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EFFECT OF FINANCIAL LITERACY ON THE STOCK MARKET PARTICIPATION AMONG THE INVESTORS OF THRISSUR DISTRICT

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ABSTRACT

This study will able to identify how much the financial literacy will influence on stock market participation of investors in Thrissur district. And study also put forward some ideas to improve financial education and knowledge among the youth. Financial literacy is a very important thing for the future development and growth of a person and society as a whole. All should give some importance to financial literacy for planning finance in the near future. Promoting financial education from the school level is also very important for building confidence among children. The study also able to understand that there are so many non-commercial or business background investors are making better profit.

KEYWORDS: *Financial Literacy, Stock Market, Investors*

INTRODUCTION

Lifelong learning should include developing financial literacy. value of financial literacy has grown significantly. These days, every one of us must make a variety of sophisticated financial decisions and even the simplest ones require a high level of awareness and expertise. Unfortunately, a large portion of our population dislikes the abilities needed to make judgments that affect investments and money. Everyday life requires a certain level of financial knowledge. People's capacity to meet their own financial objectives and their employment chances are both enhanced by understanding the fundamentals of finance.

Financial literacy is the ability to manage your finances effectively while considering your social and economic situations. Financial education, knowledge, instruction, training, and guidance all help to improve financial literacy. Individual consumers and their households can make better and more informed choices about whether to save money for a future retirement, college or home mortgage that they can repay within a reasonable amount of time. Making wise financial decisions increases a person's likelihood of reaching their financial objectives, which increases their propensity to protect themselves from financial risk and negative shocks and to promote economic growth. Understanding and using financial information in the parts of our life that depend on wise financial management that constitutes financial literacy, which goes beyond simply knowing financial facts. The OECD (2012) definition of financial literacy is "financial literacy is depending as the combination of financial awareness, knowledge, skills, attitude and behaviour necessary to make some financial decision and ultimately achieve individual financial wellbeing". Financial literacy plays a crucial role in creating a demand-side response to the initiative of supply-side investors.

This study will able to identify how much the financial literacy will influence on stock market participation of investors in Thrissur district. And study also put forward some ideas to improve financial education and knowledge among the youth. Financial literacy is a very important thing for the future development and growth of a person and society as a whole. All should give some importance to financial literacy for planning finance in the near future. Promoting financial education from the school level is also very important for building confidence among children. The study also able to understand that there are so many non-commercial or business background investors are making better profit.



SIGNIFICANCE OF THE STUDY

There are various investment options available in the stock market. Managing the finance in a most appropriate and less risky investment avenue is very important. This study gives importance to how financial education will provide support and security for one's investment in stock market. Financial knowledge places an important role in the coming future. To understand whether the financial literacy is related with profitable earning.

SCOPE OF THE STUDY

The study mainly focuses on how the financial literacy effect on the stock market participation among the investors of Thrissur district. Financial literacy is considered to be one of the important aspects of a person's life. If a person acquires proper financial literacy will able to manage their income in a most stable way. It is also necessary to know how to improve the financial literacy among the coming generation. Nowadays stock market participation is increasing rapidly and the relevance of financial education is considered to be an important factor for investment.

REVIEW OF LITERATURE

Maarten Van Rooij, Annamaria Lusardi and Rob Alessie (2007), in their paper "Financial literacy and stock market participation" they show that lack of understanding of economics and finance is significant determinant to stock ownership. It also shows that lack of literacy prevents households from participating in stock market. They conduct the study among employees and examine relationship between financial literacy and retirement planning and assess whether financial literacy has an effect not only on portfolio choice but also on saving behaviour and whether those who display low literacy are less likely to accumulate wealth.

Cynthia Harter and John Harter (2010) in their study "Is financial literacy improved by participating in stock market game?" they investigate the effectiveness of stock market game (SMG) in improving students' course on a general multiple-choice test covering basic financial concepts. Teachers from the experimental groups who were used to instructing on the stock market were present in class and offered an additional curriculum. The results of the study show that having students play an SMG while being taught seven basic principles for the learning from the market syllabus improves their proficiency on all financial knowledge assessments. The study might aid teachers in using the syllabus and SMG in the future, expose more students to SMG than those who took part in the study, and aid students in making wiser financial decisions all throughout their life.

Joanne Yoong (2011) conducted a study "Financial literacy and stock market participation Evidence from Rand American life panel". In spite of having income, education and financial literacy that are significantly correlated with the general population, this study explores how ignorance of financial illiteracy or financial matters negatively impacts stock market involvement. The study contends that a lack of financial literacy can be a significant barrier to financial involvement, and that for those who are strongly averse to the unknown, developing a fundamental understanding of investing may have an impact on their capacity to accumulate wealth over the long run.

Johan Almenberg and Olof Widmark (2011) in their study "Numeracy, financial literacy and participation in asset markets". They claim that to measure the population's level of numeracy and financial literacy in Sweden and link these two factors to involvement in two important asset markets, such as the stock and property markets. Given the strong correlation between financial literacy and numeracy, acquiring financial knowledge is probably supported in large part by numeracy skills. Their findings support the idea that lack of participation is a common reaction to numeracy and financial literacy shortcomings and highlight significant variations between the stocks and housing markets.

Dimitri's Geogarkos and Roman Inderst (2011) conducted a study "Financial advice and stock market participation". According to their individual financial capacity, this shows that various households need to depend on financial advice to different degrees. Financial advice is widely available and a major factor in determining whether a household would invest in risky assets. The outcomes might have an impact on how to rebuild investor trust in the financial system. According to the findings, trust in advice is a crucial asset for encouraging stock ownership among households with limited financial resources.

Faegh Ahmadi (2014) in his study "Financial Market Interdependence and empirical study on stock, bond, currency and commodity markets in India". During the years 2000 to 2012, he made an effort to investigate the differences between the four main financial markets in India, including the stock, bond, and currency markets. In order to assess the effects of the recent financial crisis, he divides the entire sample period into three subperiods. Through the assessment of the findings, evaluate the impact of financial liberalisation in India as well as the effects of the 2008 global financial crisis on the Indian financial markets.



Pierre Sindambiwe (2014) attempted to study “Financial literacy, stock market awareness and capital market participation of an emerging stock market”. The study's key results include that directors apply their financial literacy in their daily work to a great degree, even though organizational involvement in the Rawandan stock market is only limited. However, the organisation participates in the stock market in a minimal manner. The study also revealed that commercial banks and insurance companies both had the greatest stock market participation rates and the highest stock market awareness. The stock market involvement and stock market knowledge are lowest among manufacturing and trade enterprises.

Amari Mouna and Ansi Jarboui (2015) attempted to study “Financial literacy and portfolio diversification: An observation from the Tunisian stock market”. This study's main objective is to highlight financial illiteracy as one likely explanation for the low degree of portfolio diversification. They investigate the relationship between portfolio diversification and the social and economic traits of the individual investors, with a key emphasis on the impact of financial literacy on portfolio diversification. According to their findings, the biggest factor predicting a lack of portfolio diversification is financial illiteracy. Additionally, they discover that familiarity bias, younger households, persons with lower incomes, and people with less experience likely to be less financially knowledgeable and have less diversification.

John Almenberg and Anna Drever (2015) in their study “Gender, stock market participation and financial literacy” they then after that women participate less than men in stock market and score lower on financial literacy. They also discover that adjusting for fundamental financial literacy minimises the participation difference between men and women in the stock market. Give advanced financial literacy its own control. Even after accounting for four financial literacy factors, the gender disparity in risk-taking is still substantial. Results also influence risk attitudes, and even after accounting for financial knowledge, the gender disparity is still very large. The effect of gender on risk taking is greatly diminished when investor knowledge is taken into account.

Patrick M Mwangi (2015) conducted a study “The relationship between financial literacy and stock market participation by retail investors in Kenya”. 10 The primary goal of the study was to determine the nature of the association amongst financial literacy and Kenyan retail investors' stock market involvement. According to the report, retailing is preferred to having a high level of financial literacy. The findings showed that a variety of economic factors, including anticipated dividends, capital gains, share affordability, and changes in market indices, among others, had an impact on investors' decisions to buy in stocks. The study also identifies the influences of gender, age, income, and financial literacy on stock market involvement. According to the study's findings, Kenyan retail investors' stock market involvement and financial literacy are positively correlated.

OBJECTIVES

- Factors affecting financial literacy and profitmaking
- To analyse the relation of buying stocks and understanding of the economy.

RESEARCH METHODOLOGY

In this study a structured questionnaire is used to collect data from the stock market participants. Descriptive research design is used for collecting, processing and analysing of data. Population The population of the study is total investors of Kerala. Approximately 1954657 investors are registered with BSE. Snowball sampling is used for collecting data. Sources of data collection Primary data The term "primary data" refers to information that has been collected directly by the researcher. In this study primary data is collected by using a well structure questionnaire. Secondary data Secondary data means data collected by someone else earlier. It may be from published or unpublished source. These data are collected through books, journals and websites etc. and these data may already pass through statistical process. Data analysis tools Chi square. Chi-Square is a statistical test commonly used to compare observed data with data we would expect to obtain based on a particular hypothesis. In this study we compare the basis for buying stocks and understanding of the economy by the investors. Mean analysis The mean is the average of the numbers given and is calculated by dividing the sum of the numbers given by the total number of respondents. In this study mean is used to measure the confidence level, about the risk tolerance and other factors affecting financial literacy. One-way ANOVA One-way ANOVA is used to determine is there any significant difference between means of three or more independent groups. In this study ANOVA is used to test the year of investment in stock market and barriers affecting stock market participation. Independent sample t-test The independence sample t-test is a statistical test to compare the means of two independent groups to determine if there is a significant difference between those groups. In this study t-test is applied to test the relationship between investment of income and gender. Percentage analysis A percentage analysis of distribution is a display of data that indicates the percentage of observations that exist for each data point or grouping of data points. It is a useful way of expressing the relative frequency of survey responses and other data. Pictorial representation Pictorial representation is a graphical or visual depiction of numerical data. It is by using simple bar chart, pie diagram etc.



DATA ANALYSIS

MEAN ANALYSIS

Table No. 1: Factors affecting financial literacy and profitmaking

Factors	To a great extent (3)	Somewhat (2)	Not at all (1)	Total	\bar{x}	Rank
Parents 'financial background	33	36	21	90	1.8	4
Wealth and income	75	26	8	109	2.18	3
Economic conditions	78	24	8	110	2.2	2
Mindset towards stock market	42	52	20	114	2.28	1

Source: Primary data

Interpretation

- Table No. 1 shows the extent to which the factors affecting financial literacy. Mindset towards stock market has the 1st rank, Economic conditions has 2nd rank, Wealth and income has the 3rd rank and parents financial background has 4th rank.
- A person's mind set or attitude towards stock market has an important factor that determines the profit-making capacity of an individual. Optimistic person can earn more in this field.
- The second factor that effect stock market is economic condition. If the economy has inflation it will affect the trading and standard of living of an individual.
- The third factor is wealth and income, through this we can understand that wealth and income have some sort of relation between persons profit making ability. Iseperson has less income can also able to make profit by investing some amount of money. That is start from some amount of money also can able to attain more profit.
- The fourth factor is parents financial background, there is no such relation between parent's financial background and earning capacity of the investor. If parents are rich or poor it doesn't affect trading. If a person has the skill and ability to trade can able to achieve better profit.

MEAN ANALYSIS

Table No. 2: About Risk Tolerance

Items	S A (5)	A (4)	N (3)	D (2)	SD (1)	Total	\bar{x}	Rank
Willing to face the consequences of losses for maximum returns	60	88	36	6	1	191	12.7	1
Very much concerned about losses along with returns	25	92	42	14	1	174	11.6	2
Person who completely avoid loss for more profit	15	52	48	22	7	144	9.6	3

Source: Primary data

Interpretation

Table No 2 shows the level of risk tolerance about the respondents. Here Mean analysis is used to know the risk tolerance of the respondents. The factor Willing to face the consequences of loss for maximum returns has the 1st rank (Mean 12.7), the factor very much concerned about losses along with returns got 2nd rank (Mean 11.6) and the factor person who completely avoid loss for more profit got 3rd rank (Mean 9.6). From this we can understand that many of the investors are willing to take risk for more return. They are ready to move according to the market fluctuations.



MEAN ANALYSIS

Table No 3: About confidence level

Items	SA (5)	A (4)	N (3)	D (2)	SD (1)	Total	\bar{x}	Rank
Experienced investor	20	52	21	30	11	134	2.68	3
More confident in self-researched investment options	100	64	15	16	1	199	3.98	1
Consult others for advice	95	64	18	14	2	193	3.86	2

Source: Primary data

Interpretation

Table no 3 shows the confidence level of the respondents. Here Mean analysis is used to know the confidence level of the respondents. The factor experienced investor has the 1st rank (Mean 3.98), the factor more confident in self-research investment options got 2nd rank (Mean 3.86) and the factor consult others for advice got 3rd rank (Mean 2.68). Most of the investors are beginners but they are confident of self-researched investment options. But they don't much experience and consult others for advice.

ANOVA

H₀: There is no relationship between year of investment in stock market and barriers of stock market participation

H₁: There is relationship between year of investment in stock market and barriers of stock market participation.

Table no 4: Year of investment in stock market and Barriers of stock market participation

	N	\bar{x}	SD	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
less than 1 year	26	2.2404	.68732	.13479	1.9628	2.5180	1.00	4.25
1-3 years	17	2.3333	.58926	.14292	2.0304	2.6363	1.50	3.50
3-5 years	7	1.7857	.76959	.29088	1.0740	2.4975	1.00	3.00
Total	50	2.2083	.67706	.09575	2.0159	2.4008	1.00	4.25

Source: Primary data



ANOVA TABLE

	Sum of squares	df	Mean Square	F	sig
Between groups	1.543	2	.771	1.733	0.188
Within groups	20.919	47	.445		
Total	22.462	49			

Source: Primary data

Interpretation

Higher the f-value (1.733) means lower the significant so accept the null hypothesis. The significant difference is 0.188 it is great than 0.05 so we can conclude that there is no significant relationship between year of investment in stock market and barriers of stock market participation. The mean values of the test are 2.2404, 2.3333 and 1.7857 there is slight deviation from total mean (2.2083).

T-TEST

H0: There is no significant relationship between investment of income and gender.

H1: There is significant relationship between investment of income and gender.

Table No. 5: Relation between investment of income and gender

Gender	N	Mean	SD	t value	P value	Remarks
Male	36	3.2917	.68007	2.944	0.093	Equal variance assumed
Female	14	3.1250	.45731			
Total	50	6.4167	1.1374			

Source: Primary data

Interpretation

From the table no. 5 it shows relation between investment of income and gender. As per the data the mean score of relation between investment of income and male is (3.2917) differing from female (3.1250) since the P value of the t test is more than 0.05, so accept the null hypothesis that there is no significant relationship between investment of income and gender.

CHI SQUARE

H0: There is no association between basis of buying stocks and understanding of the economy.

H1: There is association between basis of buying stocks and understanding of the economy.

Table no 6: Basis for buying stocks and understanding of the economy

Basis	Understanding of the economy			Total	Chi-Square	Sig
	Good	Fair	Poor			
Technical analysis	10	20	2	32	3.926 (df 2)	0.140
Technical analysis	12.8	16.6	2.6	32.0		
Fundamental analysis	10	6	2	18		
Fundamental analysis	7.2	9.4	1.4	18.0		

Source: Primary data

Interpretation

Table no 6, shows the association between basis of buying stocks and understanding of the economy with chi square value 3.926. The significant difference is 0.140 it is great than 0.05 so accept the null hypothesis is that there is no association between basis of buying stocks and understanding of the economy.

FINDINGS

- Males have more interest in stock market because male investors are more confident to take risk and face the consequences of risk.



- The age category of 20 to 30 are more which means most of the investors are youngsters. The main reason for the immense growth of young investors is they need more profit in short period.
- In the case of employment status private employees are more and students is also there. The education qualification is also one of the factors that influence on stock market participation.
- Majority of respondents are unmarried.
- There is an increasing trend of investors from non-business background.
- The period of starting their investment is less than 1 year, so the investors are beginners.
- Investors prefer intraday trading and swing trading. They are trying to minimize risk and maximize profit.
- Most of the respondents prefer discount brokers. Some investors don't need any advice from stock broker.
- Some (26%) prefer full service brokers, HDFC securities.
- In discount brokers increasing number of investors prefer Upstox.
- Most of the investors don't need any advice from stock brokers.
- Internet is considered to be the major source of information provided about listed companies and market fluctuations.
- Majority (more than 50%) of the respondents believe in diversification
- The investors took less than one week to recover from losses of investment.
- Investors will be spent less to overcome the expenses or losses.
- Majority (94%) has the opinion that high risk taker has the chance of high returns.
- The investors prefer more fluctuating investments (42%).
- There is gender gap existing among stock market participants (92%).
- Males are more active in stock market participation (84%).
- Investor mindset and attitude has a significant role in stock market participation. Mean value 2.28.
- The investors are ready to take risk for more return. Mean value 12.7.
- Investors are more confident in self-researched investment options. Mean value (3.98).
- There is no relationship between year of investment in stock market and barriers affecting stock market participation. F value is 1.733 and significant difference 0.1888.
- There is no relationship between investment of income and gender. T value is 2.944 and P value is 0.093.
- Basis of buying stocks and understanding of the economy has no relation. Significant difference is 0.140 and Chi square value 3.926.

CONCLUSION

The objective of the study is identified how financial literacy will influence on stock market participation and to know who is making more profit whether financial literate or not. It can be identified there is a great influence of financial literacy in stock market participation. Well financially educated persons are making more profit than others. There is also gender gap in stock market participation. And the study can able to get an idea about how to create an awareness about the importance of financial literacy among coming generation. Finance and financial management are so relevant area in all fields, not only the business background but also every fields like IT field, Engineering and other science fields. It is also found out that financial education is one of the important things that got relevance in day by day. Through this study we reach a conclusion that more are interested in the area of stock market, but lack of financial will reduce the stock market participation. SEBI should consider giving more classes.

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PARENTAL EDUCATION AND QUALITY OF LIFE AMONG HIGHER SECONDARY STUDENTS OF RURAL AND URBAN SEGMENT IN INDIA

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ABSTRACT

Background: World Health Organization (WHO) defines the quality of life as the perception of an individual of their position in life in the context of the value systems and culture in which they live and about their expectations, standards, goals, and concerns". This includes physical and mental health, employment, the environment, education, recreation and leisure time, social belonging, religious beliefs, safety, wealth, security, and freedom [1]. Various studies have shown the effect of parental education on quality of life [2, 3, and 4]. The importance of "parental education" and its effects on students' quality of life is not implemented, which remains a gap. So, in this comparative study, we examined the impact of parental education on the quality of life of secondary and senior secondary students in rural and urban India.

Aim, objective, methodology: The impact of parental education on quality of life of secondary and senior secondary students in rural and urban India. For this study, a well-structured Pre-tested was used and data is collected among secondary and senior secondary students of rural and urban Indian schools. Thereafter, the results were obtained by using Microsoft excel. Verbal and written consent was taken from participants involved in the study and another ethical clearance was taken from the ethical committee of the selected study area.

Results: The obtained results show parents' involvement is crucial for children's growth of children. And development.

KEYWORDS: Quality of life, Parental Education, Child, growth, development, mindful parenting.

INTRODUCTION

World Health Organization (WHO) defines the **quality of life as the perception of an individual of their position in life in the context of the value systems and culture in which they live and about their expectations, standards, goals, and concerns"**. Typical indicators of the quality of life include physical and mental health, employment, the environment, education, recreation and leisure time, social belonging, religious beliefs, safety, wealth, security, and freedom [1]. McCall defines the quality of life as a measure of wellbeing, up to which extent an individual has constraints for happiness [5]. So, higher quality of life requires much more than just basic needs. Parents with higher education levels invest in children for their better future possibilities [12]. Many types of research show the parental effect on the quality of life of children. Most often, it includes the influence of parental income and education on indicators such as child education and health [2, 3, 4]. In India, an Individual aged seven and above, who can both write and read with comprehension in any language, is treated as literate. An individual, who can only read but cannot write, is treated as illiterate [6]. It was seen that low income and low education can negatively affect the acting quality of life of children [7]. This comparative study assesses the impact of parental education on the quality of life of higher secondary students in rural and urban segments of India. This study aims at identifying the role of parent education in the development of the child in their various growth phases of life, also this study ensures that the possible outcome developed from the study may widely be used for mindful parenting.

