and develop their skills as they should and become committed to their leadership and organization.

Berkovich and Eyal (2017) argue that individual judgment represents a leader's ability to pay individual attention to their followers and focus on the high-level needs of their followers. Through this behavior, leaders offer their followers an encouraging atmosphere and listen to the expressions of concern of their followers. The respondents of this study were 639 primary school teachers surveyed from a sample of schools in Israel. Multi-level analysis software was used to analyze the data for this study.

Para-González, Jimenez-Jimenez, and Martínez-Lorente (2016) through their research were able to examine employees working under the supervision of transformational leadership. They find employees do honest work for the organization because their leaders pay individual attention to them. Human resource management, learning, and innovation are the motivating variables in this study. Partial Least Squares was used to study the relationship between data from 200 Spanish industrial companies. The findings of the study indicate that transformational leadership behaviors improve organizational performance, and there is a significant and positive correlation with organizational performance.

Asif, Ayyub, and Bashir (2014) researched and found that transformational leaders have some unique qualities that make them more effective and able to keep employees committed to achieving targeted goals. A total of 250 workers from the textile sector in Punjab province were surveyed using MLQ-5X, OCQ, and Psychological Empowerment Questionnaire (PEQ) as research instruments. The results of the study show that there is a strong relationship between transformational leadership and organizational commitment.

Abdullah et. al. (2017) argue that transformational leadership styles in the Malaysian educational environment increase employee commitment to their organizations by offering an attractive vision for future situations, encouraging enthusiasm and optimism as well as enriching teachers 'goals. The participants of this study were 835 teachers from 167 national secondary schools in Malaysia.

Stinglhamber, Marique, Gaëtane, Dorothée, and De Zanet (2015) argue that transformational leaders make their employees establish an emotional connection with the organization. A total of 287 employees of water-producing companies in Belgium were surveyed. Data were analyzed using Lisrel 8.8 software. Confirmatory Analysis Factor (CFA) and Structural Equational Molding (SEM) or path modeling were used to test the study hypotheses. Findings of the study indicate that transformational leadership behaviors increase employee affective commitment.

Ibrahim, Ghavifker, Ling, Siraj, and Azeez (2014) investigated the impact of different dimensions of transformational leadership on teachers 'organizational commitment. This quantitative study surveyed a total of 1014 secondary school teachers in Malaysia. The findings of the study indicate that employees working under the supervision of transformational leadership are committed to their work and their workplace. This study suggests that educational leaders



should improve the quality of effective leadership to improve teachers 'commitment to their institutions.

Based on the results of the study by Munian, S., & Hasan, S. (2020), it was found that the transformational leadership style of headmasters has a significant relationship with the work commitment of Tamil National Type School teachers in Kulim Bandar Baharu district. Maintaining a

leadership style that emphasizes the interests of teachers can increase teachers' work commitment in schools.

METHODOLOGY

Figure 1 below depicts the conceptual framework of this study based on the discussion of variables in the literature review section.

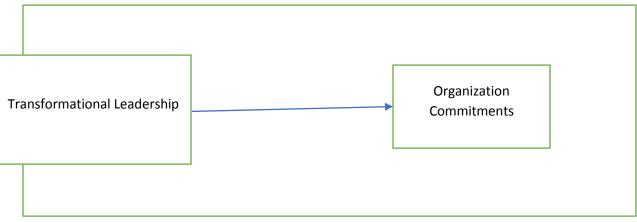


Fig. 1: Research Framework of the effect of transformational leadership on organizational commitments

This study used a quantitative research design. The study's respondents were Tamil primary school teachers from Kedah state. Responses from the teachers were gathered through a survey method. A total of 356 surveys from Tamil primary school teachers were gathered. From 356, about ten responses were discarded due to missing cases. The questionnaire's measurement item was modified from the prior research. A seven-point Likert scale was used with a score of "1" representing "strongly disagree" and a score of "7" representing "strongly agree". A total of 346 were carried out for further

analysis. Smart-PLS version 3.2.9 was used to analyze the measurement and structural model for this study.

FINDINGS

All the findings of the study are discussed in this section with the justification of the latest relevant literature review. For this purpose, all four main research objectives and related research questions and hypotheses are shown in Table 1.1.

Table 1.1 Research Obj	jectives, Research	Questions, and Hypotheses
------------------------	--------------------	---------------------------

Research Questions	Research Objectives	Hypothesis
To what extent does the	To investigate the impact of the	H1: The transformational
transformational	transformational leadership style	leadership style of headmasters
Does the leadership style of	of headmasters on the	has a significant impact on the
headmasters have an impact on	organizational commitment of	organizational commitment of
the organizational commitment of	SJKT teachers in Kedah	SJKT teachers in the state of
SJKT teachers in Kedah?		Kedah.

Transformational Leadership and Organizational Commitment

Research Objective 1: To investigate the impact of the transformational leadership style of headmasters on the organizational commitment of SJKT teachers in the state of Kedah.

The objective of this research is to "Investigate the impact of the transformational leadership style of headmasters

on the organizational commitment of SJKT teachers in the state of Kedah". Hypothesis H1 was tested in parallel with research objective 1. The findings support the significant impact of transformational leadership on organizational commitment ($\beta = 0.401$, t = 8.06, p <0.05). This means that the transformational leadership style of headmasters has a significant impact on the organizational commitment of SJKT teachers in the state of Kedah.



The significant impact of transformational leadership on organizational commitment is also supported by past studies that show a significant positive impact of transformational leadership on organizational commitment. According to Avolio & Yammarino (2013), all transformational leadership behaviors such as involving subordinates in important decisions can provide individual support and improve their loyalty by expressing an inspiring vision to increase commitment among subordinates to the organization. The findings of this study support Mesu et. al. (2015) on transformational leadership behaviors that can increase organizational commitment among their followers and increase the level of organizational commitment.

These results are supported by the leadership literature showing that the instinct of caring and listening to the expressions of subordinate employees for transformational leadership can encourage and inspire subordinate employees to do work beyond expectations with trust and loyalty to the organization [(Bass (1985)), Sarros & Santora (2001), Dionne et. Al. (2004), Kirkbride (2006) and Limsila & Ogunlana (2008)]. Many researchers agree that employees working under transformational leaders often feel committed to the organization in all aspects (Farahani et. Al. (2011), Shurbagi (2014), Eyal (2017) and Meyer et al. (2002)].

However, these findings contradict the findings of metanalytic studies that employees feel committed when they work under transformational leaders because the behavior of transformational leaders gives positive feelings among employees to be committed to their institution (Jackson et. Al., 2013). A review of the literature concluded employees have an affective commitment to their organization and their transformational leaders as they create convincing visions, motivate employees through emotional attraction and employees feel satisfied with them. The findings of the study reveal transformational leadership related to organizational commitment that supports the findings of this study.

The findings of this study are also supported by research conducted in Sarawak, Malaysia, when Ibrahim, Ghavifker, Ling, Siraj, and Azeez (2014) argued that transformational style is based on emotional relationships created with followers by initiating a common vision among teachers of the institution. Transformational leadership behaviors serve as strengths that create an organization's innovative settings and improve organizational commitment among them. In a recent study, Eyal (2017) examined the impact of transformational leadership on teachers' organizational commitment to education. The findings of the study revealed that leaders with transformational leadership qualities can develop emotional relationships with their staff so that their staff can understand the vision of the institution and develop their skills as they should and become committed to their leadership and organization.

Shurbagi (2014) investigated the extent to which staff feels committed and satisfied working under transformational leadership in Libya. MLQ, OCQ, and JSS forms were used to assess transformational leadership, organizational commitment, and job satisfaction. The findings of the study found that transformational leaders are responsible for developing the skills of their followers that can improve organizational performance. Transformational leadership is highly effective and successfully provides encouragement to employees to try new ways of solving problems and makes them more committed to the organization and satisfied with their jobs.

Based on the results of the study by Munian, S., & Hasan, S. (2020), it was found that the transformational leadership style of headmasters has a significant relationship with the work commitment of Tamil National Type School teachers in Kulim Bandar Baharu district. Maintaining a leadership style that emphasizes the interests of teachers can increase teachers' work commitment in schools.

Studies on the impact of leadership styles on teachers' organizational commitment in Tamil-medium schools are very limited in Malaysia. Therefore, this study is a significant contribution to the study of the impact of transformational leadership styles on teachers' organizational commitment in SJKT in the state of Kedah. In the context of Malaysia at the lower level of education, there have been few studies that have investigated the variability of organizational commitment. The theoretical model of this study is the first attempt to study the impact of transformational leadership on organizational commitment.

DISCUSSION AND CONCLUSION

The findings of this study proved that the transformational leadership style of the headmasters in Tamil schools has an impact on teacher organization. This finding maybe could be the reason for the achievement of UPSR results in the year 2019 in Kedah. The findings of (Sarros & Santora, 2001) proved that transformational leadership and student academic achievement in Florida primary schools show that there is a significant relationship between transformational leadership and student academic achievement. The overall achievement of Tamil schools in Kedah is 70.33% and it shows an increase of 4.67% compared to the achievement of 2018 which is 65%. According to sources in the Kedah State Department of Education performance of Tamil, schools are second best after Chinese schools. (Sarros & Santora, 2001) concludes that this study shows that transformational leadership affects student achievement and increases teacher commitment in primary school.

This study examines the impact of transformational leadership of headmasters on organizational commitment in SJKT in Kedah. The conceptual research model was designed through a review of the literature review and with the support of four research hypotheses. The effects of transformational leadership styles have been investigated in most empirical studies in the Western world [Nguni, S., Sleegers, P., & Denessen, E. (2006)]. This study was conducted in a developing

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country to investigate the impact of transformational leadership on organizational commitment.

Transformational leadership is an exogenous variable that the predictive construct of organizational represents commitment in research models. To explore the impact of the transformational leadership style of head teachers on the organizational commitment of teachers in SJKT in Kedah, researchers have used three standard instruments (questionnaires), namely MLQ and OCQ. This instrument is an instrument that has obtained permission. Respondents 'demographic information was collected through the instrument, including age, gender, marital status, position, educational qualifications, and work experience. The MLQ form (Avolio & Bass, 2004) was used to measure transformational leadership behavior, i.e. a high-level construct. According to Bass & Avolio (2004) and Darvish & Pour (2013), the MLQ 5X has been used to measure leadership style. Transformational leadership style consists of five dimensions, namely ideal influence attribute (leader quality identified by followers by considering their leader as an example based on high ethical and moral behavior), ideal influence behavior (leader behavior close to their followers), inspiring motivation (leaders motivate their subordinates by encouraging enthusiasm in the team to achieve target objectives), intellectual stimulation (leaders who increase the instincts of creativity and innovation among their subordinates by making the leadership inspire and free employees criticize not only their point of view but also opinions of leaders and their institutions), individual considerations (policies give importance to each employee and expand their role by assigning daily tasks and providing feedback on their performance to correct their mistakes). Each MLO dimension contained four five-point items on a Likert scale valued between 1–5. This variable consists of 20 items. Each dimension has five items.

The second instrument used by researchers is the Organizational Commitment survey introduced by Allen and Meyer (2004). The organizational commitment questionnaire consists of hihigh-levelonstructs (OCQ) iinvolvingaffective commitment (ACS), normative commitment (NCS), and continuous commitment (CCS). First, affective commitment involves the psychological state of an organization's commitment when different factors such as work experience, job characteristic,s and personality play an important role. Researchers emphasize work experience is seen as an important factor for an employee to show emotional attachment to the organization [Meyer & Allen (1987) as cited in Allen & Meyer (1990)]. Second, normative commitment is a state of an employee's attitude that can be changed by culture. Organizational culture plays an important role in allowing an employee to decide whether to leave the organization or continue working there [Wiener (1982) cited in Allen & Meyer's statement, p.19). For example, an employee expresses his or her commitment to the organization when influenced by important people and also shows loyalty to the organization in the long run (Allen & Meyer, 1990). Lastly, ongoing commitment is considered an important component of organizational development by many researchers. Ongoing commitment is an employee's feeling when wanting to continue working in an existing job and related organizations because of benefits such as salary, social ties, employment opportunitie,s and pensions. This sense of commitment reflects a sense of "security" in the organization [Allen & Meyer (1990), Meyer et. Al. (2002), Brown (2003), Jaros (2007), Meyer et. Al. (2012) and Lambert et. Al. (2013)]. This statement is a seven-point Likert scale that shows the psychological bonding of an employee with an organization. The instrument consists of 18 items with three dimensions. Six items measure each dimension.

The study reveals that the transformational leadership style of headmasters' has a significant impact on organizational commitment. This study also revealed empirical evidence for leaders (headmasters) to improve their leadership attitude to be more efficient and to foster a positive relationship with the organizational commitment of teachers. The study also will help to produce effective leaders who will play an essential role in accomplishing the target goals for the betterment of organizations through making subordinates committed. This research will be of significant value to all educational institutions where principals have a direct influence on teacher organizational commitment.

RECOMMENDATIONS

This study is significant to attract future researchers in international and Malaysian contexts, and to study the impact of leadership styles at other educational levels with other dependent variables such as cultural context, political influence, and so on. This paper was significant to develop the interest of principals who were particularly noted through this study and principals in other schools, in general, to analyze leadership practices and refine their leadership style and behavior to enhance job satisfaction and organizational commitment among teachers.

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PRECISION VITICULTURE'S STATE-OF-THE-ART TECHNOLOGICAL ADVANCEMENTS

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ABSTRACT

The research demonstrates how having access to this knowledge enables winemakers to strategically harvest fruit packages based on yield and/or fruit quality requirements and product requirements. Economic advantages of each of these outcomes include lower input costs, increased productivity, and a better final product. The cost of integrating decision-support systems on a field scale, as well as the accessibility of operating systems and devices, will be key factors in the implementation and regular use of smart sensing techniques because they present enormous opportunities for producers at all stages. To enable the wide adoption of such technology, the issue of data rights and security, especially when data is obtained through third parties, needs to be resolved in the upcoming years. KEYWORDS: viticulture, digital wine industry, artificial intelligence, and wine production

INTRODUCTION

As technology develops and advances, many agricultural sectors assess what improvements can be incorporated into their operations to provide management support (Fountas, Espejo-Garca, Kasimati, Mylonas, & Darra, 2020). This is crucial for the wine industry in particular because farmers around the world are facing challenges from climate change, varying atmospheric conditions, compressed seasons, drought, heat, labor shortages, and rising production costs (Koufos, Mavromatis, Koundouras, & Jones, 2020; Soar, Sadras, & Petrie, 2008). In order to examine vineyard management strategies, regular monitoring of biophysical variables and grapevine performance is therefore necessary. Today, winemakers can access and use precise data and information about their vineyards as a basis for making the best decisions they can in order to maintain productivity while also remaining financially and environmentally sound. This toolbox consists of GPS, GIS, geostatistics, AI, and DSS in addition to remote and local sensing technologies. In the viticulture sector, the terms "precision" or "digital viticulture" are frequently used to describe the prudent creation and application of such procedures (Ammoniaci, Kartsiotis, Perria, & Storchi, 2021).

Non-invasive sensing methods, including as spectroscopy, MSI, HSI, Chl fluorescence, thermography, ER, LiDAR, and CV, can be utilized in wine grape production systems to gather crucial information about the vineyard and the plants growing there (Fountas, Mylonas, et al., 2020). They can be used as portable sensors, installed on or incorporated into machinery, automated robotic systems, and ground-based platforms like piloted vehicles, as well as aerial platforms like satellites, small planes, and UAVs or drones (Matese & Di Gennaro, 2018; Matese et al., 2015). Additionally, the widespread use of cellphones and "apps" has completely changed how vineyard producers may access and gauge vine performance and fruit attributes. Thanks to the use of specifically constructed robotic devices with non-invasive sensing technologies, many vineyard operations will likely be

mechanized in the future (Matese et al., 2015; Suarez et al., 2021).

With the aid of these spatially enabled digital technologies, grape growers can monitor changes in vine parameters such as canopy size (Sanz et al., 2018), water (Gutiérrez, Diago, Fernández-Novales, & Tardaguila, 2018), and nutritional status (Diago et al., 2016). They can also monitor changes in yield (Aquino, Millan, Diago, & Tardaguila, 2018), grape composition (Gut Wine makers can more effectively apply inputs like fertilizers, sprays, and irrigation water through targeted applications thanks to the ability to trace the geographical distribution in the vine, soil, and geographical aspects across vineyards. They can also harvest fruit parcels carefully in accordance with various yield and/or fruit quality standards and product specifications (Bramley, Ouzman, & Trought, 2020).

This article's goal is to showcase several digitallybased viticulture applications that are either already in use locally or are being developed. The study will assess the prospects that these methods provide for growing grapes and making wine in response to growing environmental issues, such as changes in climatic and soil conditions. The objective is to increase the efficiency of the winemaking processes and lower production costs. The study will also discuss how various sensing methods work and how artificial intelligence might be used in viticulture.

A positive implication for viticulture is artificial intelligence.

Since AI can transform data into different types of information that grape farmers may use to make informed decisions, it may be highly useful. All of the sensing methods and platforms mentioned earlier work together to give today's grape growers a high level of data collection proficiency, even at tiny scales. But further research development will be necessary. To learn more about how to model the crop into precise statistics and extract more information, a variety of other uses and developments must be investigated. Furthermore, as crop data enables precise management of



ecologically vital resources like water and soil, in addition to being significant to grape producers for farming methods, it has both direct and indirect environmental uses.

The most widely used field for automating knowledge in agriculture, particularly viticulture, is machine learning (ML) (Cai et al., 2019; Fuentes et al., 2018). The study of getting computers to learn on their own, generally speaking, so they can transform input into useful knowledge is known as machine learning (ML), and it is at the core of artificial intelligence (AI) (Jordan & Mitchell, 2015). Therefore, grape farmers and winemakers can use machine learning in conjunction with the numerous data collection options presently available to deploy data-driven solutions to enhance and optimize their production processes. Training is used to do this, which comprises building mathematical models that are fed input from data. There are various processes involved in machine learning.

The next step is to train the models that make up machine learning after all the data has been correctly structured and handled (i.e., training models using algorithms fed by data). Model training is the most challenging stage and one that requires user experience. This is due to the need of comprehending the various algorithms that can be used, their advantages and disadvantages, and the best selection for the data at hand. In viticulture, numerous machine learning techniques have been applied to achieve a variety of objectives. For instance, SVMs for disease detection, classification of grape types, and yield forecasting, an ideal method for disease identification using imaging, deep learning for image classification in vineyards, and disease detection using hyperspectral data evaluation (Bendel et al., 2020). Advanced models for precision agriculture have been built using a variety of deep learning techniques, including convolutional neural networks (Barré et al., 2019; Hsieh & Kiang, 2020); autoencoders (Karim et al., 2020; Yu, Lu, & Liu, 2018); and recurrent neural networks (Chen, Xiao, Zhang, Xie, & Wang, 2020; L.-W. Liu, Hsieh,

A model can be used for more things when it has been adjusted, trained, and verified. For instance, combining a sensor and a system with the learned model would be necessary in digital viticulture. The model would continuously gather data from the sensor and produce forecasts based on the discovered directions and relationships. Although it is possible to take advantage of this and restart the process utilizing the newly gathered data because this is also a data-gathering procedure. It's crucial to keep in mind that a model's output should be considered more of a tool than a final product.

CONCLUSION

This article provides a thorough overview of several digital non-invasive procedures that are either currently being developed or used in the wine and grape business. Enhancing resource use efficiency across all agricultural systems is necessary to address current and future issues like climate change, the environment, waste, labor shortages, and growing production prices. The use of various proximal and remote sensing technologies has improved our understanding of vineyard variation with respect to spatial disparities, sequential dynamics, and underlying causes. According to the study, having this knowledge enables winemakers and grape

producers to use inputs more efficiently through targeted applications and harvest fruit packages strategically in accordance with yield and/or fruit quality criteria and product requirements. Economic advantages of each of these outcomes include lower input costs, more productivity, and a better final product. It is difficult to demonstrate how precise, digital viticulture and related technology benefit the environment. There are currently no known examples from the wine and grape industries. However, environmental benefits are inevitable given the tightening regulations on the use of chemicals in agriculture and the ongoing commercialization of equipment outfitted with sensors and VRA technology to measure canopy size.

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MONKEYPOX AND ITS CURRENT REALITY

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ABSTRACT

Introduction: Monkeypox or "Monkeypox" is a species of poxvirus, which possesses double-stranded DNA. This species has the potential to be used as bioterrorism; and currently has re-emerged in non-endemic countries.

Objective: To detail the current information related to monkeypox and its epidemiological repercussions; in addition, to analyze the management and prevention of the contagion of this disease.

Results: Monkeypox is transmitted by nasopharyngeal, oropharyngeal or intradermal routes; it has an incubation period of 5 to 21 days. Its diagnosis is made by laboratory tests such as PCR-RT and biopsy of skin lesions. Prevention is carried out with vaccines (especially the Ankara vaccine), which is 85% effective. Other drugs can be used in case of infection by this virus; however, their efficacy has not been determined so far. Currently, third generation vaccines are being developed.

Conclusions: Monkeypox had its outbreak in the 1970s and re-emerged in 1990. In 2020, 5257 suspected patients were found. It has now been discovered in the United Kingdom, Israel, United States, Singapore, among others. Current management is symptomatic and prevention with vaccines. The administration of Tecovirimat and Brincidofovir have controversial efficacy. Vaccines have shown greater effectiveness.

KEY WORDS: Monkeypox, orthopoxvirus, smallpox, Polymerase Chain Reaction, Poxviridae infections.

Methodology: a search was carried out in PubMed, Elsevier and Google Scholar, with the terms Monkeypox, Ape Pox and Monkeypox. Some articles were rejected due to lack of relevance.



INTRODUCTION

Within the poxvirus family there are several types of viruses with similar DNA that infect many vertebrate hosts, among these viruses are the orthopoxviruses. Some infections caused by orthopoxviruses such as zoonotic monkeypox virus also called monkeypox and variola cause fatal consequences in humans(1,2).

With the global decline of smallpox in the 1980s, monkeypox took the place of the most important orthopoxvirus for public health. Therefore, the global commission for the certification of smallpox eradication recommended research and surveillance for monkeypox and also for other orthopoxvirus infections. Forty years after that report we have a worldwide increase in reported cases of the disease(3-5).

The so-called monkeypox takes its name from the fact that it was isolated for the first time in these primates, although the main reservoirs of its particles are rodents. The disease produced by this poxvirus originates from Africa where there is direct contact with the reservoir, causing a systemic picture with vesicles, fever and lymphadenopathies; however, in 2003 we had the first outbreak in the western hemisphere (1,2,4,5). Currently, the simian virus has re-emerged in different regions of the world, including South America, and consequently it has entered the world public health agenda due to the possibility of being a potential agent of bioterrorism(3). Below we will briefly describe simian pox, its etiology, epidemiology, pathophysiology, clinical manifestations, diagnosis, treatment and discuss the critical need for further research to address this public health challenge.

The species of monkeypox virus also called monkeypox belongs to the poxviridae family. This is a diverse and large family of double-stranded DNA viruses that multiply in the cytoplasm of infected cells. They have all the proteins necessary for replication, transcription, assembly and genome output but require host ribosomes for mRNA translation(4,6,7).

They belong to the subfamily chordopoxvirinae and to the genus orthopoxvirus according to the shared antigenic similarity, the induction of cross immune protection and phylogenetic grouping. In electron microscopy, simian pox virus is seen as ovals or bricks enveloped by comparatively large lipoproteins of 200-400 nanometers (3,5,6).

Simian pox is a reemerging zoonotic disease threat. In 1958 Copenhagen, Denmark, it was first revealed among Asian monkeys originating from Singapore, 2 weeks after importation. Although it was first recognized in captive monkeys, data suggest that rodents and other small mammals are the natural reservoir. This zoonotic disease is endemic to Central and West Africa. The first reported case was in Zaire in 1970, present-day Republic of Congo, in a 9-month-old boy. Since that time there have been occasional outbreaks in human populations, and infections have also been demonstrated in rats, mice, prairie dogs, monkeys and squirrels(3-6,8).

Since 1970, the number of human cases has increased, especially in the Republic of Congo, and the median age of manifestation has also increased from 4 years in the 1970s to 21

years from 2010 to 2019(9). More than 80% of cases recorded from cohorts in 1970-1979, 1981-1986 and 1996-1997 were younger than 15 years, while less than 50% of the population was younger than 15 years at those times(10).

At this time, 2 genetically distinct clades have been identified, the West African clade located essentially in the West African Subregion and the Central African or Congo Basin clade located mainly in the Central African Region(3,6,9). The overall case fatality rate was 8.7 %, with a significant difference between clades: 10.6 % from Central Africa (95 % CI: 8.4 %-13.3 %) versus 3.6 % from West Africa (95 % CI: 1.7 %- 6.8 %)(9). Other authors show that the West African clade has a case fatality rate of less than 1% and the Central African clade a case fatality rate of up to 11% in unvaccinated children (6). A systematic review shows that the smallpox vaccine has an efficacy of about 85% against monkeypox and reduces the frequency and intensity of clinical manifestations, with case fatality rates ranging from 0 to 11% (10).

In 2003, giant gambian rats brought from Ghana infected prairie dogs in the Midwestern United States that were sold as pets, subsequently leading to more than fifty human cases of simian pox. In October 2018, a case was reported in a male who traveled from Nigeria to Israel(11).

A male who traveled from Nigeria to Singapore also presented symptomatology in May 2019 and in May 2021, 3 members of a British family returning from their trip to Nigeria were infected with simian smallpox virus. In June and November 2021, 2 men traveling from Nigeria to Texas and Maryland, respectively, were reported. As of May 2022, an individual who returned to Massachusetts from Canada, as well as other possible cases in the United Kingdom and several non endemic countries in Europe and the Americas are being investigated and further investigations are underway to establish the likely source of infection and to restrict further spread (12-17).

Not being vaccinated against smallpox and living in rural or forested areas of central and west Africa have been shown to be risk factors for contracting the disease, in addition to preparing or handling wild animals and caring for someone affected by simian smallpox virus. In the absence of reports and confirmations of disease, the prevalence and incidence of human infection cannot be accurately defined, but both have increased since routine variola vaccination was discontinued(5,6,8,18).

Humans can contract the virus by respiratory droplets, body fluids, direct contact with skin lesions of infected patients, indirect contact with contaminated fomites, bites, scratches from carrier animals, direct contact with body fluids or lesions of infected animals. Therefore, isolation in a negative pressure room is recommended, and the necessary precautions should be taken during medical care(6,8,18,19).

METHODOLOGY

A total of 36 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which a total of 23 bibliographies were used because the



previous 9 articles were not relevant for this study. The sources of information were PubMed, Google Scholar and Elsevier; the terms used to search for information in Spanish and English "Monkeypox", "Monkeypox virus", were: "Monkeypox vaccine", epidemiology", "Monkeypox "Monkeypox Management" and "Clinical cases of monkeypox". The choice of literature exposes elements related to the evolution of monkeypox in the last 5 years; in addition to this factor, these studies have several important factors related to their different treatment routes and different ways of contact with patients according to the clinical cases mentioned in this review.

DEVELOPMENT

Simian pox virus can enter through the oropharynx, nasopharynx or intradermally through direct contact with lesions. This virus usually replicates at the site of inoculation and then travels to local lymph nodes. Initial viremia leads to viral shedding and subsequent organ seeding and the incubation period usually lasts between 7 to 14 days with a longer limit of 21 days(6).

Secondary viremia and the onset of symptoms such as fever and lymphadenopathy usually appear as prodromal symptoms 1 to 2 days before lesions appear. It is at this precise moment that the infected person can infect others. Subsequently, lesions usually appear on the skin and in the oropharynx(6).

Other authors agree with the incubation period of monkeypox being between 5 to 21 days, followed by clinical signs of up to 21 days(3,15). They show that transmission occurs by secretion of fluids, generally from the respiratory tract or skin lesions(15).

Symptoms are usually self-limited and are divided into an invasion phase presenting fever, lymphadenopathy, myalgia, chills, headache and lethargy; and a rash phase that usually begins between day 1 and 3 after the onset of fever, generally located on the face and extremities, also affecting mucous membranes, genitals, palms and soles. Symic smallpox can be differentiated from other types of diseases such as chickenpox, measles and smallpox by the presence of lymphadenopathy. Eruptions begin as macules progressing to papules, vesicles, pustules and crusts that later dry and fall off. Crusts of dry lesions may increase the risk of transmission. The number of lesions varies from a few to thousands of lesions, being more lethal in young children(3,12,20).

Nguyen PY et al, in their study on the resurgence of human monkeypox and the decrease of population immunity in the context of urbanization, show the following classification of cases that we find convenient to share.

Term	Concept
Suspect case	Acute disease with fever >38.3 °C, asthenia and intense headache, back pain, myalgia and lymphadenopathy that after 1 to 3 days continues with progressive rash usually on the face that then spreads to other parts of the body, and may affect soles and palms.
Probable case	Clinically compatible case not confirmed by laboratory with epidemiological link to a confirmed case.
Confirmed case	Clinically compatible case confirmed by PCR, positive IgM or virus isolation.

Table 1. Classification of monkeypox cases.

Source: Nguyen PY et al, Reemergence of Human Monkeypox and Declining Population Immunity in the Context of Urbanization (21).

A definitive diagnosis of monkeypox can only be established by laboratory testing. For this purpose, the World Health Organization (WHO) recommends smears of exudate from vesicular lesions or scabs stored in a dry, sterile, non-viral transport medium and cold test tube(20).

Among the main differential diagnoses of simian pox are smallpox, generalized vaccinia, disseminated zoster, varicella, herpetic eczema, disseminated herpes simplex, yaws, scabies, syphilis, measles, drug-associated rash and skin infections(1,6).

Treatment is generally symptomatic and supportive; at the time of writing this research there is no specific antiviral drug approved, which emphasizes the importance of using preventive measures that can reduce the incidence of outbreaks. Therefore, the infected individual should be isolated, wear a surgical mask and keep the lesions covered as much as possible until the scabs of the lesions have fallen off naturally and a new layer of skin has formed(3,6).

Vaccines have been improved since the eradication of smallpox. First generation smallpox vaccines were disseminated in calfskin and purified from calf lymph. Second-generation vaccines were disseminated in tissue cell culture using good modern production practices, reducing the risk of contamination, but both first- and second-generation vaccines pose a risk of adverse events because they contain replication-capable vaccinia



virus. Third generation vaccines are also disseminated in tissue culture with good and modern production practices, however, they use attenuated vaccinia viruses with favorable safety profiles(22,23).

The U.S. Food and Drug Administration approved the first drug, tecovirimat, to treat smallpox (under the Animal Standard) but its efficacy has not been determined due to the lack of human cases of smallpox(3). The oral DNA polymerase inhibitor brincidofovir, the oral intracellular viral release inhibitor tecovirimat and the intravenous immunoglobulin vaccinia maintain unknown efficacy against simian smallpox virus(6,24).

The modified vaccinia Ankara vaccine (MVA) has been used for the prevention of monkeypox, based on the premise that a vaccine against monkeypox poxvirus could also protect against other orthopoxviruses, clinical trials have shown that this vaccine is reliable and that it stimulates the creation of antibodies in immunocompromised patients and those with atopy (3).

Similarly, the third-generation IMVAMUNE vaccine, also used against smallpox, has been tested in HIV-infected persons and in individuals with atopic dermatitis, showing safety and immunogenicity and protection against simian smallpox in some animal studies(22).

In the United States of America, the second-generation ACAM2000 vaccine was licensed for use during an emergency, where vaccination was also suggested for laboratory and health care personnel (22).

According to the Centers for Disease Control and Prevention, vaccination against monkeypox within the first four days of exposure is successful in preventing disease manifestation, whereas vaccination within 14 days is successful in reducing the severity of the disease, but further data collection and analysis is required to determine the advantages and disadvantages of preventive vaccination against monkeypox (3,6).

Third-generation vaccines are still in development and remain unlicensed in the United States. However, some have already completed several preclinical and clinical studies and can be used with an emergency use approval (22).

The epidemiology of simian smallpox has been variable since its discovery in 1970, ranging from 48 cases in 1970 to 520 cases discovered in 1990. Such is the importance of analyzing its epidemiology that in 2020, 6257 suspected cases of monkeypox were identified. Another important point of analysis is that the transmission from rodent to rodent became a transmission from animal to human, producing an outbreak of 47 cases, between confirmed and probable. Among the possible explanations for the resurgence of monkeypox, it is theorized that reduced immunity, and to a lesser extent deforestation, are the causes (3,9,25).

Another important point is that human-to-human transmission has been caused by contact with respiratory droplets and contact with contaminated patient fluids, the patient's environment or objects (26,27).

Currently, from the period 2018 to 2021, 6 people who have traveled from Nigeria, have been diagnosed with Simian Pox in non-African countries: 4 in the United Kingdom, 1 in Singapore, and 1 in Israel. A UK study tested 7 patients infected with Simian Pox from the period 2018 to 2021 (16,28). 4 patients were male and 3 were female; e patients acquired the virus in the United Kingdom, 1 was a health care worker who acquired the virus nosocomially, and 1 who acquired it abroad, transmitted it to an adult and a child in his or her household. Five of the seven patients were hospitalized for 22 to 39 days due to persistent PCR positivity. 3 patients were treated with Brincidofovir at a dose of 200 mg once a week, with the consequence of elevated liver enzymes, which resulted in discontinuation of the drug. 1 patient was treated with Tecovirimat at a dose of 600 mg every 12 hours for 2 weeks, where no adverse effects were evidenced and the duration of the disease was 10 days compared to the other 6 patients. One patient showed a mild relapse 6 weeks after medical discharge(29).

In a case of a 24-year-old male patient who arrived in the United States from Nigeria, he presented within 24 to 48 hours with characteristic symptoms of burning sensation on the skin, with vesicles on the forehead and nose, which spread to the arms and trunk; he also presented fever, chills and headache. Physical examination revealed lymphadenopathy at right cervical level and pustules with an erythematous base and central umbilication at facial level, neck and hands in greater prevalence. In the oral mucosa, erosions were evidenced and in the lower labial mucosa, an intact pustule was evidenced. As a background, Acyclovir was administered due to a varicella zoster infection. During hospitalization, no new lesions were evidenced. A biopsy of the pustules on the abdomen was performed, showing epidermal necrosis, reticular degeneration and vesiculation. Therefore, with these findings and the history of the trip, the suspicion of monkeypox was reached. A PCR-RT culture was performed and the presence of this virus was confirmed. In the end, symptomatic medication was administered, in addition to isolating the patient in a room along with the use of protective equipment for health care workers. These researchers concluded that vaccination is of vital importance for secondary prevention, since it provides 85% protection against monkeypox. In addition, they mention that post-exposure prophylaxis should be performed in patients with high-risk contact within the first 4 days to a maximum of 14 days after initial contact (13).

Several animal studies were performed to demonstrate the evidence of Brincidofovir at doses of 5 mg/kg or 20 mg/kg and its measurement at plasma level. However, it was demonstrated that there are no detectable concentrations with any of the doses mentioned and in maintained doses of 20 mg/kg it produced gastrointestinal toxicity; therefore, the drug was given at doses of 20 mg/kg and 5 mg/kg was administered in 48 hours and 5 mg/kg was administered 48 hours later, obtaining a favorable response. In addition, it was demonstrated that early administration before infection with simian smallpox had a survival rate of 57%; those who were administered the drug



when they had already been infected had a survival rate of 43%, and 29% when they received the treatment 1 day after infection with simian smallpox. The immune response is usually evident when the animals present cutaneous lesions, which is usually between day 9 to 13 after infection; furthermore, when administering this drug, there were no differences in relation to the immune response(30).

CONCLUSIONS

The epidemiology of monkeypox has been variable since its discovery in 1970. Rodent-to-rodent transmission evolved into animal-to-human transmission. Human-to-human transmission has been through contact with respiratory droplets and contact with contaminated patient fluids, the patient's environment or objects. A definitive diagnosis of monkeypox can only be established by effective laboratory testing. The oral DNA polymerase inhibitor brincidofovir, the oral intracellular viral release inhibitor tecovirimat and the intravenous immunoglobulin vaccinia maintain unknown efficacy against simian smallpox virus. The use of modified vaccinia vaccinia Ankara and IMVAMUNE have shown safety in animal research for the prevention of monkeypox, based on the premise that a vaccine against monkeypox poxvirus could also protect against other orthopoxviruses, but third-generation vaccines are still under development. Vaccination, which is of vital importance for secondary prevention, provides 85% protection against monkeypox. Post-exposure prophylaxis is recommended in patients with high-risk contact within the first 4 days to a maximum of 14 days of initial contact.

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NG PROSE WORKS BEGINNER METHODS OF ANALYSIS IN CLASSROOMS

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Prose works presented in primary classes should be in harmony with the age of the student and should have a positive effect on thinking and thinking. Looking at the existing textbooks, it is possible to understand that the texts in them have a tone specific to children. At the heart of this, you can get acquainted with the artistic text of the works that affect the reader's heart, and are similar to his worldview and thinking.

By the 20th century, world civilization has reached a high level. At the heart of this, the views of human thinking are being renewed and enriched, which in turn made it possible to expand the considerations aimed at understanding the human being and having an understanding of existence. The development of the history of national pedagogy formed during the works, its place in today's process, problems in reading and teaching, the need to introduce the methods of applying advanced practices in reading and teaching primary classes, and the modern development has a significant effect.

It is only on the basis of a deep understanding that it is the main task of every intellectual, especially of primary school teachers, to introduce the best practices in today's primary classes, and in the process of verifying the effectiveness of the most perfect methods, to shape children's mentality and their views in harmony. and it should be noted that the sense of teacher's responsibility is aimed at raising a mature generation to a level that gives a sophisticated and aesthetic pleasure.

Children in primary grades have a different outlook and reasoning. And this begins to manifest a state of perception. We perceive things and events as a whole, and we perceive certain properties of things. Therefore, as noted in theoretical sources: " Senses, usually simple, elements are considered mental processes, and perception is a complex mental process. The things we perceive are extremely diverse. These include, first of all, various items, chunochi, buildings, trees, equipment, technical items and hakozos. We perceive music, photographs, paintings and other works of art " [page 1,95].

As it is rightly noted, we begin to understand the world and man because of the presence of the ability to perceive, to perceive through our senses. In the same process, along with child psychology, the efforts made to understand a person, his mental and spiritual world, the way of thinking of general education students will be the basis for studying. In order to awaken the child's imagination, it is necessary to determine his ability to perceive first of all in the process of differentiation.

The reason for noting these concepts is that it seems necessary to study the opinions of elementary school students first, to get a good sense of what their concepts are. The peculiarity of the psychology of the student's youth is that, due to family circumstances, it is observed that the child does not think independently at all, follows someone's back, and sometimes takes the lead in his actions. Although there is little in the family, the formation of thoughts and views is one of the main tasks of every parent. In addition to giving birth to a child, his mature way of thinking is one of the main tasks of all of us, and we should not forget that in this process, the teacher, the family, and the psychologist must unite at one point and work in harmony.

" A teacher who aims to raise his students to have high human qualities, first of all, it is permissible to interest the children in his field of study, to familiarize them with books. Because the book is such a powerful force that it leads to the high boundaries of humanity without realizing it, both the old and the young. However, interest in books and reading is not a matter

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that can be fulfilled only by ordering and giving tasks " [p. 2, 14].

As it was noted, in order to interest students in science, in reading works of art, and in organizing classes, each teacher should deal with students based on his own experience, not only giving them the task and controlling it, but also their mental- he should enter into his spiritual world, listen to the independent views of each one, pay attention to them, even if only a little, he should respond and encourage them. Only then, one should not forget that the student should not only be interested in science, but also consider their views.

In primary grades, regardless of whether it is reading, or literature, or mother tongue, it is necessary to encourage the student to think independently, thereby, from the first days, to have a significant impact on the child's psyche. In child psychology, it is necessary to raise individual views that I should think better, act independently. In native language lessons, regardless of whether it is text, prose, or poetry, expressive reading, paying attention to the meaning of each word, encouraging the student to think independently opens up an opportunity. At the heart of these views, it is necessary to strengthen the memory of children, to take into account the views of each of them.

Each text should be read by the teacher himself to the extent that the children's hearts are "beautified", after that he should teach the children short lines one by one, insisting that they should explain the meaning of the recorded text and give it orally. necessary. At the heart of this, it is necessary to understand the person, to form the spirit in the child's heart that he should study as beautifully as his teacher. It is necessary to ensure that every lesson is conducted at the level of a beautiful life lesson, based on live dialogue, using various methods, which shakes the heart and soul of students, and excites them.

"The current level of educational development requires the teacher to skillfully use modern information technologies, because the same information technologies allow the teacher to enter lecture texts and textbooks into computer memory, conduct various experiments, animation, slides, visual aids allows to create " [page 3,13].

There are also great reasons behind the fact that educating primary school students as mature and well-

rounded individuals is recognized as one of the main tasks of today. Therefore, there are grounds for proving that it is possible to progress in the future based on their views only if children try to think independently and enrich their understanding in the understanding of a person.

So, the fundamental reforms implemented in the socio-political, economic and cultural life of our country impose on our society and teachers the task of improving the educational processes in all aspects and educating the young generation at the level of today's world requirements.

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STUDY OF THE POSSIBILITY OF USING NEW TYPES OF REAGENTS TO INCREASE THE EFFICIENCY OF CLOSED WATER CIRCULATION CYCLES

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One of the biggest environmental problems in the world in the XXI century is the problem of water. The decrease in water reserves increases the need for water purification in the mining, chemical, petrochemical, textile and food industries. A million cubic meters of water from such large industrial zones are used. The concentration of anions and cations in the water used increases by 3-4 times.

Today, wastewater discharge from mining and chemical industrial zones in the Navoi region affects freshwater resources in nearby areas. To prevent this, methods of precipitation of anions and cations should be studied. At the industrial level, an important step is the implementation of measures for the reuse of purified water.

To ensure the efficient and environmentally friendly functioning of circulating systems at high values of the evaporation coefficient, special treatment of cooling water is necessary. In this regard, an urgent task is to develop and implement new methods of stabilizing water treatment in the cooling circulating cycles of enterprises.

Methods of stabilization treatment of cooling water in circulating water supply systems can be divided into two groups [1,2]:

- Physical (water treatment with ultrasound, magnetic field, etc.);

- Chemical (acidification, recarbonization, phosphating, phosphate-acid treatment, etc

The authors of the works [3-6] proposed methods of cooling water treatment based on the use of installations emitting ultrasonic vibrations. In [7], the authors assume that when ultrasonic vibrations are applied to water, a large number of constantly shifting crystallization centers are formed, which complicates the growth and deposition of crystals of scale-forming compounds on the heat exchange surfaces of equipment.

The authors [8-11], who propose the use of a magnetic field for stabilizing water treatment, believe that the possible mechanism of the influence of a magnetic field on sedimentation processes is based on the polarization of sedimentation ions and water molecules.

In [12, 13], researchers conclude that the effect of radiation is observed only in a limited area of action of magnetic or ultrasonic emitters, as a rule, directly at the place of their installation.

In general, non-reagent methods of stabilizing water treatment are characterized by low efficiency and often do not show stable results, therefore they are not an alternative to chemical methods and can be recommended as auxiliary measures for reagent treatment of cooling water.

To date, one of the most widely used methods of processing recycled water at a number of domestic enterprises is acidic [14-16].

When using the acid method, it is more advisable to use weak organic acids. Thus, compositions based on citric acid or its salts are known [17], di- and monocarboxylic acids [18], homo- or copolymers of acrylic acid [19], an alkaline salt of polyethersulfonic and/or polymaleic acid [20]. However, the use of organic acids is effective only with a high content of them in the system, based on the stoichiometric interaction of carboxyl groups with calcium ions [21,22].

Initially, inorganic polyphosphates (hexametaphosphate, tripolyphosphate, etc.) were used as hardness stabilizers, which made it possible to reduce the degree of calcium scale formation, maintain a given alkalinity of recycled water and partially provide anticorrosive protection of the metal [23-24].

The purpose of this work is to study scale formation in water and their elimination with useful various reagents.

EXPERIMENTAL METHODOLOGY

During the research, calcium chloride of the "bda" brand, six-way magnesium chloride of the "bda" brand, sodium bicarbonate of the "bda" brand were used as starting materials for the creation of model systems. The pH value was adjusted using 0.1 N sodium hydroxide solution and 0.1 n hydrochloric acid solution.

Chemicals produced by the company "Solenis Industries Sweden AB" were used as sedimentation inhibitors: Performax DC5000-EU, Performax 3S-600, amino trimethylene phosphonic acid ATMP (CAS 6419-19-8), phosphonobutantricarboxylic acid 50% (PBTC) (CAS 37971-36-1), with different molecular weight values (500, 1000).

The particle size distribution of calcium carbonate formed without additives and in the presence of inhibitors was determined using a photometric sedimentometer FSH–4. The principle of operation of the device is based on the sedimentation law of Stokes and the law of extinction of light in a turbid medium (the Booger-Lambert-Behr law).



Measurement of the induction period of crystal formation in the CaCl2 \square NaHCO3–H2O system in the presence of sedimentation inhibitors. To study the effect of additives of inhibitors of various classes on the duration of the induction period of crystal formation in the model system Ca2+, Mg2+//CO32- – H2O, a spectrophotometric method was used.

The beginning of the formation of a crystalline precipitate of carbonates was recorded using a Cary WinUV 50 spectrophotometer based on a break in the graph of the dependence of light transmission in the system on time.

The calculated amount of 0.1 M CaCl2 and MgCl2 solutions and bidistilled water was mixed in a glass beaker using a magnetic stirrer and heated to a temperature of 25 ° C, after which the resulting solution was transferred to a thermostatically controlled glass cell of a spectrophotometer. The required amount of NaHCO3 solution heated to 25 ° C with a concentration of 0.1 M was added to the cuvette using a dispenser, after which the light transmission in the system was measured.

After each experiment, the cuvette was washed with 0.1 M HCl solution to completely remove the crystalline precipitate.

The carbonates were precipitated at a constant molar ratio of Ca2+/Mg2+ equal to 3.7. A mixture of calcium and magnesium chloride salts, as well as calcium carbonate, was stirred, heated and thermostated ($80 \pm 5 \circ C$, 3 hours), then the resulting precipitate was filtered and dried to a constant weight at room temperature.

Carbonate dispersions were prepared as follows: sample samples (fraction with a particle diameter of 10 microns) weighing 1.0 g were placed in glasses with a capacity of 150 ml, filled with distilled water or a solution (weighing 99.0 g) containing inhibitors of a given concentration, and dispersed using a magnetic stirrer at a speed of 600 rpm for 1 hour at a temperature of (293 ± 1) K, after which a given volume of dispersion was taken from the glass from the same depth, transferred to a measuring flask and brought to 100 ml of distilled water. The pH value of the dispersion was monitored using a pH meter and adjusted by adding a sodium hydroxide solution.

To select the wavelength, the prepared suspension was photometric relative to the reference solution (distilled water) at a wavelength from 315 to 990 nm. The wavelength corresponding to the highest absorption of the studied dispersion (450 nm) was chosen for the studies, which allowed the determination to be carried out with the greatest sensitivity and less error.

Measurements of the light transmission of the samples were carried out every 30 minutes at a wavelength of 450 nm, in a glass cuvette, 30 mm thick.

The error of the measurement results was:

- within the series of about \pm 1.6 %

- between series of studies $\pm 6.4\%$.

RESULTS AND THEIR DISCUSSION

Investigation of the effectiveness of scale formation inhibitor reagents under dynamic conditions on a model laboratory installation RMAS SCL–30P-2A (UK), which allows for a comparative analysis of various inhibitors under conditions of temperature changes, pH values and the composition of scale-forming solutions.

When conducting research on a PMAC model installation, solutions of calcium chloride, magnesium, and sodium bicarbonate are injected into the capillary at a constant volume and flow rate.

During the measurement, information about the differential pressure in the capillaries is automatically recorded at set intervals. The time interval during which a scale layer forms in the capillary, leading to an increase in differential pressure from zero to a certain value, is used as an indicator characterizing the effectiveness of preventing or slowing down (inhibiting) sedimentation. This indicator is a relative value – it characterizes the process of slowing the formation of sediment in the capillary compared to the control non-reactive variant. The less the pressure in the capillary increases over a certain period of time, the more effective the reagent is and the optimal dose used.



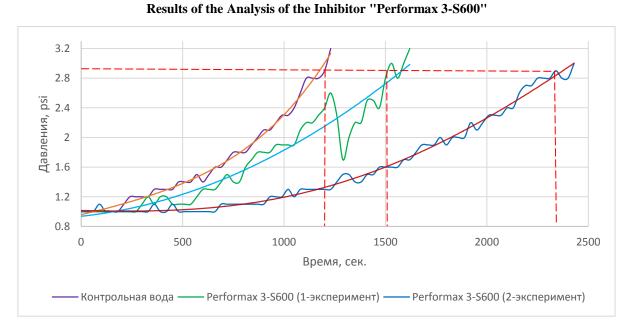
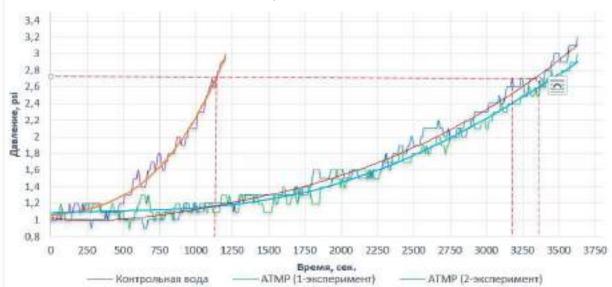


Figure 1 - Effects of a salt formation inhibitor Performax 3-S600 (0.1 mg/L) for differential pressure



The results of the analysis of the inhibitor "ATMP 50%".

Figure 2 - Effects of a salt formation inhibitor ATMP 50% (0.1 mg/l) for differential pressure



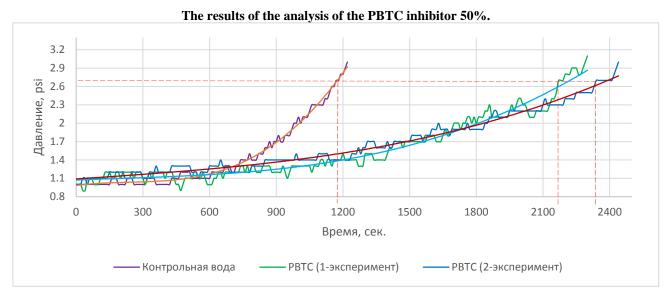
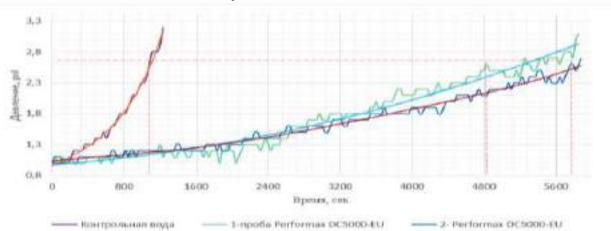


Figure 3 - Effects of a salt formation inhibitor PBTC 50% (0.1 mg/l) for differential pressure



The results of the analysis of the PERFORMAX DC5000-EU inhibitor.

Figure 4 - Effects of the salt formation inhibitor PERFORMAX DC5000-EU (0.1 mg/L) on differential pressure

The analysis of the kinetic curves presented above allows us to draw the following conclusions. All the studied types of inhibitors slow down the process of salt formation and thereby increase the multiplicity of circulation. At the same time, these types of inhibitors differ significantly in their effectiveness. So if for the inhibitor "Performax 3-S600" the time to reach the control pressure in the capillary (reduction of salt formation) was 2.5 times, then for the inhibitor of the brand "ATMR 50%" this value was 3.5 times (from 1100 sec. for control experience up to 3200-3350 sec.). The best indicators for the effectiveness of salt formation inhibition were established for the PERFORMAX DC5000-EU brand inhibitor. For this inhibitor, the increase in the duration of reaching the control pressure in the capillary was 6.5 times (Figure 1-4). Thus, it has been established that the use of salt formation inhibitors can be recommended as an effective way to increase the multiplicity of circulation of pure and conditionally pure water cycles that do not have direct contact with impurities (heat exchange, cooling and crystallization systems).

To improve the accuracy of measurements, the initial conditions were selected in such a way that the induction period was at least 5 minutes. Initiation of the nucleation process by foreign particles somehow present in the volume of the system was not observed, since the results obtained are characterized by high reproducibility of measurements (error <3%). The close values of the induction period when using two different cuvettes allowed us to conclude that the influence of the surface factor of the glass cuvette and the course of heterogeneous nucleation is insignificant.



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Evaluation of the dispersing abilities of substances of various classes in relation to crystalline carbonate-containing precipitates. To determine the dispersing ability of inhibitors, the method of relative dispersion capacity was used. The relative dispersion capacity is a parameter that allows a comparative analysis of the dispersing ability of reagents with respect to water-insoluble particles in water systems. The concentration of calcium carbonate used in this method was 15-50 ppm, which exceeds the concentration of insoluble suspended solids present in water cycles. The concentration of the inhibitor used, on the contrary, was within the values proposed for use in practice.

The method of photometry based on the proportional relationship between light absorption and the concentration of the absorbing substance was chosen as the research method. The higher the dispersing ability of the compound, the better the carbonate particles are suspended in the aqueous dispersion and the lower the light transmission. The experimental value shows what percentage of calcium carbonate is in the suspended state after certain time intervals at a pH value of 8.

CONCLUSION

The analysis of the kinetic curves obtained during the studies allows us to conclude that all the studied types of inhibitors slow down the process of salt formation and thereby increase the multiplicity of circulation. At the same time, these types of inhibitors differ significantly in their effectiveness. So if for the inhibitor "Performax 3-S600" the time to reach the control pressure in the capillary was 2.5 times, then for the inhibitor of the brand "ATMR 50%" this value was 3.5 times. The best indicators for the effectiveness of salt formation inhibition were established for the PERFORMAX DC5000-EU brand inhibitor. For this inhibitor, the increase in the duration of reaching the control pressure in the capillary was 6.5 times. Thus, the use of salt formation inhibitors can be recommended as an effective way to increase the multiplicity of circulation of pure and conditionally pure water circulation cycles that do not have direct contact with the admixture.

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A STUDY ON THE KERR SOLUTION

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ABSTRACT

In this study, a novel form of the Kerr solution is presented. The solution comprises a time coordinate which signifies the local appropriate time for the free-falling viewers on a set of the simple trajectories. Various physical events are chiefly clear when associated to this time coordinate. The selected coordinates also confirm that the solution is well performed at the horizon. The solution is well fit to the tetrad formalism and a suitable null tetrad is existing. Also given the Dirac Hamiltonian and, for one choice of the tetrad, it contains on a simple, Hermitian form.

KEYWORDS : Kerr solution, Dirac Hamiltonian, tetrad, Minkowski spacetime

I. INTRODUCTION

The Kerr solution is very important in astrophysics forever since it was realized that the accretion processes would incline to spin up a black hole to the near its critical rotation rate. Several forms of the Kerr solution at this time exist in the literature. Most of these are confined in Chandrasekhar's work, and beneficial summaries are delimited in the books by D' Inverno and Kramer et al. The purpose of this study is to present a new form of the Kerr solution which has even now proved to be valuable in numerical simulations. It is a direct extension of the known Schwarzschild solution

$$ds^{2} = dt^{2} - \left(dr + \left(\frac{2M}{r}\right)^{\frac{1}{2}} dt\right)^{2} - r^{2}(d\theta^{2} + \sin^{2}\theta \, d\phi^{2}) \tag{1}$$

This is obtained from the Eddington Finkelstein form

$$ds^{2} = \left(1 - \frac{2M}{r}\right)d\bar{t}^{2} - \frac{4M}{r}d\bar{t}dr - \left(1 + \frac{2M}{r}\right)dr^{2} - r^{2}(d\theta^{2} + \sin^{2}\theta \,d\phi^{2})$$
(2)

by the coordinate transformation

$$t = \bar{t} + 2(2Mr)^{\frac{1}{2}} - 4M\ln\left(1 + \left(\frac{r}{2M}\right)^{\frac{1}{2}}\right)$$
(3)

In both the equations, $0 < r < \infty$, θ and ϕ take their usual meaning.

The equation (1) has several nice features, many of which outspread to the Kerr case. The Kerr solution is good at the horizon, so it can be employed safely to analyze physical processes nearby the horizon, and indeed inside it. Alternative beneficial feature is that the time t overlaps with the appropriate time of viewers free-falling end to end radial trajectories initial from rest at infinity. This is probable since the velocity vector

$$\dot{x}^{i} = \left(1, -\left(\frac{2M}{r}\right)^{\frac{1}{2}}, 0, 0\right) \qquad \dot{x}_{i} = (1, 0, 0, 0)$$
(4)

expresses a radial geodesic with the constant θ and ϕ . The appropriate time along these paths overlaps with t, and the geodesic eqⁿ is basically

$$\ddot{r} = \frac{-M}{r^2} \tag{5}$$



Physics as realized by these viewers is practically completely Newtonian, making this gauge a very advantageous one for presenting some of the more problematic thoughts of the black hole physics. The numerous gauge selections foremost to this form of the "Schwarzschild solution" as well carry over in the existence of the matter and provide a meek system for the study of the creation of spherically symmetric clusters and the black holes.

Additional beneficial feature of the time coordinate in equation (1) is that it allows the "Dirac equation" in a Schwarzschild background to be cast in an unassuming Hamiltonian form. The full Dirac equation is gotten by totaling a single term \hat{H}_I to the "free-particle" Hamiltonian in the form Minkowski spacetime. This added term is

$$\widehat{H}_{I}\psi = i\left(\frac{2M}{r}\right)^{\frac{1}{2}}\left(\partial_{r}\psi + 3/(4r)\psi\right) = i\left(\frac{2M}{r}\right)^{\frac{1}{2}}r^{\frac{-3}{4}}\partial_{r}\left(r^{\frac{3}{4}}\psi\right) \tag{6}$$

A convenient feature of this gauge is that, the measure on surfaces of the constant t is the identical as that of the "Minkowski spacetime," so one can work standard methods from the quantum theory with a tiny modification. One refinement is that the Hamiltonian is not the self-adjoint because of the existence of the uniqueness. This reveals the situation as a decay in the wave function as the current density is sucked onto the singularity.

The time coordinate *t* in equation (1) has various of the properties of a global, 'Newtonian time'. This recommends that an attempt to find a correspondent for the "Kerr solution" might fail by reason of its the angular momentum. The key to accepting how to complete a suitable generalization is the realization, that it is one the local properties of time *t* that make it so suitable for recitation the physics of the solution. The usual extension for the "Kerr Solution" is consequently to look for an appropriate set of reference viewers which generalizes the idea of a family of the viewers on radial trajectories. In the Sections two and three discuss an innovative form of the "Kerr Solution" and show that it has several of the wanted properties. In Section four several tetrad forms of the solution, and give a Hermitian form of the Dirac Hamiltonian. All over using the Latin letters for the spacetime indices and Greek letters for the tetrad indices, and use the signature $\eta_{\alpha\beta} = diag (+ - --)$. Natural units $c = G = \overline{h} = 1$ are working throughout.