REVIEW OF LITERATURE

Recent progress and the latest studies gave a deeper perspective of the problem at hand. A considerable literature has been reviewed highlighting a range of diverse aspects. It has been discovered in a study that there is a strong relationship between parental education level and child mental health [8]. A similar study was conducted in 7 different countries to find the impact of parents' education and financial security on the minds of children from ages 4 to 22 years. People from various backgrounds, ranging from those living in rural areas to those living in well-furnished houses in industrialized countries, were evaluated to further assess their children's talents by administering various mental and cognitive ability tests. It has been found that the impact of parental education on the quality of



the environment required for cognitive development lies behind the considerable effect of parental education on children's cognitive competency. However, behind this association may be hidden genetic effects, and environmental quality impacts may be concealed "extended phenotypic" effects, implying that environmental factors such as the number of books and the quality of the institution may reflect genetic influence [9]. There has only recently been an emphasis on teenagers' life satisfaction (LS) in the context of schooling, drawing light on the background of positive psychology. One similar study looked into the effect of parental education as a possible moderator of the relationship between academic achievement and LS in teenagers. Parent's educational attainment has been reported by a sample of German high school students as an indication of family socioeconomic status, and academic accomplishment operationalized by grade point average in five courses. Only mom's education served as a moderator of the association between academic achievement and students' LS, according to the findings. The link between academic achievement and LS has been discovered only in adolescents whose mothers had completed the same or higher level of education (at least high school diploma) [10]. In recent years, there has been a lot of study on the relationship between parental education and children's schooling. On average, children with better-educated parents have better-educated offspring. As a result, improved later-life outcomes including health, productivity, and wealth. [11]. Altogether the long-term effects of parenting in a particular way do affect the way a child thinks and grows with the type of parents s/he had and the way parents treated their child can predict how their future life is going to look like [12].

METHODOLOGY

1. **Aim:** To determine the impact of parental education on the quality of life of higher secondary students of rural and urban segments of India.
2. **Study area:** Majitha, Road, Amritsar and Sector 15-C, Chandigarh.
3. **Sample size:** randomly selected 110 individual from each study area, thus making it 220 samples.
4. **Study design:** Cross-sectional study.
5. **Methodology and tools of the study:** A well-structured and pre-tested questionnaire (Annexure 1) was used post the pilot testing to collect the data form the study area as mentioned above from the randomly selected group of the population including males and females belonging to the higher secondary age group.
6. **Results:** The obtained results were analysed by using Microsoft excel, were Some questions over quality of life of an individual were analysed based on Likert scale ("Likert scale" is a psychometric rating system scale, that is designed to measure people's opinions, attitudes, and perceptions in which responders specify their level of agreement or disagreement to a statement typically in five points: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree.), rest of the questions were dichotomous in nature with single response system. Later on the analysed data was presented in the form of Tables and graphs.
7. **Ethical clearance:** Verbal as well written consent was taken from participants involved in the study along with the ethical clearance was taken from the ethical committee of the selected study area. (Annexure 2)
8. **Exclusion criterion:** The participants unwilling, medically unfit, having known psychological condition were excluded from the study.

OBSERVATIONS AND RESULTS

A. Behavior of the children while discussing their problems and needs with their parents.

Table 1: Children can discuss the problems with their parents

Children can discuss the problem with their parents	
Yes	86%
No	14%

Observation: From the obtained data it was observed that, 86 % of children are outward with their parents regarding personal and sensitive problems whereas 14% of children were found shy to discuss problems with their parents.

B. Self-rating of the quality of life of an individual, explains about their present situation, in terms of spending time with their parents, having good parents support, can openly discuss problems with their parents ,as shown below in the table.

Table 2: Rating the Quality of life (as per Likert scale where 1 means very low quality and 5means very good quality of life)

Rating the quality of life	Interpretation of rank	Male	Female
1	Very good	1%	2%
2	Good	7%	3%
3	Fair	9%	9%
4	Poor	25%	23%
5	Very poor	13%	7%



Observation: From the obtained results it was found that 13% males and 7% females reported very good quality of life, 25% males and 23% females reported good quality of life, 9% males and 9% females reported fair quality of life, 7% males and 3% females reported poor quality of life, 1%, and 2% females reported very poor quality of life.

C. The relationship of the child with their parents play a vital role in their growth and development and the below mentioned data table address the same.

Table 3: Relationship of Children with father and mother	Table 4: Relationship of Children with Mother																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Relationship with father</th> <th style="width: 35%;">Male</th> <th style="width: 35%;">Female</th> </tr> </thead> <tbody> <tr> <td>Good</td> <td style="text-align: center;">41%</td> <td style="text-align: center;">23%</td> </tr> <tr> <td>Average</td> <td style="text-align: center;">7%</td> <td style="text-align: center;">15%</td> </tr> <tr> <td>Bad</td> <td style="text-align: center;">8%</td> <td style="text-align: center;">6%</td> </tr> </tbody> </table> <p>Observation: 41% of males and 23% of females reported a good relationship with their parents whereas 8% of males and 6% of females reported bad relationships with their father. 7% males and 15% females reported average relationships with their parents.</p>	Relationship with father	Male	Female	Good	41%	23%	Average	7%	15%	Bad	8%	6%	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Relationship with father</th> <th style="width: 35%;">Male</th> <th style="width: 35%;">Female</th> </tr> </thead> <tbody> <tr> <td>Good</td> <td style="text-align: center;">33%</td> <td style="text-align: center;">24%</td> </tr> <tr> <td>Average</td> <td style="text-align: center;">17%</td> <td style="text-align: center;">15%</td> </tr> <tr> <td>Bad</td> <td style="text-align: center;">5%</td> <td style="text-align: center;">6%</td> </tr> </tbody> </table> <p>Observation: 33% males and 24% females reported good relations with their parents whereas 5% males and 6% of females reported bad relationships with their father. 17% males and 15% females reported average relationships with their parents.</p>	Relationship with father	Male	Female	Good	33%	24%	Average	17%	15%	Bad	5%	6%
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Average	17%	15%																							
Bad	5%	6%																							

D. The parent and child bond may be understood in the different section of our country by simply understanding the like of child, to spend time with either of their parents.(as show below in this table)

Table 5: Children liking spending time with either of the parents

Children like spending time with either of their parents	
Urban	68%
Rural	75%

Observation: 68% of children belong to an urban area like spending time with either of parents where 75% of children belongs to a rural area like to spend time with either of their parents.

E. The other means of understanding the child quality, is by understanding the involvement of parent in various activities of the child, as shown in the data below:

Table 6: Interest of Parents in various activities of children

The interest of Parents in various activities of children	
Urban	57%
Rural	61%

Observation: In urban areas, 57% of parents take interest in various activities of their children like spending time whereas 61% in rural areas.

F. The parental education plays a major role in holistic development of the child , thus the below table represent the effect of the parental education on the quality of life of child

Table 7: Effect of parental education on quality of life of Children

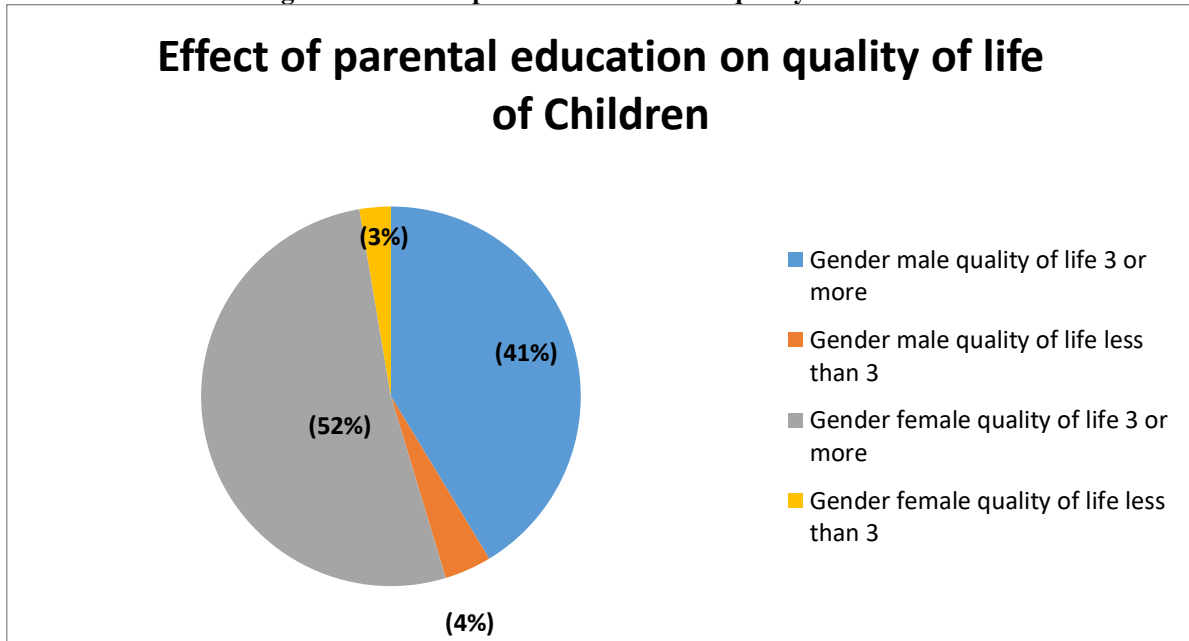
(As per the Likert Scale from a range of 1 to 5, were 1 to 2 is bad Quality and 3 to 5 is Good Quality)

Effect of parental education on quality of life of Children				
Parental education	Gender			
	Male quality of life		Female quality of life	
	3 or more	less than 3	3 or more	less than 3
Educated	62%	6%	78%	4%
Illiterate	27%	5%	14%	4%



Observation: 62% males and 78% female children of educated parents reported good quality of life whereas 6% males and 4% females reported bad quality of life. 27% males and 14% female children of illiterate parents reported good quality of life whereas 5% males and 4% females reported bad quality of life.

Figure 1: Effect of parental education on quality of children.



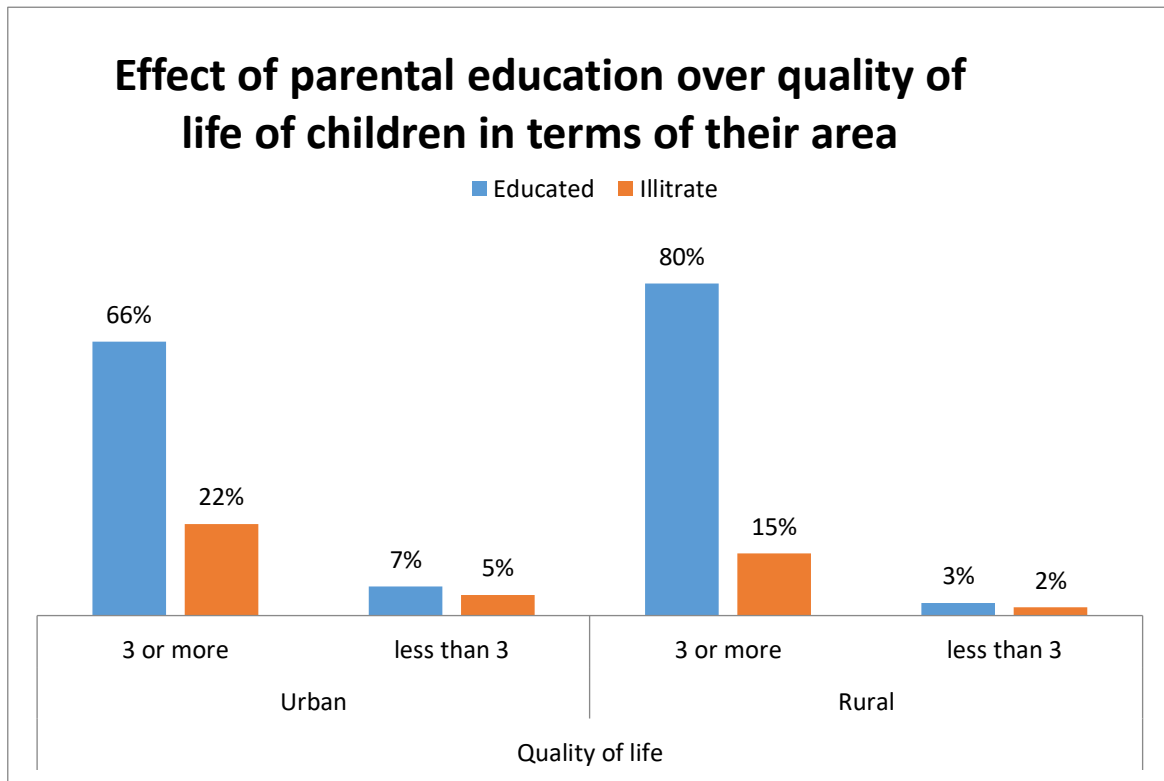
Observation: 41% male 52% females reported good quality of life with the educated parents, whereas 4% males and 3% females reported poor quality of life with educated parents.

Table 8: Effect of parental education over the quality of life of children in terms of their area (As per the Likert Scale from a range of 1 to 5, were the representation of scores are as follow: 1- very poor quality, 2- Poor Quality, 3- Fair quality, 4- Good Quality and 5- Excellent Quality.)

Effect of parental education over the quality of life of children in terms of their area				
Parental Education	Quality of life			
	Urban		Rural	
	3 or more	less than 3	3 or more	less than 3
Educated	66%	7%	80%	3%
Illiterate	22%	5%	15%	2%



Figure 2: Effect of parental education over the quality of life of children in terms of their area



Observation: In urban areas, 66% of educated parents' children reported good quality of life whereas, 7% reported bad quality of life; 22% of illiterate parent's children reported good quality of life whereas 5% reported bad quality of life. In a rural area, 80% of educated parents' children reported good quality of life whereas, 3% reported bad quality of life; 15% illiterate parents' children reported good quality of life whereas 2% reported bad quality of life.

CONCLUSION

Quality of life depends upon the art of living of any child, but it was also proven from our study that the parental education is one of the most impactful indicator that affects the life quality. The education of parents are not in just a mere terms of their personal growth, but rather their educated involvement in the life's of their child and guiding them a right pathway. Apart from the parent education the involvement of child in their routine work, their attachment with their parents and their non-hesitance, also impart a major role in their development and enhance their decision making skills.

Key recommendations

The study recommends the following:

1. The parents needs to understand the needs of child and give them freedom over their decisions.
2. There is a need of some training and skills development in terms of mindful parenting among parents of the rural as well as urban section of our society.
3. The education of the parents and child plays a major role in their own personal growth as well as maintaining the healthy and harmonious relationship with each other.
4. The undue financial as well as familial burdens over the children should be avoided and they should be made free to choose their career pathway.

DISCUSSION

World Health Organization (WHO) defines the quality of life as the perception of an individual of their position in life in the context of the value systems and culture in which they live and about their expectations, standards, goals, and concerns". Typical indicators of the quality of life include physical and mental health, employment, the environment, education, recreation and leisure time, social belonging, religious beliefs, safety, wealth, security, and freedom [1]. So, higher quality of life requires much more than just basic needs. Many types of research show the parental effect on the quality of life of children. It has been discovered in a study that there is a strong relationship between parental education level and child mental health [8]. In recent years, there has been a lot of study on the relationship between parental education and children's schooling. On average, children with better-educated parents have better-educated offspring. A relationship between parental education and children's schooling has enormous policy consequences.



Increasing education today would result in increased schooling for the next generation and, as a result, improved later-life outcomes including health, productivity, and wealth. There is solid evidence that fathers' education has a greater impact than mothers' education; one explanation is that higher educated moms work more in paid jobs and spend less time with their children [11]. Altogether the long-term effects of parenting in a particular way do affect the way a child thinks and grows and the type of parents s/he had and the way parents treated their child can predict how their future life is going to look like [12].

Apart from these studies, the present study aims to assess the impact of parental education on the quality of life of secondary and senior secondary students in rural and urban India. For this study purpose, we formed a questionnaire, and pre-testing was done on a small sample of the population. After that, data was collected randomly from secondary and senior secondary students of rural and urban Indian schools. The questionnaire consists of 26 questions divided into three sections which were categorized as participant consent, demographic details, and questions related to parental education and quality of life. The obtained results were obtained by using Microsoft excel. Verbal and written consent was taken from participants involved in the study and another ethical clearance was taken from the ethical committee of the selected study area.

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CUSTOMER SATISFACTION TOWARDS ONLINE CAB BOOKING WITH SPECIAL REFERENCE TO COIMBATORE CITY

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ABSTRACT

The investigation into Coimbatore taxi service providers' client satisfaction and service quality. Every day, a customer's first search for transportation to their place of employment or other essentials is for a taxi or cab. A taxi or cab is a vehicle used to provide transportation services with a driver from one location to another. Every service provider's company depends on its customers. When the first party (the business), is always content and successful in their partnership and survives, there are two parties involved. Customer is defined as "a particular kind of person with whom one must deal." For the research analysis, a descriptive study of convenient sampling is used. Anova, factor analysis, and the Cronbach's Alpha reliability test are examples of statistical tools. One of the quick-moving cab services that can be booked through mobile apps and has excellent client satisfaction is Ola, which is followed by Red Taxi. Ola provides its customers in the city of Coimbatore with a great balance between first-rate customer care and high-quality cabs.

KEYWORDS: Taxi, Transportation, Employment

INTRODUCTION

Urban transportation infrastructure has seen significant alterations over the last ten years. The use of taxis has grown in importance among the many modes of transportation in India's urban and metropolitan areas. With the aid of technology, the organized automobile rental market is constantly expanding. The pricing strategy of cab operators has been positively influencing customers to book a cab instead of traditional modes of transportation like autos and local buses etc. In the modern era, customers use mobile apps to book a cab at any time and from one location in urban areas. Like most industries, the car rental industries have undergone significant transformation with internet technology. Customers can reserve cabs at reasonable prices. Pricing as a result of intense rivalry between the early cab drivers. Call taxis are a service available in several Indian cities. They are treated as tourist vehicles for hire in some cities while operating under a conventional taxi authorization in others. They frequently provide services throughout the entire day. The Water Vehicles Act does not formally recognize call taxi services. They are suggested because they are thought to be more dependable, convenient, and safe than regular taxis or auto rickshaws. In Mumbai, regular taxi cabs can be reserved over the phone or online. A call taxi is a specific kind of hired car with a driver that a single person or a small group of people uses for pricing as a result of intense rivalry between the early cab drivers. The services in a private journey are call taxis. In marketing concepts, the word "customer satisfaction" is frequently employed.

STATEMENT OF THE PROBLEM

There are several call taxis in Coimbatore, but they are up against stiff competition in the modern market. Customers can choose any taxi service today, but the most essential thing is that they like the service that is provided. Customers' expectations and levels of satisfaction should be given more thought in order to retain a brand. Therefore, it is now necessary to determine the degree of consumer satisfaction with taxis and to understand why individuals favour them.

SCOPE OF THE STUDY

This study is useful in determining the variables influencing client satisfaction with the city of Coimbatore's taxi services. It focuses on the resonance's perception of cab services. Research is also useful in determining how satisfied various members of Indian society, particularly those in Coimbatore city, are with taxi services.



OBJECTIVES OF STUDY

- To analyses the customer satisfaction towards cabs in Coimbatore city.
- To study the factors which influence people to use cabs in Coimbatore City.
- To ascertain the customer view towards the driver behavior.
- To know the problem faced by customers while using cabs in Coimbatore city.

LIMITATION OF STUDY

- This study is carried out only in Coimbatore City.
- Findings of the study are purely depending on the responses provided by the respondents.
- The sample size taken for the study is limited only to 150 respondents.

DATA ANALYSIS AND INTERPRETATION

The data collected from the samples have systematically applied and presented in the tables under various headings in the following pages. They were also arranged in such a way that, a detailed analysis can; be made so as to present suitable interpretation for the same. The data have been analyzed using the following statistical tools.

- Percentage analysis.

PERCENTAGE ANALYSIS

The primary purpose of the percentage analysis is to identify the proportion of respondents in the sample that fall into each category. Additionally, it serves as a benchmark for comparisons. The distribution of respondents' responses reveals the number of frequencies in different classes, which aids in providing a general understanding of the study's aims. Percentage values are produced to allow for complete findings interpretation.

ITERPRRETATION

The table shows that out of 120 respondents, 55% of the respondents are aware of Ola cabs, 15%of the respondents are aware of Uber cabs taxi, 21% of the respondents are using Red taxi, and 9% of the respondents are using Fast track.

S.NO	BOOKING THROUGH	NO.OF. RESPONDENTS	PERCENTAGE
1	Customer Care	18	15
2	Taxi company Website	12	10
3	Taxi app	82	67
4	Others	10	8
	Total	120	100

ITERPRRETATION

The table shows that out of 120 respondents, 45% of the respondents are average journey time are less than 1 hours, 43% of the respondent's average journey time are 1 to 2 hours, 6% of the respondent's average journey time are 2 to 3 hours, 6% of the respondents average journey time are more than 3 hours.

S.NO	Purpose of using taxi series	No. of Respondents	Percentage
1	Personal travel	62	51
2	Professional travel	17	14
3	Both	43	35
	Total	120	100

INTERPRETATION

The table shows that out of 120 respondents 54% of the respondents said Ola, 16% of the respondents said Uber, 21% of the respondents said Red, 9% of the respondents said Fast track.



S. No	Mostly prefer to ride in	No. of respondents	Percentage
1	Micro	25	20
2	Mini	33	27
3	Prime	40	33
4	Share	17	14
5	Rentals	3	3
6	Outstation	4	3
	Total	120	100

FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

- Majority 55% of the respondents are aware of Ola taxi.
- Majority 45% of the Respondents average journey time are less than 1 hours.
- Majority 54% of the respondents are said Ola.

SUGGESTIONS

Respondents provided their insightful views in the survey. The list of proposed comments provided by responders is provided below.

- For the sake of discipline and safety, the service providers may use audio recording technology. may allow for heart rate monitoring or motion sensors, which wouldn't necessarily invade a passenger's privacy but would still offer security in dire circumstances.
- May Taxis can avoid charging high rates for brief rides and can prevent overcharging at peak hours.
- Cab companies should increase automobile availability in remote areas and enhance customer service.
- The driver needs to be more responsible when transporting the passengers.
- Every driver ought to respect women and take extra care around children and women. Thus, a female driver should be assigned. When travelling at night, pay more attention to security and give women special respect.
- While riding in cabs, passengers should have the opportunity to remotely turn off the engine in an emergency.
- Continually offer your services at the same price, even during strong downpours.

CONCLUSION

Overall, taxi companies do a great job of offering high-quality service to tourists. Customers who use taxis are continually changing their attitudes and anticipating many more benefits in the future. According to a poll on the taxi sector, Indian society is experiencing a slow decline in revenue. In Coimbatore, half of the passengers are willing to use cabs rather than the public transportation system, and they do not take into account the cost of cab services. Every firm always prioritises its customers. To raise revenue for this market, taxi companies must compete and adopt to supply numerous cutting-edge amenities for clients.

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Bahirparimarjana Chikitsa: A COMPREHENSIVE REVIEW OF EXTERNAL THERAPIES IN Ayurveda

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ABSTRACT

Ayurveda is a system of medicine which is both a philosophy and science. Scientific validity of Ayurveda is evident with the logical justification for its therapies and its applications. To achieve the preventive and curative purpose of Ayurveda, the role and utility of Bahirparimarjana chikitsaas number of therapies has been mentioned in text. Topical route of administration deliver drugs almost directly to the site of action, the risk of systemic side effects are reduced. Bahirparimarjana chikitsa are widely perceived many procedures which are helpful in treating a number of chronic diseases. In this article, an attempt is being made to explore in dept conceptual as well as applies aspects of Bahirparimarjana chikitsa.

KEY WORDS : Bahirparimarjana chikitsa.

INTRODUCTION

- याभिःक्रियाभिर्जायन्ते शरीरे धातवः समाः।
सा चिकित्सा विकाराणां कर्म तद्धिषजां स्मृतम्।(Cha.su.16/34)
- A process which expels the vitiated doshas and bring back to the normalcy.
- त्रिविधमौषधमिति-दैवव्यपाश्रयं, युक्तिव्यपाश्रयं, सत्त्वावजयश्च। तत्रदैवव्यपाश्रयं- मन्त्रौषधिमणिमङ्गलबल्युपहारहोमनियमप्रायश्चित्तोपवासस्वस्त्ययनप्रणिपातगमनादि, युक्तिव्यपाश्रयं- पुनराहारौषधद्रव्याणांयोजना, सत्त्वावजयः- पुनरहितेभ्योऽर्थेभ्योनोनिग्रहः॥५४॥ (चसू॥1/54)
- 1. दैवव्यपाश्रयं
- 2. युक्तिव्यपाश्रयं
- 3. सत्त्वावजय

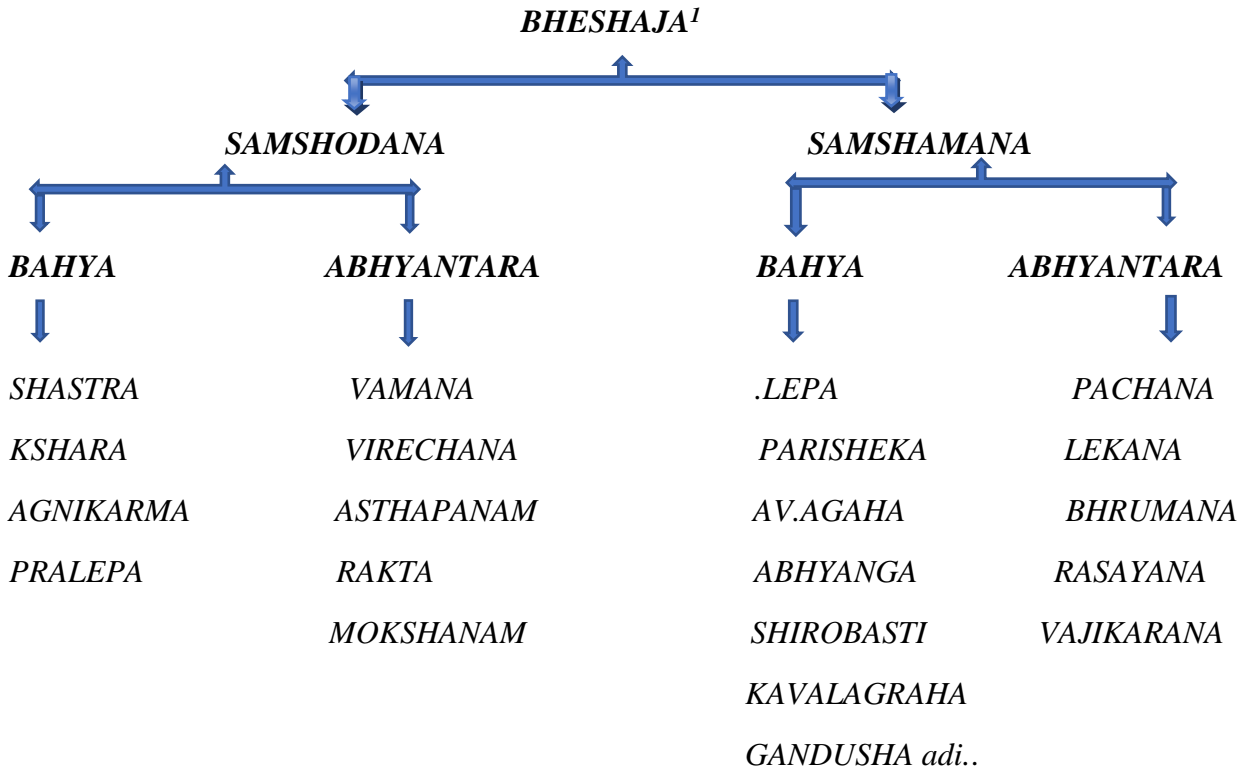
शरीरदोषप्रकोपेखलुशरीरमेवाश्रित्यप्रायश्चित्तत्रिविधमौषधमिच्छन्ति-

अन्तःपरिमार्जनं, बहिःपरिमार्जनं, शस्त्रप्रणिधानंचेति। तत्रान्तःपरिमार्जनंयदन्तःशरीरमनुप्रविश्यौषधमाहारजातव्याधीन्प्रमार्ष्टि, यत्पुनर्बहिःस्पर्शमाश्रित्याभ्यङ्गस्वेदप्रदेहपरिषेकोन्मर्दनाद्यैरामयान्प्रमार्ष्टितद्बहिःपरिमार्जनं, शस्त्रप्रणिधानंपुनश्छेदनभेदनव्यधनदारणलेखनोत्पाटनप्रच्छनसीवनैषणक्षारजलौकसश्चेति। चसू (11/55)

तेषांसंशोधनसंशमनाहाराचाराःसम्यक्प्रयुक्तानिग्रहेतवः। सु.सू.1/27

सम्यक्शोधयतीतिसंशोधनं; तद्विधिविधं बहिराश्रयमभ्यन्तराश्रयंच। तत्रबहिराश्रयंशस्त्रक्षाराग्निप्रलेपादयः; अभ्यन्तराश्रयंचतुष्प्रकारं- वमनं, विरेचनम्, आस्थापनं, शोणितमोक्षणं,

नशोधयतियदोषान्समानोदीरयत्यपि। समीकरोतिक्रुद्धांश्चतत्संशमनमुच्यते”- इति। तदपिद्विविधंवाह्यमाभ्यन्तरंच। तत्रबाह्यमालेपपरिषेकावगाहाभ्यङ्गाशिरोवस्तिकवलग्रहणडूषादिकम्, आभ्यन्तरंतुपाचनलेखनबृंहणरसायनवाजीकरणविषप्रशमनादिकम्। Dalhana on सु.सू.1/27

**BAHIRPARIMARJANA CHIKITSA**

Route of administration is the way by which the drug are taken into the body. Route of administration are basically classifies according to the target effect of drugs such as effect is local or systemic. In local route of administration drugs / therapies are applied to the body surface like, skin or mucous membranes. Local application prevent the metabolism of drug and increases the bioavailability also provides its effects directly on site of action.

DEFINITION

- बाह्यतः शुधिकरं भेषजम्।
- The external purification by topical application of medicines is called *bahiparimarjana chikitsa*.
- यत्पुनर्बहिः स्पर्शमाश्रित्याभ्यङ्गस्वेदप्रदेहपरिषेकोन्मर्दनाद्यैरायन् प्रमार्ष्टि तद्वहिः परिमार्जनं, (च.सू. 11/55)
- तत्बाह्यतः अभ्यागंस्वेदप्रदेहपरिसेकउपमर्दनादिभिः। (अ.स.सु. १२/५)
- The main area of *Bahirparimarjana chikitsa* includes *twacha* and the treatment level of action and absorption takes place through *twacha* itself, *Bahirparimarjana chikitsa* plays an important role in treating various disease conditions. it becomes an most prescribed *chikitsa* in clinical practice.

FACTORS TO BE CONSIDERED IN SELECTING BAHIRPARIMARJANA CHIKITSA

- *Dosha*
- *Ama*
- *Vaya*
- *Vyadhi*
- *Bala*
- *Rutu*

BAHIRPARIMARJANA AS PER DOSHOPAKRAMA

1) *Vatasya upakrama*² : *Abhyanga, Mardana, Swedana, Vesthana*

2) *Pittasya upakrama*³ : *Karpooora, chandana, usheera lepana, Sheetambu dhara*



3) *Kaphasya upakrama*⁴: *Rooksha unmardhana*

BAHIR PARIMARJANA IN DHATU PRADOOSHANA

- *Rasa dhatu*: *Abhyanga, Alepa, Parisheka, Avagaha*
- *Rakta dhatu*⁵: *Alepa, Abhyanga, Seka, Upanaha*
- *Mamsa dhatu*⁶: *Kshara karma, Agnikarma, shashtika shali pinda sweda.*
- *Meda Dhatu*⁷: *Sthoulya: Ruksha Udvartana*
Krishna: Abhyanga, Utsadana.

BAHIR PARIMARJANA IN SHADVIDHA UPAKRAMA

- *Brimhana* – *Ahashtika shali pinda sweda, Abhyanga, Kukkutanda sweda....*
- *Snehana* – *Abhyanga, Murdnitaila...*
- *Sthambana* – *Sheetala pariseka..*
- *Swedana* – *Nadi sweda, Bashpa sweda, Valuka sweda, Upanaha...*
- *Rukshana* – *Udvartana, Valuka sweda.*

BAHIRPARIMARJANA AS DINACHARYA⁸

- *Danta dhavana, Muhka prakshalana, Netra dhavana, Jihvanirlekhana, Anjana, Abhyanga, Murdni taila, Karna purana [cs], Udvartana, Snana, Gandusha, Kavala etc*

RUTUANUSARA BAHIRPARIMARJANA⁹

1) *Hemanta rutu* (winter season) & 2) *Shishira rutu* (dewy season)

In *Hemanta rutu Pitta* will get suside and there will be *Kapha sanchaya* in *Shishira rutu*. And *Acharyas* have mentioned *Abhyanga, Utsadana, Murdhni taila, Jentaka sweda, Atapa sweda, Ushnagruha nivasa, agaru lepa* to be fallowed.

3) *Vasantha rutu* (spring season)

In *Vasantha rutu* there will be *Kapha prakopa* to maintain its normalcy one can fallow *Udvarthana, Kavalagraha, Anjana, Chandana, agaru lepa Sukoshna jala snana.*

4) *Greeshma rutu* (Summerseason)

Greeshma is the *kala of Vata Sanchaya* and *Kapha prasara* during this time *Mukta mani dharan* and *Chandana lepa* are advised.

5) *Varsha rutu* (Rainy season)

Pitta sanchaya and *Vata prakopa* takes place in *Varsha rutu* during this time *Pragharshana, Pragharshana, Udvartana, Chandanadi sugandhita dravya prayoga* are fallowed.

6) *Sharadrutu* (Autumn season)

During this *kala Pitta prakopa* wil takes place to mitigate that *Pittasya upakramas* are fallowed.

APPLICATION OF BAHIRPARIMARJANA IN VARIOUS CONDITIONS

KUSHTA

- *Kusta* is a *kleda pradana, bahudoshaja, deergha roga*. As *kusta* is a disease of *Bahya rogamarga* manifesting at *twak* as *vyakta sthana*, there is a need for *Bahir mala shodhanawhich* can be achieved by adopting *Bahirparimarjana chikitsa* such as *Lepa, Udvartana, Avachurnana*¹⁰, *Swedana..*

PRAMEHA¹¹

- *Prameha* is *Apatya nimittaja* and *kleda pradana vyadhi*, hences *odhana* is line of treatment but due to the involvement of *burishlema, rukshana* as *purva karma* is necessary.
- व्यायामयोगैर्विधिः प्रगाढैरुद्धतैः स्नानजलावसेकैः | सेव्यत्वगोलागुरुचन्दनाद्यैर्विलेपनैश्चाशुन सन्ति मेहाः ||५०|| (Ch.chi.6/50)
- While explaining *bahya upachara* in *prameha* *Acharya charakah* highlighted *Pragada Udvartana, Pariseka.*

AMAVATA

- Inflammation in affected joints, to overcome these symptoms topical applications like *lepa* are explained. And the line of treatment of *amavata* emphasizes on *langhana, deepana, pachana, swedana.*



- यथा प्रवज्वलिते वेश्मन्यम्भसा परिषेचनम् |
क्षिप्रं प्रशमयत्यग्निमेवमालेपनं रुजः ||१५|| su.chi.1/15
- Among these concepts for *Amapachanartha lepa chikitsa* is administered.
- Ex- *agnilepa* is administered for the *amapachanarta*¹².
- As *swedana* is also line of treatment for *amavata*.
- Ex- for *swedanartha dhanyaamla kayaseka, Valuka sweda, Karshu Sweda* are adopted.

SANDHIGATA VATA¹³

स्नेहोपनाहाग्निर्मबन्धनोन्मर्दानिच |

स्नायुसन्ध्यस्थिसम्प्राप्तेकुर्याद्वायावतन्द्रितः||८||

- *Acharya Sushruta* describes *bahirparimarjana* like *snehana, upanaha, agnikarma, bandana, unmardana aschikitsa* when *vata* is localised in *snayu, sandhi, asthi* (su.chi 4/8)
- In *sandigata vata* most of *sthanika bahirparimarjana chikitsa* are adopted among them *Upanaha* is one of widely practised procedure.
- **UPANAHA-**
Snigdhaupanaha - in *dhathu kshayajanya*.
Rukshaupanaha is done *avaranajanya*.

VATAKANTAKA

- *Acharya Sushruta* in the context of *Vatavyadhi* explained *vatakantaka*.
- *Rooksha sweda* is specially indicated for *vatakaphaja* and *kaphaja* disorders.
- *Pariseka* with *Gomutra, ksharodaka* and *Lepa* with *Tila* and *Ashwagandha kalka*¹⁴.
- Ex - *Istika Sweda* is a type of *rooksha Sweda*, which helps in relieving symptoms, like *kriyahaani, vedana*. It also subsides *kapha dosha*.
- *Dashamoola kashaya* is having properties like *vatahara, shothahara, svayathu hara* and can also be used as *parisheka*, helps in subsiding *vataadi tridosha* as it is *vedanahara, shophahara*.
- *Agnikarma*

BAHIRPARIMARJANA IN COSMETICS

- *Seka*
- *Abhyanga*
- *Lepa*
- *Udvartha*

BAHIRPARIMARJANA IN MANOVIKARA

- *Murdni tailas*
- *Anjana*
- *Utsadana*
- *Gomutra snana*
- *Samvahana*

POSTPARTUM SKIN CARE

Kikkisa

- *Lepa* : *Chandana, ushira, Kamala nala Shirisha, Dhataki, Yastimadhu* ¹⁵
- *Seka* : *Patola, Nimba, Manjistha* ¹⁶

MODE OF ACTION

- तिर्यंगाः सम्प्रवक्ष्यामि कर्म चासां यथायथम् ||८||

तिर्यंगाणां तु चतसृणां धमनीनामेकैका शतधा सहस्रधा चोत्तरोत्तरं विभज्यन्ते, तास्त्वसङ्ख्येयाः, ताभिरिदं शरीरं गवाक्षितं विबद्धमाततं च, तासां मुखानि रोमकूपप्रतिबद्धानि, यैः स्वेदमभिवहन्ति रसं चाभितर्पयन्त्यन्तर्बहिश्च, तैव चाभ्यङ्गपरिषेकावगाहालेपनवीर्याण्यन्तःशरीरमभिप्रतिपद्यन्ते त्वचि विपक्वानि, तैरेव च स्पर्शं सुखमसुखं वा गृह्णीते, तास्त्वेताश्चतस्रो धमन्यः सर्वाङ्गगताः सविभागा व्याख्याताः ||९|| (Su.sha.9/8-9)



- In *dhamani vyakarana adhyaya sushurta* explains *dhamanis* which are *urdvaga*, *adoga* and *tiryakga*. Here *acharya* explains four *tiryakgami siras*. out of these, each divides gradually into 100 and 1000 times and thus become innumerable, by these the body is covered like network, these are knit together broadly, their openings (pores) are attached to the *romakupa*, which carry *sweda* and replenish *rasa* inside and outside body and through the *veerya* of the *dravyas* used in the form of *Abyanga*, *pariseka*, *lepa*, which absorbs in skin and enters inside the body after undergoing *paaka* by *Brajaka pitta* in *twacha* it produces desired therapeutic effect.¹⁷

IMPORTANCE

- Bahirparimarjana chikitsa can be applied in any condition such as Doshha, Vaya, Bala, Rutu etc.
- Through the Bahirparimarjana chikitsa we can transfer the gunas of different dravyas to deeper dhatus.
- Ofcourse Shodhana is prime, in some conditions like in bed ridden patients we can't do shodhana, here bahirparimarjana is effective.
- Bahirparimarjana is applicable from minor disease to major diseases.

DISCUSSION

- आस्यादामाशयस्थान् हि रोगान् नस्तःशिरोगतान्
गुदात् पक्वाशयस्थांश्च हन्याशुदत्तमौषधम्||२९४||
शरीरावयवोत्थेषु विसर्पिडकादिषु
यथादेशं प्रदेहादि शमनं स्याद्विशेषतः|| (Cha.chi 30/295)
- The mode of administration of *aushadhi* plays vital role in easy elimination of *doshas*.
- In *Charaka samhita* also it is mentioned that the administration of drug through oral route cures the diseases of *Amashaya*, through *nasa* cures *Shiroroga* and in diseases of *pakvashaya* origin, route of administration should be *guda* and for the cure of diseases which are located in various parts of body like *visarpa* and *pidakadi*, *bahirparimarjana chikitsa* like *pradeha*, *pariseka*, *upanaha* has to be performed.
- *Chakrapani* comments that based on the *sharira avayava* in relation to the *vyadhi chikitsa* can be done.¹⁸

CONCLUSION

- Bahirparimarjana chikitsa can be preventive, promotive and curative.
- And plays a major role as purva karma, pradhana karma and paschat karma.
- Bahirparimarjana chikitsa can relieve the symptoms like in amavata shoola, shotha and stabdata.
- Along with Bahirparimarjana chikitsa antaparimarjana chikitsa is essential but diseases with less chronicity and less severity Bahirparimarjana chikitsa is more beneficial.
- Both types of chikitsa beneficial, in Sharirika and Manasikavyadhis and for manasika vyadhis along with these Daivavyapashraya and Satvavajaya chikitsa are beneficial.

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EMPLOYEE'S ATTITUDE TOWARDS QUALITY OF WORK LIFE

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ABSTRACT

Life is a mixture which contains all the strands together. A person should have both love and work in life to make it more happy and healthy. Work is an important part of everyone's day to day life. In a day, on an average everyone spent at least eight to ten hours for work which is a part of our entire life. Human values were given inadequate attention by traditional management. Earlier it was like the employees were used for physical and material needs. The aspect of "QWL" was first introduced by Davis in 1970's. In 1972 the first International Conference on QWL was held at Toronto. The concept was introduced for reducing employee turnover and employee well being on the services offered by them. Quality of work life refers to the level of satisfaction or dissatisfaction of a job environment for the employees working in an organization. The study attempted to enumerate the satisfaction level of the employees in their current job environment at Apollo. With this information Apollo can strengthen the factors which provide better QWL. In short, the study helped the company to make the work place a pleasant and highly motivating one for employees.

KEYWORDS: QWL, Employee attitude, Employee satisfaction, Motivation, Organisation

INTRODUCTION

Humans are considered as the assets of an organization. Human resources play a very crucial role in success of every business organizations. Thus managing the human resource is the most important aspect of every organization. Among all the factors that lead to the management of the human resources, QWL is considered one of the important aspects. Quality of Work Life is basically a multidimensional idea and a manner of thinking rationally about humans and work structure and relations. (Hsu and Kernohan, 2006; Haas 1999). Organizations have to maintain skilled employees in order to sustain in the competitive market. Employees must be treated as an asset and not as a liability to the organization. It is possible only through the civilized job design process, known as Quality of Work Life.