II. THE KERR SOLUTION

The novel form of the "Kerr Solution" can be written in Cartesian coordinates (t, x, y, z) in the Kerr-Schild form. In this coordinate system our novel form of the solution is

$$ds^{2} = \eta_{ij}dx^{i}dx^{j} - \left(\frac{2\alpha}{\rho}a_{i}v_{j} + \alpha^{2}v_{i}v_{j}\right)dx^{i}dx^{j}$$

$$\tag{7}$$

where η_{ii} is the Minkowski metric,

$$\alpha = \frac{(2Mr)^{\frac{1}{2}}}{\rho} \tag{8}$$

$$\rho^2 = r^2 + \frac{a^2 z^2}{r^2} \tag{9}$$

here a and M are constants. The function r is specified implicitly by

$$r^{4} - r^{2}(x^{2} + y^{2} + z^{2} - a^{2}) - a^{2}z^{2} = 0$$
⁽¹⁰⁾

and we restrict r to $0 < r < \infty$, with r = 0 relating the disk z = 0, $x^2 + y^2 \le a^2$. The maximally extended "Kerr Solution" (where r is allowed to take -ve values) will not be counted here.

The two vectors in the equation (7) are

$$v_i = \left(1, \frac{ay}{a^2 + r^2}, \frac{-ax}{a^2 + r^2}, 0\right) \tag{11}$$

and

$$a_{i} = (r^{2} + a^{2})^{\frac{1}{2}} \left(0, \frac{rx}{a^{2} + r^{2}}, \frac{ry}{a^{2} + r^{2}}, \frac{z}{r} \right)$$
(12)

These 2 vectors play a vital role in studying physics in a Kerr related. They are linked to the two major null directions n_{\pm} by

$$n_{\pm} = (r^2 + a^2)^{\frac{1}{2}} v_i \pm (\alpha \rho v_i + a_i)$$
(13)

For computations it is convenient to note that, the contravariant components of the spacelike vector in the brackets are similar as



those of $-a_i$,

$$\alpha \rho v^{i} + a^{i} = -(r^{2} + a^{2})^{\frac{1}{2}} \left(0, \frac{rx}{a^{2} + r^{2}}, \frac{ry}{a^{2} + r^{2}}, \frac{z}{r} \right)$$
(14)

The vector v_i similarly plays a vital role in unravelling the Dirac equation in a Kerr background, and it is the time like eigenvectors of the form electromagnetic stress-energy tensor for the method "Kerr-Newman analogue" of our form.

III. SPHEROIDAL COORDINATES

From (7) is more visibly exposed if we make known to oblate spheroidal coordinates (r, θ, ϕ) , where

$$\cos\theta = \frac{z}{r} \qquad 0 \le \theta \le \pi \tag{15}$$

$$\tan\phi = \frac{y}{x} \qquad 0 \le \phi < 2\pi \tag{16}$$

so that ρ improves its standard definition

$$\rho^2 = r^2 + a^2 \cos^2 \theta \tag{17}$$

Here use of the symbols r and θ are standard, nevertheless one must be conscious that when M = 0 (flat space) these decrease to the oblate spheroidal coordinates, and not the spherical form of polar coordinates. Clearly, from the fact that r does not equal

$$\sqrt{(x^2+y^2+z^2)}\,.$$

In terms of the coordinates (t, r, θ, ϕ) our novel form of the "Kerr solution" is

$$ds^{2} = dt^{2} - \left(\frac{\rho}{(r^{2} + a^{2})^{\frac{1}{2}}}dr + \alpha(dt - a\sin^{2}\theta \ d\phi)\right)$$
$$-\rho^{2}d\theta^{2} - (r^{2} + a^{2})\sin^{2}\theta \ d\phi^{2}$$
(18)

This effortlessly generalizes the Schwarzschild form of the equation (1), replacing $\sqrt{(2M/r)}$ with $\sqrt{(2Mr)/\rho}$, and presenting a revolving component. It can be simplified more by acquaint with the hyperbolic coordinate η via $asinh\eta = r$, however this can make some equations rigid to interpret and will not be working here. The equation (18) is gotten from the innovative "Eddington-Finkelstein Form" of the "Kerr Solution",

$$ds^{2} = \left(1 - \frac{2Mr}{\rho^{2}}\right)dv^{2} - 2dvdr + \frac{2Mr}{\rho^{2}}(2a\sin^{2}\theta)dvd\bar{\phi} + 2a\sin^{2}\theta\,drd\bar{\phi} - \rho^{2}d\theta^{2} - \frac{2Mr}{\rho^{2}}(a^{2}\sin^{4}\theta)d\bar{\phi}^{2}$$
(19)

via the coordinate transformation

$$dt = dv - \frac{dr}{1 + (2Mr/(r^2 + a^2))^{1/2}}$$
(20)

$$d\phi = d\bar{\phi} - \frac{adr}{r^2 + a^2 + (2Mr(r^2 + a^2))^{1/2}}$$
(21)

This transformation is exact for all r, however the integrals tangled do not give the idea to have a simple closed form.

2



The velocity vectors

$$\dot{x}^{i} = \left(1, -\frac{\alpha (r^{2} + a^{2})^{1/2}}{\rho}, 0, 0\right)$$
 $\dot{x}_{i} = (1, 0, 0, 0)$ (22)

describes an infalling geodesic with constant θ and ϕ , and the zero velocity at infinity. The presence of these 'geodesics' is a key property of the solution. The time coordinate t now has the modest clarification of recording the local appropriate time for spectators in free-fall along trajectories of constant θ and ϕ . As per the spherical case, various physical phenomena are modest to interpret when uttered in terms of this time coordinate. An instance of this is if in the next section, where we display that the time coordinate tends a 'Dirac Hamiltonian' which is the Hermitian in form. The variance between this free-fall velocity and the velocity v_i correspondingly delivers a local meaning of the angular velocity confined in the gravitational field.

IV. TETRADS AND THE DIRAC EQUATION

From the equation (18) and (13) one can construct the following null tetrad, stated in (t, r, θ, ϕ) coordinates,

$$l^{i} = \frac{1}{r^{2} + a^{2}} \left(r^{2} + a^{2}, r^{2} + a^{2} - \left(2Mr(r^{2} + a^{2}) \right)^{1/2}, 0, a \right)$$
(23)

$$n^{i} = \frac{1}{2\rho^{2}} \left(r^{2} + a^{2}, -(r^{2} + a^{2}) - \left(2Mr(r^{2} + a^{2}) \right)^{1/2}, 0, a \right)$$
(24)

$$m^{i} = \frac{1}{\sqrt{2}(r+ia\cos\theta)} (ia\sin\theta, 0, 1, i\csc\theta)$$
⁽²⁵⁾

In this way the Weyl scalars Ψ_0, Ψ_1, Ψ_3 and Ψ_4 all be wiped out, and

$$\Psi_2 = -\frac{M}{(r - ia\cos\theta)^3} \tag{26}$$

A 2nd tetrad, better suitable to computations of the matter geodesics, is given by

$$e^{0}{}_{i} = (1, 0, 0, 0)$$

$$e^{1}{}_{i} = (\alpha, \rho / (r^{2} + a^{2})^{1/2}, 0, -\alpha a \sin^{2} \theta)$$

$$e^{2}{}_{i} = (0, 0, \rho, 0)$$

$$e^{3}{}_{i} = (0, 0, 0, (r^{2} + a^{2})^{1/2} \sin \theta)$$
(27)

This describes a frame for all that values of the coordinate r, so it is in force inside and outside the horizon. An additional tetrad is on condition that by reverting to the original Cartesian coordinates of equation (7) and writing

$$e^{\mu}{}_{i} = \delta^{\mu}_{i} - \frac{\alpha}{\rho} v_{i} a_{j} \eta^{j\mu}$$
⁽²⁸⁾

where v_i and a_i are as clear at equations (11) and (12). Now the inverse is

$$e_{\mu}{}^{i} = \delta_{\mu}{}^{i} + \frac{\alpha}{\rho} \eta^{ij} a_{j} \delta_{\mu}{}^{k} v_{k}$$
⁽²⁹⁾

This final form of the tetrad is the meekest to use when using in the Dirac equation in a "Kerr" background. We will not go over the facts here but will just show the final equation in the usual Hamiltonian form. Following the conventions of Itzykson and Zuber we signify the Dirac Pauli matrix illustration of the Dirac algebra by $\{\gamma^{\mu}\}$ and write $\alpha^{i} = \gamma^{0}\gamma^{i}$, i = 1...3. Since $e_{\mu}^{0} = \delta_{\mu}^{0}$, premultiplying the Dirac equation by γ_{0} the Dirac equation in a "Kerr" background becomes

$$i\partial_t \psi = -i\alpha^i \partial_i \psi + m\gamma_0 \psi + \widehat{H}_{K\psi}$$
(30)



where

$$\widehat{H}_{K\psi} = \frac{\sqrt{2M}}{\rho^2} \begin{pmatrix} (r^3 + a^2 r)^{1/4} i \partial_r ((r^3 + a^2 r)^{1/4} \psi) \\ -a \cos \theta \ r^{\frac{1}{4}} a_{\phi} i \partial_r \left(r^{\frac{1}{4}} \psi \right) - \frac{a \cos \theta}{2} (r^2 + a^2)^{1/2} \gamma_5 \psi \end{pmatrix}$$
(31)

and

$$\alpha_{\phi} = -\sin\phi \,\alpha_1 + \cos\phi\alpha_2 \tag{32}$$

Hypersurfaces measure of constant t is again the similar as that of the Minkowski spacetime, As the covariant volume element is basically

$$dxdydz = \rho^2 \sin\theta \, dr d\theta d\phi \tag{33}$$

As per the Schwarzschild case the relations Hamiltonian \hat{H}_K is not independent when integrated concluded these hypersurfaces. This is because the singularity grounds a boundary term to be existing once the Hamiltonian is integrated.

V. CONCLUSIONS

The Kerr solution is very important in astrophysics by means of ever more captivating evidence points to the presence of black holes revolving at nearby their critical rate. In the least form of the solution which helps physical understanding of revolving black holes is evidently beneficial. The form of the solution existing here has several features which realize this aim. The solution is well-matched for studying progressions nearby the horizon, and the condensed form of the spin linking for the tetrad of the eqⁿ (28) makes it principally good for the numerical computation. It might also be well-known that this gauge confesses a simple generalization to a time-dependent system which looks compatible to the study of accretion and the formation of revolving black holes. The Complete description of the features of this gauge, together with the derivation of the Dirac Hamiltonian will be existing elsewhere. One reason for not prominence more of the advantages here is that various of the hypothetical uses which activity these properties have been executed utilizing the Hestenes' spacetime algebra. This language completely disclosures much of the difficult algebraic structure of the Kerr solution and, brings with it several insights. These are hard to define deprived of employing spacetime algebra and so it will be presented untainted in a distinct paper. The fact that the time coordinate t measured by observers brings the Dirac equation into the Hamiltonian form is expressive of a cavernous principle. These equations also authorizations many methods from quantum field theory to be accepted over to a gravitational related with little change. The lack of independents due to the basis itself is also usual in this framework, as the singularity is an accepted sink for the current. In the non-rotating case, the physical progressions resulting from the existence of this sink are quite meek to analyze. The Kerr case is significantly more intricate, due both to the nature of the fields confidential the internal horizon, and to the edifice of the singularity. One exciting point to note is that the sink area is designated by r = 0, and so represents a disk, instead of just a ring of the matter.

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EFFECT OF ASHWAGANDHA (WITHANIA SOMNIFERA) ROOT POWDER SUPPLEMENTATION ON AGILITY LEVEL OF PLAYERS: A CASE STUDY OF HOCKEY PLAYERS

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ABSTRACT

Withania Somnifera (WS) is having significant effects on anti-inflammatory, nervine tonic, nerve soothing, antioxidant, immunomodulator, free radical scavenger, adaptogen, antiarthritic, antispasmodic, anti -stress and anti-cancer. But ergogenic value of WS as nutritional supplement is yet to be established. **Objectives:** Present study was designed to investigate the effect of supplementation of WS on the agility level in Hockey Players. **Method:** Thirty two male hockey players, with a mean age of 17.3 ± 1.8 years and BMI 20.7 ± 2.8 kg/m2 volunteered for the study. Subjects were randomly assigned into two groups Group I (n=24): Withania somnifera group (experimental group) and Group II (n=24): Placebo (control) group. The experimental group received 500 mg capsules of aqueous roots of Ashwagandha twice daily for eight weeks, whereas the placebo group received starch capsusules. Agility level was assessed with **Illinois Agility Run Test Getchell (1979)** Test in both experimental and control groups before and after the administration of Withania somnifera and placebo respectively. **Results:** A significant improvement in the agility level after 4 weeks (t = 1.83, p < 0.10, on tail rest) and 8 weeks (t = 2.45, p < 0.02, one tail test) in experimental group was found. Whereas, no significant improvement in the control group for agility level after 8 weeks of placebo supplementation was found. **Conclusion:** Supplementation of Withania Somnifera improves agility level in young hockey players.

KEY WORDS: Withania Somnifera, agility and Placebo.

INTRODUCTION

The plant Withania Somnifera commonly known as "Ashwagandha" is well known for its therapeutic use in the ayurvedic system of traditional medicine. It has been used as an antibacterial, antioxidant, adaptogen, aphrodisiac, liver tonic, anti- inflammatory agent (Puri HS, 2003). It is a reputed health food and herbal tonic and used for cardiovascular diseases in ethnomedicine. It is available for human use either as a single herb or an ingredient of polyherbal or herbomineral formulations. Withania somnifera, also known as Indian ginseng, widely used in the Ayurvedic medicine, belongs to the family of Solanaceae. Leaves, fruits, seeds, shoots and roots of this plant have all been used traditionally as well. The roots of Withania Somnifera contained 35 chemical constituents. Withaferin A and withanolides, the active ingredients contribute to the most of the biological actions of Withania. Furthermore, the roots of this plant are reputed to promote health and longevity by augmenting defense against some diseases, arresting the aging process, revitalizing the body in debilitated condition, increasing the capability of individual to resist adverse environment factors and by creating a sense of mental well being (Mishra LC; 2003).

Aphale et al. (1998) reported in a study conducted on rats, intake of ginseng and ashwagandha for 90 days, researchers

found significant increase in body weight, food consumption and liver weight, and improved hematopoiesis. They did not reveal any toxicity of brain, heart, lung, liver, spleen, kidneys, stomach, testis and ovaries. Further the side effects of WS were not significantly different from those experienced by placebo-treated individuals Cooley et al. (2009) and Chopra et al.(2004). The human doses of Ashwagandha are generally in the range of 4-6 g/day and expected to be safe and non-toxic. Withania contains active ingredients like steroidal alkaloids and lactones known as "withanolides". Withaferin A and withanolide D are the two main withanolides that contribute to most of the biological actions of Withania (Matsuda et al. 2001; Sharma V et al. 2011). Stress, as a major cardiovascular risk factor leads activation of sympathoadrenal and hypothalamic pituitary adrenal (HPA) axis and causes oxidative stress. Withania possesses a potent anti-stressor effect and is reported to alleviate induced changes and provides cardio protection in stress ischemic rats similar to the properties ascribed to adaptogens like Panax ginseng. It also increases heart weight and glycogen in myocardium and liver indicating intensification of the anabolic process and enhances the duration of contractility as well as coagulation time (Dhuley 2000). So, this study was planned to assess the effect of Ashwagandha on hypertensive subjects.



Long term strenuous exercises release of free radicals that causes oxidative damages of varied amount on different systems of human body. Stress can cause increased peroxidation of lipids, while decreasing levels of the antioxidant enzymes catalase and glutathione peroxidase. When Ashwagandha extract was administered by re-searchers one hour before a daily stress- inducing procedure, all of the aforementioned parameters of free radical damage normalized in a dose- dependent manner Bhattacharya at el. (2001). Thus, ashwagandha probably is safe without serious side effects. There are only few scientific clinical studies showing effect of WS on selective parameter of exercise performance after regular administration when given as supplements. The present study was therefore designed and performed to assess the effects of Withania somnifera (Ashwagandha) on the Agility level which is the key for all form of sports/games.

METHODOLOGY

The present randomized controlled, parallel group, single blinded study was conducted on thirty two male hockey players, with a mean age of 17.4 ± 1.7 (aged between 16 to 19 years) years and BMI 20.9 \pm 2.9 kg/m² from Shri Guru Hari Singh Hockey Academy, Shri Jiwan Nagar, Sirsa, Haryana, who volunteered for the study. Subjects were randomly assigned into two groups using the chit in a box method, Group I (n=16): Withania somnifera group and Group II (n=16): Placebo (control) group. Withania somnifera was used in the form of a standardized aqueous root extract was obtained from Central Council for Research in Ayurveda and Siddha (CCRAS), Delhi, India. Prior to the start of data collection, participants were explained about the drugs and previous research supporting the effectiveness on physical performance and possible side effects due to overdose. Only then the subjects who volunteered to participate in the study were recruited. A written informed consent was taken from each participant and their parent prior to recruitment.

Quality and dose of drug was decided after consultation with the Ayurvedic Medical Officer of civil hospital, Sirsa. 500mg of roots of WS and 500mg of sugar power was filled in gelatin capsules and stored in air tight containers and in room temperature below 30°C throughout the experiment. Drug and sugar capsules were given to their respective groups (Experimental and Controlled) in the dose of 1 capsule/day orally with milk after meals at night for 8 weeks under the personal supervision of researcher. Subjects were unaware of which group they were in and which drug they were to receive. It was thus a single blinded study, where all the subjects were completely unaware of drugs which they were going to consume. Agility level was assessed with Illions Agility Run Test Getchell (1979) of both experimental and control groups were measured before and after the administration of Withania somnifera. The data was analyzed by student "t" test(one tail) with Statistical Package for Social Sciences (SPSS - 20) software.

RESULTS

Results of the table- 1 indicates that the mean Pre Test and Mid Test (After 4 Weeks) Agility of placebo group (control group) before the supplementation of placebo (Pre Test) is 17.24 and after 4 weeks supplementation of placebo (Mid Test) it is 17.02. The mean difference is 0.22, which is in favor of mid test. The t value is 0.395, which is less than the table value of 1.68 at 0.10 levels (one tail test) of significance for 40 degrees of freedoms.

S. No.	Phase	Mean	S.D	Mean Difference	S.E.D	t – Value	P Value
1.	Pre Test	17.24	1.88	0.22	0.556	0.395	Not
2.	Mid Test	17.02	1.72				Significant

Table – 1 Comparative status of Pre Test and Mid Test Agility in Placebo Group (Control Group)

Similarly mean Agility level of placebo group (control group) before the supplementation of placebo (Pre Test) is 17.24 and after 8 weeks supplementation of placebo (Post Test) it is 16.56 The t value is 1.24, which is less than the table value of 1.68 at 0.10 levels (one tail test) of significance for 40 degrees of freedoms.

	Comparative status of Pre Test and Post Test Agility in Placebo Group (Control Group)													
S.	Phase	Mean	S.D	Mean Difference	S.E.D	t – Value	P Value							
No.				Difference										
1.	Pre Test	17.24	1.88	0.60	0 7 40	1.04	Not							
2.	Post Test	16.56	1.67	0.68	0.548	1.24	Significant							

Table – 2



Whereas table - 3 indicates that mean Agility of Experimental Group before the supplementation of Ashwagandha (Pre Test) is 17.14 and after 4 weeks supplementation of Ashwagandha (Mid Test) it is 16.21. The mean difference is 0,93, which is in favor of pre test. The t value is 1.83, which is more than the

table value of 1.68 at 0.10 levels (one tail test) of significance for 40 degrees of freedoms. It means that there is a significant improvement in the Withania Somnifera group (Experimental Group) for Agility after 4 weeks of Ashwagandha (Withania Somnifera) supplementation.

Table – 3
Comparative status of Pre Test and Mid Test Agility level in Withania Somnifera Group (Experimental Group)

S.No.	Phase	Mean	S.D	Mean Difference	S.E.D	t – Value	P Value
1.	Pre Test	17.14	1.71				Significant at
2.	Mid Test	16.21	1.59	0.93	0.509	1.83	0.10 level

Similarly mean Agility level of Withania Somnifera group (Experimental Group) before the supplementation of Ashwagandha (Pre-Test) is 17.14 and after 8 weeks supplementation of Ashwagandha (Post Test) it is 15.80. The mean difference is 1.34, which is in favor of Pre Test. The t

value is 2.45, which is more than the table value of 2.43 at 0.02 levels (one tail test) of significance for 40 degrees of freedoms. Hence, there is a s ignificant improvement in the Withania Somnifera group (Experimental Group) for Agility level after 8 weeks of Ashwagandha (Withania Somnifera) supplementation.

 Table – 4

 Comparative status of Pre Test and Post Test Agility level in Withania Somnifera Group (Experimental Group)

	S.No.	Phase	Mean	S.D	Mean Difference	S.E.D	t – Value	P Value
Γ	1.	Pre Test	17.14	1.71				Significant at
	2.	Post Test	15.80	1.82	1.34	0.547	2.45	0.02 level

DISCUSSION OF RESULTS

According to table 1 and 2 the t value is 0.395 and 1.24, which are not significant. It means that there is no significant improvement in the Pre Test, Mid Test and Post Test in Agility level after 4 and 8 weeks of placebo supplementation. Whereas table 3 and 4 reveals as t value is 1.83 and 2.45, which are significant also, indicates that there is a significant improvement in the withania somnifera group (Experimental Group) for Agility after four and eight weeks of Ashwagandha (Withania Somnifera) supplementation.

The growth-promoting effect of WS was studied for 60 days in a double-blind study of 60 healthy children, age 8-12 years, experienced a slight increase in hemoglobin, packed cell volume, mean corpuscular volume, serum iron, body weight, and hand grip, and significant increases in mean corpuscular hemoglobin and total proteins (p<0.01) at the end of 60 days when compared to the initial level and the placebo group Venkataraghavan at el.(1980). WS may induce the synthesis of inducible nitric oxide expression likely by acting at transcriptional level Iuvone at el.(2003). Shenoy S et al. (2012) found that eight weeks of Ashwagandha supplementation increased endurance, respiration capacity and metabolic efficiency among cycling athletes.

Colorado State University researchers found that Ashwagandha and other Ayurvedic herbs help protect the heart from oxidative damage Reuland DJ et al.(2012). The effect of Ashwagandha on glycosaminoglycan synthesis in the granulatio n tissue of carrageenin- induced air pouch granuloma was studied. Ashwagandha is shown to exert significant inhibitory effect on incorporation of ribosome -35S into the granulation tissue. The uncoupling effect on oxidative phosphorylation (ADP/O ratio reduction) was also observed in the mitochondria of granulation tissue. Further, Mg2+ dependent ATPase activity was found to be influenced by Ashwagandha. Ashwagandha also reduced the succinate dehydrogenase enzyme activity in the mitochondria of granulation tissue (Begum & Sadique, 1987). Biswal BM et al.(2012) from Malaysia's University Sains found that Ashwagandha reduced fatigue and increased general well-being among patients who were undergoing chemotherapy. Raut AA et al.(2012) from the ICMR Advanced Centre for Reverse Pharmacology in Traditional Medicine found in a 30day clinical trial among 18 healthy volunteers that 750-1250 milligrams of Ashwagandha per day reduced cholesterol, improved sleep and increased muscle strength. Research from Germany's University of Tuebingen discovered that Ashwagandha reduces oxidative stress and alters gene expression to help cells with energy production Sabir F et al. (2012).

Analytical reports on Ashwagandha suggest that this herb has a rich array of a diverse spectrum of bioactive compounds Chaurasiya ND et al. (2008). The abundance of phytochemicals with antioxidant properties, such as phenolic, flavonoids, and carotenoids may be held responsible for the rejuvenating activity of this medicinal herb. This explains the inclusion of this herb in the Indian system of Ayurvedic lists in promoting longevity and other pharmacological effects Widodo N et at. (2008). In spite of



the many properties attributed to Ashwagandha, there is a shortage of clinical scientific evidence for its use in athletes. Present study provides a scientific basis for the use of Ashwagandha supplementation by athletes.

Though there are many factors that could contribute to the increase in the Agility level, we believe that an increase in the Agility is due the ability of Ashwagandha to provide healthy long-lasting energy for enhanced performance, improving recovery from workout-derived stress and fatigue, and increasing anabolic metabolism to promote lean muscle development. An added benefit of this stress reduction is that many people feel an enhanced mood when taking Ashwagandha. In addition, most athletes know that maintaining a healthy weight helps enhance performance. Further studies on Agility level would provide conclusive evidence regarding the mechanism of the ergogenic effect of Ashwagandha. Thus, the above findings clearly indicate that the traditional use of Ashwagandha has a logical and scientific basis. Large scale clinical studies are needed to prove the clinical efficacy of this herb, especially in sports performance.

CONCLUSION

Withania somnifera may therefore be useful for to improve the Agility level after 8 weeks of Ashwagandha (Withania Somnifera) supplementation. Drug appears to be safe for young adults when given for mentioned dosage and duration. The forthcoming researches should focus on dose finding, longer treatment duration as well as gender specific effects of WS Further studies are also required to measure whether the drugs can improve other parameters of physical fitness so that in future Withania somnifera can be used as ergogenic elements.

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QUERVAIN'S TENOSYNOVITIS, GENERAL DESCRIPTION

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ABSTRACT

INTRODUCTION: Quervain's tenosynovitis is a condition involving tendon entrapment affecting the first dorsal compartment of the wrist, causing pain that increases with thumb movement and radial and ulnar deviation of the wrist.

OBJECTIVE: To detail the current information related to Quervain's tenosynovitis and its management, as well as to analyze the conservative and surgical treatment of this disease.

METHODOLOGY: A total of 28 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 18 bibliographies were used because the other 10 articles were not relevant for this study. The sources of information were PubMed, Google Scholar and Elsevier; the terms used to search for information in Spanish and English were: Quervain's Tenosynovitis, surgical quervain's tenosynovitis. corticosteroids and quervain, non-surgical treatment tenosynovitis.

RESULTS: The choice of preferred treatment is subject to the severity of the condition. Oral non-steroidal anti-inflammatory drugs accompanied by immobilization are a good option. Corticosteroid injections are effective for this tenosynovitis, leading to success 73.4% of the time with 2 injections. The use of ultrasound can improve the accuracy of the injections. Surgery is essential in cases that recur and are not relieved by conservative therapies over the course of 3 to 6 months.

CONCLUSIONS: De Quervain's tenosynovitis is a pathology based on inflammation of the tendon sheath of the abductor pollicis longus and extensor pollicis brevis in the first extensor compartment of the wrist. Its diagnosis is clinical with a positive Finkelstein's test. Non-surgical measures are preferred for its treatment. The use of splints and corticosteroid injections together provides more benefit than when used individually. And finally surgical treatment is effective and safe but is not without complications.

KEY WORDS: Tenosynovitis, Quervain's, inflammation.

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INTRODUCTION

Quervain's tenosynovitis is a condition that involves tendon entrapment affecting the first dorsal compartment of the wrist. It was first described in 1985 by the Swiss surgeon Fritz de Quervain, after whom it is named (1). To study it, it is necessary to know the wrist, which is a complex structure formed by the radiocarpal, intercarpal and distal radioulnar joints. It has adjacent soft tissues such as the extrinsic ligaments, intrinsic intercarpal ligaments and the triangular fibrocartilage complex, as well as extensors, flexors, arteries, veins and the median, anterior ulnar and posterior interosseous nerves(2).

This tenosynovitis causes pain that increases with thumb movement and radial and ulnar deviation of the wrist, presenting an increase in the thickness of the tendon sheaths near the abductor pollicis longus and extensor pollicis brevis where the tendons pass through the fibro-osseous tunnel located in the extension of the radial styloid at the distal wrist(1).

The most common cause of De Quervain's tenosynovitis is overuse of the thumb musculature, an example of this would be caused by excessive use of text messaging on cell phones(3).

METHODOLOGY

A total of 28 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 18 bibliographies were used because the other 10 articles were not relevant to this study. The sources of information were PubMed, Google Scholar and Elsevier; the terms used to search for information in Spanish and English were: Quervain's Tenosynovitis, surgical quervain's tenosynovitis, corticosteroids and quervain, non-surgical treatment tenosynovitis.

The choice of literature exposes elements related to Quervain's tenosynovitis in the last 5 years; in addition to this factor, these studies have several important factors related to their different treatments.

DEVELOPMENT

The inflammation of the tendon sheath of the abductor pollicis longus musculus also called abductor pollicis longus of the thumb and the extensor pollicis brevis musculus also called extensor pollicis brevis in the first extensor compartment of the wrist is called Quervain's tenosynovitis. As a consequence of repetitive movements and tendon overload, patients present pain in the radial side of the wrist(4).

At the moment the point cause of Quervain's tenosynovitis is not well defined, but the probable cause is increased vascularization rather than acute inflammation of the synovial lining as well as myxoid degeneration with fibrous tissue deposits. The deposition results in thickening of the tendon sheath, which painfully imprisons the tendons of the abductor pollicis longus and extensor pollicis brevis. Mothers of newborns are frequently affected when performing repeated movements with the thumbs in radial abduction and the wrists in ulnar to radial deviation(1,5).

The relationship between Quervain's tenosynovitis versus pregnancy and the postpartum period currently presents multiple concerns since it could be associated with hormonal causes and its origin is not clear(6).

The diagnosis of Quervain's tenosynovitis is clinical, but radiographs can be used to rule out other possible causes of radial wrist pain, such as osteoarthritis of the carpometacarpal joint of the thumb (7,8).