Quality of work life is a belief, a set of principles, which holds that humans are the most important resource of the organization as they are reliable, responsible and have the ability of making valuable contribution and the employees should be treated with majesty and respect. Quality of work life ensures high productivity and greater job satisfaction by creating a culture of commitment towards work. Earlier, QWL concept was used only for the process of redesigning jobs, but nowadays the concept has changed by considering large interventions. Quality of work life refers to the level of satisfaction or dissatisfaction of a job environment for the employees working in an organization. QWL gives opportunities for the employees in decision making process. An organization should maintain high quality of work life in order to attract and retain employees. By improving the QWL, it will increase the level of satisfaction of employees which will result in various benefits for both employees and employers. Regular efforts are required by the organization which offer the employees more opportunities for their job effectiveness and overall effectiveness in order to achieve the Quality of Work Life.

Quality of work life (QWL) deal with employee dedication, self esteem and skills during a period of phase out, organization and rapid technological change acknowledging the achievement of missions and goals requiring high performing employees to address work life balance. The aspect "Quality of Work Life" was first introduced by Louis Davis in 1970's. In 1972 the first International Conference on QWL was held at Toronto. The concept was introduced for reducing employee turnover and employee well being on the services offered by them. The contribution of Maslow, Herzberg and McGregor in improving QWL cannot be compromised. Employees are regarded as the soft and precious things of an organization (Daud 2010). Many factors will influence the management of human resources. QWL ensures high productivity and greater job satisfaction by creating a culture of commitment towards work. Earlier, an idea about QWL was used only for the process of redesigning jobs, but nowadays the concept has changed by considering huge involvements. Work is an integral part of our daily life, be it our livelihood or career or business. On an average we spend



around twelve hours daily in the work place which is one third of our entire life; it does influence the overall quality of our life. This study covered the overall quality of work life of employees, i.e., their job satisfaction, work environment, working hours, work stress, their relation with their colleagues, work assignments, infrastructure provided etc.

REVIEW OF LITERATURE

Sathyanarayan and Somaseshakarappa (2006) identify the job related dimensions of quality of work life viz., job challenge and meaning, job security and monetary were not significantly contributing to enhance organizational effectiveness in a private sector organizations whereas they do have a significant influence on organizational effectiveness in a public sector organization. They conclude that there was no significant difference between a public sector and a private sector in terms of QWL and organizational effectiveness.

Saraji and Daraghi (2006) in his study on “Study of quality of work life” state that in order to make continue and attract and retain employees a high quality of work life is essential for the organizations. The research aimed at providing awareness to employees about quality of work life on the positive and negative attitudes of Tehran University of Medical Sciences (TUMS) Hospitals. A cross-sectional, descriptive and analytical study was conducted among 98 employees by using questionnaire at 15 studied hospitals. To select nursing, supportive and paramedical groups as respondents a stratified random sampling technique was used. The research results showed that most of the employees were dissatisfied with the job environment, managers, safe and healthy working conditions and their work life balance. In this survey conducted the employees of TUMS hospital had a poor quality of work life.

Joshi, J. Rama (2007) in an article, “Quality of Work Life of Women Workers: Role of Trade Unions” discussed the quality of work life of women employees in the services and manufacturing (public) sectors in India. The study found that the level of satisfaction of women employees with quality of work life in their respective organizations was quite high despite the prevalence of average work life conditions. The study also found that trade unions play a positive and proactive role so as to improve the quality of work life of women employees.

“Organizational Behavior”, a book written by **Fred Luthans (2008)** described that Quality of work life doesn't prescribe to do a job technique only. In lieu, it is more concerned with the overall working atmosphere or culture in an organization. According to Fred Luthans, “quality of work life may be described as a concern about the effect of work on people and organizational effectiveness combined with an eminence on participation in problem solving and decision making”.

Luciana, Bruno, Antonio and Luiz(2008) indicated that regarding the quality of life in the laboral environment raised the development of various models of quality of work life. Among those, one of the most commonly used has been the model proposed by Walton. Although its utilization occurs in large scale, the Walton's QWL model may not be an appropriate instrument for populations with a low schooling level, once the non-understanding of the evaluation criteria may result in relapses answers. In this viewpoint, the objective of the present study is to suggest an adaptation from the Model of Walton, where the criteria were transcribed in the interrogative form, and the scale of answers were changed into a Likert scale with five options.

Sarma (2009) in his book, “Organizational Behaviour” stated that Quality of Work Life involves improving the working conditions and other internal and external aspects of work life. It includes the provision of good housing facilities and living facilities, recreational facilities, training and development of employees for overall development of human resources in the organization.

OBJECTIVES

1. To understand the factors that affects Quality of Work Life.
2. To analyze the satisfaction of the employees in their current job environment.

RESEARCH METHODOLOGY

In any research problem, the important criterion for meaningful analysis is designing a suitable methodology and selection of analytical tools. In methodology, researcher uses different methods for solving the given research problem. For solving the problem different types of methods are used from different sources. The methodology of the study includes research design, details on data collection, sampling design and statistical tools for analysis.

The data collection was based on both primary and secondary data. The primary data was collected using well framed and structured questionnaire. Questionnaire method was used for collecting the data. A five point likert scaling technique was used for the study. Quality of work life was measured using five dimensions namely Adequate and fair compensation, Safe and healthy working environment, Growth and security, Social Integration & the total life space.

DATA ANALYSIS AND INTERPRETATION

➤ Factors that affects Quality of Work Life

- H1: Adequate and fair compensation has a significant positive impact on the quality of work life
- H2: Safe and healthy working environment has a significant positive impact on the quality of work life
- H3: Development of human capacities has a significant positive impact on the quality of work life
- H4: Growth and security has a significant positive impact on the quality of work life
- H5: Social Integration has a significant positive impact on the quality of work life



H6: The total life space has a significant positive impact on the quality of work life

Table 1
The regression Coefficients

Path	Estimate	Critical Ratio (CR)	P	Variance explained
Adequate and fair compensation → Quality of work life	0.126	1.248	0.215	1.6
Safe and healthy working environment → Quality of work life	0.467	4.986	<0.001	21.8
Development of human capacities → Quality of work life	0.298	3.027	0.003	8.9
Growth and security → Quality of work life	0.436	4.602	<0.001	19.0
Social Integration → Quality of work life	0.888	13.910	<0.001	78.9
The total life space → Quality of work life	0.941	17.203	<0.001	88.5

H1: Adequate and fair compensation has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct Adequate and fair compensation has no significant influence on Quality of work life as the standardized direct effect of this construct on Quality of work life was 0.126, which is less than the recommended value of 0.4. So the hypothesis H₁ is rejected and concludes Adequate and fair compensation has no significant impact on the quality of work life

H2: Safe and healthy working environment has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct Safe and healthy working environment had significant influence on Quality of work life as the standardized direct effect of this construct on Quality of work life was 0.467, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₂ is accepted and concludes Safe and healthy working environment has a significant positive impact on the quality of work life

H3: Development of human capacities has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct Development of human capacities has no significant influence on Quality of work life as the standardised direct effect of this construct on Quality of work life was 0.298, which is less than the recommended value of 0.4. So the hypothesis H₃ is rejected and concludes Development of human capacities has no significant impact on the quality of work life

H4: Growth and security has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct Growth and security had significant influence on Quality of work life as the standardised direct effect of this construct on Quality of work life was 0.436, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₃ is accepted and concludes that Growth and security has a significant positive impact on the quality of work life

H5: Social Integration has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct Social Integration had significant influence on Quality of work life as the standardised direct effect of this construct on Quality of work life was 0.888, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₂ is accepted and concludes that Social Integration has a significant positive impact on the quality of work life

H6: The total life space has a significant positive impact on the quality of work life

The results exhibited in Table 1 revealed that the regulatory construct. The total life space had significant influence on Quality of work life as the standardised direct effect of this construct on Quality of work life was 0.941, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₆ is accepted and concludes that The total life space has a significant positive impact on the quality of work life.

➤ **To find out the level of Quality of work life in Apollo tyres.**

One of the objectives is to find the level of Quality of work life of Apollo Tyres. For this the respondents are asked 27 questions on five point Likert scale. The responses are scored as 1 for 'Strongly Disagree', 2 for 'Disagree', 3 for 'Neutral', 4 for 'Agree' and 5 for 'Strongly agree'. Out of 27 questions 23 are remaining after convergent validity test. The total score of the 23 questions for all 100 respondents is found out, based on which we calculate the mean % score of level of Quality of work life in Apollo tyres $[MPS = \frac{MeanScore \times 100}{Maximumpossiblescore}]$. This score is classified into one of the four groups as poor or low if the mean % score is less than 35%, average if the mean % score is between 35 to 50 per cent, good or medium if the mean % score lies in the interval 50 to



75% and excellent or high if the mean % score is above 75%. A one sample Z test is carried out to test the significance. The following table gives the Mean, SD, Mean % Score and Z value of the variable considered. (Loyd, B. H., & R. R. Abidin. R. R. (1985). Revision of the Parent Stress Index. *Journal of Pediatric Psychiatry*, 10(2), 169).

Table 2
Mean, Standard deviation and z value for level of Quality of work life in Apollo tyres

Variable	N	Mean	Standard Deviation	Mean % score	CV	z	p value
Quality of work life	100	101.72	3.49	88.45	3.43	44.321	<0.001

The mean percentage score level of Quality of work life in Apollo tyres is 88.45% which indicate that level of Quality of work life in Apollo tyres is excellent or high. The CV = $\frac{\text{Standard deviation} * 100}{\text{Mean}}$ indicates that this score is stable as the value is less

than 20%. To test whether the sample information that we observe exists in the population or to verify that the level of Quality of work life in Apollo tyres is high or not, we formulate the hypothesis

H₀: The level of Quality of work life in Apollo tyres is medium

H₁: The level of Quality of work life in Apollo tyres is high

To test the above hypothesis we use one sample Z test and the result is exhibited in Table 2. From the table the p value is less than 0.05 which indicates that the test is significant. So we conclude that the level of p Quality of work life in Apollo tyres is high.

FINDINGS

Adequate and fair compensation has no significant impact on the quality of work life. Development of human capacities has no significant impact on the quality of work life. Safe and healthy working environment has a significant positive impact on the quality of work life. Growth and security has a significant positive impact on the quality of work life. Social Integration has a significant positive impact on the quality of work life. The total life space has a significant positive impact on the quality of work life. The level of Quality of work life in Apollo tyres is high.

CONCLUSION

From the analysis and interpretation it is found that the all the employees are highly satisfied with the factors that affect their quality of work life, current job and the attitude towards QWL. As a whole the employees of Apollo is totally satisfied with the entire dimensions that affect QWL. All the employees in Apollo are males. Most of the employees are with the experience range of 20-25 years. All the employees have a basic educational qualification and majority of the employees are qualified with ITI. Only 8% of the employees are unmarried. The dimensions taken for the study on QWL were adequate and fair compensation, safe and healthy working environment, growth and security, social integration and the total life space. Almost 90% of the employees are satisfied with the factors that affect QWL. Thus we can conclude that the employee's attitude towards Quality of Work Life shows a positive impact on the employees

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INDUSTRY1.0 TO 4.0: THE EVOLUTION OF INDUSTRIES

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ABSTRACT

Therefore, an industrial production system is adaptable and facilitates the creation of specialized items. This paper’s objective is to explain industry principles, including its drivers, enablers, aims, and restrictions, and to make it easier for readers to understand them. The “Internet of Things” is an industrial vision where people, things, and machines are always connected. Many new goods and services are intended to be produced as a result of this relationship. Products, cars, and tools are expected to “bargain” in an online marketplace over which production elements will best finish the upcoming production stage. As a result, the physical items present in both the real world and the virtual world would be seamlessly connected. The fourth industrial revolution is referred to as “Industry 4.0”. It is best described as a new level of management and coordination across the whole value chain of a product’s life cycle that is focused on the consumer’s more ecognizee wants. The production of the product, including placing the order, is the first step in this cycle. Development and manufacture follow, followed by distribution to the consumer, and recycling, which includes all follow-up services, is the last step. The construction of dynamic, self-organizing, real-time optimal value-added linkages within and between organisations is made possible by the connectivity of people, things, and systems. These may be optimised based on a variety of factors, including cost, accessibility, and resource ecognizee.

INTRODUCTION

Three parts make up our description of the Industrial Internet, or Industry 4.0.

The adoption of cutting-edge digital business strategies, the digitalization of offerings for goods and services, and the better integration of vertical and horizontal value chains. The fourth industrial revolution, which is ecognizee by an increase in the digitization and interconnectedness of goods, value chains, and business models, has penetrated the industrial sector. Industry 4.0: Opportunities and Challenges of the Industrial Internet is the title of our study. These components must be made by the formatter while taking into account the following applicable criteria. It outlines the key characteristics, possibilities, and difficulties this development provides. They predict that more than half of investments in Industry 4.0 solutions will be made. 50% of anticipated capital expenditures over the following five years The promise of more effective management and integration of horizontal and vertical value chains is the primary driving force behind the development of Industrial Internet solutions. According to the companies questioned, productivity will increase by more than 18% during the following five years.

Businesses have currently digitalized their essential valuechain processes. By the end of the next five years, however, 85% of businesses will have used Industry 4.0 solutions across all important industry sectors.

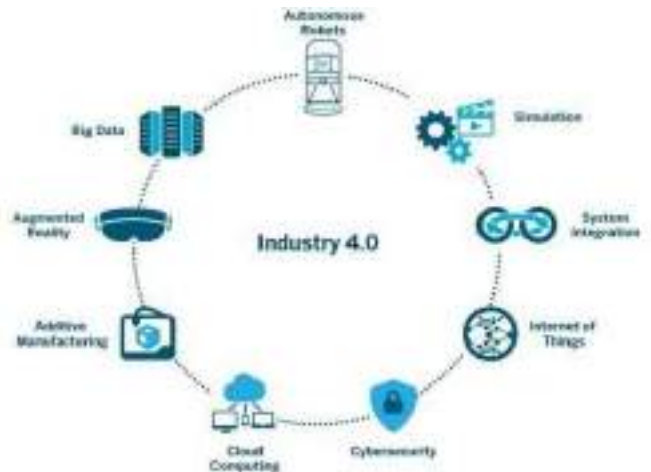


Fig: 1.1 Industrial Revolution

The networking and digitization of goods and services (Internet of Things/Services) is a second important aspect. It promises annual revenue growth of 2% to 3% on average and will significantly help businesses stay competitive. A third crucial aspect is the recently developed, frequently disruptive digital business models that significantly increase value for customers by offering them ecognizee solutions. An considerable increase in horizontal cooperation across value chains, as well as the integrated usage and analysis of data, are characteristics of these new business models. They can so better meet client needs as a result. Due to the numerous prospects, the profound level of change, and the



increased need for expenditures, the Industrial Internet is one of the most important topics for business management. However, it's crucial to recognize all of the transition's challenges. In addition to the largely unresolved corporate commercial drivers for the Industrial Internet, there are issues with data protection and the need to develop and agree upon industry standards.

INDUSTRY 1.0 TO 5.0

INDUSTRY 1.0

People have been making their own food, clothing, shelter, and weapons by hand or with the assistance of working animals for thousands of years. However, the development of Industry 1.0 at the start of the 19th century marked a dramatic shift in production, and things moved along swiftly after that. Here is a summary of that development.

INDUSTRY 2.0

Electricity replaced other forms of energy as the main source of power during the start of the 20th century. Compared to water and steam, it was simpler to utilize and gave businesses the ability to direct power to specific machines. Later, to make machines more portable, they were built with their own power sources. During this time, a variety of management programmes were also developed, allowing manufacturing plants to operate more effectively and efficiently. The division of labor increased productivity since each employee now completes a piece of the total labour. The use of assembly lines to produce things increased. Frederick Taylor, an American mechanical engineer, developed ways for evaluating tasks to improve employee and workplace behaviour. Last but not least, just-in-time and lean manufacturing concepts enhanced approaches for manufacturing firms to raise output in terms of both quality and quantity.

INDUSTRY 3.0

The development of electronic devices like the transistor and, later, integrated circuit chips allowed for a higher level of automation of individual machines to assist or replace humans in the latter few decades of the 20th century. In order to take advantage of the electronic hardware, software systems were also developed around this time. Enterprise resource planning tools have replaced integrated systems like material requirements planning, which allowed people to schedule, plan, and monitor how product moves through the production. Many firms relocated component and assembly activities to low-cost nations under pressure to cut prices. The notion of supply chain management became formalised as a result of the extensive geographic dispersion.

INDUSTRY 4.0

The internet of things (IOT) is linked to manufacturing processes through Industry 4.0 in the twenty-first century so that systems may exchange information, analyse it, and utilise it to direct intelligent activities. According to the article "Industry 4.0 and Manufacturing Ecosystems" by Deloitte University Press, Industry 4.0 also combines cutting-edge technologies including additive manufacturing, robotics, artificial intelligence and other cognitive technologies, complex materials, and augmented reality.

The transition to Industry 4.0 has been primarily fueled by new technological breakthroughs. Among other late 20th century programmes, manufacturing execution systems, shop floor control, and product life cycle management were novel ideas but lacked the requisite technology foundation to be properly implemented. These efforts can now benefit from Industry 4.0 to the fullest extent. Equations with increasing numbers. Equation numbers should be enclosed in brackets and flush-right aligned using a right tab stop. You can use the solidus function, the exp function, or the relevant exponents to make your equations more compact. For numbers and variables, italicize Roman symbols but not Greek ones. For a minus sign, a long dash should be used instead of a hyphen.

INDUSTRY 5.0

Industry 5.0 refers to a method of operating firms that makes use of cutting-edge technology to empower people and relieve stress on machine employees. Every industry will be impacted by this upheaval, and business opportunities are virtually limitless.

Recently, the term "industry 5.0" has grown in acceptance, in part because it is consistent with a novel, unsettling, and illuminating viewpoint on business and economics. It emphasises the importance of societal value rather than placing a focus on profit. In the production industry, tedious, repetitive, and dangerous tasks have historically been handled by robots. But as communication and technology advance, robots become more intelligent and networked.

The fifth industrial revolution seeks to combine cognitive computer skills with human resourcefulness, in contrast to industry 4.0's goals of automating operations and eliminating human involvement in the production line. Instead of only focusing on profits, the new sector prioritizes the welfare of people and the environment. The company strategy makes use of cutting-edge technology to boost productivity and lower stress. The fifth industrial revolution aimed to create an environment where workers could prosper alongside one another, much like industry 4.0. It promotes circular production models and supports technological advancements that help with more effective resource utilisation. Additionally, the procedure strives to increase an industry's resistance to outside shocks. Here are a few of its main characteristics that will increase industry's competitiveness and sustainability in the future. Before industrialization, handcrafted goods were produced by people who knew the process firsthand and gave them a personal touch. Industry 5 aims to bring those times back.

By successfully executing repetitive activities, collaborative robots (cobots) will assist human craftspeople in efficiently meeting demand and quality standards. Worker time will be freed up by cobots for innovative and creative tasks. Additionally, as cobots concentrate on routine activities, workers in the industrial sector can concentrate more on the company's future. Universal Robots, a Danish startup, is the first to provide industrial robots that can efficiently and safely work alongside production workers.

DISCUSSION

The Industrial Internet, also known as Industry 4.0, is a component that will significantly change how businesses supply their goods and services with the ultimate goal of better satisfying customer expectations. The digitalization of horizontal and vertical



value chains is one such component. Beyond improving industrial technologies, the Industrial Internet has a wide range of potential applications. However, taking advantage of these prospects calls for a significant investment. As a result, the issue must be of the utmost importance to directors and managers of industrial businesses.

The industrial enterprises questioned expect to spend an average of 3.3% of their annual revenues on industrial internet solutions during the next five years. This is almost equal to 50% of the higher capital investments that are anticipated, or more than €140 billion each year. For these investments to be as effective as possible, the full value chain must be utilised. According to the organisations, 80% of vertical value chains and 86% of horizontal value chains would be highly digitalized and integrated by 2020.

The manufacturing process in the industrial sector must produce things in ever-increasing quantities while using less energy and raw materials. The Industrial Internet, which promotes higher productivity and resource efficiency, thus creates the conditions for efficient and sustainable manufacturing. The organizations consulted predict that the digitization of value chains will boost productivity by an average of 3.3% per year across all industrial sectors. Over the next five years, this will have a cumulative effect of 18%. They anticipate annual cost savings of 2.6%.

The Industrial Internet will have a substantial impact on current company models, and this will also cause the birth of brand-new, frequently disruptive digital business models. This movement's main objective is to maximise consumer benefits by offering a greater variety of value solutions (as opposed to products) and fostering stronger relationships with clients and partners. What sets digital change apart is the quickening of change's pace. Disruptive innovations will quickly bring about a sustainable transformation in industries like the communications and technology sectors of the economy.

In the Digital 4.0 era, businesses face many obstacles to success. High investment levels and frequently perplexing business structures for new Industrial Internet applications are the key themes of discussion. It's also important to make sure that people have the appropriate abilities in order to satisfy the demands of the digital age.

The completion of activities in the area of IT security and the development of mandatory standards are required. Advocates for strong data security and data protection regulations as well as uniformed international or European industrial standards can particularly help with these latter difficulties.

Table No: 1.1 Industrial Revolutions 1.0 to 4.0

Revolution	Time period	Technologies
1st	18 th and 19 th centuries	Mechanical manufacturing fueled by steam and water
2nd	Late 19 th century 1970s	Mass production using electricity that is based on the division of labour
3rd	1970s-Today	New levels of automation for difficult jobs are being driven by electronic and computer technology.
4th	Today	on the basis of a cyber-physical system

Figure Labels:

This study aims to investigate the Fourth Industrial Revolution (4IR) trend, which strongly emphasises industry, and to assess the Malaysian government's initiatives in light of this trend. Numerous studies have shown that advanced nations have begun using cutting-edge technologies like robots and artificial intelligence.

CONCLUSION

The Industrial Revolution was undoubtedly a significant advancement for humanity, bringing forth numerous inventions that greatly enhanced manufacturing capabilities across various industries. It resulted in a substantial boost to the economy and significantly improved the standard of living for many segments of society. However, alongside these benefits, the rise of industrialization also diminished the need for unskilled manual labor, leading to a rise in unemployment and subsequently increased poverty levels.

On the other side of the coin, the identification of waste disposal requirements allows for better management and preparation of essential activities. It facilitates the successful implementation and adoption of modern technologies by users, ultimately leading to process improvements.

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CONSUMER AWARENESS AND PERCEPTION TOWARDS EDIBLE OILS

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ABSTRACT

This study aims to identify the consumer awareness and satisfaction level by the respondents while using Edible oils. The data has been collected from 150 respondents in Avinashi Taluk by applying Simple random sampling. Statistical tools such as percentage analysis, Weighted average analysis, Chi-square, Correlation. In this above research, Consumer suggest that promotional activity sometimes affects an consumer to choose an different types of edible oils, so that the manufacturing company should focus on Promotional activity as well as Quality.

KEY WORDS: *Edible oils, Consumer Awareness, Satisfaction level*

INTRODUCTION

This study is an attempt to analyze the consumer awareness and perception towards Edible oils. The study will help consumers to understand their lifestyle pattern in the consumption of edible oils. The study is also aims to help the manufacturers of edible oils in understanding different consumer taste and preferences so as to meet diverse consumer needs. The findings from this study can also have an impact on the company's marketing strategy with respect to segmentation of the market and positioning of the company's portfolio of products. This study will create awareness amongst employees on the factors influencing consumer choice and hence give them an opportunity to meet customer's expectations and measure their loyalty in relation to the purchase of the edible oils. This can create perception among the consumers of edible oils and lead to the growth of market share.

In comparison to other countries that produce oilseeds, India has the largest area and produces the most of the three oilseed crops-groundnut, rapeseed, mustard, and sesame. India comes ranked second to Brazil in terms of the production of castor seeds. Edible oils are among the most significant and widely utilised products among all the essential goods available on the market. Cooking oil is a liquid fat made of plants, animals, or synthetic materials that is used in baking, frying, and other sorts of cooking. It may also be referred to as edible oil because it is used in cold food preparation and flavouring, including salad dressing and bread dips. One of the most fundamental and significant components used by all people historically for all food products, edible oil is necessary for everything that is cooked. There are many different types of edible oils flooding the market. such as mustard oil, coconut oil, sunflower oil, groundnut oil, and gingili oil. Unrefined oils like coconut oil, powdered oils, and ginger oil have historically been used by people. Refined oils have become more widely available in recent years as a result of consumers' increased knowledge of quality and health concerns. As a result, many branded refined oils are now sold in consumer packets and loose for the food oil market. For various types of edible oils, such as olive oil, Palm oil, Soybean oil, canola oil, Pumpkin seed oil, corn oil, sunflower oil, peanut oil, grape seed oil, sesame oil and rice bran oil etc., refined oil is readily available.

STATEMENT OF PROBLEM

In the modern world, man is eager to lead a life without ill-health. The quality of food is becoming a necessity for everyone. The users of edible oils can afford to select a particular brand. They may make different choices based on factors like price, fat content, brand, flavor, oil source, advertising and peer pressure. And most important problem in this is, the unsaturated fats found in edible oils when they're heated, tend to oxidize. They are more harmful to bodily tissues in this form and can cause inflammation, which is a known risk



factor for causing blood-vessel plaques to become unstable enough to result in a heart attack. This research is aim to identify the consumer awareness and perception towards edible oils.

OBJECTIVES OF THE STUDY

- ❖ To study the consumers awareness towards edible oils.
- ❖ To know the factors influencing the consumer perceive and choose edible oils.
- ❖ To find out the satisfaction level of consumers, regarding edible oils.

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problems. It may be understood as a science of studying how research is done scientifically. It includes the overall result design, data collection methods, and analysis procedure.

RESEARCH DESIGN

The descriptive study typically concerns with determining the frequency of something occurs or how two variables vary together. Descriptive research design was adopted to study the consumer awareness and perception towards Edible oils.

DATA COLLECTION

Data was collected to both primary and secondary data source. Primary data was collected through survey method using questionnaire to conduct the study successfully. A questionnaire was designed for this purpose.

Primary data : Primary data is a data which is collected for the first time for the particular interest to collect more information. In this study, the primary data was collected using questionnaire.

Secondary data : Secondary data consists of information that already exists somewhere, having been collected for some other purpose. In this study, the secondary data was collected from studies, journals and websites.

SAMPLING TECHNIQUE

In this study the researcher used Simple Random Sampling.

PERIOD OF THE STUDY

The study was conducted for the period of four months. The primary data was collected and it took one month time period. The review of literature and discussion with the field experts in the species board took another one month. Data analysis and interpretation was carried for a period of one month and final period of the report took the remaining period.

TOOLS USED FOR THE STUDY

The rules of statistics in research is to function as a tool in designing research, analyzing the data, drawing its conclusion from most research studies result in large volume of raw data must be suitable reduced so that the same can be read easily and can be used for future analysis. The tools used for

- Simple Percentage analysis
- Weighted average analysis
- Chi-square test
- Correlation

The above tools were applied for the study using the software IBM SPSS Statistics.

REVIEW OF LITERATURE

Dr.Rajni Pandey, Dr.Smita Kumari and Dr.Kavitha Kumari (2022) ‘Consumers preference for edible oil in patna city’. This research aims to investigate the awareness level regarding healthy cooking oil. Fats always an important role in both food preparation and nutrition and so as proteins and vitamins our body needs dietary fats as it serves many physiological functions such meeting energy requirements and one of the greatest source of fats is cooking oils. They provide essential fatty acids which our body is unable to synthesize of its own. Cooking oils from an integral part of Indian diet and so selection of right edible oil is one of the most important things. The purpose of the study is to explore the most preferred oil brands, edible oil variants and also to investigate the awareness level of the consumers regarding healthy cooking oils.

Dr. M.Rajee and P. Jenitha Lenitha (2022) This research aims to know the factors influencing perception of rural women towards branded edible oils. The scope of the study is to cover buying behavior in reference to branded edible oil, which will further help



marketers to take certain decisions in order to enhance their product sale. The scope of the study is to cover the key points on basis of which rural women take their purchase decisions. The research design is descriptive and qualitative in nature. The study has been conducted in Tuticorin district. The study is based on primary data only.

ANALYSIS AND INTERPRETATION

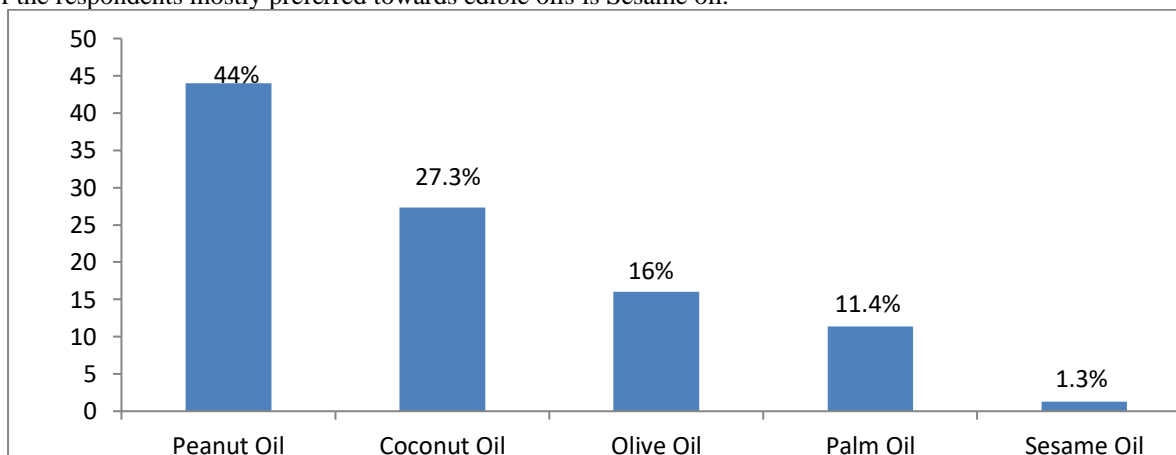
EDIBLE OILS MOSTLY PREFERRED

S.No	EDIBLE OILS PREFERRED	No. OF RESPONDENTS	PERCENTAGE
1	Peanut oil	66	44
2	Coconut oil	41	27.3
3	Olive oil	24	16
4	Palm Oil	17	11.4
5	Sesame Oil	2	1.3
	TOTAL	150	100

Source: Primary Data

INTERPRETATION

The above table reveals that Kinds of edible oils mostly preferred by Consumers. It is clear from that 44% of the respondents mostly preferred towards edible oils is Peanut oil, 27.3% of the respondents mostly preferred towards edible oils is Coconut oil, 16% of the respondents mostly preferred towards edible oil is Olive oil, 11.3% of the respondents mostly preferred towards edible oil is Palm oil and 1.3% of the respondents mostly preferred towards edible oils is Sesame oil.



ANALYSIS AND INTERPRETATION

EDIBLE OILS OFFERS PARAMETERS

S.No	FACTORS	1(5)	2(4)	3(3)	4(2)	5(1)	TOTAL	MEAN SCORE
1	Large variety of products	78 390	33 132	32 96	6 12	1 1	150 631	4.206
2	Natural Ingredients	19 95	92 368	29 87	9 18	1 1	150 569	3.793
3	Customers service	33 165	39 156	62 186	11 22	5 5	150 534	3.560
4	Shopping experience	48 240	30 120	32 96	32 64	8 8	150 528	3.520

INTERPRETATION

The above table shows the different parameters of edible oils. The highest mean score rise 4.206 from the large variety of products.



ANALYSIS AND INTERPRETATION

RELATIONSHIP BETWEEN GENDER OF THE RESPONDENTS & AWARENESS REGARDING EDIBLE OILS

Gender	Awareness Regarding Edible Oils			Total
	Low	Medium	High	
Male	4	10	10	24
Female	32	74	20	126
Total	36	84	30	150

To find the association between Gender and Consumer awareness regarding edible oils by the respondents, Chi-Square test is used and result is given below.

HYPOTHESIS

H₀: There is no significant difference between Gender of the respondents and consumer awareness regarding Edible oils.

H₁: There is significant difference between Gender of the respondents and consumer awareness regarding Edible oils.

CHI-SQUARE TEST

Factors	Calculation	df	Table Value	Remarks
Gender	8.395 ^a	2	5.991	Rejected

INTERPRETATION

The Calculated Value of Chi-square is greater than the table value. Hence, the hypothesis rejected stating that there is significant relationship between Gender of the respondents and Consumer Awareness regarding edible oils.

ANALYSIS AND INTERPRETATION

RELATIONSHIP BETWEEN RESIDENTIAL AREA AND BUYING AREA

H₀ : There is no Significant relationship between Residential Area and Buying place of edible oils by the respondents.

H₁ : There is Significant relationship between Residential Area and Buying place of edible oils by the respondents.

RELATIONSHIP BETWEEN RESIDENTIAL AREA AND BUYING AREA

Residential Area	Pearson Correlation	Residential Area	Buying place
		1	.113
	Sig. (2-tailed)		.167
	N	150	150
Buying Place	Pearson Correlation	.113	1
		Sig.(2-tailed)	.167
	N	150	150

Correlation is significant at the 0.05 level (2-tailed)

INTERPRETATION

Table No – 4.7.1 shows that correlation of Residential Area and Buying place of edible oils was found to be Perfect Correlation and Statistically significant (r=.113, p<0.05). Hence H₁ was supported. This shows that Perfect Correlation between Residential Area and Buying place of edible oils by the respondents.

CONCLUSION

The edible oils form essential commodities in Indian Fast Moving Consumer Goods industry in India. India being the fourth largest vegetable oil economy. In the present scenario, consumers do not accept any product which doesn't give them complete satisfaction, that is the reason why so many brands are successful and failure in the consumer market. Consumers have specific preferences towards edible oils like Quality, Quantity, Health Benefits, Oil taste, offers, Product Design etc, so that the manufactures has to provide better product to the consumers which makes them to retain in the market for a long period. Quality and health benefit is considered to be an important factor in case of edible oil, because it is more related with health. Nowadays people are very much health conscious on the



basis of various observations made in the study, the consumers feel that edible oil is necessary for day-to-day life. Hence the manufacturers of edible oil follow the concept of being hygienic and healthy oil to attract the consumers. If the consumer is satisfied with the brand it leads to positive perception, loyalty towards brand, positive word of mouth and leads to long term relationship with the brand of edible oil.

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A STUDY ON NON-PERFORMING ASSETS OF AXIS BANK

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ABSTRACT

The non-performing assets (NPAs) of Axis Bank have been a significant concern for the bank and its stakeholders. NPAs refer to loans and advances that have not been serviced for a certain period of time and have thus become overdue. This paper provides an abstract overview of the NPAs of Axis Bank, analysing the causes, impacts, and management of NPAs by the bank. The paper examines the macroeconomic factors that have contributed to the rise in NPAs, including the slowdown in the Indian economy, changes in the regulatory environment, and the impact of the COVID-19 pandemic. It also looks at the internal factors such as credit underwriting, risk management, and loan monitoring, which have contributed to the bank's NPA problem. The paper highlights the impact of NPAs on the bank's profitability, liquidity, and reputation. Finally, it reviews the strategies and measures taken by Axis Bank to manage its NPAs, including loan recovery, resolution, and restructuring, provisioning, and credit risk management.

INTRODUCTION

Non-performing assets (NPAs) refer to loans or advances that have not been repaid by the borrower within the stipulated timeframe. In other words, they are assets that have stopped generating income for the lender because of the borrower's failure to make timely payments of principal and interest. NPAs are a major concern for banks and financial institutions as they impact their profitability and financial health. The accumulation of NPAs can also weaken the overall economy as it hampers the flow of credit to productive sectors, leading to a slowdown in economic growth. Effective management of NPAs is, therefore, critical for the sustainability of the banking sector and the economy as a whole. The effect in global financial crisis on the NPA is indicators as well are explained. The study concludes that NPA still remains that major threat and incremental component explained through additions NPA creates a great question mark to efficiency of credit risk management of Bank of India. The Reserve Bank of India (RBI) has issued prudential norms regarding identification of nonperforming assets NPAs, asset classification, providing and income recognition on the April 1, 1992 with these norms RBI introduced the concept of the non-performing assets NPAs. The financial committees (1991,1998) chaired by M.Narsimham former Governor, RBI specially the second committee 1998 emphasized management of NPAs in the bank to improve assets quality International Research Journal of Management Sociology & Humanities make Indian Bank capable to completed successfully in changing global environment. To Bharati v. Phathak 2008 "Non-performing assets NPAs are loan given by a bank or a financial institution wherein the borrower defaults or delays interest or principal payment".

STATEMENT OF THE PROBLEM

The increasing number of Non-Performing Assets (NPAs) in the loan portfolios of banks and financial institutions is posing a major challenge to their financial stability and profitability. With NPAs on the rise, banks are facing significant losses, a decline in the quality of their loan portfolio, and a reduction in their ability to support economic growth. As a result, there is a need for effective strategies to resolve the issue of NPAs and minimize their impact on the financial performance of banks and other lending institutions.

OBJECTIVES OF THE STUDY

- To analysis the non-performing assets of AXIS Bank.
- To evaluate the ratio of the banks with concerned to the NPAs.
- To understand the impacts of NPAs on the operations of the banks

METHODOLOGY OF THE STUDY

Analytical research design is chosen for the study. this research is conducted to find out facts about given topic from the answers obtained develop new and useful ways during things.



TOOLS

- ✓ Ratio analysis
 - ✚ Gross Non performing Assets
 - ✚ Net Non performing Assets
 - ✚ Return on Assets

REVIEW OF LITERATURE

- **Mr. Bharatkumar D. Prajapati and Bharatbhai M. Prajapati(2015)**, they found that the bank would have to maintain a minimum common equity capital of 5.50 percent a minimum tier-I capital ratio of 7 percent of risk weighted assets, a capital conservation buffer of 2.5 comprising only common equity capital. Base on regulation would be implementation in phases beginning from january, 2013 and would be fully implemented by March 31, 2018. To implement the base regulation, the indian bank required to maintain and improve capital base on financial health. The integrated approach to management of NPAs will facilitate the bank to achieve these targets.
- **Vivek RajbahadurSingh(2016)**, His study shows that extent of NPA is comparatively very high in public sectors banks. Although various steps have been taken by government to reduce the NPAs but still a lot needs to be done to curb this problem. The NPAs level of our banks is still high as compared to the foreign banks. It is not at all possible to have zero NPAs. The bank management should speed up the recovery process. The problem of recovery is not with small borrowers but with large borrowers and a strict policy should be followed for solving this problem. The government should also make more provisions for faster settlement of pending cases and also it should reduce the mandatory lending to priority sector as this is the major problem creating area. So the problem of NPA needs lots of serious efforts otherwise NPAs will keep killing the profitability of banks which is not good for the growing Indian economy at all.

ANALYSIS AND INTERPRETATION

Year	Net Profit	Gross NPA	Net NPA	ROA	NPA Ratio	Advance to Deposit Ratio
2021-2022	20.5	2.82	0.73	0.046	1.38	88.33
2020-2021	11.2	3.70	1.05	0.045	1.13	88.33
2019-2020	2.9	4.86	1.56	0.048	1.09	89.74
2018-2019	9.09	5.26	2.06	0.052	0.85	89.74
2017-2018	0.9	6.77	3.40	0.041	0.08	90.78

FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

1. Net Profit ratio of the bank was highest 20.5 in the year 2021-2022 and lowest 0.9 in the year 2017-2018. It is growing regularly so it is satisfactory.
2. Gross Non-performing Assets of the bank was highest 6.77 in the year 2018 and lowest 2.82 in the year 2022. It is not growing every year so it's not satisfactory.
3. Net Non-performing Assets of the bank was highest 3.40 in the year 2018 and lowest 0.73 in the year 2022. It is not growing every year so it's not satisfactory.
4. Return on Assets of the bank was highest 0.052 in the year 2019 and lowest 0.041 in the year 2018. It is growing every year so it is satisfactory.
5. Non-Performing Assets Ratio of the bank was highest 1.38 in the year 2021-2022 and lowest 0.08 in the year 2017-2018. It is growing every year. So it is not satisfactory.
6. Advance to Deposit Ratio of the bank was highest 90.78 in the year 2017-2018 and lowest 88.33 in the year 2020-2021 and 2021-2022. It is constant and slight decrease in ratio which is satisfactory.

SUGGESTIONS

1. Increase efforts to recover outstanding loans, including using legal action if necessary.
2. Consider selling off non-performing assets to a third party who may be better equipped to recover the debt
3. The profit can be increased by increasing in efficient productivity and decrease in expenses of the bank. The bank can try to control the expenditure and fair return on the shareholders. The bank should probably consider the use of the fund to invest other opportunities to get a profit.
4. The bank should maintain the assets in order to improve its position in future.



CONCLUSION

In conclusion, the study on non-performing assets (NPA) of Axis Bank has provided valuable insights into the bank's asset quality, loan recovery mechanisms, and overall financial performance. The analysis of Axis Bank's NPA ratio revealed that the bank has been able to maintain a relatively low ratio compared to its peers in the banking industry. The study also examined the factors that contribute to NPA, such as economic downturns, borrower defaults, and inadequate credit risk management. The findings suggest that Axis Bank has implemented effective strategies to manage NPA, such as strengthening its loan recovery mechanisms, reducing exposure to vulnerable sectors, and adopting a proactive approach to managing credit risk.

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IMPLEMENTATION OF LenQuad (LINEAR QUADRATIC) MATHEMATICAL MODEL IN PYTHON TO ESTIMATE THE VALUE OF PI USING ONE QUADRANT OF A GIVEN CIRCLE. FURTHER CHECKING THE EFFICIENCY OF LenQuad METHODOLOGY USING ASYMPTOTIC NOTATIONS

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Pi (π) is one of the most important and fascinating numbers in mathematics. Roughly 3.14, it is a constant that is used to calculate the circumference of a circle from that circle's radius or diameter.^[1] It is also an irrational number, which means that it can be calculated to an infinite number of decimal places without ever slipping into a repeating pattern.^[2] This makes it difficult, but not impossible, to calculate precisely.

This manuscript specifically addresses finding of Pi value using different approach called LinQuad Mathematical Model. In computer science efficiency of a program solely depends on time factor of processing statement or statement block. Further the amount of memory it is being used for processing also matters in calculating the space complexity of the program, hence the time complexity and space complexity of Linear Quad Mathematical model code is examined. The purpose is to provide an alternative methodology for finding the value of pi.