On physical examination, the Finkelstein test can be performed, which consists of flexing the thumb on the palm of the hand, wrapping the thumb with the fingers, and performing an ulnar deviation of the wrist. In case of being positive, it will cause acute pain of the radial wrist in the first dorsal compartment, it can also be accompanied by pain on palpation over the radial styloid and a fusiform swelling can be observed in the region(1).

Among its main differential diagnoses are acute compartment syndrome, carpal tunnel syndrome, cellulitis, bursitis, fractures, osteoarthritis, rheumatoid arthritis and others(1).

Non-surgical treatment of Quervain's disease is a good option, in which oral non-steroidal anti-inflammatory drugs can be given, accompanied by immobilization and, if necessary, corticosteroid injections. Treatment with the latter has been very successful with rates of 61 to 83 percent(9).

The choice of preferred treatment for de Quervain's tenosynovitis is subject to the severity of the condition, however non-surgical treatment with anti-inflammatory drugs, immobilization and recovery is preferred(10,11).

Corticosteroid injections are effective for this tenosynovitis, leading to success 73.4% of the time with 2 injections. In addition, one study suggests that BMI > 30 and female sex are associated with lower treatment success(12).

Corticosteroids may have benefits but should be used with caution as they may have negative effects. Multi-point injection procedures and multiple injections prior to surgical resolution usually provide greater benefit compared to a single point injection technique or a single injection prior to surgery. Also the use of splints and corticosteroid injections together as a treatment often provides more benefit than when used individually(9).

The use of corticosteroids as a treatment for de Quervain's tenosynovitis is positive in both diabetics and healthy people, however it is less effective in diabetics(13).

Ultrasound-guided injections into the compartment are more accurate and provide better results(9).

Patients who show progressive disease despite conservative therapy and those who do not respond to non-invasive therapy are candidates for surgical treatment, which is effective and safe(14).

Even knowing that surgery could provide conclusive treatment for de Quervain's tenosynovitis, conservative therapy may be preferable(12).



However, corticosteroid infiltrations are associated with recurrence in 75% with a recurrence rate of 32.14% per year(15).

Surgery is essential in recurrent cases that are not relieved by conservative therapies within 3 to 6 months. The existence of a septum and tendon movements contribute to the failure of non-surgical treatment. Surgical techniques require decompression of the first dorsal compartment, with reconstruction of the compartment if necessary to prevent possible tendon subluxation(11,16).

The open release made by means of a longitudinal incision provides a better image of the underlying anatomy, causing less lesions in the underlying structures and a lower incidence of hypertrophic scarring in contrast to a transverse incision; however, endoscopic release can generate faster improvement of symptoms, lower incidence of lesion of the radial sensory nerve and a superior appearance of the scar (17).

A randomized clinical trial evaluating treatment with triamcinolone acetonide injection versus surgical decompression showed supremacy of the surgical technique, providing symptomatic improvement at 6 weeks among all patients, absence of complications and no recurrence(15).

The WALANT technique, which consists of injecting a solution of lidocaine 1%, adrenaline (1:100,000) and sodium bicarbonate (10:1) in the area to be incised, in an awake patient and without tourniquet, has shown that the release of the first dorsal compartment can be done effectively and safely, and even has the potential to save prices without risking the quality or comfort of the patient(17,18).

Surgical complications are infrequent, but local soft tissue infection and wound dehiscence are the most common. In addition, lesion of the superficial radial nerve can be observed, which can generate extreme sensitivity, pain and/or paresthesia, as well as trapping of the abductor pollicis longus and extensor pollicis brevis and tendon subluxation(1).

CONCLUSIONS

De Quervain's tenosynovitis is a pathology based on inflammation of the tendon sheath of the abductor pollicis longus and extensor pollicis brevis in the first extensor compartment of the wrist. Its diagnosis is clinical with a positive Finkelstein's test. The preferred choice of treatment is subject to the severity of the condition. Non-surgical measures are preferred. Oral non-steroidal anti-inflammatory drugs accompanied by immobilization are a good option. Corticosteroid injections are effective for this tenosynovitis, leading to success 73.4% of the time with 2 injections. The use of ultrasound can improve the accuracy of injections. The use of splints and corticosteroid injections together provides more benefit than when used individually. Surgery is essential in cases that recur and are not relieved by conservative therapies over the course of 3 to 6 months. And finally, surgical treatment is effective and safe but is not without complications.

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ROLE OF NATIONAL RURAL LIVELIHOOD MISSION IN ECONOMIC EMPOWERMENT AND INCLUSIVE GROWTH OF RURAL POOR WOMEN – A REVIEW

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ABSTRACT

Women are an integral part of human resources of any country. In India, women constitute 48.2 per cent of the total population, 44.62 per cent of the total agricultural labourers and their economic contribution in the family is 44 per cent according to 2001 census. Economic empowerment means mobilization of self help efforts to raise the income and standard of living. Economic empowerment can be observed at household, community and broader area level, through control over income and relative contribution to family support. At broader area level women are said to be empowered on the basis of women's representation of economic interests in macro-economic policies. The policies and programmes implemented by Ministry of Rural Development through NRLM pave the way to economic empowerment. As women need access to better business climate to support them in financial sector, the National Rural Livelihood Mission (NRLM) laid emphasis on investment credit needs with the objective to reduce poverty by enabling the poor to access self-employment opportunities through building strong grass root institutions.

The present paper deals with how NRLM scheme enables the economic empowerment of women, into the formal financial sector. The main objective of the study is to highlight the measures taken by NRLM. An attempt has been made through this paper to analyze the scope of the implementation of the scheme for economic growth. The secondary sources have been used in the study from books, journals, annual reports of MORD, GOI, UNDP, world bank etc. It has been found that NRLM's financial assistance helped in economic empowerment of rural poor women.

KEY WORDS: Economic Empowerment, Inclusive Growth

INTRODUCTION

In most developing countries, women have a low social and economic status. In such countries effective empowerment of women is essential to harness the women labour in the main stream of economic development. Women's role in directing and shaping the destiny of the society is crucial.¹ Progress in health and education commonly comes from increasing access to services for disadvantaged groups. Human development improves the inequalities level out. Fiscal policy is a vital lever for greater equity, with spending much more powerful and leads the way to economic empowerment.²

Empowerment helps to increase people's ability to bring about change through capability approach. It emphasizes the ability of individuals and groups to engage with, shape and benefit from political and other development processes in households, communities and countries. In many countries women are far less likely and less able to own property and other assets than men and are with negative implications for their absolute and relative status and livelihood of experiencing violence.³

Empowerment is a process of awareness and capacity building leading to greater participation to greater decision making powers and to transformative action. It is multidimensional in its approach and covers social, political and economic aspect of all these facets of women development.⁴ It also means increasing the capacity of individuals or groups to make effective development and life choices and to transform these choices into desired actions and outcomes. It is about the process by which those who have been denied the ability to make strategic life choices acquire such ability.⁵

The process of empowerment covers different dimensions such as social, political and economic. The term economic empowerment means to help people to raise their income and standard of living.⁶In economic development, the empowerment approach focuses on mobilizing the self-help efforts of the poor, rather than providing them with social welfare. When women have economic power defined as control of income and capital they gain more equality and control or over their own lives, while contributing directly to their development (nutrition, health and education) and their by indirectly to their nations income growth.⁷

To increase their economic opportunities, women need access to more and better jobs, a business climate that supports them in starting and doing business, a financial sector that gives them access to financial services tailored to their

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needs, and greater livelihood security in times of food and fuel crises. This is especially true for women living in rural areas and vulnerable environments.⁸ Economic empowerment of women changes the balance of power because it allows half the world's population to contemplate higher goals than basic survival.⁹

Along with the economic liberalization, privatization, participatory governance, empowerment is an accepted part of development orthodoxy. Empowerment has emerged as a keyword effectively replacing the term welfare. The Women in Development (WID) approach in 1970s believed that Women played a central role in the life of their community and particularly within their family as mothers, educators, and care providers and as workers. The central issue stressed on the absence and exclusion of women from development programmes. This approach supported the solution of integrating women into development programmes in order to improve women's access to resources and their participation in development. ¹⁰

The Women and Development approach (WAD)believed that women had always been part of the development process, where the working women undertook both inside and outside the household. This was vital to the survival in the society for economic and social empowerment. Women and Development stressed that both women and men are being disadvantaged by the global economic structures, including class issues and the way wealth was distributed in the form of wages. Women and Development therefore argued that the integration of women into development was their disadvantage and only worsened their chances of equality.¹¹

Government of India has made many provisions for different aspects which helped women to get empowerment social, economical and also in political way. Five year plans implemented by the government showed a better pathway to the women for their livelihood.

FIVE YEAR PROGRAMMES

Government has initiated various plans for socio-economic empowerment of women which are listed as under

The first Five Year Plan (1951-56) envisaged a number of welfare measures for women. Establishments of the Central Social Welfare Board (CSWB), organization of MahilaMandals or women's Clubs and the Community Development Programmes were a few steps in this direction. The Third Five Year Plan (1961-66) supported female education as major welfare measures. Rural welfare services and condensed courses of education had priority besides provision of services for maternal and child welfare, health education, nutrition and family planning. Similarly, the Fourth Five Year Plan (1969-74) continued emphasis on women's education. Here the basic policy was to promote women's welfare within the family. The Fifth Five Year Plan (1974-79) emphasised training women in need of income and protection. Seventh Five Year Plan (1985-90) operationalised the concern for equity and empowerment. The Eight Five Year Plan (1990-95) focused on empowering women especially at the grassroots level through Panchayati Raj Institutions. The Tenth Five Year Plan approach aims at empowering women

through translating recently adopted National Policy for Empowerment for women into action. The Eleventh Plan will foster women's access to legal services. Women will be exempted from paying fees to fight cases of human rights violations. Funds for legal assistance will be provided to poor women seeking legal redress. Legal awareness programmes will be carried out in all States in collaboration with Non Governmental Organizations working at the grassroots level. ¹² The Twelfth Plan aims at women's Economic Empowerment, Social and Physical Infrastructure, Women's Participation in Governance, Inclusiveness of all categories of vulnerable Women.

The plan will endeavour to increase women's employability in the formal sector as well as their asset base. Focus will be on women's workforce participation particularly in secondary and tertiary sectors, manufacturing financial inclusion and extending land and property rights to women.¹³

To overcome the gaps between financial system and economic development the World Bank documented the reports on financial sectors and paves the way for an inclusive growth.

In accordance to the World Bank report, the incomplete or imperfect financial markets are like worse elements for the talented poor and for individuals who have desire to open a micro and small enterprise.¹⁴

Empowerment of Women through Financial Inclusion

- Having access to resources on their own account and to the tools that help them to earn a living can increase women's bargaining power within households and their influence over how money and other resources are used.
- Financial inclusion can help increase women's opportunities to earn an income or control assets outside the household.
- It can reduce women's vulnerability by allowing them to insure against risk or borrow to meet unexpected expenses, such as medical treatments. These are all key factors for economic empowerment and they can also help to empower women more broadly.¹⁵

Poverty is complex and multidimensional approach. The programmes of Ministry of Rural Development (MoRD), Government of India that directly target poor families for creation of assets and self employment started withIntegrated Rural Development Programme (IRDP) in the year 1980. In 1999, IRDP was transformed into Swarnjayanti Gram SwarozgarYojana (SGSY). The government restructured SGSY into National Rural Livelihoods Mission (NRLM) since Financial Year 2010-11 to provide greater focus and momentum for poverty reduction and to achieve the Millennium Development Goals (MDG). The Framework for Implementation for NRLM was approved by the Ministry on 9th December, 2010 and the Mission was formally launched on 3rd June, 2011.

NRLM's mandate is to reach out to all the poor families, link them to sustainable livelihoods opportunities and nurture them till they come out of poverty and enjoy a better quality of life. The Institutions of the poor SHGs provide the



platforms for collective action based on self-help and mutual cooperation. Government agencies, NGOs and civil society organizations, local self governments, banks and corporate sector can play this role. Banks provides savings, credit and other financial services to meet priority needs, consumption needs, food and health security and livelihoods. The institutions become the internal sensitive support structures for the poor.

Overview of NRLM

The core belief of National Rural Livelihoods Mission (NRLM) is that the poor have a strongdesire and innate capabilities to come out of poverty by providing sufficient capacities to manage the external environment and easy access to finance, and enable them to expand their skills and assets to convert into meaningful livelihoods. Support structure at the national level to the sub-district level, is required to bring such social mobilization, institution building and livelihoods promotion. Strong institutional platforms empower the poor households and enable them to build-up their own human, social, financial and other resources and enable them to access their rights, entitlements and livelihoods opportunities.

NRLM Mission

"To reduce poverty by enabling the poor households to access gainful self-employment and skilled wage employment opportunities, resulting in appreciable improvement in their livelihoods on a sustainable basis, through building strong grassroots institutions of the poor."

NRLM implementation is in a Mission Mode. This enables

- (a) shift from the present allocation based strategy to a demand driven strategy enabling the states to formulate their own livelihoods-based poverty reduction action plans,
- (b) Focus on targets, outcomes and time bound delivery,

(c) Continuous capacity building, imparting requisite skills and creating linkages with livelihoods opportunities for the poor, including those emerging in the organized sector, (d) monitoring against targets of poverty outcomes.

As NRLM follows a demand driven strategy, the States have the flexibility to develop their livelihoods-based perspective plans and annual action plans for poverty reduction.

Components of the Programme

NRLM works on the basis of three pillars:

a) Enhancing and expanding existing livelihood options for the poor

b) Building skills for the job market outside

c) Nurturing self-employment and entrepreneurship

These three pillars can only stand on a foundation of social capital of the poor. Hence, mobilising communities for SHGs and various aggregate forms of people's institutions becomes a core activity of NRLM. Dedicated support structures build and strengthen the institutional platforms of the poor. These platforms, with the support of their built-up human and social capital, offer a variety of livelihoods services to their members.¹⁶

NRLM Guiding Principles

- Poor have a strong desire to come out of poverty, and they have innate capabilities.
- Social mobilization and building strong institutions of the poor is critical for unleashing the innate capabilities of the poor.
- An external dedicated and sensitive support structure is required to induce the social mobilization, institution building and empowerment process.
- Facilitating knowledge dissemination, skill building, access to credit, access to marketing, and access to other livelihoods services underpins this upward mobility.

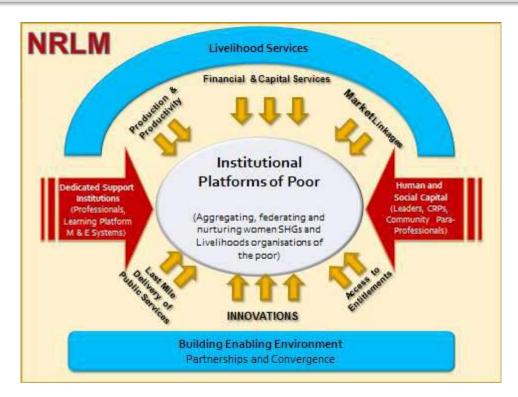
NRLM values

The core values which guide all the activities under NRLM are as follows:

- Inclusion of the poorest, and meaningful role to the poorest in all the processes
- Transparency and accountability of all processes and institutions
- Ownership and key role of the poor and their institutions in all stages – planning, implementation, and, monitoring
- Community self-reliance and self-dependence

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INCLUSIVE GROWTH THROUGH NRLM

NRLM as a demand driven strategy helps to eradicate poverty and paves the wave for inclusive growth in different manners. These are as under:

1. Universal Social Mobilization: NRLM would ensure that at least onemember from each identified rural poor household, preferably a woman, is brought underthe Self Help Group (SHG) network in a time bound manner. NRLM would ensure adequate coverage of vulnerablesections of the society such that 50% of the beneficiaries are SC/STs, 15% are minorities and3% are persons with disability, while keeping in view the ultimate target of 100% coverageof BPL families.

2. Promotion of Institutions of the poor: Strong institutions of the poor such as SHGs and

their village level and higher level federations are necessary to provide space, voice and resources for the poor and for reducing dependence external their on agencies. Theyempower them and also act as instruments of knowledge and technology dissemination, and hubs of production, collectivization and commerce. NRLM, therefore, would focus onsetting up these institutions at various levels.

3. Training, Capacity building and skill building: NRLM would ensure that the poor are provided with the requisite skills for managing their institutions, linking up with markets, managing their existing livelihoods, enhancing their credit absorption capacity and credit worthiness, etc. NRLM would make extensive use of ICT to makeknowledge dissemination and capacity building more effective.

4. Revolving Fund and Capital Subsidy: Subsidy would be available in the form of revolvingfund and capital subsidy. The Revolving Fund would be provided to the SHGs (where

morethan 70% members are from BPL households) as an incentive to inculcate the habit of thrift and accumulate their own funds towards meeting their credit needs in the long-run andimmediate consumption needs in the short-run. Capital Subsidy fund would be given directly to the SHGs or would be routed to the SHGs through the federations, wherever the SHGs desire such an arrangement.

5. Universal Financial Inclusion: NRLM would work towards achieving universal financial

inclusion, beyond basic banking services to all the poor households, SHGs and theirfederations. NRLM would work on both demand and supply side of Financial Inclusion.

- On he demand side, it would promote financial literacy among the poor and provides catalyticcapital to the SHGs and their federations.
- On the supply side, it would coordinate with thefinancial sector and encourage use of Information, Communication & Technology (ICT)based financial technologies, business correspondents and community facilitators like 'BankMitras'. It would also work towards universal coverage of rural poor against loss of life, health and assets. Further, it would work on remittances, especially in areas wheremigration is endemic.

6. Provision of Interest Subsidy: The rural poor need credit at low rate of interest and in multiple doses to make their ventures economically viable. In order to ensure affordablecredit, NRLM has a provision for subsidy on interest rate above 7% per annum for all eligible

7. Livelihoods: Poor have multiple livelihoods a coping mechanism for survival. Their existing major livelihoods are:



wage labour, small and marginal holding cultivation, cattle rearing, forest produce, fishing, and traditional non-farm occupations.

NRLM would look at the entire portfolio of livelihoods of each poor household, and work towards stabilizing and enhancing the existing livelihoods and subsequently diversifying their livelihoods.

8. Infrastructure creation and Marketing support:

NRLM would seek to ensure that the infrastructure needs for the major livelihoods activities of the poor are met with. It wouldalso provide support for marketing to the institutions of the poor. NRLM would encourage and support partnerships with public andprivate organizations and their networks/associations for these activities, particularly formarket linkages. Rural Haats would also be encouraged to directly link producer groups(SHGs).

9. Skills and Placement Projects: NRLM would scale up the existing skill and Placement projects through partnership mode as one of the best investments in youth, and provide impetus to livelihoods opportunities in emerging markets. For strengthening this, various models of partnerships with public, private, non-government and community organizations would be developed. National Skill Development Corporation (NSDC) would be one of the leading partners in this effort. 15% of the central allocation under NRLM is earmarked for this purpose.

10. Rural Self Employment Training Institutes (RSETIs)

NRLM encourages public sector banks to set up RSETIs in all districts of the country. RSETIstransform unemployed rural youth in the district into confident self-employed entrepreneurs through need-based experiential learning programme followed by systematic handholding support. Banks are completely involved in selection, training and post training follow-up stages. RSETIs partner with others, including the institutions of the poor, to realize their mandate and agenda.

11. Innovations: NRLM believes that successful innovations can reduce the learning curve for poverty eradication by

showing a different pathway out of poverty. 5% of the Central allocation is therefore, earmarked for innovations. Those innovations, which have the potential for reaching out specifically to the poorest or for reaching out to the largest number of poor and having maximum impact with limited resources, would be preferred and supported.

12. Monitoring and Learning: NRLM would monitor its results, processes and activities through web-enabled comprehensive MIS, regular meetings of the Performance Review Committee(s), visits by senior colleagues, Local, District, State and National Monitoring Groups and the mechanisms of Review and Planning Missions.

13. Funding Pattern: NRLM is a Centrally Sponsored Scheme and the financing of the programme would be shared between the Centre and the States in the ratio of 75:25 (90:10 in case of North Eastern States including Sikkim; completely from the Centre in case of UTs). The Central allocation earmarked for the States would broadly be distributed in relation to the incidence of poverty in the States.

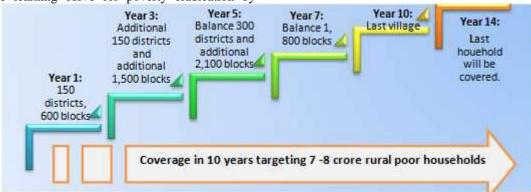
14. Transition to NRLM

All States/UTs would have to transit to NRLM within a period of one year from the date of formal launch of NRLM. Further funding under SGSY ceases thereafter.

Promoting mandatory and voluntary savings: NRLM needs to give priority to savingsled models of microfinance. Additional voluntary savings could be generated through specialized savings products.¹⁷

Implementation

NRLM is a highly process oriented programme and requires intensive application of resources, both financial and human, in order to mobilize the poor into functionally effective institutions, promote their financial inclusion and diversify and strengthen their livelihoods. It has been decided to phase the implementation of the programme over period of 10 years. The indicative phasing is as under:-



The blocks and districts in which all components of NRLM are implemented are treated as 'intensive' blocks and districts, whereas the remaining as 'non-intensive' blocks and districts.

Framework for Implementation of NRLM

NRLM can strategically have Livelihood Promotion and Financial Inclusion divisions. Based on the need of different



segment of poor, there can be three major functional categories of services:

- Community Institution Development Services;
- Livelihood Enhancement and Development Services; and
- Livelihood support services / Social Venture Capital Services.

Agenda before NRLM

NRLM has set out with an agenda to reach out, mobilize and support 7.0 Crore BPL households across 600 districts, 6000 blocks, 2.5 lakh Gram Panchayats, in 6.0 lakh villages in the country into their self-managed SHGs and their federal institutions and livelihoods collectives. NRLM's long-term dedicated sensitive support would be with them and extend facilitation support in all their efforts to get out of poverty. In addition, the poor would be facilitated to achieve increased access to their rights, entitlements and public services, diversified risk and better social indicators of empowerment.

Support Structure

NRLM has set up dedicated sensitive support units at the National, State, district and sub-district levels, to catalyze social mobilization, build institutions, capacities and skills, facilitate financial inclusion and access to financial services, support livelihoods and to promote convergence and partnerships with various programmes and stakeholders. These units would be staffed with professionally competent and dedicated human resources.



- At the national level, Ministry of Rural Development (MoRD) is required to provide technical and professional support to the states to establish the Mission societies, implementation architecture and systems and guide them in the implementation and monitor their progress.For this,**NRLM Empowered Committee** (**EC**)has been set up whichreviews and approves the Implementation Plans and Annual Action Plans and release the funds to SRLMs.
- At the state level, the **State Rural Livelihoods Mission** (**SRLM**) constituted by State Government, would oversee the implementation of all NRLM related activities in the state. An autonomous body under the State Government, SRLM would be incorporated as a society, trust or company. **State Mission Management Unit (SMMU)** would implement the NRLM activities in the state through an SMMU, at the state level, headed by a full-time State Mission Director (SMD).
- **District Mission Management Unit (DMMU):** The DMMU of the SRLM would be responsible for meeting NRLM objectives and implementing NRLM activities in the district. DMMU, linked suitably with DRDA, would

be a facilitating and support unit for field structures. A multidisciplinary DMMU, led by District Mission Manager (DMM), hired from open market on contract or on deputation from Government, includes functional specialists in Social Inclusion, Financial Inclusion, Livelihoods, Capacity Building, Programme Management, Programme Support etc., and support staff, as required. These specialists and staff would be hired in a phased manner, as required, on contract or on deputation.

Support Structures at Sub-district level: The Sub-district level Support Structure is either -

A Block Mission Management Unit (BMMU) led by a Block Mission Manager (BMM) and consisting of 3-5 spearhead teams; or

a Project Facilitation Team at cluster (sub-block) level

The members of sub-district structure(s), including the BMMs, if any, would be recruited from the open market or on deputation.

In recent years new approaches to livelihood promotion have evolved, which underline the ecological concept of 'carrying



capacity' by promoting efforts to diversify the local economy by adding value to local produce through processing, creating pro-poor value chains, and developing non-farm and service sectors.

FINDINGS AND SUGGESTIONS

- There is need of regulation for the framework of NRLM scheme.
- There should be proper maintenance and growth of SHG's Bank Linkage Programmes.
- There should be uniform distribution of micro financing through NRLM in both rural and urban areas of each state in India.
- Bank need to introduce appropriate organizational changes in the various branches in order to play a pro active role in bringing more and more SHG's under the Bank Linkage Programme of NRLM.
- There should be clarification about the legal form of SHG's for the larger organizations to command greater credibility.
- There should be proper maintenance of the records about the finances, functioning of the concerned organizations.

CONCLUSION

Women always contribute their best in the welfare and progress of the society without any glare of publicity. A positive change in attitude of society is needed so that women can be given a fair chance to develop without any fear. The creation of inclusive growth and development by NRLM is a significant step forward in the promotion of economic empowerment. NRLM encourage women to take active part in the socio economic progress of our nation and make them sensitized, self-made and self-disciplined.

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INDIA'S COMPREHENSIVE MARITIME SECURITY CHALLENGES: ALTERNATIVES AND MITIGATION REQUIREMENTS

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ABSTRACT

India faces a wide range of maritime security concerns in both traditional and non-traditional sectors as a result of its extensive coastal frontage in the northern Indian Ocean. While traditional risks are primarily caused by the activities of Pakistan and China's maritime entities in the northern Indian Ocean and their generally antagonistic agendas, non-traditional risks are either caused by rogue non-State actors acting from, on, or through the sea or result from natural or man-made causes. In order to chart a course toward ensuring India's own comprehensive maritime security and serving as a net provider of security for its immediate maritime neighbours, the Indian maritime security establishment must adopt a multi-pronged approach of accepting, avoiding, controlling, reducing, and monitoring such challenges.

"The vital feature which differentiates the Indian Ocean from the Atlantic and the Pacific is not the two sides but the sub-continent of India which juts far out into the sea for a thousand miles to its tapering end at Cape Comorin. It is the geographical position of India that changes the character of the Indian Ocean."

KM Panikkar

Despite holding a naturally endowed dominant position in the Indian Ocean region (IOR), as succinctly put by Sardar Panikkar, India paid a high price for its proverbial "seablindness" in the past. However, it has now acknowledged its proper place in the geopolitical affairs of the region. As a result, it recognises the new security dangers brought on by modern geopolitical dynamics, as well as the non-traditional threats caused by natural disasters and man-made causes, and is prepared to perform its rightful role as a reliable "net supplier of security" in the region.

This essay initially examines India's marine challenges, both conventional and unconventional. The available options and methods for their mitigation are then offered.

THREATS TO INDIA'S MARITIME SECURITY IN THE PAST

The proactive animosity of two States, Pakistan and China, and the related operations of their maritime organisations in the northern IOR, in particular, have historically posed a threat to modern India's maritime security. Two security situations for India could develop in this context. The first would be because China has properly supported Pakistan's notion of operations in the Arabian Sea, whether explicitly or secretly. The other could show up when China's other maritime assets and its naval force, which is becoming increasingly hightech enabled, signal an unmistakably proactive intent within the IOR, particularly within its northern portion, with the potential to negatively impact India's economic and security interests.

SCENARIO 1 THE "CONCEPT OF OPERATION IN THE ARABIAN SEA" BY PAKISTAN

In December 2018, Pakistan published its first-ever maritime doctrine, titled "Preserving Freedom of Seas," in which it identifies the western Indian Ocean as an extension of the north Arabian Sea as its main area of interest. According to this philosophy, "the adversary's [read: India] nuclearization of the Indian Ocean has upped stakes in the region." The Pakistan Navy (PN) promotes a strategy of provocative and flexible mobility utilising maritime space in order to create enough deterrence against this purported enemy's objective. The PN strategy also calls for "hitting first with the greatest impact and the least amount of power."

In order to "high-intensity diversion and disruption of enemy sea lines of communications (SLOCs)... to dominate the war theatre," according to Pakistan's maritime doctrine, submarines should be used. The Yuan Class submarines, eight of which are being imported from China, fitted with airindependent propulsion (AIP) systems, and outfitted with cutting-edge fire-control and decision-making technologies, would undoubtedly be the best options in this endeavour. However, it is clear that the PN's current lack of capabilities would prevent it from carrying out the major objectives outlined in Pakistan's maritime strategy. Therefore, allying with China is the only option to adhere to its doctrinal instruction of "striking first with maximum effects and minimum application of force."



This will make it possible for the PN to utilise Chinese high-technology support infrastructure for its operational needs. For instance, PN ships and submarines would be able to conduct out precision targeting of enemy assets as well as interdict Indian SLOCs in Pakistan's near-coast areas with access to restricted positioning signals from the Beidou satellite navigation system, which is available to that country.

SCENARIO 2 CHINESE MARITIME ASSETS' PROACTIVE PRESENCE IN IOR

As previously stated in its Defence White Paper from 2008, the Chinese Navy's envisioned function of conducting international cooperation in far-off areas had by 2015 gradually evolved to include safeguarding its vital SLOCs and foreign interests. China has prioritised the high-technology development of its naval weaponry and revised its operating plans in order to achieve the latter goal. The PLA Navy continues to gain capacity and numerical supremacy thanks to its rapid warship construction tempo. Since 2013, Chinese shipyards have been building between 17 and 20 ships and submarines per year. By 2035, the PLA Navy, which now has roughly 270 blue water competent ships, is anticipated to surpass all other navies in size.