KEYWORDS: *Circumference(C), Radius(r), Linear Quad (lq), Runtime Complexity (rc), BigO(n), Big Theta θ (n), Big Omega Ω (n).*

1. INTRODUCTION

Pi The number π is a mathematical constant that is the ratio of a circle's circumference to its diameter, approximately equal to 3.14. The number π appears in many formulae across mathematics and physics. It is an irrational number, meaning that it cannot be expressed exactly as a ratio of two integers, although fractions such as 22/7 are commonly used to approximate it. Consequently, its decimal representation never ends, nor enters a permanently repeating pattern. It is a transcendental number, meaning that it cannot be a solution of an equation involving only sums, products, powers, and integers.^[4]

2. PROBLEM DEFINITION

Estimating the pi value using existing methods have pros and cons depending upon the application and the methodology being used in estimating the pi value. Most commonly used algorithms to find pi value are graphical approach and monte carlo approach. This paper finds a new algorithm to estimate the value of pi. The function called LenQuad() finds the value of pi using continuous and linear plotting of points on a quadrant.

3. METHODOLOGY

This program depends profoundly on the concepts of coordinate geometry

The first step is to take a Cartesian plane [x-y plane] and choose the first quadrant. The usage of first quadrant is because of its property of having positive value in both the axes hence reducing the complexity of the code.

If we draw a circle with origin as centre, exactly a fourth of its circumference will lie in the first quadrant. The first formula to use is the equation of circle, also commonly known as the circle formula:

$$(x - h)^2 + (y - k)^2 = r^2$$

The h and k in this formula denote the centre of the circle. Since we use origin as the centre, this formula becomes:

$$x^2 + y^2 = r^2$$

For our convenience we take the radius of the circle as 5. So the range of the coordinates will be (5,0) \rightarrow (0,5) Here, a new concept I discovered comes into play.

We know that $x^2 + y^2 = r^2$ and r is 5. Therefore, r^2 is fixed as 25. If we look into our range, x starts from 5 and finishes at 0 and the vice versa for y.

$$5^2 + 0^2 = 25$$

$$25 + 0 = 25$$



So, to find the adjacent point, we decrease the square of x and increase the square of y simultaneously. Slowly, the value of x reaches 0 and y reaches 5.

$$24+1=25 ; x=\sqrt{24},y=\sqrt{1}$$

$$23+2=25 ; x=\sqrt{23},y=\sqrt{2}$$

$$22+3=25 ; x=\sqrt{22},y=\sqrt{3}$$

...

...

...

$$0+25=25 ; x=\sqrt{0},y=\sqrt{25}$$

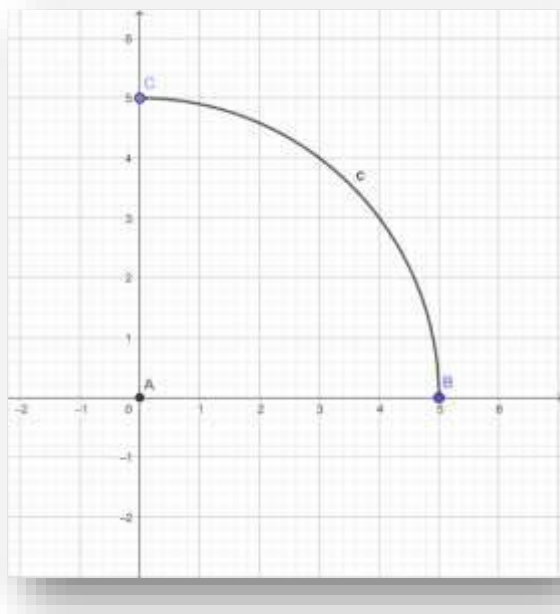
If we plot these, we get the arc of the circle in the first quadrant. Once we acquire all the points in this arc, we calculate the distance between them and add them together.

To do this we apply the distance formula:

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

$$A(0,0); B(5,0); C(0,5)$$

$$c = \text{length of arc}$$



This process will give us the length of the arc of the quadrant. We know that 4 times the length of a quadrant is equal to the circumference of a full circle.

$$C = \pi * \text{diameter}$$

$$\pi = C / \text{diameter}$$

4. LENQUAD MATHEMATICAL MODEL

Implementation:

The following code implements the LenQuad() function.

```

LenQuad()
    from math import sqrt
    x=25
    y=0
    prevtup=(5,0)
    c=0
    while x>=0:
        x-=0.0001
        if x<0:
            pass
        else:
            mx=sqrt(x)
            y+=0.0001
            my=sqrt(y)
            curtup=(mx,my)
            d=((curtup[0]-
            prevtup[0])**2+((curtup[1]-
            prevtup[1])**2
            d=sqrt(d)
            c+=d
            prevtup=curtup
    cir=c*4
    pie=cir/10.00
    print(pie)
LenQuad()
    
```

5. COMPLEXITY OF ALGORITHM

In computer science, analysis of algorithms is a very crucial part. It is important to find the most efficient algorithm for solving a problem. It is possible to have many algorithms to solve a problem, but the challenge here is to choose the most efficient one.^[5] There are multiple ways to design an algorithm, or considering which one to implement in an application. When thinking through this, it's crucial to consider the algorithm's time complexity and space complexity.^[6]

6. SPACE COMPLEXITY

The space complexity of an algorithm is the amount of space (or memory) taken by the algorithm to run as a function of its input length, n. Space complexity includes both auxiliary space and space used by the input.^[6] Auxiliary space is the temporary or extra space used by the algorithm while it is being executed. Space complexity of an algorithm is commonly expressed using Big (O(n)) notation.^[6] The Space complexity is ignored in this research paper, since the space complexity of particular problem is not considered so important.

7. TIME COMPLEXITY

The time complexity of an algorithm is the amount of time taken by the algorithm to complete its process as a function of its input length, n. The time complexity of an algorithm is commonly expressed using asymptotic notations:^[6]



**Big O - $O(n)$
Big Theta - $\Theta(n)$
Big Omega - $\Omega(n)$**

It's valuable for a programmer to learn how to compare performances of different algorithms and choose the best time-space complexity to solve a particular problem in the most efficient way possible.^[6]

Big O notation is used in Computer Science to portrait the performance or complexity of an algorithm. Big O specifically defines the worst-case scenario of an algorithm, and can be used to describe the execution time required or the space used (e.g. in memory or on disk) by an algorithm. Here O stands for order of growth. Big Theta(Θ) is used to represent the average case scenario of an algorithm and can be used to describe the execution time required or the space used (e.g. in memory or on disk) by an algorithm. Big Omega (Ω) is used to represent the best case scenario of an algorithm and can be used to describe the execution time required or the space used (e.g. in memory or on disk) by an algorithm. These three methods are the most common and very popular methods of design and analysis of an algorithm which are used for finding the efficiency of the program.

These asymptotic notations are representing the execution time of given algorithm. These are acting like handy tools to identify the efficiency of an algorithm.

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6. <https://www.educative.io/edpresso/timecomplexity-vs-space-complexity>

8. RUNTIME COMPLEXITY OF CHECKING LENQUAD() FUNCTION

For an input value 5 the runtime complexity of LenQuad() function at different time intervals/run.

<i>LenQuad() function's Time Complexity</i>
0.36827564239501953
0.3634049892425537
0.37503552436828613
0.39061808586120605
0.37500762939453125
0.4374504089355469
0.35936832427978516

The runtime complexity of the LenQuad() function is as under:

Worst case- BigO(n)

9. CONCLUSION

There are numerous algorithms in computer science to calculate value of pi, these algorithms' efficiency is solely based on the range of value and hardware specifications. The LenQuad methodology requires minimal hardware specification and works for smaller numbers with a greater efficiency.

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1. <https://www.mathsisfun.com/definitions/pi.html>
2. <http://mathworld.wolfram.com/IrrationalNumber.html>



SOCIOECONOMIC ASPECTS AND CULTURAL PRACTICES OF THE BHIL TRIBE IN SITAPURI PANCHAYAT, DHAR DISTRICT, MADHYA PRADESH: CHALLENGES AND PATHWAYS FOR SUSTAINABLE DEVELOPMENT

Niranjan

ABSTRACT

This research paper examines the socioeconomic aspects and Bhil tribe culture in Sitapuri Panchayat, Manawar Block, Dhar District. The study focuses on understanding the social, and cultural dimensions of the village. It explores the demographic composition, caste and religion dynamics, education scenario, language usage, family structure, health dimension, and cultural practices prevalent in the community. The findings reveal that Sitapuri village faces challenges in terms of educational infrastructure, with a low literacy rate and limited access to higher secondary schools. Migration for employment and seasonal work contribute to high dropout rates among students. Gender discrimination is observed, where girls are often engaged in household chores and prioritized for early marriages. Traditional institutions such as temples and rituals play a significant role in the cultural fabric of the village, including the worship of specific trees and belief in superstitions. The study highlights the health dimension, emphasizing the limited availability of medical facilities in the village and the dependence on nearby towns for healthcare services. Festivals such as Ghanghor, Makar Sankranti, Holi, and Diwali hold cultural significance and are celebrated with unique customs and traditions, fostering community cohesion. Understanding the socioeconomic conditions and cultural practices of the Bhil tribe in Sitapuri Panchayat is crucial for identifying development issues and formulating strategies for upliftment. The research paper provides valuable insights into the challenges faced by the community and emphasizes the need for targeted interventions in education, healthcare, infrastructure, and gender equality. By addressing these issues, sustainable development can be fostered, leading to improved livelihoods and overall well-being in Sitapuri village and similar contexts.

KEY WORDS – Bhil tribe, Dimensions, Sitapuri, Practices, Indigenous, culture.

INTRODUCTION

Bhil Tribe

The Bhil tribe holds a significant position in India and is recognized as one of the oldest tribes, particularly in Madhya Pradesh. In ancient times, they exerted authority over various regions in Rajasthan, Gujarat, Malwa, Madhya Pradesh, and Bihar. The Bhil tribe represents a diverse segment of the Munda race and is considered a primitive tribe in India. They are believed to have ancestral roots in the Dravidian tribes, which are also found in the West Indies, and their language is believed to have originated from the Dravidian family of languages.

The Bhil tribe is primarily located in the central and western regions of India, specifically in the states of Rajasthan, Gujarat, Madhya Pradesh, and Maharashtra. While the majority of the Bhil population resides in Madhya Pradesh, there are also a few villages of the tribe in the northern and eastern parts of the country.

Population - Based on the 2001 census, the Bhil population in India was recorded at 12,705,753 individuals. They constitute approximately 10% of India's tribal population, ranking second after the Gond tribe.

Religion - The majority of Bhils, accounting for 97%, follow Hinduism as their religion. Their traditional customs and rituals are heavily influenced by Hindu practices. However, Bhils are often portrayed as outsiders or outcasts within the Hindu community, as reflected in their folklore and mythological stories. Bhils have a deep reverence for nature and their religious beliefs are animistic in nature. They hold strong superstitious beliefs and place great faith in supernatural forces. The Bhils worship various deities associated with nature, including gods related to the sky, trees, water, and rain. Fire holds a sacred significance in their religious practices, and they consider certain animals like horses, tigers, wild boars, peacocks, and sparrows as totemic symbols. Animal sacrifice is a common ritual observed by Bhil families.



RESEARCH METHODOLOGY

The study uses qualitative methodology to understand the Socioeconomic Aspects and Cultural Practices of the Bhil Tribe. The data is collected from primary and secondary data sources and personal observation during the field visit

SOCIAL DIMENSION

Demography of Sitapuri Village

Sl. no.	Particulars	Number
1	Total population	1584
2	Male	786
3	Female	798
4	Household	340
5	Total literacy	54.05%
6	Male literacy	63.25%
7	Female literacy	45.40%

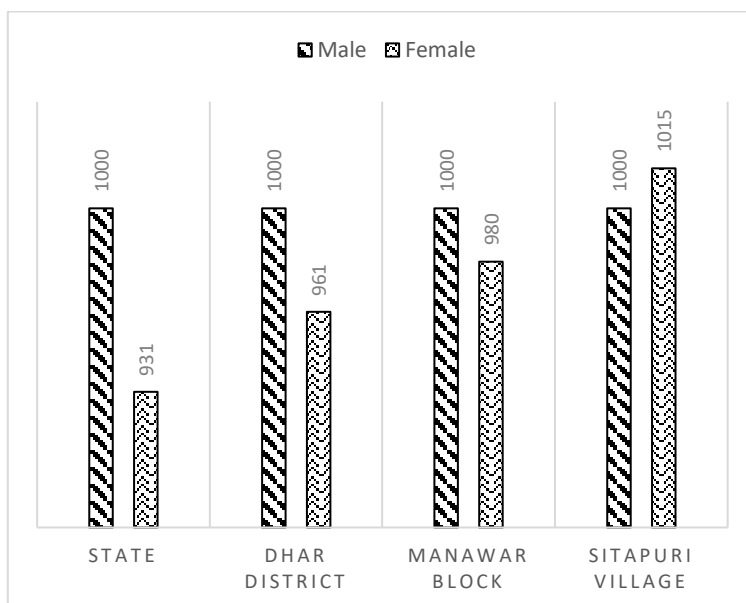
Caste and Religion

In Sitapuri village, Out of 340 Household, 320 households are part of the Bhilala tribe, which is a sub-klan of the Bhils tribe. The people belonging to the Bhilala tribe follow the Hindu religion. Within the Bhilala tribe, there are different surnames such as Vaskel, Chauhan, Patel, Bhabbhar, Rawat, Baghel, Ajnore, Solanki, Dawel, Bhilala Darbar, and Jamra, among others.

Gender

The Bhilala tribe is the main and only tribe existing in the Sitapuri Panchayat. Typically, tribal areas have a higher sex ratio compared to non-tribal areas, and in this panchayat, the sex ratio is 1015 females per 1000 males, which is higher than the district and state sex ratio. Based on the Focused Group Discussion, it was found that most decisions in households are made jointly by both males and females. Traditionally, men hold a dominant role and make decisions with the assistance of women. The practice of Pardah, where women must compulsorily cover themselves in front of their husbands, elders, family members, and relatives, still exists in the village. This Pardah system is followed by women of all ages as it is a longstanding tradition. However, women in their area are allowed to be without Pardah when they are with friends or in marketplaces. The average age for marriage among women is 16-17 years. Many girls do not continue their education due to various reasons. The quality of education is often poor, leading to lower grades in 8-10 standard exams, and if they fail, they tend to discontinue their education. Additionally, early marriages at the age of 16 or 18 also hinder their educational pursuits. Some parents do not allow their daughters to pursue higher secondary education due to the fear that they might run away. Another significant reason is the allure of earning money by working, where they can earn around 150-200 rupees per day. This temptation sometimes leads to a preference for work over education or engagement in household chores. Women are typically confined to their homes, with occasional outings for work or essential errands.

Sex ratio





The sex ratio in Sitapuri village is favourable, with 1015 women for every 1000 men. This ratio is higher than the sex ratios observed in Madhya Pradesh, Dhar district, and Manawar block, which stand at 931, 961, and 980 women per 1000 men, respectively.

Language

Language plays a significant role in identifying individuals in a specific geographic region. The Bhil community primarily communicates in their native language, Bhili. However, the common language used among the people is Nimadi. For written communication, Hindi is predominantly utilized. As many individuals have received their education in Hindi medium schools, they are proficient in speaking and reading Hindi

Family structure

Mostly nuclear families are seen. As soon as the sons began to work and get married, they began to live separately with their families. However, the family farms collectively and splits the profits. When the parents get older, they move in with one of their sons, who looks after them till end. Before the death of their parent’s the son receives the small parcel of property that they owned

Education

Sitapuri village exhibits a lower literacy rate in contrast to the state of Madhya Pradesh. As of 2011, the literacy rate in Sitapuri village was recorded at 54.05 percent, whereas Madhya Pradesh had a higher literacy rate of 69.32 percent. Within Sitapuri, the male literacy rate was 63.25 percent, while the female literacy rate stood at 45.4 percent.

Sitapuri village panchayat is equipped with two aaganwadi, one primary school, and one middle school. According to the teachers, parents who recognize the importance of quality education prefer to admit their children to private and English medium schools. Only students who have poor academic records or come from economically disadvantaged backgrounds are enrolled in these schools. Unfortunately, there is a lack of awareness among parents regarding the importance of education, leading to a lack of motivation in encouraging their children to pursue education. During the harvesting season, school attendance suffers as parents often take their children to work for more than 30 days. This situation has been further impacted by the education policy implemented by the Government of Madhya Pradesh, which promotes social promotion and prohibits the failure of students until the 8th standard. This policy has had implications for the quality of education in both rural and tribal contexts.

Health facility, 3A, and sanitation

A vital aspect of human life is health. Therefore, the availability, accessibility, and cost of health services are crucial for both the poor and the extremely poor. There are some signs that can be used to indicate the current state of health.

Mobility toward the health

s.no	Health Care Centre	Distance From Sitapuri	Transportation Facility	Access For Poor	Affordable For Poor
1	Government Hospital Manawar	16km	Own Vehicle	Yes	Yes
2	Health Care Centre	6km	Own Vehicle	Yes	Yes
3	Primary Health Care Centre	0km	Not Functioning	Not Functioning	Not Functioning
4	Private Clinic	6km	Own Vehicle	No	No
5	Medical Shop	16km	Own Vehicle	Yes	Yes
6	Government Hospital Barwani	40km	Own Vehicle	Yes	Yes

The primary health care center in the village is not functioning, and the nearest government hospital is located in Manawar, which is 16km away. While transportation facilities are available through own vehicles, the accessibility and affordability of healthcare services for the poor in the village are still a concern. The presence of a private clinic within a 6km distance indicates some availability of medical services, but the lack of transportation options hinders accessibility for the villagers.

Sanitation

In this village, the main problem is sanitation. Despite the fact that the majority of households were eligible for Swachh Bharat Mission toilet construction subsidies. However, nobody is using their toilet; instead, people are using it as a storage space for items related to their homes.



DEVELOPMENT ISSUES

Migration

In the village, the Bhil community is predominantly engaged in migration, with at least one member from each household migrating to Gujarat. The primary reason for migration is the lack of sufficient land for cultivation in the local area, coupled with the inadequate and irregular wages received by small and marginal farmers in Sitapuri. Many individuals migrate along with their families. Another factor contributing to migration is the low wages offered under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in Madhya Pradesh, where the daily wage is only 190 Rs. This wage is considerably lower compared to what laborers can earn by working in factories. Hence, individuals prefer to work in manufacturing units in Gujarat and Indore, where they can earn higher wages ranging from 400 to 500 Rs. per day.

Alcohol

In the village, there is a prevalent addiction to liquor made from the Mahua flower, which is readily available. Both men and women in the village indulge in consuming this Mahua liquor.

Lack of Education

In the village, a significant number of individuals have completed their education only up to the fifth grade. Parents in the village show limited interest in educating their children as they engage them in farming and household chores. Additionally, Sitapuri village lacks educational facilities beyond the eighth grade, and students have to travel to Manawar for higher secondary education. The absence of transportation options and the 14 km distance discourages regular attendance at school.

Open Defecation

In Sitapuri village, the majority of households have constructed toilets; however, they are not being used for their intended purpose. The toilets were primarily built to avail government schemes and subsidies, and as a result, they are merely symbolic structures. Instead, these toilet structures are used as storage rooms or for other purposes. This prevalent practice of open defecation poses significant challenges for women, as they have to wait until early morning or after 7 o'clock in the evening to find a suitable time for open defecation.

Lack of Drinking Water

The residents of Sitapuri panchayat live in dispersed settlements, and they face challenges in accessing drinking water sources. The panchayat has a limited number of water sources, including 7 hand pumps and 4 wells, which are used for obtaining drinking water. However, during the summer season, these hand pumps become non-functional due to the scarcity of groundwater. As a result, women bear the responsibility of fetching water from the wells and carrying it on their heads, which further adds to their daily workload.

Health Care Facility and Transportation

the healthcare facility in Sitapuri village is limited and inadequate. The village lacks proper medical infrastructure, and accessing healthcare services is a challenge for the residents. The primary health care center in the village is not in working condition, and the nearest government hospital is located 16 km away in Manawar.

In terms of transportation, the villagers rely on their own vehicles or have to travel on foot to reach the healthcare facilities. This indicates a lack of public transportation options, which further hinders their access to medical services.

Inaccessibility to formal credits

People are highly depending upon agriculture. Crops like soybean, cotton, and maize are main crops for the village. But the ultimate challenge is all these crops sowing time is almost same or near to each other (May-June and June-July). And this is the time when village people need credits (Sources: crop cash flow study and FGD with farmers). Due to inaccessibility to formal credit system they use to lend money from informal sources at high interest rate (according to participants an average of 10- 15percent per month) that in turn create vulnerability to village people and these factors increases more to people in case of crop failure situations.

Early Marriage

As per the villagers, boys in Sitapuri typically get married at the age of 15, while girls get married at 17. The prevailing belief is that marrying a girl at a relatively younger age is advantageous for the family as she can assist with domestic and agricultural tasks, reducing the family's burden and potentially improving their economic status. This also allows the girl to stay at home and take care of household responsibilities if the family engages in migration. However, early marriages have negative consequences, including larger family sizes, increased health risks for both the child and mother due to their low maturity during pregnancy, and various implications such as girls dropping out of school and assuming family responsibilities at a very young age.