Obviously, the Indian Ocean cannot accommodate the deployment of the full force. The majority of the PLA naval force will inevitably need to be stationed closer to home due to current geopolitical circumstances and the resulting maritime security imperatives in the Pacific Ocean. Though hypothetically, this would equal to 17 platforms if China sent even 10% of its deployable blue-water forces-taking approximately two-thirds of operational availability, or 170-to the Indian Ocean. The net force level that could be deployed in the IOR would consist of about 12 vessels-eight destroyers/frigates, one/two replenishment ships, one LPD, one nuclear-powered attack-submarine (SSN), along with its support ship-after excluding its strategic-role nuclear-missile-armed submarines (SSBNs) and the conventional submarines needed for tactical employment in the western Pacific.

This level of force may potentially consist of an aircraft carrier strike group (CSG). The "Chinese maritime force" (CMF) could consist of 26–28 vessels when combined with other types of support- and special-purpose vessels, which are also being swiftly inducted in huge numbers. A domain expert is not necessary to understand the increased threat posed by such a sizable force being permanently stationed in India's principal maritime interest regions.

CHALLENGES TO NON-TRADITIONAL MARITIME SECURITY

Non-traditional maritime problems are those that are essentially non-military in nature but pose a significant risk to the existence and welfare of the State and its citizens. According to the degree, scope, and seriousness of their influence on national security, the difficulties that India and the rest of the Indian Ocean littoral are confronting can be generally categorised. They would consist of:

- 1. Renegade elements acting at sea or from it that are supported by the state
- 2. Non-traditional human-made security challenges
- 3. Non-traditional security issues brought on by natural disasters

ROGUE ACTIONS BY NON-STATE ACTORS ON OR FROM THE SEA

The most serious non-traditional security threats to India are acts of terrorism committed at sea or coming from the sea, as well as related operations like gunrunning and the trafficking of WMD with or without State help. According to one nautical analyst, maritime terrorism may take the following forms:

- 1. Armed robbery used to support terrorism
- 2. Direct assault on single-buoy moorings and offshore oil- and gas-platforms
- 3. Direct assault on a port facility or harbour or on a ship at anchorage or alongside
- 4. Direct assault on nuclear and industrial installations close to the coast
- 5. Hijacked ships' indirect attack on a city or installation on land:
- 6. For strikes in the hinterland, infiltration
- 7. Inconveniencing safe passage by sinking vessels confined spaces like straits or channels

Of course, the Mumbai terror attack in November 2008 by terrorists aided by Pakistan was undoubtedly the most noticeable act for India. The most popular abbreviation for this is "26/11". The biggest threat currently facing all internationally networked economies is posed by these terrorists' freedom to travel across largely unrestricted oceans.

Gun trafficking across borders by sea is said to be more simpler. A significant instance of this occurred during the investigation of the 1993 Mumbai serial blasts, when it was discovered that a sizable cache of weapons, ammo, and explosives had been sent to the coast of Raigad (close to Mumbai) specifically for this reason.

An additional frightening aspect of the threats associated with the sea is the spread of nuclear technology. These kinds of illicit activities continue unabatedly, according to the periodic seizures of such contraband. For instance, the Kandla Port authorities in 1999 captured the Ku Wol San, a North Korean freighter destined for Pakistan with a cargo of parts purportedly intended for use in the manufacture of weapons. A more recent example involved the detention of a Chinese ship, the Da Cui Yun, in February 2020 for transporting an industrial autoclave that was used to manufacture ballistic missiles.



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CHALLENGES TO MARITIME SECURITY CREATED BY ANTHROPOGENIC CAUSES

Piracy, hostage-taking for ransom, armed robbery, drug trafficking, human trafficking, ocean pollution, and illegal, unreported, and unregulated (IUU) fishing are just a few of the non-traditional security threats that involve rogue elements and criminals at sea. Due to its extensive coastline and dysfunctional government, Somalia became a haven for piracy. At its height in 2011, Somali pirates were responsible for 24 of 33 hijackings and 237 out of a total of 353 episodes of piracy. Only a coordinated and prolonged global naval campaign could bring piracy in the Gulf of Aden and off Somalia under control.

Terrorism is still financed by the manufacturing and trade of heroin, which originated in the "Golden Crescent" region of Afghanistan and Pakistan. The "Golden Triangle," which consists of a number of South-East Asian nations, is another significant route for the transit and trade of illegal drugs. This region is known as the "Golden Quadrilateral" because of the nearby Chinese province of Yunnan, which serves as both a major market and a favoured route for the passage of South-East Asian drugs. Drug trafficking organisations from the Golden Quadrangle carry drugs to the US and Europe via the Maldives and Sri Lanka.

The Indian EEZ is rife with illegal, unreported, and unregulated (IUU) fishing, notably in the Andaman Sea. China and Taiwan are the main players, while fishermen from Sri Lanka and Indonesia also engage in illicit fishing and poaching. As many as ten Chinese trawlers belonging by the Dongxinglong Ocean Fishing Company, which when combined were capable of harvesting a whopping 80,000 tonnes of marine life in a month, were arrested off Ratnagiri Coast of Maharashtra in June 2019 in one particularly large-scale infringement.

NATURAL CATASTROPHES AND CALAMITIES

Natural disasters in the Indian Ocean, as in other oceanic environments, result in significant loss of life and property in coastal communities and create unimaginable suffering for local residents. These could take the shape of hurricanes, tsunamis, sea level rise brought on by global warming and the subsequent flooding of land areas, excessive salinization of soil and potable water in coastal areas, etc. In reality, a doomsday scenario based on current estimates of sea level rise projects that the majority of the Maldives would be inundated within the next 20 years and the entire nation by 2085.

The Andaman and Nicobar Islands, as well as the coastal regions of Tamil Nadu, Sri Lanka, the Maldives, Banda Aceh in Indonesia, and many other places along the Bay of Bengal's rim, suffered significant property damage and casualties as a result of the 2004 Indian Ocean tsunami. Several recent examples of these natural disasters are the Super-cyclone Nargis that struck Myanmar in 2008, the Phailin that devastated Odisha in 2013, the Hudhud that ravaged Visakhapatnam in 2014, and the

Tauktae that will severely strike Mumbai and the Konkan coast in May 2021.

INDIAN MARITIME SECURITY AGENCIES' MITIGATION OBJECTIVES

Indian maritime security forces like the Indian Navy and the Indian Coast Guard would obviously be the first responders as both conventional and novel maritime security issues facing India would occur at-, from, or through the waters. However, addressing, mitigating, and controlling such a wide range of issues calls for a comprehensive, "whole-of-nation" strategy. In order to do this, the Indian security establishment must take a multi-pronged approach that includes accepting, avoiding, controlling, lowering, and monitoring risks in order to identify solutions that are specifically tailored to a certain circumstance.

TECHNIQUES FOR REDUCING COMMON MARITIME SECURITY ISSUES

While the "acceptance" of hazards related to potential maritime conflict resulting from the twin scenarios stated above may be seen as a "given," it is rarely possible to completely eliminate these dangers. Therefore, pragmatism would suggest "lowering" these risks with a thorough "monitoring" method and a trustworthy "control" mechanism. The major method of "monitoring" the environment is through activities that improve Maritime Domain Awareness (MDA). The deployment of effective operational tactics to "control" such risks would follow naturally from this.

MAINTAINING MARITIME DOMAIN AWARENESS OF TRADITIONAL THREATS (MDA)

In the context of physical security, MDA refers to the capability to efficiently locate, track, and identify the presence of possible hostile targets in a maritime environment that is uncertain and unpredictable and contains neutral commerce. MDA's key components include the following:

- 1. Long-range UAVs and maritime reconnaissance and AEW aircraft as necessary to complement satellite-based surveillance.
- 2. Systems used by the Joint Services to identify the enemy.
- 3. Systems for subsurface surveillance at strategic IOR locations.
- 4. Strong, fast, high-bandwidth networking infrastructure with the necessary built-in secrecy.
- 5. Capabilities for efficient cyberspace monitoring.

CONTROLLING CONVENTIONAL THREATS

 Anti-Submarine Warfare (ASW) Operations. The Indian Navy's ASW capabilities must be prioritised at the strategic, operational, and tactical levels due to Pakistan and China's potential use of contemporary

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submarines and other potent undersea hardware, such as unmanned submarines, manned submersibles, and UUVs for sea denial.

- Anti-air operations and air defence. The addition of contemporary carrier-based aircraft, unmanned aerial vehicles, and airborne observation equipment has undoubtedly improved the Indian Navy's ability to undertake antiair operations. The acquisition of AWACS, including carrier-based Airborne Early Warning (AEW) aircraft, is necessary in this context and merits additional emphasis.
- Capabilities for Joint Expeditionary Missions. Since one of the main functions of a maritime force is to influence events on land, the Indian Navy must develop strategic sealift capabilities by acquiring heavy-lift helicopters and air-cushion vehicles in order to get ready for massive amphibious operations in the IOR littoral. In addition, the Indian Army has to allocate more role-specific land-force units, which calls for close coordination with the three Services' amphibious, marine, and special forces.
- MCM (mine countermeasure) warfare The success of subsequent maritime operations will directly depend on the Indian Navy's capacity to maintain open designated channels across choke spots and entrance/exit routes from harbours for the safe transit of warships during a conflict. In either of the two scenarios outlined above, the persistent major shortage in MCM hardware—mine-sweeping and mine-hunting ships and equipment—could cost the country dearly, so addressing this deficiency must be given top priority.
- Special Operations. A innovative move that has to be improved upon is the establishment of an unified "Special Operations Division" under the Integrated Defence Services Headquarters to quickly respond to and combat State-sponsored or non-State acts of terrorism.
- Joint Operation Future battles will always be fought by troops working together. The three Defense Services must work together in order for joint missions to be successful. This cooperation and coordination must include the adoption of common doctrines, the coordination of strategies, achieving commonality in equipment and standard operating procedures, etc. It also includes other associated forces, such as the Indian Coast Guard.

STRATEGIES TO ADDRESS NON-TRADITIONAL MARITIME CHALLENGES

The Indian government undertook a significant upgrade of its coastal security assets, operating processes, and structures in the wake of the 26/11 attacks. In collaboration with the Indian Coast Guard, state maritime police forces, port authorities, and other

central/state government organisations, the Indian Navy was named the principal agency in charge of overall Coastal Security. The following are the key actions taken to prevent a repeat of November 26, 2008:

- Joint Operation Centers (JOCs), staffed and run jointly by the Navy and Coast Guard, were established in Mumbai, Visakhapatnam, Kochi, and Port Blair.
- For real-time marine domain awareness, a National C3I Network was created, connecting the Navy and Coast Guard at both the field and apex levels.
- The Sagar Prahari Bal was established to guard naval bases, vulnerable assets, and vital points along the coast. It consists of 1,000 men and 80 Fast Interceptor Craft (FIC).
- Indian Navy, Coast Guard Ships, and aircraft increased surface and air surveillance around the coast and offshore development regions.
- Auto Identification System (AIS) Chains and coastal radar stations were installed.
- Union Territories and coastal states now have stronger Marine Police.

India has been continuously stationing at least one naval cruiser in the Gulf of Aden to accompany trade ships for more than 13 years in an effort to reduce piracy, working with the fleets of other nations. The Indian Navy has been quite proactive, and in fact, in November 2008, the INS Tabar became the first ship to ever decisively fire upon and sink a pirate mother ship.

While the Indian Navy's designated military and diplomatic functions, as per the Indian Maritime Doctrine of 200928, deal with the conventional difficulties already outlined, the actions taken under its constabulary and benign roles are precisely what are needed to cope with unconventional challenges.

The Covid-19 epidemic has left behind a number of distinct issues in the maritime sector. The Indian Navy, however, has done a good job of responding by taking a threepronged approach that includes: (1) keeping its own personnel free from the pandemic; (2) helping the country and States in India's immediate neighbourhood to lessen the impact of the pandemic; and (3) maintaining operational readiness to address traditional and other non-traditional security threats in the maritime domain. Major Covid-related tasks carried out by the Indian Navy include the delivery of medications, food, and medical assistance teams to the Maldives, Mauritius, Madagascar, Comoros, and Seychelles as part of India's Mission SAGAR initiative, as well as the repatriation of Indian personnel from the Maldives and Sri Lanka in May-June 2020.

CONCLUSION

India does recognise that modern ideas of force employment and evolving risk carrying situations in the IOR call for joint forces that are well-equipped to carry out the full



range of maritime tasks. The current restructuring of the Indian Defense Forces, which is being overseen by the office of the Chief of the Defence Staff and centres on the establishment of Joint Commands and Integrated Theatre Commands, is in fact a very pertinent and timely initiative aimed at achieving this desired end-state. This will promote better jointmanship at both the conceptual and operational levels and lead to greater integration among the three Services.

An Integrated marine theatre in the maritime domain, with the Indian navy as the lead Service, would be well-suited to deal with the full range of conflict, including traditional and non-traditional threats, as well as to project power up to India's secondary maritime interest regions. In addition, the recent appointment of the National Maritime Security Coordinator (NMSC) under the auspices of the National Security Council Secretariat — a move that had been overdue ever since the terror attack of November 2008 — will give the Indian efforts to secure its non-traditional challenges structural robustness and implementational heft.

However, the most important aspect of maintaining "Core Competencies" over the long term would include putting a specific emphasis on niche areas linked to warship and submarine construction, aircraft manufacture, and the creation of a defence industrial base that is prepared for the future. The Indian government's recent reorganisation and corporatization of the ordnance industries is a step in the right direction toward achieving these goals. Investing in future technology should also be advanced as a project at the national level. This would not only accelerate India's naval readiness to cope completely with novel maritime security issues, but it will also ensure that China and Pakistan's asymmetric advantages over India, which they jointly desire, are balanced in the marine sphere. Rear Admiral K Raja Menon, a renowned maritime thinker from India, succinctly stated this imperative in his writing:

"...after Galwan and Pangong Tso, we will clearly approach the larger picture from a position of tactical inferiority, unless we develop some punitive capability, which it seems could only be in the Indian Ocean."

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CONSUMPTION PATTERNS OF TOBACCO AND INTOXICANTS IN INDIA

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Tobacco smoking and binge alcohol drinking are two of the leading risk factors for premature mortality worldwide. In India, studies have examined the geographic distributions of tobacco smoking and alcohol drinking only at the state-level; sub-state variations and the spatial association between the two consumptions are poorly understood. We analyze the consumption patterns, socio-economic distribution and the household choice of a variety of harmful tobacco and alcohol products across India.

INTRODUCTION

Alcohol and tobacco consumption are the major global public health problem. By 2030, and if current trends are maintained, they are expected to be the highest cause of death worldwide. India, who is the second largest producer of tobacco in the world, is no exception to the growing burden of tobacco related diseases and morbidity. In India, 14% per cent of the population above age 15 smoke tobacco (24% for men and 3% for women).

Most studies examined tobacco smoking and alcohol drinking behaviors separately among the Indian population. Few studies which examined the concurrent use of tobacco and alcohol found that smokers have a higher likelihood to drink alcohol than non-smokers and vice versa.

The main goal of this study is to analyze the consumption behavior of the households living in India for the given commodities.

Also, we will discuss about the policy implication on taxes using elasticity on howgovernment can change the tax structure and earn higher revenues. Evidence from countries of all income levels suggest that price increases of tobacco and alcohol products are highly effective in reducing demand. Higher taxes induce some smokers and drinkers to quit and prevent other individuals from starting. They also reduce the number of ex- smokers and drinkers who return to cigarettes and alcohol reduce consumption among continuing smokers.

LITERATURE REVIEW

In the paper "*Price Elasticity Estimates for Tobacco Products in India*", Rijo M John examines the price elasticity of demand 3 major tobacco products: bidis, cigarettes and leaf tobacco at the national level using 55th round of household level data collected by NSSO for the time period July 1999 to June 2000.

Findings: Total expenditure elasticity (sum of the expenditure elasticity of quantity and quality) is less than one for both bidis and leaf tobacco in both rural and urban India andis more than unity for cigarettes. High expenditure elasticities of cigarettes imply that cigarettes are luxury goods both in rural and in urban India. They found own-price elasticity estimates of different tobacco products in India ranged between -0.4 and -0.9. The estimates for rural and urban households were approximately the same with bidis and leaf tobacco having own-price elasticities close to 1 except for cigarettes which are relatively more inelastic in urban India(-0.20) than in rural India(-0.34). This explains heavy taxation on cigarettes in India, as economic logic supports taxing luxuries which are highly inelastic.

Another paper by the same writer Rijo M John, "An Analysis of Household's Tobacco Consumption Decisions: Evidence from India" uses the same 55th round household level data collected by NSSO to analyze the consumption patterns, socio-economic distribution and the household choice of a variety of tobacco products across rural and urban India. They use Multinomial Logit Model and odd ratios to examine the factors that lead to increased chances of consumption of tobacco products.

Findings: The socio-economic and demographic factors that significantly impacted the probability of consuming tobacco products were household expenditure and size, ratio of adult males to household size, mean education of the household, alcohol and pan consumption habits of the household, socio-economic status of the household etc. For example increase in household size or



education level of head of the family turned the odds against tobacco consumption. They also found that the effects of these variables differed for rural and urban households. Also, policies targeted at reducing cigarettes and not bidis and other tobacco products will be wasteful because of the complementarity between tobacco products.

DATA

Data for the study has been taken from the 68th Round of National Sample Survey Office (NSSO) conducted from June 2011-July 2012. The round considered was the ninth survey to cover various Household Consumption Expenditures.

The data set is cross-sectional and includes observations of 1, 01,405 households. Our analysis is centered on household consumption of Tobacco, Alcohol and related products. For our analysis we stick to consumption over 30 days recall period. Because of the fact that quantity consumed of these products (simultaneously) can very well be zero. The imputed unit values calculated by dividing total expenditure by quantity consumed of a particular tobacco item turns out to be infinite if the quantity is 0 andhence was an obstruction to our calculations. So we have replaced those values with the mean of the prices, values for which existed. The data set used for the logit model had 1, 01,090 observations. Also for households consuming at least one type of tobacco products, we had 62,619 observations which are sufficiently high to get consistent estimates.

Tobacco Products Used For Our Analysis

The 68th Round of NSS had information on consumption of 18 tobacco products commonly consumed by Indian Households. These are mentioned as codes in the data which have been modified by us for simpler analysis.

Code of the tobacco product(as per NSS 68 th Round)	Name of the Product	Measured Units
310	Bidi	No of sticks
311	Cigarettes	No of sticks
312	Leaf tobacco	In gm
316	Zarda,kimam,surti	In gm
322	Country liquor	Litres
324	Foreign /refined liquor or wine	Litres

SUMMARY STATISTICS

This section summarizes the insights of NSS 68th Round pertaining to tobacco and relatedproducts.

BIDI		CIGERETTE		LEAF TOBACCO			RDA, A,SURTI		NTRY OUR	REFINED LIQOUR	
Value (Rs.)	Quantiy (No.)	Value (Rs.)	Quantiy (No.)	Value (Rs.)	Quantiy (No.)	Value (Rs.)	Quantiy (gm.)	Value (Rs.)	Quantiy (ml.)	Value (Rs.)	Quantiy (ml.)
7.41	20.80	9.63	3.24	1.33	6.71	1.11	2.82	6.31	81.07	10.57	29.47

Table 1 shows Aggregate per capita monthly quantities consumed and value spent for all tobacco products. An individual on an average consumes 81 ml of domestic liquor and 24 ml of foreign liquor, which makes sense as given the high proportion of poor households, domestic liquor is mostly consumed since it's cheaper.



IncomeGroup	Bidi		Cigarette		Leaf tobacco		Zarda,kimam		Country Liquor		Refined Liquor	
	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (gm.)	Value (Rs.)	Quantity (ml.)	Value (Rs.)	Quantity (ml.)
LOW	7.650	23.769	1.569	0.646	1.825	9.994	0.833	2.354	5.594	97.397	2.466	7.755
(Bottom 30%)												
MEDIUM	8.806	23.964	7.438	2.749	1.323	6.511	1.204	3.091	6.492	80.114	8.237	24.187
(30% to 70%)												
HIGH	5.312	13.625	20.636	6.515	0.871	3.714	1.269	2.953	6.800	66.028	21.784	58.258
(Top 30%)												

Table 2: Per Capita Monthly Statistics On The Basis Of Income

Table 2 shows didis and leaf tobacco is highly consumed by bottom 30% income group, 23 sticks and 10 grams respectively, which also makes its expenditure the highest amongst all groups. Cigarette and foreign liquor are mainly consumed by top 30% households with slightly low values for middle income groups.

		14	1010 01 1	ci Capita	monun	j stutistic	5 On The			,up		
Social Group	Bidi		Bidi Cigarette Leaf tobacco Zarda,kimar		nam,Surti Country Liquor			Refined Liquor				
	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (gm.)	Value (Rs.)	Quantity (ml.)	Value (Rs.)	Quantity (ml.)
ST	7.527	20.571	16.554	6.736	1.910	9.093	1.007	2.485	9.705	206.877	9.915	32.398
SC	9.569	27.969	6.173	1.997	1.385	7.195	1.307	3.452	8.860	91.489	9.711	27.755
OBC	6.904	18.586	7.519	2.352	1.355	7.000	0.937	2.453	5.116	57.953	10.664	29.142
Others	6.937	20.138	11.033	3.501	1.055	5.153	1.275	3.128	5.135	52.050	11.148	29.529

Table 3: Per Capita Monthly Statistics On The Basis Of Social Group

Table 3 shows similar variables as above but the variations are seen across social groups. We observe that Scheduled Tribe people are the top most consumers of all tobacco and allied products, followed by others, Scheduled Castes and Other Backward Classes. Bidi, leaf tobacco and country liquor are highly consumed by STs, which is realistic because such products are usually made in rural areas and STs have access to these only.

Education	Bidi		Cigarette		Leaf tobacco		Zarda,kimam,Su		Countr	y Liquor	Refined Liquor	
(Years)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (No.)	Value (Rs.)	Quantity (gm.)	Value (Rs.)	Quantity (ml.)	Value (Rs.)	Quantity (ml.)
1 to 5	14.662	41.932	2.866	1.055	2.713	14.574	1.974	5.211	10.023	175.943	7.747	21.019
6 to 10	9.013	25.562	7.208	2.572	1.507	7.640	1.166	2.977	7.408	97.154	9.077	27.133
11 to 12	4.561	12.390	13.798	4.520	1.108	5.321	0.997	2.415	4.616	53.271	12.676	33.906
above 12	3.406	8.910	14.792	4.521	0.571	2.746	0.834	2.273	3.412	32.374	14.337	34.130

Table 4 shows similar results for individuals with different education levels. People with less education, are consumers of bidi, leaf tobacco and country liquor. As education increases, people shift to consumption of cigarettes and refined liquor.

METHODOLOGY

Analyzing the demand behavior of households in two phases:

First determining the related covariates because of which household chooses to consume Tobacco and related products and then, in the subset of population that consumes at least one, determining the patterns of demand by studying elasticities.



Role of Factors Affecting Probability of Consumption

We address this issue by using a Logit Model, which assesses how the probability of a household consuming tobacco and related products (and in another case alcohol) isaffected by various factors like age, gender, household size, social group, etc. Econometrically, the logit model can be defined as the regression to find the β parameters that best fit the following model where ϵ is an error distributed by the logistic distribution.

$$y = egin{cases} 1 & eta_0 + eta_1 x + arepsilon > 0 \ 0 & ext{else} \end{cases}$$

The interpretations are represented in the terms of log-odds which can be defined as:

$$\mathrm{OR} = rac{\mathrm{odds}(x+1)}{\mathrm{odds}(x)} = rac{\left(rac{F(x+1)}{1-F(x+1)}
ight)}{\left(rac{F(x)}{1-F(x)}
ight)} = rac{e^{eta_0+eta_1(x+1)}}{e^{eta_0+eta_1x}} = e^{eta_1}$$

Demand estimation using AIDS

The second phase of the analysis is concerned with estimating the demand of Tobacco and Alcohol products. The model we have used was first presented by Deatonand Muellbauer (1980) and is widely known as the Almost Ideal Demand System. AIDS is not just flexible in its very form but also, it allows an exact aggregation of heterogeneous consumers. Also, it can be estimated via nonlinear models. Finally, it's widely accepted because of its empirical validation. The general specification is given by

$$w_i = \alpha_i + \sum_{j=1}^n \gamma_{ij} \log p_j + \beta_i \log(x/P)$$

Where:

- w_i is the expenditure share associated with the *ith* good, *i*=1, 2, ..., n,
- α_i is the constant coefficient in the *i*th share equation, .
- γ_{ij} is the slope coefficient associated with the *jth* good in the *ith* share equation,
- p_i is the price of the *jth* good,
- x is the total expenditure on the system of goods and,
- P is the general price index defined by:

$$\log P = \alpha_0 + \sum_{i=1}^n \alpha_i \log p_i + \frac{1}{2} \sum_{i=1}^n \sum_{j=1}^n \gamma_{ij} \log p_i \log p_j$$

The same index can also be approximated by the Stone Price Approximation but that can be safely used when we know for sure, that the prices are collinear.

There are various restrictions that arise out of the utility maximization problem of a consumer and hence those restrictions can be parametrically imposed.

- Adding up is satisfied within the data by taking the relevant budget $\sum_{i=1}^{n} \alpha_i = 1, \sum_{i=1}^{n} \beta_i = 0, \sum_{i=1}^{n} \gamma_{ij} = 0$ Homogeneity can be forced during the estimation and a relevant model $\sum_{i=1}^{n} \gamma_{ij} = 0$ was also estimated.
- Symmetry can again be forced during estimation and again, a relevant $\gamma_{ij} = \gamma_{ji}$ model was estimated.

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The results revolve around the elasticities, and hence the relevant formulas as given byGreen and Alton (1990) are

• Income elasticity given by:

Hicksian Compensated Elasticity:

$$e_i = 1 + \frac{r_i}{\dots}$$

$$e_y^* = -\delta_y + w_j + \gamma_y / w_i$$

R

• Marshallian Uncompensated Elasticity of expenditure on commodity *i* relative to the price of the commodity *j*:

$$e_{ij} = -\delta_{ij} + \frac{\gamma_{ij}}{w} - \beta_i \frac{w_j}{w}$$

where

 δ_{ii} is the Kronecker deltataking the value 1 for i = j and 0 for $i \neq j$.

Finally, we also take into account the effects of Age and Education as demographics in the AIDS model by allowing the intercept term of each equation to be a function of Age and Education:

$$w_i = d_i + \sum_{j=1}^n \gamma_{ij} \log p_j + \beta_i \log(x/P^*)$$

Where $d_i = \alpha_{0i} + \sum_{k=1}^{n} \alpha_{ki} z_k$, K is the number of demographic variables which in our case is xh

xk

RESULTS AND DISCUSSION

ESTIMATES FROM LOGIT REGRESSION

Using logit model the effect of a set of household socio-economic characteristics on probability of consumption was analyzed. Odd ratios have been reported in table 6 forsome of the variables and refer to appendix table for the rest.

Table 0. Estimates of Logit Model						
Variable	Effect On Tobacco	Effect On Intoxicants				
Age	0.998***	0.996***				
Education	0.957***	0.973***				
HH Size	1.100***	1.036***				

Table 6: Estimates of Logit Model

*Note: *** denotes significance at 1% level of significance.*

Factors like age, education, household size were found to be significantly affecting the probability of consuming tobacco and alcohol. It was found that increasing age and education reduces the odds of consuming tobacco and alcohol as indicated by odd ratios less than 1 and increase in household size increased the probability of consuming these.

ESTIMATES FROM BUDGET SHARE REGRESSION USING AIDS

Table 7 reports estimates of total expenditure elasticities for budget share equations. The coefficient for cigarette, country liquor and foreign liquor is positive and highly significant which indicates that these are luxuries for the people who are addicted which makes sense because they are relatively expensive commodities and bidi, zarda etc. are necessities as shown by negative coefficients because they are cheaper.

 Table 7: Expenditure Elasticities estimates for tobacco products in India

Table 7. Experiation Chastletics estimates for tobacco products in mula							
Commodities	Coefficient of Log Expenditure (β)	Expenditure Elasticities					
Bidi	-0.045***	0.863					
Cigarette	0.057***	1.318					
Leaf Tobacco	-0.116***	0.330					
Zarda Kimam Surti	-0.025***	0.650					
Country Liquor	0.054***	1.407					
Foreign/Refined Liquor	0.076***	1.719					

Note: *** denotes significance at 1% level of significance.



Table 8 reports constrained own and cross-price elasticity estimates using only tobacco consuming households. As we can observe, all of the own-price elasticities (diagonal elements) are negative and are statistically significant. All the given products have elastic demand as elasticities are greater than unity which means price increase in form of say taxes can reduce their consumption. All the cross-price elasticities are also significant. The goods for which cross price elasticities are positive are substitutes and for which they are negative are complements.

Prices	Bidi	Cigarette	Leaf Tobacco	Zarda Kimam Surti	Country Liquor	Foreign/Refined Liquor
Bidi	-1.646	0.070	0.280	0.184	0.122	0.127
Cigarette	-0.025	-2.350	0.106	0.295	0.297	0.358
Leaf Tobacco	0.724	0.290	-1.826	0.380	0.041	0.062
Zarda Kimam Surti	0.920	0.846	0.845	-4.142	0.365	0.516
Country Liquor	0.126	0.379	-0.125	0.147	-2.344	0.411
Foreign/Refined Liquor	0.111	0.532	-0.141	0.277	0.481	-2.979

Table 8: Price Elasticity Estimates for Tobacco Products and Intoxicants In India

Notes: The elasticity in row i, column j estimates the effect of a change in the price of good j on thequantity demanded of good i.