CULTURAL DIMENSION

Marriage

The tribal community follows a distinctive marriage system where they solemnize their union by taking a vow to nature. They can only marry individuals from outside their own surname, as marrying within the same surname is considered incestuous. In the Bhilala tribe, it is customary for the groom to provide a dowry to the bride's family as part of the marriage arrangement.

Inter-caste marriages and love marriages are generally not accepted in the village. If such marriages do take place, the girl is subjected to certain restrictions. She is prohibited from visiting her parents' home, communicating with them, or even visiting her relatives. These restrictions do not apply to boys. In the case of a love marriage within the same caste, the groom's family must pay a fine to the bride's family. Typically, the fine amount is around Rs. 2 lakhs. The bride's family receives 1.5 lakhs from this sum, while the remaining 50,000 rupees is used for purchasing goat meat and alcohol.

Parda system

In a unique cultural practice observed in this tribal area, women never remove the saree from their heads, which signifies that they do not reveal their faces to any male other than their husbands, especially if the male is older than married women. Despite progress in the 21st century, women in tribal families still face backwardness, largely influenced by these traditional norms and practices.

Gatha

Gatha is a distinctive custom observed in the village where people create stone structures in remembrance of individuals who have died in accidents. These structures are worshipped as a form of reverence. The belief behind this practice is that if someone passes away due to an accident, they are revered as a deity. During the 14 days of Diwali, goats are sacrificed near the Gatha structure on a specific day known as Gatha Choudas. This occasion is marked by a fair organized by the villagers, which is named after the ritual itself, Gatha Choudas.

Belief in superstition

Superstition refers to beliefs that cannot be rationalized or explained by logic or scientific reasoning. In the village, there is a belief among the residents that certain women possess the knowledge of witchcraft (jadu tona) and have the ability to cause illness in individuals or harm animals through their supernatural powers. These women are commonly referred to as dakini or witches. Some people seek the assistance of these witchcraft practitioners to resolve their problems. When conflicts arise within households, such as disputes among family members or between spouses, individuals attribute these issues to the influence of witchcraft. The witchcraft practitioners provide a powder-like substance, resembling medicine, and instruct the recipient to secretly administer it to the person they wish to control. In return for their services, the witchcraft practitioners accept offerings of chicken and goat meat as payment.

Mannat

Mannat is a form of prayer where individuals express their desires and seek blessings from their deity for future events or personal improvement. They perform this ritual at specific religious sites. When someone's wishes or goals are not fulfilled, they resort to Mannat and make a vow to their deity. Once their wish is granted as per their Mannat, they offer offerings such as goats, roosters, and coconuts to express their gratitude to the deity.

THE MAIN FESTIVAL OF THE BHIL TRIBE

Bhaguria Fair

Festivals hold significant importance in the lives of Bhil tribal communities as they provide a much-needed respite from their daily routines. Among these celebrations is the vibrant carnival known as 'Bhaguria,' which is enthusiastically observed by tribes such as Bhil and Bhilalas.

This age-old festival is highly cherished in regions including Jhabua, Dhar, Alirajpur, and Khargone. It takes place just before Holi, during which people joyfully apply colored powders to each other, while dancing and singing to traditional tribal melodies. Also, young tribal individuals adorned in colourful attire, showcasing their cultural instruments, singing melodiously, and engaging in regional dances at the local marketplaces.

Bhaguria holds historical significance, particularly in relation to agriculture. It signifies the culmination of the harvest season, and the local community celebrates this festival as a way to acknowledge the completion of their agricultural activities.

Divasa

Divasa is a tribal festival observed on the final day of the initial fortnight of Shraavanmaas. It is a celebration where the tribal community worships and bathes bullocks and other animals, considering them as manifestations of the divine.



Ghanghor

Ghanghor is a widely celebrated festival of the Bhil tribe, in the village, marked by a visit to the nearby village temple. At this temple, wheat is grown in numerous pods, known as "Mata ka sthan." These pods are then taken back to the homes of the villagers, where they are cared for over a period of nine days. During Ghanghor, people engage in the worship of the nine forms of Durga, namely Shaila Putri, Brahmachari, Chandra ghanta, Kush Manda, Skanda Mata, Katyayani, Kala Ratri, and Mahagauri. Some individuals observe a fast for the entire duration of the nine days. It is common for marriages to take place before or during the Ghanghor festival in the village.

Akhateej

The Bhil tribe observes Akshaya Tritiya in their own distinctive manner. They follow a number of rites and traditions on this auspicious day in an effort to attract blessings and wealth. Members of the Bhil tribe assemble at a predetermined location, typically a temple or other sacred spot, to give prayers and carry out customary rites. They present their gods with presents of flowers, fruits, and other fortunate objects.

Traditional institution

Sitapuri village is home to various local deities, including the revered Bhilat dev (God of Bhils). Among the significant temples in the village, the Sati Mata temple holds particular importance.

Tree worship

In the Bhil tribe, each family has a designated tree that holds great significance for them. This tree passed down through generations, is worshipped and revered by the family. Throughout their lifetime, they hold a deep reverence for this specific tree and never engage in the act of cutting it. Instead, they continue to worship and cherish the tree as a sacred symbol of their ancestral heritage.

Bhad

Bhad is an individual responsible for maintaining ancestral records in the village, with each family having their own designated Bhad. Originating from Chittorgarh, Rajasthan, the Bhad visits the village every 3-4 years to narrate the stories of ancestors. Following this, they meticulously document the names of new family members and those who have passed away. As a gesture of appreciation, family members contribute monetary donations or offer items such as clothes, cows, goats, chickens, and bulls to the Bhad based on their personal discretion.

Jajmani system

The Jajmani system is a unique feature of rural Indian villages. It involves members of different castes providing services to members of other castes. Those who receive the services are known as Jajmans, while those who provide the services are referred to as kamins. For instance, a barber may offer his services to landowners, making the landowners the Jajmans and the barber the kamins. The kamins are compensated with crops or grains, typically on an annual or semi-annual basis. This system helps to ensure job stability within the village community.

CONCLUSION

In conclusion, this research paper sheds light on the socioeconomic aspects and cultural practices of the Bhil tribe in Sitapuri Panchayat, Manawar Block, Dhar District. The study identifies key development challenges including limited access to education, gender discrimination, inadequate healthcare facilities, sanitation issues, and the prevalence of harmful cultural practices. It emphasizes the need for targeted interventions in education, healthcare, infrastructure, and gender equality to uplift the community and foster sustainable development. The findings underscore the importance of understanding the socioeconomic conditions and cultural practices of the Bhil tribe in Sitapuri Panchayat to formulate effective strategies for improvement. By addressing these challenges and preserving their cultural heritage, the community can experience improved livelihoods, enhanced education, better healthcare, and overall well-being. This research provides valuable insights for policymakers, practitioners, and organizations working towards the development of marginalized communities, not only in Sitapuri village but also in similar tribal contexts, ultimately striving for inclusive and sustainable development.

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SUB-EPITHELIAL CONNECTIVE TISSUE GRAFT COMBINED WITH PLATELET-RICH FIBRIN IN MANAGEMENT OF PERI-IMPLANT SOFT TISSUE DEHISCENCE – A CASE REPORT

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ABSTRACT

Over the past 2 decades the use of dental implants to advance functional and esthetic demands of dentition has amplified significantly. Patients today have become extremely concerned about esthetics which has become an integral part of the periodontal practice. One of the major factors contributing to improved esthetics is soft and hard tissue management. A chief esthetic concern is soft tissue defects around implant restoration. Implant soft tissue dehiscences compromise the aesthetics of the supported restorations and also implant survival in the long run.

The present case report gives a novel technique for soft tissue reconstruction and covering defects associated with a palatally placed maxillary implant-supported restoration. A pedicle subepithelial connective tissue graft was prepared from the palatal mucosa and was displaced into the receptor site, along with the PRF. The receptor and donor site were primarily covered. After surgery of four months, the peri-implant soft tissue margin was compared with the baseline. A 2 mm increase in buccal soft tissue margin was accomplished. There was good stability of the soft tissue margin and the esthetic appearance of the implant site was well preserved. This case report demonstrates the possibility of fully correcting peri-implant soft tissue defects and achieving high patient satisfaction through a subepithelial connective tissue graft in conjunction with growth factors.

KEYWORDS: *Buccal peri implant soft tissue dehiscence ,peri implant recession , PRF , sub epithelial connective tissue graft*

INTRODUCTION

Dental implants are an extensively used treatment option in dental clinics. They have been proven to be a reliable solution for the successful rehabilitation of missing or non-restorable teeth with favorable long-term survival rates.¹ However, like every other procedure, they are not free of complications. The most dominant are mucositis(29.48%) and/or peri-implantitis (9.25%), esthetic complications, and loss of osseointegration prior to prosthetic loading.² Today, implant survival is not the solitary objective of implant dentistry. Optimum aesthetics and good patient satisfaction are considered game-changers in clinical practice.¹ The long-term success of implant-supported rehabilitation is strictly influenced by both the density and volume of available bone and the quality of soft tissues at the implant site.³ A major concern is the appearance of soft tissue dehiscence (STD) in the facial aspect, a common finding following implant restoration.⁴ Different soft tissue defects around dental implants have been introduced. A few of them are papilla or volume loss, peri-implant recession, and alterations of the ridge color and/or texture. Because of the high patient demand for esthetics, these defects make them more aware. Therefore these defects around implants demand treatment⁵

soft tissue dehiscences/deficiencies around implant (PSTD)is described as loss of attachment including one or more of their surfaces.⁶ Buccal peri-implant soft tissue dehiscences (PSTDs) develop due to the apical shift of the facial mucosal margin of the implant-supported prostheses. Implant malposition and the thin peri-implant phenotype are two of the key determinants for the occurrence of STDs.⁶ Four other parameters that have been evaluated are the level of the soft tissue margin (STM), the papillae height (PH) in comparison to the homologous tooth, the peri-implant mucosa color, and mucosa appearance (PMA).^{6,7} The role of peri-implant mucosa is to act like a soft tissue barrier by preventing bacterial penetration.^{8,9} Papilla loss is a most common peri-implant soft tissue complication.⁵

In the management of various mucogingival defects, Subepithelial CTG has proved to be successful. This article aims to treat soft tissue deficiency around the implant by CTG along with growth factors.



CASE REPORT

The present case reports a technique of treating soft tissue defect around implant associated with palatally placed maxillary implant-supported restoration with maxillary anterior 11.

2.1. Clinical case presentation

A 28-year-old male was referred from the Department of Orthodontics and Dentofacial orthopedics, Kvg Dental College and Hospital, Sullia DK to department of periodontology with a chief complaint of unesthetic placement of 11. (Figure1). The patient had placed the implant 1 year ago from a private clinic. The patient was a non-smoker with good general health and had received no antibiotics and/or periodontal therapy during the previous 1 year.

We came up with a diagnosis of soft tissue deficiency around implant PSTD.

PRESURGICAL PREPARATION

The procedure was explained to patient and informed consent was obtained. The patient was motivated toward the maintenance of his oral hygiene

SURGICAL TECHNIQUE

The flap design for the surgical procedure has been shown in Figure 4.

Following local anesthesia application (2% lidocaine, epinephrine 1:100,000). An intracrevicular incision was made followed by mesial and distal vertical releasing incisions. Both horizontal and vertical incisions are connected. A full-thickness flap was elevated in an apical direction until the mucogingival junction (MGJ). The periosteum was released and blunt dissection into the vestibular lining mucosa was performed to eliminate tension to help re-position the flap (Figure 2).¹²

PREPARATION OF DONOR SITE

The donor site for the sub-epithelial connective tissue graft selected was the palatal site of the same subject as the availability of quantity and quality of tissue. Steps for harvesting donor palatal tissue: a horizontal incision in the palate 3 mm from the free gingival margin, and two parallel internal vertical incisions, one superficial and one deep, and connected mesially and distally (L-shape). The underlying connective tissue of a thickness of 1–1.5 mm and a length of 3 mm was released at its base and removed. The wound was closed with simple interrupted 4-0 silk sutures. The graft was fit to the recipient site along with PRF and secured with an interrupted suture using 5-0 vicryl. Silk sutures were removed after 14 days; viable portions of the vicryl suture were removed after 3 weeks. To reduce the risk of post-surgery complications, the donor site was covered with non-eugenol coe pack. Healing took place by primary intention.

FOLLOW-UP AND MAINTENANCE

For maintenance of oral hygiene, instructions were provided to the patient. Instruction was not to brush their teeth in the surgical area and to use chlorhexidine gluconate mouth rinse (0.12%) for 60 s twice daily for 10 days and amoxicillin 500 mg thrice daily for 5 days to prevent infection. The patient was instructed to avoid muscle traction and trauma to the treated area for the first 3 weeks.

Suture removal was done after 10 days.

Recall visits for prophylaxis treatment were arranged at 1, 3, 5, 8, 12, 16 and 32 weeks.

DISCUSSION

SOFT TISSUE DEFECTS

Soft tissue around dental implants gets influenced by many factors, some of these have been studied well, and others have not been explored or are still controversial.¹³ soft tissue dimensions around the implant-supported single-tooth restoration are factors proposed to be important for the esthetic purpose of implant therapy (Belser et al.1998).³

RISK FACTORS

A key factor for the incidence of PSTD is found to be the buccolingual malposition of the implants.⁷

SURGICAL TECHNIQUES FOR THE TREATMENT OF SOFT TISSUE DEFICIENCY

A variety of surgical techniques have been recommended to treat soft tissue defects around implant, and the coronally advanced flap along with connective tissue graft is the most commonly described technique in the literature.⁶

Connective tissue grafts is successful when they attain adequate vascularization from the neighboring blood vessels a way of getting nourishment.¹⁶ Therefore in this clinical case report, the main idea was the preservation of the blood supply of the connective tissue graft as much as possible.

CONCLUSION

Soft tissue deficiencies around implants developed after implant loading of 6 months and could compromise the patient's aesthetics. When risk factors such as implant malposition and thin biotype exist the possibility of getting soft tissue defects around implant increases.⁷ coronally advanced flap with a CTG is proved to be a better surgical technique in treatment of soft tissue defect¹⁷

This article presented a case report with a subepithelial connective tissue graft, and PRF are an effective treatment modality for the management of PSTD affecting teeth in the esthetic zones of the mouth. This surgical technique resulted in the complete achievement of keratinized tissue and high patient satisfaction.

PICTURES



Fig 1

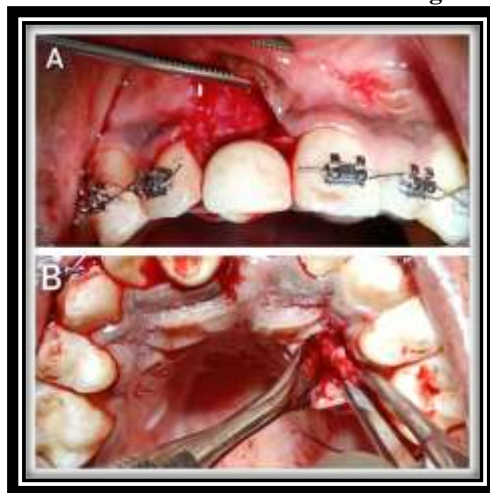


Fig 2

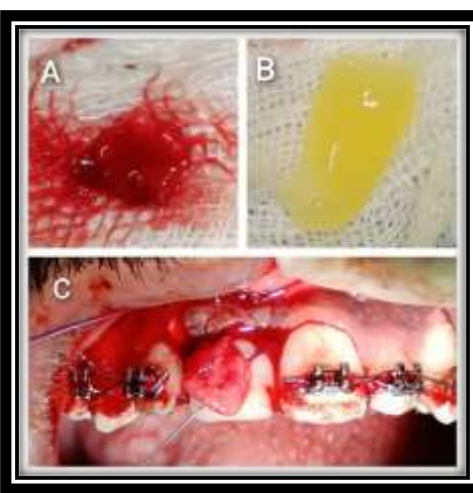


Fig 3

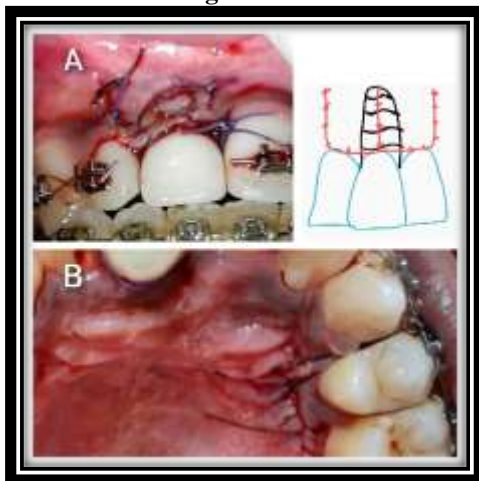


Fig 4



Fig 5



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PERFORMANCE MANAGEMENT: - CONCEPTUALIZING AND DESIGNING A SYSTEM

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ABSTRACT

Performance Management seems to be going up brighter on the horizon of Human Resource Management. It has emerged as its key function. Academicians, researchers, practitioners, and managers, have been contributing to this highly important and complex field of managing individuals and organizations since the last three decades. The plethora of contributions presents a wide variety of solutions for different organizations, situations and individual needs. Here inferences have been drawn, and a broad picture of the concept, and a general theme on designing and its implications has been drawn. The concept of performance management involves appraisal & evaluation and applied behavior analysis. Basically, it is a systematic data oriented approach to manage the people at work that relies on positive reinforcements, to maximize performance.

INTRODUCTION

In today's global economy, there appears to be a resurgence of renewed interest in the area of performance management as companies vie each other in search for a competitive edge, captured by a few but desired by all. The worldwide recession seems to have hastened this pace even more. In an environment where industrial organizations are facing the toughest time they ever had, many of them bowing out of the fear of uncertainties. With this backdrop, the understanding dawned upon is that the best use of human resources only can convert these threats into beneficial opportunities.

Adding fuel to this are the recent employee trends. The work force of the coming generation has surfaced with impatience and unrealistic expectations. They demand without long or proven career baselines, intellectual challenges, higher positions and more money than ever. The traditional work environment is not enough to sustain their behavior. They want a challenging, high paying, and fast paced, autonomous, reinforcing jobs, with more emphasis on personal satisfaction. The new acronym, MT-BOO, or Mean Time Between Other Offers, as given by Hal Lancaster, shows the edginess of the phenomena.

Thus these trends demands a highly specialized Performance Management system, with more responsibilities of appraising, enhancing, inducting, and maintaining the super performing individuals and organizations as a subsequence.

The Concept

The term Performance Management (PM) originated in the late seventies with the increasing use of behavioral science in business. The name of Aubrey Daniels et al. and Bill Hopkins is of special reference in this context when it comes to introducing the term 'Behavior modification' and 'Behavior Management' to the business world. Due to the negative reaction of the people the term was changed to Performance Management. Since then in the field of Applied Behavior Analysis, the term Organizational Behavior Management (OBM) was used, before finally settling for the expression Performance Management, when applied to in a business setting. Over the years and especially in the nineties Performance Management suddenly becomes a popular term with the increasing importance of human resource management.

Performance Management has two meanings -The first is for performance appraisal or evaluation process this is the most common usage. When used in this context the consequences are delivered by the system. The other meaning is for Applied behavior analysis in an Performance organizational setting here the consequences is delivered by an individual or team, performance is always defined as the sum of behaviors and results.

Performance Management is the systematic, data oriented approach to manage the people at work that relies on positive reinforcement as the major way to maximize performance. Performance Management is used across the world in a wide variety of organizations, private as well as public sector. PM has been used to address many organizational issues including quality control,



safety, and productivity improvement, appraisal system, reward system, behavior analysis, communication process and so on. As such Performance Management can have more than one definition.

Why measure performance?

Most people interested in measuring performance do so for one of these reasons :-

- You can't manage what you can't measure. Managers, as well as self-managing professionals and teams, can define what's expected, give feedback and provide recognition without performance measures.
- You can't improve what you can't measure. It's easy to say, "Let's try this new program" but without data before and after, you can't see if performance is actually improving.
- High performance teams and individuals require clear goals. Creating high performance requires a definition so you'll know it when you see it. In addition, all high performers get there because they have a clear picture of where they're going.
- Pay for performance requires metrics. If you want to pay based on performance, you need to have some way of knowing when the payout has been earned.

Design

Designing a formal performance management system is a difficult proposition for managers in general. Most of the situations are complex and require the help of human resource experts to do the special task. This is quite understandable, as poorly designed systems may do more harm than any good. Such recent new trends, as flextime, telecommuting, 360-degree feedback, the flattening of hierarchies, the six sigma methods and tools and the increased use of temps and contract workers present tough new challenges for supervisors in every field. The general considerations which managers should try to establish for a well-designed system that will give them the power to :-

- Motivate, and creatively brainstorm the minds and spirit of the employees,
- Make appraisals and evaluations, Develop and train them,
- Help these employees to maintain their good performance,
- Share responsibility, aligning of purpose, and encouraging creative talent,
- Help managers instill a sense of common purpose, promote communication, and make teams that perform,
- Shows managers how to create a sense of interdependence in a team, how to set goals through participative leadership, how to anticipate problems and deal with them before they arise,

To obtain immediate, positive results and eliminate self-destructive employee behavior,

Deal with poor performers appropriately, and,

- Attract the type of employee needed.
- Retain the best of them,

The Essentials

Performance management describes the processes by which managers improve the performance of their employees by utilizing their power to reward, develop or discipline as appropriate. A performance management system documents these processes as company policy and may form a legally binding contract between the company and one or more of its employees. It can be negotiated through individual contracts or by collective bargaining either directly with employees or with the involvement of a union. The essential components of a performance management system are:

•Time Factor: A performance plan is negotiated between a manager and employee for a given period (usually one year). The employee agrees to achieve a specified level of performance in exchange for a reward or to avoid discipline. The plan also commits the manager to assist the employee improve his/her performance.