POLICY IMPLICATIONS

Annual consumption of manufactured cigarettes in India was estimated to be 73.8 billion sticks and the tax revenue from cigarettes amounted to Rs.95.74 billion in the financial year 2010-11. Assuming that the tax is collected from all cigarettes consumed, this yields a weighted average tax per stick of Rs. 1297 per 1000.We computed an *ad valorem* tax rate of 40.94% and a retail price of Rs. 1.29 per stick for an average cigarette in India.

Bidis are taxed at a very low rate with a quantity tax of Rs. 14 per 1000 sticks for man- made bidis and Rs. 26 per 1000 for machine-made bidis in the year 2010-11. The pricefor an average bidi stick was computed as Rs. 0.374 which amounts to Rs. 9 per pack of 25 bidis.

Tax shock	Unit price(per stick)	Tax rate	Tax perstick	Consumption (billions sticks)	Total expenditure	Tax Revenue (in billion Rs.)
0%	0.374	7%	0.026	(billions sticks) 343.9	(in billion Rs.) 128.62	<u>(III DIIIIOI KS.)</u> 8.9414
20%	0.3792	8%	0.0312	336.032046	127.4234	10.4842
40%	0.3844	9%	0.0364	328.164092	126.1463	11.94517
60%	0.3896	11%	0.0416	320.296138	124.7874	13.32432
80%	0.3948	12%	0.0468	312.428185	123.3466	14.62164

Table 11: (Cigarettes) Tax shock Price perstick Tax rate Tax perstick Consumption Expenditure Tax Revenue							
1 dx shock	The persiek	TaxTau	Tax persites	(billions sticks)	Expenditure (in billion Rs.)	(inbillion Rs.)	
0%	3.169	41%	1.2973886	73.8	233.8722	95.74727868	
1%	3.1819738	41%	1.3103624	73.09012865	232.5708807	95.77456268	
5%	3.2338694	42%	1.3622580	71.1014616	229.9328431	96.85853701	
10%	3.2987388	43%	1.4271274	68.61562779	226.3450378	97.9232466	
15%	3.3636082	44%	1.4919968	66.12979397	222.4347232	98.66544694	
20%	3.4284777	45%	1.5568663	63.64396016	218.2018994	99.08513804	

Table 10 and 11 show the changes in consumption and tax revenue as a result of changes in tax amount. Tax shocks (increases in tax as a percentage of the existing tax) are introduced and the changes in consumption, expenditure and tax revenue are calculated using the price elasticity given in table 8. Revenue from taxation of bidis increases until tax becomes more than 27% of the retail price, which would be equivalent to a multi-fold increase in the current taxes on bidis from the current level of roughly 7% of the retail price. In other words, tax on bidis can be increased to Rs. 100 per 1000 sticks compared with the current Rs. 26 without any



fear of losing revenue. At that level, the average price of a pack of 25 bidis would be slightly more than Rs. 12 which is tantamount to a 35% increase in the current average retail price.

CONCLUSION

The analysis here also provides strong support for taxing tobacco products whether it is bidis, cigarettes or leaf tobacco. With certain assumptions, it is shown that taxes on cigarettes and bidis can be raised to many times higher than the existing rates withoutfear of losing tax revenue, which reveals the potential of using taxation as an effective way for both regulating tobacco use and generating tax revenue.

However, as mentioned above, taxation of tobacco in India has been predominantly on cigarettes. The tax on bidis of Rs. 26 per 1000 sticks, compared with Rs.1297 per 1000 of the cigarette, is negligible in comparison. Such low taxes on bidis are certainly the most important reason why bidis have such high price advantage over cigarettes, making them one of the cheapest tobacco products in the world.

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$(1, 2)^*$ -GENERALIZED η -CLOSED SETS IN BITOPOLOGICAL SPACES

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ABSTRACT

In this paper, we introduce $(1, 2)^*$ -generalized η -closed sets and obtain the relationships among some existing closed sets like $(1, 2)^*$ -semi- closed, $(1, 2)^*$ - α - closed and $(1, 2)^*$ - η - closed sets and their generalizations. Also we study some basic properties of $(1, 2)^*$ - $g\eta$ -open sets. Further, we introduce $(1, 2)^*$ - $g\eta$ -neighbourhood and discuss some properties of $(1, 2)^*$ - $g\eta$ -neighbourhood.

1. Introduction

The study of bitopological spaces was first intiated by Kelly [4] in the year 1963. By using the topological notions, namely, semi-open, α -open and pre-open sets, many new bitopological sets are defined and studied by many topologists. In 2008, Ravi et al. [6] studied the notion of $(1, 2)^*$ -sets in bitopological spaces. In 2004, Ravi and Thivagar [5] studied the concept of stronger from of $(1, 2)^*$ -quatient mapping in bitopological spaces and introduced the concepts of $(1, 2)^*$ -semi-open and $(1, 2)^*$ - α -open sets in bitopological spaces. Recently H. Kumar [3] introduced the concept of $(1, 2)^*$ - η -open sets and discuss their properties.

2. Preliminaries

Throughout the paper (X, \mathfrak{I}_1 , \mathfrak{I}_2), (Y, σ_1 , σ_2) and (Z, \mathfrak{O}_1 , \mathfrak{O}_2) (or simply X, Y and Z) denote bitopological spaces.

Definition 2.1. Let S be a subset of X. Then S is said to be $\mathfrak{T}_{1,2}$ -open [5] if $S = A \cup B$ where $A \in \mathfrak{T}_1$ and $B \in \mathfrak{T}_2$. The complement of a $\mathfrak{T}_{1,2}$ -open set is $\mathfrak{T}_{1,2}$ -closed.

Definition 2.2 [5]. Let S be a subset of X. Then

(i) the $\mathfrak{T}_{1,2}$ -closure of S, denoted by $\mathfrak{T}_{1,2}$ -cl(S), is defined as $\cap \{F : S \subset F \text{ and } F \text{ is } \mathfrak{T}_{1,2}$ -closed}; (ii) the $\mathfrak{T}_{1,2}$ -interior of S, denoted by $\mathfrak{T}_{1,2}$ -int(S), is defined as $\cup \{F : F \subset S \text{ and } F \text{ is } \mathfrak{T}_{1,2}$ -open}.

Note 2.3 [5]. Notice that $\mathfrak{I}_{1,2}$ -open sets need not necessarily form a topology.

Remark 2.4. [6]

(i) $\mathfrak{T}_{1,2}$ -int(S) is $\mathfrak{T}_{1,2}$ -open for each $S \subset X$ and $\mathfrak{T}_{1,2}$ -cl(S) is $\mathfrak{T}_{1,2}$ -closed for each $S \subset X$. (ii) A subset $S \subset X$ is $\mathfrak{T}_{1,2}$ -open iff $S = \mathfrak{T}_{1,2}$ -int(S) and $\mathfrak{T}_{1,2}$ -closed iff $S = \mathfrak{T}_{1,2}$ -cl(S). (iii) $\mathfrak{T}_{1,2}$ -int(S) = \mathfrak{T}_1 -int(S) $\cup \mathfrak{T}_2$ -int(S) and $\mathfrak{T}_{1,2}$ -cl(S) = \mathfrak{T}_1 -cl(S) $\cup \mathfrak{T}_2$ -cl(S) for any $S \subset X$. (iv) for any family { $S_i / i \in I$ } of subsets of X, we have

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 $\begin{array}{l} (1) \cup_{i} \mathfrak{J}_{1,2}\text{-}int(S_{i}) \subset \mathfrak{J}_{1,2}\text{-}int(\cup_{i} S_{i}). \\ (2) \cup_{i} \mathfrak{J}_{1,2}\text{-}cl(S_{i}) \subset \mathfrak{J}_{1,2}\text{-}cl(\cup_{i} S_{i}). \\ (3) \mathfrak{J}_{1,2}\text{-}int(\cup_{i} S_{i}) \subset \cup_{i} S_{i} \mathfrak{J}_{1,2}\text{-}int(S_{i}). \\ (4) \mathfrak{J}_{1,2}\text{-}cl(\cup_{i} S_{i}) \subset \cup_{i} \mathfrak{J}_{1,2}\text{-}cl(S_{i}). \end{array}$

Definition 2.5. A subset A of a bitopological space (X, \mathfrak{I}_1 , \mathfrak{I}_2) is called (i) (1, 2)^{*}-semi-open [5] if $A = \mathfrak{I}_{1,2}$ -cl($\mathfrak{I}_{1,2}$ -int(A)), (ii) (1, 2)^{*}- α -open [5] if $A \subset \mathfrak{I}_{1,2}$ -int ($\mathfrak{I}_{1,2}$ -cl($\mathfrak{I}_{1,2}$ -int(A))). (iii) (1, 2)^{*- η}-open [5] if $A \subset \mathfrak{I}_{1,2}$ -int($\mathfrak{I}_{1,2}$ -cl($\mathfrak{I}_{1,2}$ -int)(A)) $\cup \mathfrak{I}_{1,2}$ -cl($\mathfrak{I}_{1,2}$ -int)(A)).

The complement of a $(1, 2)^*$ -semi-open (resp. $(1, 2)^*$ - α -open, $(1, 2)^*$ - η -open) set is called (1, 2)*-semi-closed (resp. (1, 2)*- α -closed, (1, 2)*- η -closed).

The $(1, 2)^*$ -semi-closure (resp. $(1, 2)^*$ - α -closure, $(1, 2)^*$ - η -closure) of a subset A of X is denoted by $(1, 2)^*$ -scl(A) (resp. $(1, 2)^*$ - α -cl(A), $(1, 2)^*$ - η -cl(A)), defined as the intersection of all $(1, 2)^*$ -semi-closed. (resp. $(1, 2)^*$ - α -closed, $(1, 2)^*$ - η -closed) sets containing A.

The family of all $(1, 2)^*$ -semi-open (resp. $(1, 2)^*$ - α -open, $(1, 2)^*$ - η -open, $(1, 2)^*$ -semi-closed, $(1, 2)^*$ - α -closed, $(1, 2)^*$ - η -closed) sets in X is denoted by $(1, 2)^*$ -SO(X) (resp. $(1, 2)^*$ - α O(X), $(1, 2)^*$ - η O(X), $(1, 2)^*$ -SC(X), $(1, 2)^*$ - α C(X), $(1, 2)^*$ - η C(X).

Remark 2.6. It is evident that any $\mathfrak{T}_{1,2}$ -open set of X is an $(1, 2)^*$ - α -open and each $(1, 2)^*$ - α -open set of X is $(1, 2)^*$ -semi-open but the converses are not true.

Remark 2.7. We have the following implications for the properties of subsets [3]:

 $\mathfrak{I}_{1,2}$ -open \Rightarrow $(1,2)^*$ - α -open \Rightarrow $(1,2)^*$ -semi-open \Rightarrow $(1,2)^*$ - η -open

Where none of the implications is reversible.

3. (1, 2)*-generalized η -closed Sets in Bitopological Spaces

Definition 3.1. A subset A of a bitopological space $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is called

(i) $(1, 2)^*$ - generalized closed (briefly $(1, 2)^*$ -g-closed) [8] if $\mathfrak{T}_{1,2}$ -cl(A) \subset U whenever A \subset U and U is $\mathfrak{T}_{1,2}$ - open in X.

(ii) $(1, 2)^*$ -weakly closed (briefly $(1, 2)^*$ -w-closed) [**2**] if $\mathfrak{T}_{1,2}$ -cl(A) \subset U whenever A \subset U and U is $(1, 2)^*$ -semiopen in X.

(iii) $(1, 2)^*$ - α -generalized closed (briefly $(1, 2)^*$ - α g-closed) [8] if $(1, 2)^*$ - α -cl(A) \subset U whenever A \subset U and U is $\mathfrak{I}_{1,2}$ -open in X.

(iv) $(1, 2)^*$ -generalized semi-closed (briefly $(1, 2)^*$ -gs-closed) [8] if $(1, 2)^*$ -s-cl(A) \subset U whenever A \subset U and U is $\mathfrak{T}_{1,2}$ -open in X.

(v) $(1, 2)^*$ -generalized η -closed (briefly $(1, 2)^*$ -g η -closed) if $(1, 2)^*$ - η -cl(A) \subset U whenever A \subset U and U is $\mathfrak{T}_{1,2}$ -open in X.

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The complement of a $(1, 2)^*$ -g-closed (resp. $(1, 2)^*$ -w-closed, $(1, 2)^*$ -ag-closed, $(1, 2)^*$ -gs-closed, $(1, 2)^*$ -gq-closed) set is called $(1, 2)^*$ -g-open (resp. $(1, 2)^*$ -w-open, $(1, 2)^*$ -ag-open, $(1, 2)^*$ -gs-open, $(1, 2)^*$ -gq-open). We denote the set of all $(1, 2)^*$ -gq-closed sets in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ by $(1, 2)^*$ -gq-C(X).

Theorem 3.2. Every $\mathfrak{T}_{1,2}$ -closed set is $\mathfrak{g}\eta$ -closed.

Proof. Let A be any $\mathfrak{T}_{1,2}$ -closed set in $(X, \mathfrak{T}_1, \mathfrak{T}_2)$ and $A \subset U$, where U is $\mathfrak{T}_{1,2}$ -open. So $(1, 2)^*$ -cl(A) = A. Since every $\mathfrak{T}_{1,2}$ -closed set is $(1, 2)^*$ - η -closed, so $(1, 2)^*$ - η -cl $(A) \subset (1, 2)^*$ -cl(A) = A. Therefore, $(1, 2)^*$ - η -cl $(A) \subset A \subset U$. Hence A is $(1, 2)^*$ - η -closed set.

Theorem 3.3. Every $(1, 2)^*$ - α -closed set is $(1, 2)^*$ -g η -closed.

Proof. Let A be any $(1, 2)^*$ - α -closed set in $(X, \mathfrak{T}_1, \mathfrak{T}_2)$ and $A \subset U$, where U is $\mathfrak{T}_{1,2}$ -open. Since every $(1, 2)^*$ - α -closed set is $(1, 2)^*$ - η -closed, so $(1, 2)^*$ - η -cl $(A) \subset (1, 2)^*$ - α -cl(A) = A. Therefore $(1, 2)^*$ - η -cl $(A) \subset A \subset U$. Hence A is $(1, 2)^*$ - η -closed set.

Theorem 3.4. Every $(1, 2)^*$ -semi-closed set is $(1, 2)^*$ -gη-closed.

Proof. Let A be any $(1, 2)^*$ -semi-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ and $A \subset U$, where U is $\mathfrak{I}_{1,2}$ -open. Since every $(1, 2)^*$ -semi-closed set is $(1, 2)^*$ - η -closed, so $(1, 2)^*$ - η -cl $(A) \subset (1, 2)^*$ -s-cl(A) = A. Therefore $(1, 2)^*$ - η -cl $(A) \subset A \subset U$. Hence A is $(1, 2)^*$ -g\eta-closed set.

Theorem 3.5. Every $(1, 2)^*$ - η -closed set is $(1, 2)^*$ - $g\eta$ -closed. **Proof**. Let A be any $(1, 2)^*$ - η -closed set in $(X, \mathfrak{T}_1, \mathfrak{T}_2)$ and $A \subset U$, where U is $\mathfrak{T}_{1,2}$ -open. Since A is $(1, 2)^*$ - η -closed. Therefore $(1, 2)^*$ - η -cl(A) = A \subset U. Hence A is $(1, 2)^*$ - $g\eta$ -closed set.

Theorem 3.6. Every $(1, 2)^*$ -g-closed set is $(1, 2)^*$ -g η -closed. **Proof.** Let A be any $(1, 2)^*$ -g-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ then $(1, 2)^*$ -cl(A) \subset U whenever A \subset U, where U is $\mathfrak{I}_{1,2}$ -open. So $(1, 2)^*$ - η -cl(A) \subset $(1, 2)^*$ -cl(A) \subset U. Therefore $(1, 2)^*$ - η -cl(A) \subset U. Hence A is $(1, 2)^*$ -g η -closed set.

Theorem 3.7. Every $(1, 2)^*$ -w-closed set is $(1, 2)^*$ -gη-closed.

Proof. Let A be any $(1, 2)^*$ -w-closed set in $(X, \mathfrak{T}_1, \mathfrak{T}_2)$ then $(1, 2)^*$ -cl(A) \subset U whenever A \subset U, where U is $\mathfrak{T}_{1,2}$ -open, since every $\mathfrak{T}_{1,2}$ -open set is $(1, 2)^*$ -semi-open. So $(1, 2)^*$ - η -cl(A) \subset $(1, 2)^*$ -cl(A) \subset U. Therefore $(1, 2)^*$ - η -cl(A) \subset U. Therefore $(1, 2)^*$ - η -cl(A) \subset U. Hence A is $(1, 2)^*$ - η -closed set.

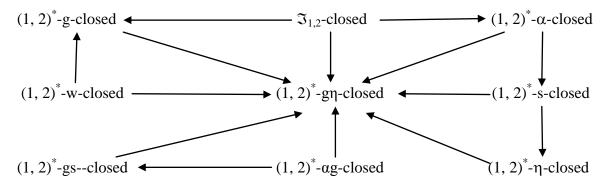
Theorem 3.8. Every $(1, 2)^*$ - α g-closed set is $(1, 2)^*$ - β g-closed.

Proof. Let A be any $(1, 2)^*$ - α g-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ then $(1, 2)^*$ - α -cl(A) \subset U whenever A \subset U, where U is $\mathfrak{I}_{1,2}$ -open. Given that A is $(1, 2)^*$ - α g-closed set such that $(1, 2)^*$ - α -cl(A) \subset U. But we have $(1, 2)^*$ - η -cl(A) \subset (1, 2)*- α -cl(A) \subset U. Therefore $(1, 2)^*$ - η -cl(A) \subset U. Hence A is $(1, 2)^*$ -g\eta-closed set.

Theorem 3.9. Every $(1, 2)^*$ -gs-closed set is $(1, 2)^*$ -gη-closed.

Proof. Let A be any $(1, 2)^*$ -gs-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ then $(1, 2)^*$ -s-cl $(A) \subset U$ whenever $A \subset U$, where U is $\mathfrak{I}_{1,2}$ -open. Given that A is $(1, 2)^*$ -gs-closed set such that $(1, 2)^*$ -s-cl $(A) \subset U$. But we have $(1, 2)^*$ - η -cl $(A) \subset (1, 2)^*$ -s-cl $(A) \subset U$. Therefore $(1, 2)^*$ - η -cl $(A) \subset U$. Hence A is $(1, 2)^*$ -g\eta-closed set.





Remark 3.10. We have the following implications for the properties of subsets:

Where none of the implications is reversible as can be seen from the following examples:

Example 3.11. Let $X = \{a, b, c, d\}$ with $\mathfrak{I}_1 = \{\phi, X, \{a\}, \{b\}, \{a, b\}, \{b, c, d\}\}$ and $\mathfrak{I}_2 = \{\phi, X, \{c\}, \{a, c, d\}\}$. Then

- (i) $\Im_{1,2}$ -closed sets : ϕ , X, {a}, {b}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (ii) $(1, 2)^*$ - α -closed sets : ϕ , X, {a}, {b}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (iii) $(1, 2)^*$ -semi-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (iv) $(1, 2)^*$ - η -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (v) $(1, 2)^*$ -g-closed sets : ϕ , X, {a}, {b}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- $(vi) (1, 2)^*$ -w-closed sets : ϕ , X, {a}, {b}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (vii) $(1, 2)^*$ - α g-closed sets : ϕ , X, {a}, {b}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (viii) $(1, 2)^*$ -gs-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (ix) $(1, 2)^*$ -g η -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.

Example 3.12. Let $X = \{a, b, c\}$ with $\Im_1 = \{\phi, X, \{b\}\}$ and $\Im_2 = \{\phi, X, \{c\}\}$. Then

- (i) $\Im_{1,2}$ -closed sets : ϕ , X, {a}, {a, b}, {a, c}.
- (ii) $(1, 2)^*$ - α -closed sets : ϕ , X, {a}, {a, b}, {a, c}.
- (iii) $(1, 2)^*$ -semi-closed sets : ϕ , X, {a}, {b}, {c}, {a, b}, {a, c}.
- (iv) $(1, 2)^*$ - η -closed sets : ϕ , X, {a}, {b}, {c}, {a, b}, {a, c}.
- (v) $(1, 2)^*$ -g-closed sets : ϕ , X, {a}, {a, b}, {a, c}.
- (vi) $(1, 2)^*$ -w-closed sets : ϕ , X, {a}, {a, b}, {a, c}.
- (vii) $(1, 2)^*$ - α g-closed sets : ϕ , X, {a}, {a, b}, {a, c}.
- (viii) $(1, 2)^*$ -gs-closed sets : ϕ , X, {a}, {b}, {c}, {a, b}, {a, c}.
- (ix) $(1, 2)^*$ -g η -closed sets : ϕ , X, {a}, {b}, {c}, {a, b}, {a, c}.



Example 3.13. Let $X = \{a, b, c, d\}$ with $\mathfrak{I}_1 = \{\phi, X, \{a\}\}$ and $\mathfrak{I}_2 = \{\phi, X, \{b\}, \{a, b, c\}\}$. Then

- (i) $\Im_{1,2}$ -closed sets : ϕ , X, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (ii) $(1, 2)^*$ - α -closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (iii) $(1, 2)^*$ -semi-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.
- (iv) $(1, 2)^* \eta$ -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.
- (v) $(1, 2)^*$ -g-closed sets : ϕ , X, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (vi) $(1, 2)^*$ -w-closed sets : ϕ , X, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (vii) $(1, 2)^*$ - α g-closed sets : ϕ , X, {c}, {d}, {a, d}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (viii) $(1, 2)^*$ -gs-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.
- (ix) $(1, 2)^*$ -g η -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, b, d}, {a, c, d}, {b, c, d}.

Example 3.14. Let $X = \{a, b, c, d\}$ with $\mathfrak{I}_1 = \{\phi, X, \{a\}, \{b\}, \{a, b\}, \{a, b, c\}\}$ and $\mathfrak{I}_2 = \{\phi, X, \{a, b, d\}\}$. Then

- (i) $\Im_{1,2}$ -closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (ii) $(1, 2)^*$ - α -closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (iii) $(1, 2)^*$ -semi-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.
- (iv) $(1, 2)^*$ - η -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.
- (v) $(1, 2)^*$ -g-closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (vi) $(1, 2)^*$ -w-closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (vii) $(1, 2)^*$ - α g-closed sets : ϕ , X, {c}, {d}, {c, d}, {a, c, d}, {b, c, d}.
- (viii) $(1, 2)^*$ -gs-closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.
- (ix) $(1, 2)^*$ -g η -closed sets : ϕ , X, {a}, {b}, {c}, {d}, {a, b}, {a, c}, {a, d}, {b, c}, {b, d}, {c, d}, {a, c, d}, {b, c, d}.

4. Some Properties of $(1, 2)^*$ -generalized η -closed Sets

Theorem 4.1. The union of any two $(1, 2)^*$ -g η -closed subsets of $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is need not be $(1, 2)^*$ -g η -closed subset of $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ as per the following example.

Example 4.2. Let $X = \{a, b, c, d\}$ with $\mathfrak{I}_1 = \{\phi, X, \{a\}\}$ and $\mathfrak{I}_2 = \{\phi, X, \{b\}, \{a, b, c\}\}$. Here $A = \{a\}$ and $B = \{b\}$ are $(1, 2)^*$ -g η -closed subsets in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. Then $A \cup B = \{a, b\}$ is not $(1, 2)^*$ -g η -closed subsets in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. \mathfrak{I}_2 .

Remark 4.3. The intersection of two $(1, 2)^*$ -g η -closed-sets in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is also a $(1, 2)^*$ -g η -closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

Proof. Easy to verify.



Theorem 4.4. If a subset A is $(1, 2)^*$ -g η -closed of X, then $(1, 2)^*$ - η -cl(A) – A does not contain any non-empty $\Im_{1,2}$ -closed set.

Proof. Let F be a $\mathfrak{T}_{1,2}$ -closed subset of $(1, 2)^* - \eta$ -cl(A) – A. Then $F \subset (1, 2)^* - \eta$ -cl(A) and $F \cap S = \phi$. Therefore X - F is $\mathfrak{T}_{1,2}$ -open and hence X - F is $\mathfrak{T}_{1,2}$ -open. Since $F \cap A = \phi$, $A \subset X - F$. But A is $(1, 2)^* - \eta$ -closed, then $(1, 2)^* - \eta$ -cl(A) $\subset X - F$ and consequently $F \subset X - (1, 2)^* - \eta$ -cl(A). Therefore $F \subset ((1, 2)^* - \eta$ -cl(A)) $\cap (X - (1, 2)^* - \eta$ -cl(A)) and hence F is empty.

Remark 4.5. The converse of **Theorem 4.4** is not true as per the following example.

Example 4.6. Let $X = \{a, b, c, d, e\}$ with $\mathfrak{I}_1 = \{\phi, X, \{a, b\}, \{a, b, c, d\}\}$ and $\mathfrak{I}_2 = \{\phi, X, \{c, d\}, \{a, b, c, d\}\}$. If we consider $A = \{a, c\}$, then $(1, 2)^* -\eta$ -cl(A) – A = X – $\{a, c\} = \{b, c\}$ does not contain any non-empty $\mathfrak{I}_{1,2}$ -closed set. However A is not $(1, 2)^* -\eta$ -closed.

Theorem 4.7. Let A be a $(1, 2)^*$ -g η -closed subset of X. If $A \subset B \subset (1, 2)^*$ - η -cl(A), then B is also $(1, 2)^*$ -g η -closed in X.

Proof. Let $U \in (1, 2)^*$ -g $\eta O(X)$ with $B \subset U$. Then $A \subset U$. Since A is $(1, 2)^*$ -g η -closed, $(1, 2)^*$ - η -cl $(A) \subset U$. Also, since $B \subset (1, 2)^*$ - η -cl(A), $(1, 2)^*$ - η -cl $(B) \subset (1, 2)^*$ - η -cl $(A) \subset U$. Hence B is also $(1, 2)^*$ -g η -closed subset of X.

Theorem 4.8. For an element $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$, the set $(X, \mathfrak{I}_1, \mathfrak{I}_2) - \{x\}$ is $(1, 2)^*$ -gn-closed or $\mathfrak{I}_{1,2}$ -open. **Proof.** Suppose $(X, \mathfrak{I}_1, \mathfrak{I}_2) - \{x\}$ is not $\mathfrak{I}_{1,2}$ -open set. Then $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is the only $\mathfrak{I}_{1,2}$ -open set containing $(X, \mathfrak{I}_1, \mathfrak{I}_2) - \{x\}$. This implies $(1, 2)^*$ - \mathfrak{n} -cl $((X, \mathfrak{I}_1, \mathfrak{I}_2) - \{x\}) \subset (X, \mathfrak{I}_1, \mathfrak{I}_2)$. Hence $(X, \mathfrak{I}_1, \mathfrak{I}_2) - \{x\}$ is $(1, 2)^*$ -gn-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

Theorem 4.9. If A is an open and S is $(1, 2)^*$ - η -open in bitopological space (X, $\mathfrak{I}_1, \mathfrak{I}_2$), then A \cap S is $(1, 2)^*$ - η -open in (X, $\mathfrak{I}_1, \mathfrak{I}_2$).

Theorem 4.10. If A is both open and $(1, 2)^*$ -g-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$, then it is $(1, 2)^*$ -g η -closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

Proof. Let A be an open and $(1, 2)^*$ -g-closed set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. Let $A \subset U$ and let U be a $\mathfrak{I}_{1,2}$ -open set in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. Now $A \subset A$. By hypothesis $(1, 2)^*$ - η -cl $(A) \subset A$. That is $(1, 2)^*$ - η -cl $(A) \subset U$. Thus A is $(1, 2)^*$ -g\eta-closed in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

5. $(1, 2)^*$ -g η -open sets and $(1, 2)^*$ -g η -neighborhood

In this section, we study $(1, 2)^*$ -g η -open sets in bitopological spaces and obtain some of their properties. Also, we introduce $(1, 2)^*$ -g η -neighborhood (shortly $(1, 2)^*$ -g η -nbhd in bitopological spaces by using the notion of $(1, 2)^*$ -g η -open sets. We prove that every nbhd of x in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is $(1, 2)^*$ -g η -nbhd of x but not conversely.

Definition 5.1. A subset A in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is called $(1, 2)^*$ -generalized η -open (briefly, $(1, 2)^*$ -g η -open) in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ if A^c is $(1, 2)^*$ -g η -closed in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. We denote the family of all $(1, 2)^*$ -g η -open sets in X by $(1, 2)^*$ -g η O(X).



Definition 5.2. Let $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ be a bitopological space and let $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$. A subset N of $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is said to be a $(1, 2)^*$ -gn-nbhd of x iff there exists a $(1, 2)^*$ -gn-open set G such that $x \in G \subset N$.

Definition 5.3. A subset N of a bitopological space (X, \mathfrak{I}_1 , \mathfrak{I}_2), is called a (**1**, **2**)^{*}-**g** η -**nbhd** of A \subset (X, \mathfrak{I}_1 , \mathfrak{I}_2) iff there exists a (1, 2)*-g η -open set G such that A \subset G \subset N.

Remark 5.4. The $(1, 2)^*$ - η -nbhd N of $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$ need not be a $(1, 2)^*$ - η -open in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

Example 5.5. Let $X = \{a, b, c, d, e\}$ and $\mathfrak{I}_1 = \{\phi, \{a, b\}, \{a, b, c, d\}, X\}$ and $\mathfrak{I}_2 = \{\phi, \{c, d\}, \{a, c, d\}, X\}$. Then $(1, 2)^*$ -g $\eta O(X) = \{\phi, X, \{a\}, \{b\}, \{c\}, \{d\}, \{a, b\}, \{a, d\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, b, e\}, \{a, c, d\}, \{b, c, d\}, \{c, d, e\}, \{a, b, c, d\}, \{a, b, c, d\}, \{a, b, c, e\}, \{a, b, d, e\}, \{a, c, d, e\}, \{b, c, d, e\}$. Note that $\{a, e\}$ is not a $(1, 2)^*$ -g η -open set, but it is a $(1, 2)^*$ - η -nbhd of a, since $\{a\}$ is a $(1, 2)^*$ -g η -open set such that $a \in \{a\} \subset \{a, e\}$.

Theorem 5.6. Every nbhd N of $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$ is a $(1, 2)^*$ -g η -nbhd of $(X, \mathfrak{I}_1, \mathfrak{I}_2)$.

Proof. Let N be a nbhd of point $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$. To prove that N is a $(1, 2)^*$ -g η -nbhd of x. By definition of nbhd, there exists an open set G such that $x \in G \subset N$. As every open set is $(1, 2)^*$ -g η -open set G such that $x \in G \subset N$. As every open set is $(1, 2)^*$ -g η -open set G such that $x \in G \subset N$. Hence N is $(1, 2)^*$ -g η -nbhd of x.

Remark 5.7. In general, a $(1, 2)^*$ -g η -nbhd N of $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$ need not be a nbhd of x in $(X, \mathfrak{I}_1, \mathfrak{I}_2)$, as seen from the following example.

Example 5.8. Let $X = \{a, b, c, d\}$ with topology $\mathfrak{I}_1 = \{\phi, \{a\}, \{b\}, \{a, b\}, \{a, b, c\}, X\}$ and $\mathfrak{I}_2 = \{\phi, \{a, b, d\}, X\}$ Then $(1, 2)^* - \mathfrak{g}\eta O(X) = \{X, \phi, \{a\}, \{b\}, \{a, b\}, \{a, c\}, \{a, d\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, b, d\}, \{a, c, d\}, \{b, c, d\}\}$. The set $\{b, c\}$ is $(1, 2)^* - \mathfrak{g}\eta$ -nbhd of the point b, there exists an $(1, 2)^* - \mathfrak{g}\eta$ -open set $\{b\}$ is such that $b \in \{b\} \subset \{b, c\}$. However, the set $\{b, c\}$ is not a nbhd of the point b, since no open set G exists such that $b \in G \subset \{a, c\}$.

Theorem 5.9. If a subset N of a space $(X, \mathfrak{T}_1, \mathfrak{T}_2)$ is $(1, 2)^*$ -g η -open, then N is a $(1, 2)^*$ -g η -nbhd of each of its points.

Proof. Suppose N is $(1, 2)^*$ -g η -open. Let $x \in N$. We claim that N is $(1, 2)^*$ -g η -nbhd of x. For N is a $(1, 2)^*$ -g η -open set such that $x \in N \subset N$. Since x is an arbitrary point of N, it follows that N is a $(1, 2)^*$ -g η -nbhd of each of its points.

Remark 5.10. The converse of the above theorem is not true in general as seen from the following example.

Example 5.11. Let $X = \{a, b, c, d, e\}$ with topology $\mathfrak{I}_1 = \{\phi, \{a, b\}, \{a, b, c, d\}, X\}$ and $\mathfrak{I}_2 = \{\phi, \{c, d\}, \{a, b, d\}, X\}$. Then $(1, 2)^* - \mathfrak{gn} O(X) = \{\phi, X, \{a\}, \{b\}, \{c\}, \{d\}, \{a, b\}, \{a, d\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, b, c\}, \{a, b, c\}, \{a, c, d\}, \{b, c, d\}, \{c, d, e\}, \{a, b, c, d\}, \{a, b, c, e\}, \{a, b, d, e\}, \{a, c, d, e\}, \{b, c, d, e\}\}$. The set $\{a, b, c\}$ is a $(1, 2)^*$ -gn-nbhd of the points a, b and c since the $(1, 2)^*$ -gn-open sets $\{a\}, \{b\}$ and $\{c\}$ for the points a, b and c respectively, such that $a \in \{a\} \subset \{a, b, c\}; b \in \{b\} \subset \{a, b, c\}$ and $c \in \{c\} \subset \{a, b, c\}$ respectively. That is $\{a, b, c\}$ is a $(1, 2)^*$ -gn-nbhd of each of its points. However the set $\{a, b, c\}$ is not a $(1, 2)^*$ -gn-open set in X.



Definition 5.12. Let x be a point in a space $(X, \mathfrak{I}_1, \mathfrak{I}_2)$. The set of all $(1, 2)^*$ -g η -nbhd of x is called the $(1, 2)^*$ -g η -nbhd system at x, and is denoted by $(1, 2)^*$ -g η -N(x).

Theorem 5.13. Let $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ be a bitopological space and for each $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$. Let $(1, 2)^*$ -g η -N(x) be the collection of all $(1, 2)^*$ -g η -nbhds of x. Then we have the following results. (i) $\forall x \in (X, \mathfrak{I}_1, \mathfrak{I}_2), (1, 2)^*$ -g η -N(x) $\neq \phi$. (ii) $N \in (1, 2)^*$ -g η -N(x) $\Rightarrow x \in N$. (iii) $N \in (1, 2)^*$ -g η -N(x), $M \supset N \Rightarrow M \in (1, 2)^*$ -g η -N(x). (iv) $N \in (1, 2)^*$ -g η -N(x), $M \in (1, 2)^*$ -g η -N(x) $\Rightarrow N \cap M \in (1, 2)^*$ -g η -N(x). (v) $N \in (1, 2)^*$ -g η -N(x) \Rightarrow there exists $M \in (1, 2)^*$ -g η -N(x) such that $M \subset N$ and $M \in (1, 2)^*$ -g η -N(y) for every $y \in M$.

Proof. (i) Since $(X, \mathfrak{I}_1, \mathfrak{I}_2)$ is a $(1, 2)^*$ -g η -open set, it is a $(1, 2)^*$ -g η -nbhd of every $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$. Hence there exists at least one $(1, 2)^*$ -g η -nbhd (namely - $(X, \mathfrak{I}_1, \mathfrak{I}_2)$) for each $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$. Hence $(1, 2)^*$ -g η -N $(x) = \phi$ for every $x \in (X, \mathfrak{I}_1, \mathfrak{I}_2)$.

(ii) If $N \in (1, 2)^*$ - $g\eta$ -N(x), then N is a $(1, 2)^*$ - $g\eta$ -nbhd of x. So by definition of $(1, 2)^*$ - $g\eta$ -nbhd, $x \in N$.

(iii) Let $N \in (1, 2)^*$ - $g\eta$ -N(x) and $M \supset N$. Then there is a $(1, 2)^*$ - $g\eta$ -open set G such that $x \in G \subset N$. Since $N \subset M$, $x \in G \subset M$ and so M is $(1, 2)^*$ - $g\eta$ -nbhd of x. Hence $M \in (1, 2)^*$ - $g\eta$ -N (x).

(iv) Let $N \in (1, 2)^*$ - $g\eta$ -N(x) and $M \in (1, 2)^*$ - $g\eta$ -N(x). Then by definition of $(1, 2)^*$ - $g\eta$ -nbhd. Hence $x \in G_1 \cap G_2 \subset N \cap M \Rightarrow (1)$. Since $G_1 \cap G_2$ is a $(1, 2)^*$ - $g\eta$ -open set, (being the intersection of two $(1, 2)^*$ - $g\eta$ -open sets), it follows from (1) that $N \cap M$ is a $(1, 2)^*$ - $g\eta$ -nbhd of x. Hence $N \cap M \in (1, 2)^*$ - $g\eta$ -N(x).

(v) If $N \in (1, 2)^*$ - $g\eta$ -N(x), then there exists a $(1, 2)^*$ - $g\eta$ -open set M such that $x \in M \subset N$. Since M is a $(1, 2)^*$ - $g\eta$ -open set, it is $(1, 2)^*$ - $g\eta$ -nbhd of each of its points. Therefore $M \in (1, 2)^*$ - $g\eta$ -N(y) for every $y \in M$.

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N.S. TRUBETSKOI AND THE PRAGUE LINGUISTIC SCHOOL

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ABSTRACT

The paper considers those positive moments that were achieved in the works of N.S. Trubetskoi in morphonology, as well as the disadvantages that did not allow morphonology to be distinguished as an independent linguistic discipline. The views of N.S. Trubetskoi were further developed by the Prague Linguistic School. However, they failed to resolve the issue of the independent status of morphonology as a linguistic discipline, although they tried to single out independent morphonological units – morphoneme and alternant. **KEY WORDS**: morphonology, alternant, alternation, morphoneme.

INTRODUCTION

In the world linguistics, the study of morphonological phenomena is considered to be an essential part of modern descriptive, historical and comparative grammars. N.S. Trubetskoi was the first to declare morphonology as a special linguistic discipline. The first period in the development and formation of morphonology as a science is associated with his name. "The doctrine of ancient Indian grammarians about alternation" by V. Pisani (1) served as an impetus for the emergence of the famous work by N.S. Trubetskoi "Some Considerations Regarding Morphonology". In this work, he first introduced the concept of "morphonology" into science. It marked the first period in the history of morphonology.

AIMS AND OBJECTIVES

Aim

To highlight those positive moments that were achieved in the works by N.S. Trubetskoi on morphonology, as well as point out the disadvantages that did not allow morphonology to be singled out as an independent linguistic discipline.

Objectives

To highlight those positive moments that were achieved in the works of N.S. Trubetskoy on morphonology.

Point out the shortcomings that did not allow to single out morphonology as an independent linguistic discipline.

Show how N.S. Trubetskoi's ideas were developed by members of the Prague Linguistic School.

To highlight the reasons why morphonology could not obtain the status of an independent language level within the framework of the Prague Linguistic School.

RESULTS

The term "morphonology" is one of the most controversial in modern linguistics. Different meanings are invested in it, hence the different scope of tasks and problems of morphonology. Inconsistency has been characteristic of it since its origin. This is apparently due to the fact that the status of morphonology as an independent linguistic discipline was not determined. The second period is associated with the name of R.O. Jacobson, whose ideas were developed by American linguists. The issues of morphonology as a special linguistic tier are being resolved, its boundaries and terminological apparatus are determined, morphonological descriptions appear on a specific linguistic material. The question of the position of morphonology among linguistic disciplines is still the subject of controversy. The review proposed below will aim to point out the positive points that were achieved in the works of N.S. Trubetskoi.



The idea of morphonology as a special linguistic discipline, which should take its rightful place, was expressed by N.S. Trubetskoi. The object of morphonology, according to N.S. Trubetskoi are phoneme alternations, i.e. alternations not determined by phonetic position, compare: $\pi e uy - \pi emuub u//m$ (lechu - letish' ch/t). In this case, the consonant alternates with the consonant. In the example $\pi m m - m u a//m'$ (myat' - mnu a//m') consonant alternating with vowel *a*, and also the vowel can alternate with zero sound $eopo6eu - eopo6b\pi e//o$ (vorobei - vorob'ya e//o), as well as a vowel with a vowel *coxhymb - cyuumb o//y* (sokhnut' - sushit' o//u).

N.S. Trubetskoi called the morphoneme the general idea of alternation. This refers to the alternation characteristics of the entire set of the class of word forms. A member of the alternation is named alternant by N.S. Trubetskoi.

N.S. Trubetskoi considered the phenomenon of sandhi to be another object of morphonology. Sandhi are phonetic changes that occur at the junction of morphemes, composites, words. In fact, N.S. Trubetskoi singled out the paradigmatic phenomena of morphonology – morphonemes and syntagmatic – sandhi. Subsequently, the ideas of N.S. Trubetskoi were developed in "Projet de terminologie phonologique standaritsee" (2), as well as in the works of a number of American linguists who were followers of L. Bloomfield (3).

At present, the question of whether morphonology belongs to one or another language level is still the subject of controversy. So, N.S. Trubetskoi, A.A. Reformatsky, and R.I. Avanesov include morphonology in phonology.

However, the recognition of the phonological structure of the morpheme as an object of morphonology does not mean that morphonology is part of phonology. A number of American researchers refer morphonology to morphology. E.A. Makaev and E.S. Kubryakov refer morphonology to an intermediate level, as it does not have its own basic units (4).

N.S. Trubetskoi sees in morphonology "a link between morphology and phonology" (5). He substantiated the need for a linguistic description of morphonology as a science of "the morphological use of phonological means". In the same work, he defined the tasks of morphonology. "The complete morphonological theory consists of the following sections:

- 1) Theory of phonological structure of morphemes;
- Theories of combinatorial sound changes to which individual morphemes undergo in morphemic combinations;
- 3) Sound alternations that perform a morphological function" (5).

The views of N.S. Trubetskoi were further developed by the compilers of "Projeta de terminologie phonologique standaritsee". They try to single out independent morphonological units, considering the morphoneme and the alternant to be the object of the study.

"Morphonological alternation is the alternation of a phoneme with a) a correlative phoneme, or b) with a disjunctive phoneme, or c) with a group of phonemes, or d) with a zero phoneme within the same morpheme, depending on the morphological structure of the word. Alternants are members of the same alternation. A morphoneme is the general idea of a combination of two or more members of an alternation" (5).

However, members of the Prague linguistic school cannot be distracted from a specific type of phoneme. Therefore, they cannot solve the problem of identifying alternations with a different composition of phonemes (5). Differences like *neчý nemúuь u πο*δ*π*ό - *π*ό*бишь* ('lechú - letísh'' and 'lyublyú - lyúbish'') considered as different alternations. Morphonological theory of N.S. Trubetskoi remained a phonological theory, since the units of morphonology were determined by the phoneme and the morpheme.

The concept of "morphoneme" has been criticized many times. A.A. Reformatskii does not accept the idea of N.S. Trubetskoi to reduce such facts of a language as alternations like $\langle \kappa \cdot u \rangle$, $\langle z \cdot \mathcal{H} \rangle$ ($\langle k \cdot ch \rangle$, $\langle g \cdot zh \rangle$) to «idees complexes». He criticizes the psychologism of the definition, although in many ways his views on morphonology are similar to those of members of the Prague Linguistic Circle. T.V. Bulygina agrees more: "The search for an objective invariant of alternating phonemes led N.S. Trubetskoi to the promotion of the concept of morphoneme" (6). But she sees the impossibility of

isolating such a unit in the fact that the morphoneme cannot be defined in terms of differential features.

Within the framework of the Prague School, morphonology did not receive the status of an independent discipline, since the units of morphonology were determined through the phoneme and morpheme. Practically morphonology of N.S. Trubetskoi remained a phonological theory. This was its main disadvantage.

From the definition of the Prague school follows the current concept, according to which morphonology is an intermediate, non-basic level, included in the basic (morphological), and "non-basic levels do not have their own units".

DISCUSSION

Thus, the Prague School of Morphonology denies the status of morphonology as an independent linguistic discipline. The object of study of morphonology are alternations, morphonological changes that occur with affixes, which are explained as a result of the compatibility of affixes. But the question of the choice of affixes and the principles of their compatibility is not raised.

The further development of morphonology led to the separation of morphonology into an independent linguistic discipline, to the separation of from phonology and morphology. O.S. Akhmanova said that "The functioning of linguistic matter is more complex and flexible than can be depicted using only the concepts of proper phonology or morphology. Therefore, it is necessary to study some intermediate area in which a real connection and interaction of two principles is found _ phonological and morphological" (7).

Recognition of the status of morphonology gives the right to single out autonomous morphonological units that do not belong to either the level of phonology or the level of morphology. This problem was solved within the framework of the Moscow Phonological School.

The formation of the concept of a morphonological unit is based on the idea of the identity of the morpheme of the Moscow Phonological School. The meaning of this idea is that morphemes are considered identical if their differences are expressed in some rule. But the rule defining the identity of а morpheme is morphonological. If the identity of the morpheme expresses the unity of the word, then the morphonological rule is a means of expressing and defining the unity of the word. This is the meaning of the further evolution of morphonological views. The the Moscow initial premise of School of Morphonology in explaining morphonological means creates a tendency to isolate morphonology into a special level of language with its own units.

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A STUDY ON CONSUMER'S PERCEPTION IN NEW PAYMENT METHODS POST COVID-19

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ABSTRACT

Covid-19 started in 2019 and spread in almost all countries of the world. Due to this pandemic, many changes are observed in various fields like commerce, education, trade, services, politics etc. One of the important changes observed by almost all economies are in the forms of payment and trade. This pandemic and social distancing has brought digital financial services into effect. It helps government to disburse funds quickly and even firms and households to access online payments. In India, digital payment space has witnessed a steady growth right from Demonetization in 2016 to detrimental impact of Covid-19. In recent time's government have pushed to digitalize Indian economy through its several initiatives like IMPS, NEFT, UPI, BHIM, NPCI etc. therefore this new ecosystem of digital payment will grow rapidly in the era of post covid-19. However challenges like network congestions, poor internet, cash preference, low rate of financial inclusion, safety and security are causing youths to stick to traditional payment system and preventing from digital payment methods and shift from cash to digital modes. This paper analyzed primary data collected from respondents of Palghar district and Mumbai to study adoption /non-adoption of mobile wallet system during current pandemic situation and also on the basis of demographics characteristics of respondent. Correlation and ANOVA are used to analyse the data.

KEYWORDS: Covid-19, Pandemic, Mobile Wallets, NPCI, digital payment, financial inclusion,

INTRODUCTION

Digital payment is an emerging concept that involves financial transaction between two or more people using online or digital platform instead of physical money. It can be done via mobile or computers across globe and 24*7. During the pandemic of COVID-19 whole world was forced to shut down all its business through worldwide lockdown by almost all nations to safeguard health and lives of normal people, but it has also hit all individuals economically. However business has started preparing for new normal, enabling them to become more successful post COVID-19 pandemic world. Post the current situation, there will be the possibility that people will minimize contact with physical currency and embrace more digital payment options. The hybrid payment solutions can be brought in by the industry players. RBI too has a vision of getting digital payments deep rooted in the near future.

We hypothesize that recent habits created by using contactless technology will persist, even after the virus wanes. Between February and March 2021 contactless transaction grew twice as fast as non-contactless transaction in the grocery and drugs store categories (according to a consumer poll conducted by MasterCard). More than 80% viewed contactless as a cleaner way to pay and would continue to use contactless payments post pandemic.

An individual can make digital payment either by installing mobile banking application or by any third party app such as Amazon Pay, Google Pay, PhonePe, PayTM and several others where both the parties, payer as well as payee need to link their bank account with payment application in order to place transaction or deposit amount on digital wallet of installed application.al payments helps public in making their dues clear even from distant places or helping their peer members in need. Digital payment does not take into consideration the location or place of payer or payee.

DIGITAL PAYMENT METHODS IN INDIA

Indian economy is transforming into digitally empowered and knowledge based economy through digital India program. It has led to the growth of various mode of payments like USSD, AEPS, UPI, MOBILE WALLETS, POS, INTERNET AND MOBILE BANKING.

A) CARDS: Banking cards like debit card, credit card, cash, travel and few more offers card holders with security convenience and control. These cards are of RuPay, Visa and Master Cards which also offers great



flexibility in digital payment modes. With OTP and PIN security, these cards are widely accepted from trust point of view.

- B) USSD: This service is available on basic feature mobile without internet connectivity. It helps the underbanked society to be included in the main stream banking services. Customer needs to dial *99# on mobile through displayed screen to transact. It provides services like balance inquiry, transfer of funds and mini statement. Presently 51 banks are providing USSD services and it can be accessed in 12 different Indian languages.
- C) AEPS: AEPS offers services like balance inquiry cash withdrawal, cash deposits, Aadhar to Aadhar fund transfer and payments.it is a bank led model allowing interoperable financial transaction at POS.
- D) UPI: It merges various banking facilities like fund routing, merchant payments, Peer to Peer transfer etc. Mobile number is required to be linked with the bank account for availing this facility. This facility can be availed only through smart phones having internet access. Each bank provides it own UPI app for various mobile platforms.
- E) Mobile Wallets: mobile wallets allow customers to make payments through mobile phones or tablet or any smartphone. Applications like Paytm, Mobikwik, Airtel money etc are offering mobile wallets services in which mobile phone provides easy way to carry cash in the form of digital wallets.
- F) PoS: PoS transaction requires a card and biometric for executing the payment for goods and services
- G) Internet or online banking: An electronic payment system which provides a banking website to its customers to undertake financial transaction. It offers services like NEFT, RTGS, ECS and IMPS.
- H) Mobile banking: various banks provides this services to its customers to utilize banking services remotely through mobile device. Banks provide customized applications to its customers for availing mobil banking facility.

DIFFERENT MOBILE PAYMENT APPS

GooglePay: This application was launched by Google Incorporation in the year 2015. It is most commonly used digital payment application on android or iOS operating system. One can transfer money or pay utility bills either directly from their bank account or by UPI id in Google Pay app. This app offers dual security to its users through their fingerprints to avoid any kind of lost or theft. It can be used by small shopkeepers, wholesalers, or even large business organizations. As of date this application has more than 120 million users.

Paytm: This is an Indian origin digital payment service, third party mobile and computer based application. It was launched in the year 2010 as private firm. It has specialization in e-

commerce, financial technology and digital wallets. It offers services in 11 different languages of India. As of date this application has more than 350 million users.

PhonePe: This is another Indian based payment application launched in the year 2015 as a private multilingual mobile and computer based application. It is UPI based app where a user is required to link his or her bank account and generate a UPI id to make any kind of transaction. It has more than 280 million customers. In 2020 it has launched ATM services for its customers.

LITERATURE REVIEW

Singal Rashi (2021),"Impact and importance of digital payment in India". According to her paper banks come across various opportunities through digital form of services, which it can provide to its customers. She mentioned that RBI and Indian government has brought up noticeable acceptance of nonfinancial system to deferred payments. Further activities such as demonetization and GST has contributed to economic expansion with spreading effects of computerized instalments

Jain, Sarupria and Kothari (2020): "The impact of covid_19 on e-wallet's payment in Indian economy" analyzed that covid-19 has resulted into great boost to Indian economy in sectors like food beverages, medicine and others. Digital payment has seen growth from 5% to 40% from demonetization; even government has been taking continuous efforts for economy's growth

Thirupathi, Vinayagamoorthi and mathiraj (2019): "Effect of cashless payment methods: a case study perspective analysis" has analyzed that several banks and financial institutions are getting interlinked with a digital payment system. This linkage helps government to attain economic prosperity and growth since after demonetization. They also analyzed that in 2019 nearly 30% of India's population had access to internet which was earlier only 5%. Even now banks and financial institution are offering discounts to their customers to increase and inculcate the habit of digital payments

Vally Suma and Divya Hema (2018): "Digital payments in India with perspective of consumer adoption" analyzed that digital payments services were boosted after demonetization and it also gave rise to usage of BHIM and UPI applications with full transparency. They conducted primary research for 13 people from Hyderabad region and analyzed the data through Chi-square. They found that a digital payment has raised banking performances and making it competent to achieve cash less economy. They also analyzed that generating awareness is required by banks through various measures.

OBJECTIVES OF RESEARCH

The objectives of this study are as follows:

- 1) To study the impact of Covid-19 on payment methods.
- 2) To know the usage of digital payment system.
- 3) To highlight the issues of digital payment systems.



RESEARCH METHODOLOGY

Our study is based on primary data collected from 379 respondents of Palghar district of Maharashtra. Data was collected via google forms through a well-structured questionnaire. Correlation and ANOVA were used on collected data to analyze it and derive necessary conclusion for our set objectives. Microsoft excel was used for statistical testing.

1) Demographic profile of the respondents.

	T.	ABLE 1	
Variable	Characteristics	Frequency	Percentage
Gender	Male	180	47.49
	Female	199	52.51
Age group	Below 20	99	26.17
	20-30	251	66.36
	30-40	4	1
	40-50	11	2.8
	50-60	14	3.7
Education	Primary	67	18
	Plus 2	18	5
	Degree	241	64
	P.G	16	3.7
	Professional	17	4.3
	Technical	20	5
Profession	Student	283	74
	Daily wage	11	3
	Private job	77	20
	Govt. job	8	3
Monthly	Below 20000	322	85
income	20000-50000	28	7
	50000-70000	11	3
	Above 70000	18	5

2) Correlation

In Table 2 we have shown that the correlation analysis of digital payment is positively related to different variables like age,

education, profession and monthly income. There is a high correlation of digital payment with profession and monthly income than other variables

	TABLE 2:							
	AGE	EDUCATION	PROFESSION	MONTHLY INCOME	DIGITAL PAYMENT			
AGE	1							
EDUCATION	-0.206	1						
PROFESSION	0.540	0.013	1					
MONTHLY	0.030	0.190	-0.079	1				
INCOME								
DIGITAL	0.045	0.099	0.013	0.150	1			
PAYMENT								

3) Analysis of Variance

ANOVA is carried out to test the variance in the study. In Table 3 we have computed ANOVA on the basis of gender and it is being observed that there is no significant difference of respondents perception towards digital payments on the basis of gender especially in the times of Covid-19



	TABLE 3:		
ANOVA	ON THE BASIS	OF GENDE	R

		1111011			11	
AVOVA						
VARIATION	SS	df	MS	F	P-VALUE	F-CRIT
SOURCES						
INTER	0.076	3	0.076	0.626	0.430	3.932
GROUPS						
INTRA	12.82	375	0.122			
GROUPS						
TOTAL	12.896	378				

In the above table it is observed that F value is very less than the critical value of F and the P value is above 0.05 which shows

that there is no significant difference between male and female on digital payment perception during Covid-19 times.

TABLE 4ANOVA ON THE BASIS OF AGE

ANOVA						
VARIATION	SS	df	MS	F	P-VALUE	F-CRIT
SOURCES						
INTER	0.670	15	0.168	0.399	0.240	2.460
GROUPS						
INTRA	12.227	363	0.120			
GROUPS						
TOTAL	12.897	378				

Even in Table 4 it is been observed that F value is less than the critical value of F and the P value is well above 0.05. Hence we can conclude that there is no significant difference between

various age groups and digital payments perception during Covid-19 times.

ANOVA ON THE BASIS OF EDUCATION						
ANOVA						
VARIATION SOURCES	SS	df	MS	F	P-VALUE	F-CRIT
INTER GROUPS	0.060	18	0.212	0.809	0.118	2.305
INTRA GROUPS	11.840	360	0.120			
TOTAL	12.90	378				

 Table 5

 ANOVA ON THE BASIS OF EDUCATION

Again in Table 5 it is seen that value of F is less than critical value of F and value of P is above 0. which shows that there is no significant difference between educational groups and digital payments perceptions during covid-19 times.



Table 6
ANOVA ON THE BASIS OF PROFESSION

		ANOVAOI	I THE DASIS	OF FROTESS		
ANOVA						
VARIATION	SS	DF	MS	F	P-VALUE	F-CRIT
SOURCES						
INTER	0.380	11	0.126	01.040	0.380	2.70
GROUPS						
INTRA	12.520	367	0.121			
GROUPS						
TOTAL	12.9	378				

In Table 6 again it is observed that F value is less than the critical value of F and the P value is well above 0.05, thus we can infer that there is no significant difference between various

professional groups and digital payments perception of consumers during Covid-19 times.

	A	NOVA ON TI	HE BASIS OF N	MONTHLY I	NCOME	
ANOVA						
VARIATION SOUIRCES	SS	df	MS	F	P-VALUE	F-CRIT
INTER GROUPS	0.370	11	0.123	1.013	0.390	2.692
INTRA GROUPS	12.530	367	0.121			
TOTAL	12.90	378				

Table7 ANOVA ON THE BASIS OF MONTHLY INCOME

Even in Table 7 it is been observed that the value of F is much less than the critical value of F and value of P is well above 0.05, thus showing that there is no significant difference between monthly income groups and digital payments perception of consumers during Covid-19 times

CONCLUSION

This study was an attempt to analyze the impact of Covid-19 pandemic on the usage of digital payments methods. We have collected sample data from Palghar district of Maharashtra which is one of the sub-urban district. Our study has tried to show and analyze the relationship between various demographic features of sample and their digital payment methods usage and adoption. Statistical tools like correlation and ANOVA are employed to analyze the cause and effect relationship between various variables and digital payment methods usage. The study has shown that during the times of Covid-19 people are rescuing to digital payment methods irrespective of various demographic features like age, gender, education, profession and monthly income. Around 65% of the respondents are of age 20-30 and around 75% are students with monthly income below 20000. It counts to around 85% of the respondents. Our research has observed that during Covid-19 times consumers are compelled to rescue to digital payment methods even for maintains the safety norms and precautions. Indeed the factors like digital India movement and easy accessibility of internet has played significant role in digital revolution of payment methods in the times of Covid-19 pandemic.

SUGGESTIONS

The technology has changed today's consumer behavior and even pattern of purchasing and payment methods. Now people are taking advantage of digital platforms to develop and grow. The digital revolution has triggered the style of communication, purchase, bills payments, and exchange of information. It has brought about the habitual use of browsing and online payments and even developing trust and faith and loyalty towards payment platforms.at the same time companies are also benefitted through advancement of technology for online tracking of consumer's preferences, feedbacks, attitude towards products and even there search patterns. The key recommendations from our study are that incorporating feedback and gauging public perception can further catalyze digitization.

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WEST SYNDROME, UPDATED INFORMATION FROM 2021 UNTIL 2022

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SUMMARY

Congenital Zika infection has been linked to phenotypic features including neurological sequelae. In relation to West syndrome, it has been shown that of 147 children with congenital Zika infection, 7.5% suffer from West syndrome. Furthermore, in the management of this syndrome, the use of vigabatrin has been shown to be an appropriate therapy for these patients (1). This is one of the studies with which we want to demonstrate the variations in the current treatment of West syndrome.

The aim of this literature review is to demonstrate how varied the treatment of this pathology is so far, to show what the medical literature says about the most adequate treatment in the last 2 years.

KEYWORDS: Nervous System, West Syndrome, Infantile Spasms

INTRODUCTION

In a case reported in 2021 of an eight year old female patient from New Delhi, poor psychomotor development and anxiety were evident in this patient. The prenatal history indicates prematurity, in addition to a maternal history of dehydration, fever and vaginal infection during delivery. The patient presented with seizures from an early age up to the age of 20 years, which was more characteristic at the time of awakening. The seizures were accompanied by jerking movements of the upper and lower extremities. The electroencephalogram showed hypsarrhythmias and diffuse cerebral atrophy on magnetic resonance imaging. This patient was initially given adrenocorticotropic hormones, but was replaced by anticonvulsant medication. Since the change of medication to anticonvulsant drugs earlier, the patient has had no new seizures (2).

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A study of 26 patients with West syndrome who were given short-course therapy in 2020 found that idiopathic West syndrome is self-limiting and has a good response to treatment. Another feature found in the study was that treatment with vigabatrin and adrenocorticotropic hormones are the first line of treatment. Another element to consider is that idiopathic West syndrome has a genetic component which should be studied; and that generally patients with idiopathic West syndrome with excellent prognosis of treatment is usually of short duration (3).

In a study conducted in 2021, it became clear that the use of high-dose prednisolone, typically a dose of more than 4 mg per kilogram, offers electro-clinical resolution and is a great cost-effective strategy for the treatment of West syndrome. There is also evidence that high-dose prednisolone has efficacy equal to that of adrenocorticotropic hormone safety and tolerability therapy. Finally, the of methylprednisolone followed by oral prednisolone has been found to be greater than that of adrenocorticotropic hormonebased treatment (4).

It should be remembered that West syndrome is often accompanied by hypsarrhythmias which are the most important features in the presence of developmental delay. These two features together with the presence of infantile spasms lead to the diagnosis of this syndrome (5). In addition, West syndrome includes hormone therapy, which includes hydrocortisone, prednisolone or Pina adrenocorticotropin. To this is added vigabatrin as a first-line treatment. A combination of hormone therapy and vigabatrin has shown greater efficacy than hormone-only treatment in patients aged two to 14 months with new-onset West syndrome (6).

A study conducted in Japan in 2021 showed the following results: Seizures occurred daily in 69.3%; seizure frequency of less than one per year was observed when the etiology was unknown (22.6%). Genetic aetiology was found in 23.8% and cortical developmental formation in 19.1%. Neurological abnormalities were absent in 37% but a high percentage of abnormalities were seen when the patient presented hypoxic ischaemic encephalopathy or Aicardi syndrome. Electroencephalogram abnormalities were found in 96.7% and MRI was altered in 62.7%. Treatment included hormone therapy, anti-epileptic therapy and a specific diet. Importantly, intellectual developmental delay was present in 88.4% and was more severe in patients with Aicardi syndrome, genetic aetiology and hypoxic ischaemic encephalopathy (7).

The metabolic alterations found in West syndrome were: obesity in 27.3%, diastolic hypertension in 48.8%, hypertriglyceridaemia in 71%, decreased HDL in 54.2%, weight gain and increased triglyceride levels in patients treated with ACTH (8).

A study conducted in 2021 looked at the relationship between BCG vaccination and administration of adrenocorticotropic hormones for West syndrome. This is studied because hormone therapy has caused immunosuppression and could result in infection after BCG vaccination. As a result of this study it was shown that 33 patients received hormone therapy prior to BCG vaccination.

The interval between the administration of hormone therapy and vaccination was very short, almost 14 days. The evidence showed that none of the patients developed a BCG infection, even up to an interval of eight weeks there was no development of an infection (9).

A study conducted in 2021 showed that the median age of onset of West syndrome was four months. It was shown that prematurity, neonatal asphyxia, neonatal encephalopathy and small for gestational age were among the features that can lead to this syndrome. Some characteristics found in the electroencephalogram were hypsarrhythmias; in the MRI, on the other hand, were periventricular leukomalacia, cystic encephalomalacia and in very few cases a normal MRI. It was also shown that Trina, prednisolone, and adrenocorticotropic hormone treatment are the best alternative for the cessation of spasms (10).

In 2021, a total of 198 patients were studied in Argentina between 2004 and 2017. It is evident that five patients had a spontaneous remission related to an infection, and this was demonstrated through electroencephalographic manifestations and absent clinical manifestations. Of these five children, four were male and one was female. Apparently, these patients had remission of their pathology and normalisation of their EEG following upper respiratory infection; four of them had remission and one of them had sudden exanthema (11).

There is a clinical case report of three cases of three infants with West syndrome, all three infants were breastfed, considering that the mothers follow a strict vegan diet. In one of the three infants West syndrome developed during treatment with vitamin B12 and was maintained until vitamin B12 levels were normal. The fundamental point to mention in this review is the fact that supplementation of the mother can prevent the development of disease in the child. Early initial treatment with vitamin B12 and replacement therapy are of vital importance to prevent severe neurological problems and improve the clinical course of the patient (12).

However, the mothers of patients with West syndrome are also of consideration. A study conducted in 2021 reports that mothers had high levels of depression and anxiety. The scales used for anxiety were the Hamilton Anxiety Scale and for depression the Beck Depression Scale. Maternal anxiety, depression and parental stress were significantly higher in all mothers of children with West syndrome compared to mothers without children with West syndrome (13).

A randomised study conducted in 2021, studying the effectiveness of intravenous methylprednisolone versus oral prednisolone administration, used children aged 2:30 months with West syndrome who were randomised to be administered methylprednisolone at a dose of 30 mg per kilogram per day for three days or oral prednisolone at a dose of 4 mg per kilogram per day for two weeks. The first outcome found was cessation of spasms on day 14. The second outcome was response time in which electro-clinical remission was seen at around two to six weeks (14).

One of the features evident in the treatment of West syndrome has been that cessation of spasms has been seen in 53% when they occur within short periods of evaluation,



although it should be noted that 2/3 of these patients relapse. Electroencephalogram is abnormal in 78% and it is important to mention that good response to standard therapy and a non-structural aetiology are associated with better seizure control (15). A study in 2021 evaluated quality of life at six years in patients who were treated with West syndrome based on hormone therapy. The conclusions drawn from this study were: age of onset, delay in treatment and early spasm control were several factors that did not have a major influence on the patient's quality of life. This means that despite epilepsy control, the boys suffered from an inadequate quality of life (16).

CONCLUSIONS

West syndrome, based on several scientific articles mentioned above, has been shown to have several factors influencing early treatment, adequate seizure control and the different therapeutic modalities encountered. However, it is necessary to mention that all the studies mentioned above evaluate patients from various perspectives; all this is of vital importance to emphasise because the treatment of patients in general is not strictly the same. In some of the studies mentioned above, the use of vigabatrin, methyl prednisolone, adrenocorticotropin-based therapy, prednisolone, among others, is mentioned; however, each individual must be properly evaluated so that the treatment given to the patient is the best solution for the control of West syndrome.

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PRESENT CONTEXT OF POPULATION DENSITY IN STUDENT'S MOTIVATION AND ACADEMIC ACHIEVEMENT: A SYSTEMATIC REVIEW

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ABSTRACT

"An educated, enlightened and informed population is one of the surest ways of promoting the health of a democracy"- Nelson Mandela

In many developing countries, low population density may be a major reason for low school participation in rural areas, and the problem is likely to worsen with rapid urbanization. However, few studies have investigated empirically the role of population density in rural education, especially the moderating effect of population density on the outcomes of education policies. In this regard, the researcher has reviewed some of the studies from the various web sources and found recent studies i.e. from 2015 to 2022. The main aim of the study is to identify the reasons for population density for students' motivation and academic achievement. Thus, the population density used in this study may not accurately reflect the local population density of each participant's neighborhood. Second, the relationship between step count and population density was investigated with considerations for only gender and school grade. These results suggest the importance of studies of physical activity determinants in extremely high density areas in an effort to inform effective interventions.

KEY WORDS: population density, motivation, academic achievement and distribution

INTRODUCTION

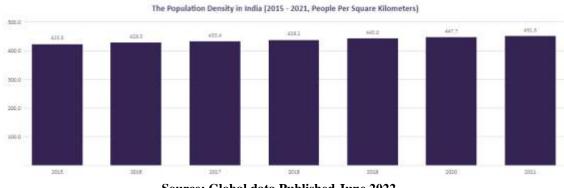
Despite the potential significance of population density for rural education, there are few relevant empirical studies on this topic. There are several studies about economies of scale in education, impacts of commuting and boarding, and even teachers' willingness to serve in remote schools (Sargent and Hannum, 2005; Luschei, 2012; Li and Liu, 2014; Wei, 2016), but an overall evaluation of the causal effect of low population density on rural children's educational attainment is lacking. However, such evaluations are crucial for making projections and guiding actions. One reason for the research gap may involve endogeneity of population density. It is difficult to specify exogenous sources of variation in rural population densities and identify the causality between rural school participation and local population density. Nevertheless, another approach is to identify the effects of educational policies affecting various regions and examine heterogeneity of policy effectiveness among regions with different rural population density.

The density of the urban population spreads by land function and geographical condition of the urban land. An understanding of the population density and pattern of distribution will help planners understand the pattern of urban development and urban dwelling trends. Population density and its distribution can be seen through the trend of population density based on the distance of the sub-district center to the city center.

As a study conducted by Yin et al. (2010) showing the effect of population density on the amount of car ownership and fuel consumption. By knowing this condition, the government will be able to make policy to prevent negative impact. The location of settlements located in the city center will also affect the mobility of the population. This may affect urban policy. Research conducted by Papageorgiou (2014) shows the condition of the urban community's tendency to live in areas close to the city's economic centers or markets.



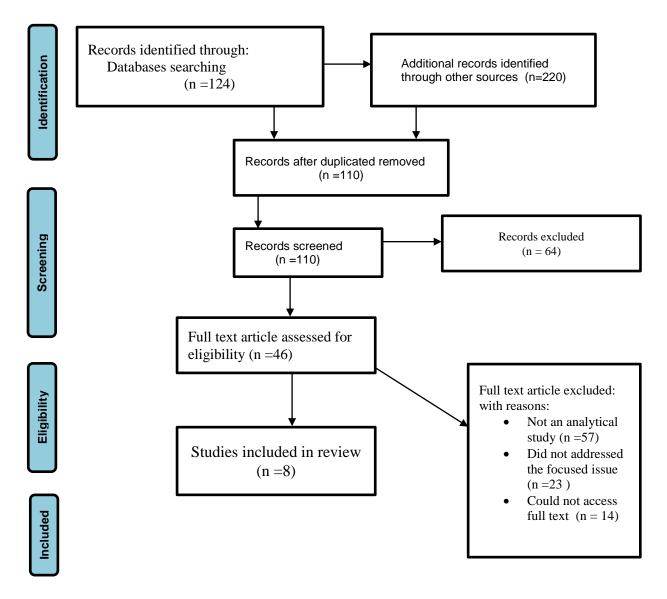
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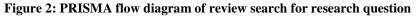




Population density of India reached 451.46 people per square kilometer in 2021 India witnessed a population density growth of 6.65% between 2015 to 2021 and is expected to grow by **MATERIALS AND METHODS**

2025. Uttar Pradesh was the most densely populated state in the country in 2021





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QUALITY ASSESSMENT

Saad AlQuhtani (2022) investigated the spatial distribution of boys' public elementary schools in Najran city. Spatial equity in the provision of educational services is a major component to provide a healthy and cheerful living environment in cities. Experts accordingly, set many standards for selecting school locations. Consequently, the study concluded by showing suitable locations for future schools and recommended that planners provide elementary schools in deficient districts and enhance equitable distribution of elementary schools throughout the city.

Xi Zhang, Scott Rozelle (2022) study aims to fill this gap in the literature. From 1999 through the early 2000s, China launched a set of major nationwide policies aimed at universalizing 9-year compulsory education in rural areas. In many developing countries, low population density may be a major reason for low school participation in rural areas, and the problem is likely to worsen with rapid urbanization. However, few studies have investigated empirically the role of population density in rural education, especially the moderating effect of population density on the outcomes of education policies. This study provides evidence that population density indeed matters in rural education. In the short run, policymakers should deal with immediate problems associated with low population density, such as long commuting.

Sho Furuichi (2022) examined the quantitative relationships between population density and school size, the number of schools, and other school characteristics (i.e. packing density, volume, and cross-sectional area) in three species of small pelagic fishes: Japanese anchovy Engraulis japonicus, Japanese sardine Sardinops melanostictus, and chub mackerel Scomber japonicus. They found that school size increased almost linearly with population density, whereas the number of schools and other characteristics increased non-linearly with population density, whereas the slowed radically as population density increased.

Ida Bagus Ilham MALIK (2019) the researcher opined that the population density and its distribution can be seen through the trend of population density based on the distance of the sub-district center to the city center. Usually, the population density will be high in the city center and will decrease to the suburbs. The research was conducted in 15 cities across Indonesia spread across several main islands of Indonesia and with a diverse population such as geographical area and geographical conditions.

Dr. Ranu Pariyar (2018) studied the population awareness among higher secondary levels school teachers. The study aimed to identify the area wise and gender wise the population awareness among teachers. The descriptive study was focused on various intervention of population programme viz. literacy, health, small family norms, population growth awareness.

A very interesting study of population density is done by Moos (2015). This study was conducted by looking at the effect of population age on city density and distribution of population density. The results of this study indicate the pattern of population distribution that tends to the economic and market areas. This can affect the population's tendency to use the car as a mobility tool. Because young age gives influence to the desire to own a car. And this will also have an effect on the environment.

Research conducted by Guneralp et al. (2017) indicates that an increase in home demand has an effect on energy consumption. Meanwhile, the increase in the number of housing caused by the increase of population and the distribution of urban population density. Therefore, control of population density is considered important in order to suppress global warming. Population density presented in spatial format has also been done by Jones et al. (2016). They conducted research on population density on a continental, national, and sub-national scale that had differences in grid cells. The presentation of spatial population density helps us to better understand the pattern of population density.

DISCUSSION

The results indicate that the population number and schools within the city are not equidistributed. Some districts are experiencing a glut and concentration of schools, especially in old, fully developed, and highly populated districts, while most of the new eastern districts suffer a lack and have no adequate access to schools. Also, half of the city districts do not have elementary schools Saad AlQuhtani (2022). The policies significantly increased the probability of junior high school enrollment of rural children and, more importantly, these policies were more effective in densely populated regions. These findings confirm the importance of population density to rural education Xi Zhang, Scott Rozelle (2022).

The results indicate that the schooling behaviour of small pelagic fishes is density-dependent, and responses to changes in density are species-specific. Our results provide insight into how biological interactions such as intra- and inter-specific competition and predator-prey interactions mediate the density-dependent processes that underlie the population dynamics and community structure of small pelagic fishes in marine ecosystems Sho Furuichi (2022). The study found the difference between male and female teachers of both urban and rural secondary schools. They also found that the urban teachers have more population awareness than the rural teachers and female teachers have more literacy and small family norms awareness than male teachers (Dr. Ranu Pariyar, 2018). Results show that the densest population will be in the center of the city as an economic area, and its density decreases as it progresses further from downtown. This indicates that the population density will rise if it is close to the location of economic activity i.e. downtown, and will decrease when away from the city center (Ida Bagus Ilham MALIK 2019).

CONCLUSION

The issue of density must also be viewed through the psychological implications from the study of territoriality of place according to Banghart and Trull (1973). We know that the student is always dependent on the environment for psychological and sociological clues. The student is always interacting with the physical environment. Since the school is a social system within the cultural environment, we should



consider social distance as it relates to crowding and density. The designs of schools have undergone many transformations since their inception. From one room buildings to campuses that included specialized spaces, schools continue to address the needs of rising enrollments and a diverse population. School size, class size, and density, along with technological needs and flexibility are all concerns for today's school designers.

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MORPHOLOGICAL DEVELOPMENT OF ENDOCRINE CELLS OF THE DUODENUM IN THE EARLY POSTNATAL PERIOD OF LIFE

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ABSTRACT

The article is devoted to studying the formation of duodenal endocrine cells in the early postnatal period. The material of the study was outbred white rats, which were on different types of feeding. The small intestine with normal microflora affects the adequate adaptation of functional systems of various levels of organization, metabolism, normal structure and function of all organs and systems, the body as a whole. It is known that natural, mixed or artificial, definitive nutrition involves the intake of nutrients and a huge number of various microorganisms from the external environment into the intestine. As a result, during the formation of a normal intestinal microbiocenosis, a genetically determined harmonious development of the individual is ensured.

KEYWORDS: Homeostasis, adaptation, duodenal microbiocinosis, neuroimmunoendocrine system.

INTRODUCTION

The formation of intestinal microbiocenosis is significantly influenced by childbirth (natural or caesarean section), microbiocenosis of the birth canal, ecology, drugs, especially antibiotics, nosocomial infection, type of feeding, etc. [2,3,10].

However, until now, the existing ideas about the role and significance of the intestinal microflora in the formation of the duodenum, its neuroimmune-endocrine formations, the functional system external environment-intestinal microbiocenosis-internal environment of the macroorganism, adaptation and regulation of homeostasis in the process of digestion and absorption are fragmentary and contradictory.

MATERIAL AND METHODS

Rats are white outbred at the age of 1,3,7 and 14 days after birth, which were breastfed. Slaughter of animals and taking a piece of the initial section of the jejunum was carried out in accordance with the International Convention for the Protection of Animals used for Scientific Purposes (2003). After appropriate fixation and wiring, obtaining ultrathin sections, the material was viewed in an IEM-100S electron microscope. In the dynamics of age, the activity of hydrolytic enzymes in the homogenate of the mucous membrane of the jejunum was determined by conventional biochemical methods.

RESULTS AND DISCUSSION

In newborn rats, as well as children [6,9,11], before feeding, the mucous membrane of the duodenum is not separated from the submucosa, forms villi of various generations and short rare crypts between them. Formed finger-like villi are expelled by highly prismatic epithelium, have a homogeneous cytoplasm and a wide, up to 1.0 mkm brush border on the apical surface. Goblet cells between them are single, have a characteristic ultrastructure and secretory granules of moderate density in the supranuclear region. Endocrine and neuroreceptor cells are rarely detected, they are at the stage of differentiation. Lymphocytes or other leukocytes are not detected between villi or crypt enterocytes. In the lamina propria of the mucous membrane under the epithelium, single small groups of cells consisting of clusters of lymphoblasts are detected.

In newborn rats (1-3 days), which are in natural vivarium conditions, due to the minimal development and differentiation of cells of the fundic glands of the stomach, pancreatic acini, low hydrolytic-transport function of columnar epitheliocytes of the villi of the duodenum [9], digestion is autolytic and symbiotic, carried out in the intestinal cavity. Insufficiency of mucus production by goblet cells and developing Brunner's glands in the duodenum does not allow practically implementing membrane and membrane digestion in newborn children and rats [9]. Absorption from the lumen of the jejunum into the cytoplasm of villi enterocytes is carried out heterochronously by receptormediated endocytosis. This is a perfect mechanism for the adaptation of mammals to natural feeding with breast milk, which is carried out 0.5-1.0 hours after birth, naturally due to the termination of amniotic and placental nutrition in the same receptor-mediated way.

After feeding rat pups, regulatory, protective and other biologically active ingredients in the composition of breast milk already after 3-5 minutes enter the composition of the intestinal chyme and begin to interact with the stalk-like border enterocytes of the villi, plasmolemm receptors between the bases of the microvilli, forming tubulo-vesicular formations. As a result, using the most perfect way to maintain homeostasis of the internal environment of the newborn



receptor-mediated endocytosis, in a matter of seconds, the plastic, protective and biologically active ingredients contained in breast milk are bound. Transport of plastic, protective and biologically active ingredients from the lumen of the organ to the cytoplasm, to the supranuclear zone, to the structures of the Golgi complex.

In man, the transition from the sterile conditions of his symbiotic development in the mother's womb to the anti-natal ones occurs against the background of continuing close relationships with the mother. Within 1-2 years, its adaptation consists in the formation of neuroimmunoendocrine and other functional systems [1,8] in close relationship with ecology, the properties of numerous microorganisms, dynamic symbiotic relationships with the external environment, a characteristic type of nutrition, digestion, trophology, which have been evolutionarily fixed in in the form of harmonious integration of normal microbiocinosis of the intestine and internal environments, structural and functional adaptation of neuroimmunoendocrine and other body systems, regulation of homeostasis of the internal environment.

On the 1st-3rd day after birth, in the lamina propria of the mucous membrane of the small intestine, mainly mesenchymal and rarely monocyte-like cells, fibroblasts are detected. Blood and lymphatic capillaries are at the stage of formation and growth. Nerve elements, accumulations of lymphoblasts and reticular cells are rarely detected. In the caudal part of the duodenum and ileum, under the epithelium, round or oval formations are detected, consisting of diffusely located lymphoblasts and reticular cells. Among them, mitotically dividing cells are often noted.

In 7 day old rats, along the mucous membrane of the duodenum with normal microflora, the proportion of formed villi and growing crypts, the number and density of endocrine cells in them increases significantly. At the same time, the degree of infiltration of the epithelial layer of villi and crypts by lymphocytes increases. In the lamina propria, the density of nerve fibers, differentiated leukocytes and connective tissue cells, and blood capillaries increases. As the submucosal and muscular layers thicken, the nerve ganglia become larger, the density and degree of differentiation of various nerve cells increase in them. In progressively increasing accumulations of lymphoblasts and reticular cells, monocytes, an emerging network of blood and lymphatic capillaries are detected.

7 days after the birth of rats with normal microflora, both the number of lymphoid formations along the organ and their volume increase. Individual follicles, or nodules, are indistinguishable. With a diffuse arrangement of lymphoblasts and reticular cells in each of the clusters of lymphoid tissue, the absolute number of cells in them increased on average 2 times. Among them, macrophages are found first, which are moderately active and contain polymorphic lysosomes.

Two weeks after the birth of rats along the duodenum with normal microflora in the mucous membrane, the proximodistal gradient of the linear parameters of the villi and crypts becomes more distinct, and the frequency of their neoplasms significantly decreases. In the thickness of the wall of the duodenum, the number of Peyer's patches reaches 10.8 ± 1.6 . In each of the accumulations of lymphoid tissue, an intensive increase in the number and density of cells leads to their bulging into the intestinal lumen, pushing the villi and crypts to the periphery. Their luminal surface is lined with a single-layer prismatic epithelium, where border, M and neuroepithelial cells are distinguished, goblet cells are single. The epithelium is infiltrated with lymphocytes at different levels. In the lamina propria and submucosa of the duodenum, in the accumulations of lymphoid tissue of the proximal part of the duodenum, germinative and follicular zones are more often seen in the distal one. Other structural and functional zones do not differ.

Structural and functional formation of the intestine occurs between 3-4 weeks after the birth of rats, when they switch to definitive nutrition. In them, as in sexually mature 3-4 months old animals with normal intestinal microbiocinosis, the duodenal mucosa, consisting of the epithelium of the connective tissue and muscle plates, has a characteristic relief due to the presence of folds, crypts and villi. The structural and functional unit of the duodenal mucosa is the crypt-villus system. It establishes certain dynamic relationships between proliferating, functioning and extruding epithelial cells. Proliferation of epitheliocytes is carried out in the lower half of the crypts. For border and goblet cells, the life cycle is on average 72 hours. The functioning of the border and goblet cells throughout the villi lasts 24-48 hours. The extrusion process can be observed at any level of the villi due to their heterochronous functioning.

CONCLUSION

Based on the study of the duodenal mucosa, the formation after the birth of symbiotic relationships between macro- and microorganisms, the regular introduction of nutrients and biologically active substrates into the body with the aim of the harmonious development of the individual, adaptation and homeostasis of the internal environment of the normal structure and function of internal organs and systems naturally formed in the evolution of the functional system environment-intestinal internal macroorganism microbiocenosis-external environment. Feedback from the peripheral (in the small intestine) and central neuroimmune (hypothalamic-pituitary system), symbiotic systems relationships between membrane dominant and associations of cavitary microsymbionts, optimal conjugation of symbiotic cavitary and membrane, sterile membrane digestion, coupled with absorption into villi enterocytes, provide the most important thing - homeostasis of the internal environment of the macroorganism, adequate adaptation of functional systems of various levels of organization, metabolism, normal structure and function of all organs and systems, the body as a whole.

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MORPHOLOGICAL CHARACTERISTICS OF THE SMALL INTESTINE DURING ABSORPTION IN THE EARLY POSTNATAL PERIOD OF LIFE

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ABSTRACT

The article studies the features of the process of breast milk absorption in the early postnatal period. The material of the study was outbred white rats, which were on different types of feeding. The process of absorption in the small intestine is universal and proceeds almost identically up to 14 days after birth when breastfeeding. In mammals and humans, the mucous membrane of the small intestine and its immune system begin to form before birth, and their final formation occurs after birth, by the time of transition to final nutrition [1,2]. The immune system of the intestine at the time of birth is presented in the form of clusters of mesenchymal cells under the epithelium, from which the reticular stroma is formed at the beginning, and then single lymphocytes and their precursors from the vascular bed are populated in it. The lymphoid tissue of the mucous membrane of the small intestine in this period does not have the characteristic features for a sexually mature organism [3,4,8,11,17].

KEYWORDS: Nutrition, absorption, lactation, enterocyte, hydrolytic enzymes.

INTRODUCTION

Currently, large-scale studies are being carried out to study the formation of the immune system of the small intestine mucosa and its adaptive reactions in postnatal ontogenesis. These studies include this research work, which studies the morphological, morphometric, ultrastructural features of development and formation, proliferation and migration parameters of the epithelium of the small intestine mucosa in the dynamics of age in germ-free rats and in sterile rats associated with some representatives of the normal intestinal microflora - lactobacilli. Also in this work, the relationship and integration of epithelial cells of the mucous membrane of the small intestine and its immune system were studied. These studies provide an opportunity to evaluate the morphological, morphometric and ultrastructural features of the development and formation of the stomach, small intestine and large intestine in intact rats.

Taking this into account, as well as the fragmentary nature of the ideas about the mechanisms of digestion and absorption in early postnatal ontogenesis, we in this work considered the ultrastructural mechanisms of absorption of food from the small intestine into the blood during natural breastfeeding and the regulation of homeostasis.

MATERIAL AND METHODS

Rats are white outbred at the age of 1,3,7 and 14 days after birth, which were breastfed. Slaughter of animals and taking a piece of the initial section of the jejunum was carried out in accordance with the International Convention for the Protection of Animals used for Scientific Purposes (2003). After appropriate fixation and wiring, obtaining ultrathin sections, the material was viewed in an IEM-100S electron microscope. In the dynamics of age, the activity of hydrolytic enzymes in the homogenate of the mucous membrane of the jejunum was determined by conventional biochemical methods.

RESULTS AND DISCUSSION

At the birth of germ-free rats, the small intestine, like all newborns, is considered sterile. Macroscopically, the small intestine is short and small in diameter. The wall consists of mucous, submucosal, muscular and serous membranes.

The mucous membrane throughout the small intestine is not yet formed: only the villi are short, dome-shaped, lined with highly prismatic enterocytes (PEC). Crypts are either small depressions formed by accumulations of poorly differentiated epithelial cells (EC) between the bases of the villi, or a short epithelial cord with a barely visible lumen (Fig. 1A, B).



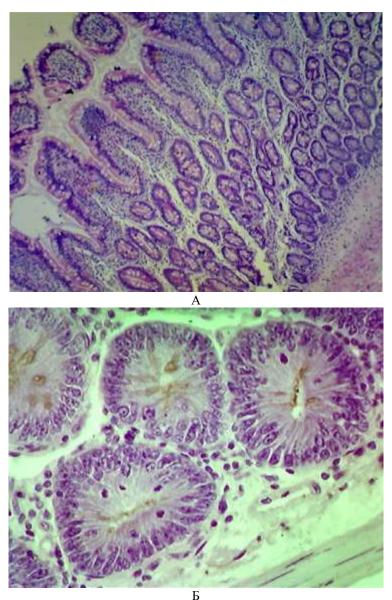


Fig.1. The jejunum of a newborn rat in the first hours after birth. Coloring: R.g. inc.A - 40, B -100

The epithelial cells of the small intestine usually end their life cycle at the tips of the villus. Before extrusion, the matrix is clarified, the cytoplasm is structureless in places. Individual mitochondria may thicken or swell. The length of orgonella membranes sharply decreases, the terminal network in the apical part of the cells is fragmented, and microvilli undergo vesiculation. At the same time, there is a decrease in the viscosity of the basement membrane, an increase in Tlymphocytes in the epithelial layer, lysis of desmosomes and a dense connective complex.

Extrusion is the process of separating the enterocyte from the surface of the basal lamina and moving towards the lumen of the organ. The 10.0 mkm wide space formed in this case is eliminated on average almost instantly due to the upward convergence of the plasma membranes of adjacent viable epitheliocytes. In the space between adjacent cells or under the base of an extruding epithelial cell, 90% of T lymphocytes are usually identified. A destructively changing cell, apparently, is the cause of an increase in the transport of antigen-significant substrates from the intestinal lumen and a violation of homeostasis. Food and its most significant component - microorganisms (indigenous, pathogenic and opportunistic) - after 30 minutes on average after ingestion cause leukocytosis in the circulating blood, in the gastric mucosa, the proximal part of the small intestine an increase of up to 30% on average of lymphocytes, infiltrating mainly epithelial layer of villi.

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