- Feed Back: During the year the manager gives employees feedback on their performance and may suggest how it can be improved.
- Appraisal: Performance is appraised at year-end and decisions are made to reward, discipline or develop employees. Performance is measured in terms of either goals or competencies. Goals are best reserved for professionals or managers and competencies used for employees who are less skilled and/or have less control over their work environment. Performance pay or promotional opportunities are typical rewards. Discipline may include dismissal, suspension, and loss of privileges or counseling and are usually applied only to willful misbehavior.

Employee development, (rather than discipline) is used to address incompetence. Employees who either cannot or will not successfully undertake this development are made redundant to their position and either redeployed to a position they can handle (if one is available) or given a redundancy package.

The cycle is completed with a new performance plan. The Process.

The process for introducing a Performance Management System Can be as -:



1. Setting up a consultative process that will facilitate the involvement of managers, employee and union representatives as necessary in the designing of your system.
2. Identifying what you will measure and how you will measure it.
3. Committing your company to decisions to train, discipline, make redundant or reward according to the level of competency achieved.
4. Documenting and designing a system for writing performance plans, giving feedback and appraising performance.
5. Negotiating this system into your Enterprise Agreement and/or Individual Performance Contracts and train employees in its use.
6. Training the line managers to effectively use your system. Effectiveness.

A performance management system will only be effective if it:

- Rewards behavior that improves the employee's performance,
- Addresses behavior or incompetence that results in poor performance by discipline, development or redundancy.

Is integrating into a cycle of planning and performance measurement that extends from corporate, through business unit planning down to individual performance agreements

■ Objectively measures performance. If it is not objective, it will not operate as a system but be continually challenged by employees or managers. Objectivity can be achieved by setting competency standards or goals for various levels of performance, explaining how each will be measured and committing to rewards or discipline for each standard during Performance Planning. Appraisal then becomes a simple and unemotional process based on objective criteria. Deciding employee objectives, establishing priorities, and ensuring that employees understand their roles in the organization's overall mission, tips for coaching workers to improve performance levels.

■ Is trusted to be fair. Employees need to be reassured that the system will be used equitably across their organization. Achieve this by negotiating use of the system into an Enterprise Agreement or individual performance contracts and then making implementation of the system as transparent as possible.

■ Both managers and employees see that they have something to gain from using the system. Correct implementation sometimes requires managers to change the way they currently work. If they do not also see how it makes their job easier the system will quickly be seen as a bureaucratic chore and will not be implemented successfully. Good design will ensure ease of operation and managers should then be held accountable for using the system through their own performance contracts.

■ Employees naturally resist having their performance measured because they fear the consequences of it being found unsatisfactory. For most employees, this resistance evaporates very quickly if they can see it also provides real opportunities for superior performance to be rewarded.

CONCLUSION

In conclusion, the process of conceptualizing and designing a performance management system is of paramount importance for organizations aiming to enhance employee performance, align goals with strategic objectives, and foster continuous improvement. This paper has explored the key elements involved in creating an effective performance management system.

Firstly, it is crucial to establish clear objectives and align them with the organization's mission and vision. By defining performance expectations and linking them to broader strategic goals, organizations can create a sense of purpose and direction for employees, motivating them to excel in their roles.

Secondly, the process of designing performance measures and metrics should be carefully undertaken. Selecting appropriate and meaningful indicators allows organizations to assess performance accurately and make informed decisions. Balancing objective quantitative measures with subjective qualitative assessments, such as feedback and developmental discussions, contributes to a comprehensive evaluation process.

Moreover, the involvement of all stakeholders, including managers, employees, and HR professionals, is essential for the successful implementation of a performance management system. Open communication, collaboration, and training ensure that all parties understand the system's purpose, processes, and benefits, fostering a culture of performance excellence.

Furthermore, regular performance reviews and continuous feedback loops promote ongoing development and improvement. By providing constructive feedback, coaching, and opportunities for growth, organizations can cultivate a learning environment where employees feel supported and empowered to reach their full potential.



Lastly, the design of a performance management system should be flexible and adaptable to evolving business needs. Regular evaluations and adjustments based on feedback and changing circumstances enable organizations to refine their processes, ensuring the system remains relevant and aligned with organizational goals.

In conclusion, conceptualizing and designing a performance management system requires careful consideration of objectives, measures, stakeholder involvement, feedback mechanisms, and adaptability. When implemented effectively, such a system serves as a strategic tool that aligns employee performance with organizational goals, fosters growth and development, and ultimately contributes to sustained success. Organizations that prioritize the design and implementation of a robust performance management system are better equipped to maximize their human capital potential and achieve excellence in today's dynamic business landscape.

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IMPACTS OF SHADOW TRAINING ON REACTION TIME AND AGILITY AMONG HANDBALL PLAYERS

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ABSTRACT

The objective of this research was to investigate the effects of shadow training on reaction time and agility in handball players. The study involved thirty handball players from Ramakrishna Mission Vidyalaya Maruthi College of Physical Education, Periyanaickenpalayam, Coimbatore, Tamil Nadu, who were selected at the college level. The age range of the participants was 21 to 25 years. The players were divided into two groups, each consisting of fifteen participants. The groups were not intentionally matched. The Experimental Group (Group I) underwent eight weeks of shadow training (ST), while the Control Group (Group II) did not engage in any training program other than their regular activities. The participants' agility was assessed using the 4x10mts shuttle run test, and their reaction time was evaluated using the Penney Cup Test. The collected data was analyzed using a 't' ratio to determine any significant improvements at a confidence level of 0.05. The results revealed a significant improvement in agility and reaction time as a result of shadow training. It is important to note that the limitations of the study include factors such as diet, climate, lifestyle, as well as the participants' previous training. Nevertheless, the findings of this study align with previous research conducted by different experts in the field of sports sciences. In conclusion, shadow training had a significant positive impact on the agility and reaction time of college-level handball players.

KEYWORDS: Handball Players, Agility and Reaction Time.

INTRODUCTION

Handball is a dynamic and fast-paced sport that requires athletes to possess quick reaction times and exceptional agility. The ability to react swiftly and move with agility is crucial for successful performance in handball, as it directly influences a player's ability to anticipate and respond to the rapid changes that occur during a match. Therefore, finding effective training methods to enhance reaction time and agility is of great interest to coaches, athletes, and researchers.

One such training method that has gained attention in recent years is shadow training. Shadow training involves mimicking the movements and actions of an opponent or imaginary opponent, without any physical contact. It is commonly used in various sports to improve technique, speed, coordination, and mental focus. Shadow training allows athletes to refine their skills, develop muscle memory, and enhance their overall performance. Understanding the impacts of shadow training specifically on reaction time and agility among handball players is crucial for optimizing training programs and improving player performance. By investigating the effects of shadow training, coaches and trainers can develop targeted training regimens that address the specific demands of handball and help athletes reach their full potential.

Research in the field of sports sciences has shown that reaction time and agility can be improved through various training methods, including plyometrics, speed drills, and specific sport-related exercises. However, the specific effects of shadow training on handball players' reaction time and agility remain relatively unexplored. Therefore, this study aims to bridge this research gap by examining the impacts of shadow training on reaction time and agility among handball players. By assessing the changes in these two critical performance factors, this research will contribute to the body of knowledge surrounding effective training methods for handball players and provide valuable insights for coaches, trainers, and athletes.

To accomplish this goal, a group of college-level handball players will be selected, and they will undergo a shadow training program over a period of eight weeks. Their reaction time and agility will be assessed before and after the training program using standardized tests. Statistical analysis will then be conducted to determine if significant improvements in reaction time and agility can be attributed to the shadow training intervention. The findings of this study will not only enhance our understanding of the impacts of shadow training on handball players but also have practical implications for the development of training protocols aimed at improving reaction time and agility. Ultimately, the knowledge gained from this research has the potential to optimize training strategies, enhance player performance, and contribute to the overall advancement of handball as a sport.



METHODS

Experimental Approach to the Problem

To test the proposed hypothesis, a total of thirty college-level handball players were carefully selected for this study. The participants' ages fell within the range of 21 to 25 years. They were then divided into two groups, each containing fifteen individuals. It's important to note that no specific efforts were made to ensure equal distribution of attributes between the groups.

Group I, known as the experimental group, comprised fifteen participants who underwent an intensive eight-week shadow training program. On the other hand, Group II, serving as the control group, consisted of fifteen individuals who did not partake in any training program other than their regular handball activities.

By implementing this design, we aimed to observe the potential impact of shadow training on the selected variables. The control group allowed us to assess any changes solely attributable to the shadow training intervention in the experimental group. This approach provides a basis for comparison and enables us to draw more accurate conclusions regarding the effects of shadow training on handball players' performance.

Design

The parameters that were evaluated in this study included agility, assessed using the 4x10m shuttle run, and reaction time, measured using the Penney Cup Test. These measurements were conducted at the baseline before the intervention began and again after the eight-week period of shadow training (ST). The purpose of these evaluations was to analyze the effects of the training program on the participants' agility and reaction time. By comparing the measurements at baseline with the post-training results, we aimed to determine the impact of the shadow training intervention on these performance indicators.

Training Protocol

During the study, each training session lasted for a duration of 60 minutes. These training sessions were conducted three days per week over a span of 8 weeks. The shadow training program consisted of a structured regimen that encompassed various aspects of practice, including warm-up exercises, the main training routine, and a relaxation procedure after each session.

The warm-up phase of the training was crucial in preparing the handball players both physically and mentally for the subsequent activities. It typically involved a series of dynamic stretches, mobility exercises, and cardiovascular movements to increase heart rate, promote blood flow, and improve flexibility. The purpose of the warm-up was to reduce the risk of injury and optimize the players' performance during the training sessions.

Following the warm-up, the main training routine commenced. This phase of the shadow training program focused on replicating the movements, techniques, and actions typically encountered in handball matches. The participants engaged in simulated game scenarios, mimicking the movements of opponents or imaginary opponents. This allowed them to develop their skills, refine their technique, and enhance their overall performance in a controlled environment. The specific exercises and drills varied depending on the targeted aspects of reaction time and agility.

After completing the main training activities, a relaxation procedure was implemented to aid in the recovery and rejuvenation of the players' bodies and minds. This phase involved cool-down exercises, stretching, and breathing techniques to promote relaxation and prevent muscle soreness. By incorporating this relaxation component, the training program aimed to enhance the players' overall well-being and readiness for subsequent sessions.

Throughout the 8-week period, the handball players adhered to this structured training regimen, engaging in shadow practices three days per week. The duration of each training session, the inclusion of warm-up and cool-down procedures, and the focus on replicating game-like situations all contributed to the comprehensive nature of the shadow training program.

By following this consistent and well-designed training schedule, the study sought to determine the specific effects of shadow training on the participants' reaction time and agility. The aim was to assess the efficacy of this training method in improving these crucial performance factors in handball players.

Statistical Analysis

The collected data were analysed with application of 't' test to find out the individual effect from base line to post-test if any. 0.05 level of confidence was fixed to test the level of significance.



RESULTS

Table-I

Relationship of Mean, SD and 't'-Values of the Reaction Time between Pre & Post Test of the Shadow Training and Control Groups of College Level handball Players

Reaction Time	Groups	Test	Mean	S.D	't' Values
	Control Group	Pre Test	5.79	1.17	1.52
		Post Test	5.77	1.20	
	Shadow Training Group	Pre Test	5.03	0.75	8.30*
Post Test		4.71	0.75		

*Significant at 0.05 level of confidence

Table-I reveals that the mean values of per test and post test of control group for reaction time were 5.79 and 5.77 respectively; the obtained t ratio was 1.52 respectively. The tabulated t value is 2.14 at 0.05 level of confidence for the degree of freedom 14. The calculated t ratio was lesser than the table value. It is found to be insignificant change in reaction time of the college level handball players. The obtained mean and standard deviation values of pre test and post test scores of shadow training group were 5.03 and 4.71 respectively; the obtained t ratio was 8.30. The required table value is 2.14 at 0.05 level of confidence for the degree of freedom 14. The obtained t ratio was greater than the table value. It is found to be significant changes in reaction time of the college level handball players. The mean values on shadow training group and control group are graphically represented in figure-1.

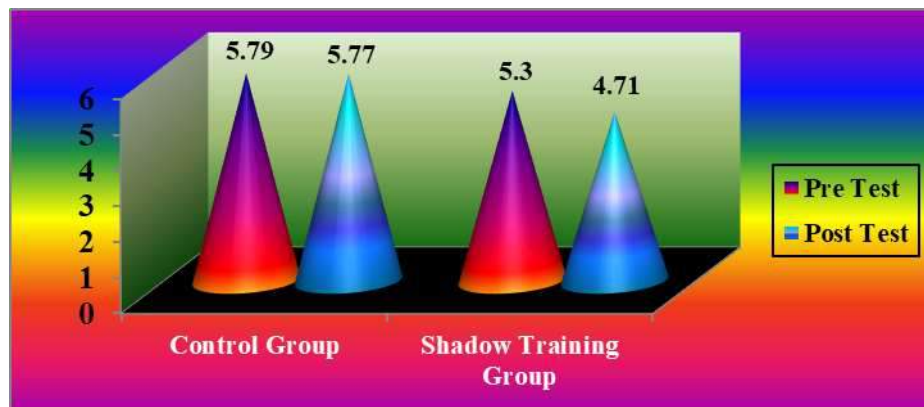


FIGURE-1: Bar Diagram Showing the Pre-Test & Post Test On Reaction Time of Control And Shadow Training Groups

Table-II

Relationship of Mean, SD and 't'-Values of the Agility between Pre & Post Test of the Shadow Training and Control Groups of College Level Handball Players

Agility	Groups	Test	Mean	S.D	't' Values
	Control Group	Pre Test	12.08	1.14	0.11
		Post Test	12.07	1.08	
	Shadow Training Group	Pre Test	9.76	0.71	8.33*
Post Test		9.36	0.67		

*Significant at 0.05 level of confidence

Table-II reveals that the mean values of per test and post test of control group for agility were 12.08 and 12.07 respectively; the obtained t ratio was 0.11 respectively. The tabulated t value is 2.14 at 0.05 level of confidence for the degree of freedom 14. The calculated t ratio was lesser than the table value. It is found to be insignificant change in agility of the college level handball players. The obtained mean and standard deviation values of pre test and post test scores of shadow training group were 9.76 and 9.36 respectively; the obtained t ratio was 8.33. The required table value is 2.14 at 0.05 level of confidence for the degree of freedom 14. The obtained t ratio was greater than the table value. It is found to be significant changes in agility of the



college level handball players. The mean values on shadow training group and control group are graphically represented in figure-2.

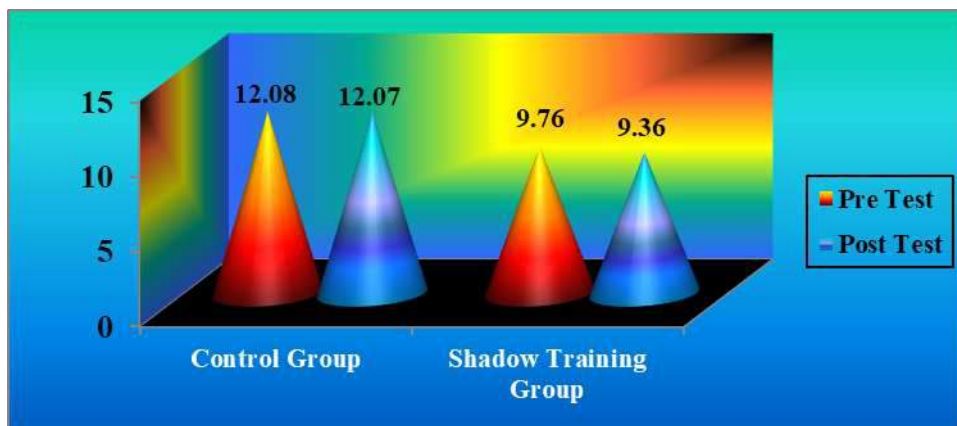


Figure-2: Bar Diagram Showing the Pre-Test & Post Test on Agility of Control and Shadow Training Groups

DISCUSSION ON FINDINGS

Shadow training has emerged as an effective and valuable training method for college-level handball players, particularly in terms of improving reaction time and agility. This study aimed to investigate the impact of shadow training on these performance factors by comparing the shadow training group with a control group. The shadow training program included various exercises specifically designed to enhance reaction time and agility. These exercises consisted of front runs, backward runs, side-to-side movements, and cross runs, all of which aimed to simulate game-like situations and replicate the dynamic actions required in handball. In addition to improving reaction time and agility, the shadow training program also targeted other physical fitness components such as speed and speed endurance.

The results obtained from this study demonstrated significant improvements in the shadow training group. The participants who underwent the shadow training program displayed substantial enhancements in both reaction time and agility. These findings align with previous studies conducted by **Jenith et al., (2021)**, **J. Nirendan et al. (2019)**, **S. Senthil Kumaran (2018)**, and **Mehmet Fatih Yuksel and Latif Aydos (2017)**, which also reported positive effects of similar training methods on reaction time and agility in handball players. In contrast, the control group, which did not engage in any specific training program beyond their regular handball activities, did not show significant improvements in reaction time and agility.

Overall, the findings of this study indicate that shadow training has a significant positive impact on reaction time and agility among college-level handball players. These results contribute to the existing body of literature supporting the effectiveness of shadow training as a valuable tool in enhancing athletic performance.

CONCLUSION

Based on the findings and within the limitation of the study it is noticed that practice of shadow training helped to improve reaction time and agility of college level handball players. It was also seen that there is progressive improvement in the selected criterion variables of shadow training group of handball players after eight weeks of shadow training programme. Further, it also helps to improve reaction and agility.

1. It was concluded that individualized impacts of shadow training group showed a statistically significant positive sign over the course of the treatment period on reaction time and agility of college level handball players.
2. It was concluded that individualized impacts of control group showed a statistically insignificant positive sign over the course of the period on reaction time and agility of college level handball players.
3. The results of comparative effects lead to conclude that shadow training group had better significant improvement on reaction time and agility of college level handball players as compared to their performance with control group.

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THE IMAGE OF THE AUTHOR AND THE LYRICAL OBJECT

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The image of the author, the lyrical subject and the lyrical hero form the basis of the subject structure. Since these categories depict objective reality through the lyrical “me”. But, this form of display means only the external manifestations of these three categories. And in terms of internal content, they differ from each other. In this article we consider the role of the lyrical object in creating the image of the author.

In the lyrics, one of the forms of conveying thoughts through the subject is the image of the author. In the theoretical part of the work, we expressed our personal position on the image of the author, taking into account the opinions of literary critic. For example, literary critic K.Khudaibergenov wrote: “If the reader does not see his own feelings in the poem, but sees only the author’s own feelings or life facts, then an image of the author is created” [11: 11]. Looking at it from this point of view, he sharply criticizes the opinion of literary critic T.Mambetniyazov, who made the wrong conclusion that some poems depicting the image of the author of that time have the image of a lyrical hero [12: 48-49]. So, in this opinion of the scientist (K.Khudaibergenov - P.D.), the poet’s soulful thing belongs only to him and no one else is excited by the idea that the image of a lyrical hero is being created. These comments of the scientist about the image of the author are correct from one point of view. But if you look at it from the other side, it is noticeable that these opinions about the image of the author are one-sided. Based on this point of view, we consider the image of the author conditionally in two:

1. Limited picture image.

2. Generalized image of the author.

The image of a limited author is explained by the poet's views on the events of life and the limitations of his understanding of the world, the narrowness of his spiritual world. Because the creation of a work of art imposes a great responsibility on the author, therefore not all works created in the field of poetry are considered poetry. True, a poet can find a really interesting, deep, thought-provoking thought from life, but if this thought is devoid of feeling, that is, consists of bare words, then any thought that has come into the world, no matter how inventive, loses its meaning. Therefore, if we supplement the opinion of K. Khudaibergenov, who entered into a scientific discussion with the literary critic T.Mambetniyazov mentioned above, then the assessment of the second scientist as an image of a lyrical hero is not only the image of the author, as the first scientist said (it is not enough to say that there will be a complete destruction of the image of the author), it turns out to be limited by the author’s image.

Also, in Karakalpak literary studies, some scientific comments were made on the problem of the lyrical object.

If in Russian literature Yu.N.Tynyanov [10: 325] and E.Nevzglyadova [5: 324] expressed an opinion about “things and events affecting the feelings of the poet”, then in Karakalpak literature K.Khudaibergenov [12: 84] and K.Orazymbetov [7: 35] on the basis of these opinions state their scientific views. By this they could mean the problem of the “lyrical object”, which is one of the objects of our research. Because the definition given to a lyrical subject as an instrument that awakens the poet’s inspiration and motivates his feelings corresponds to the theoretical views of the above-mentioned scientists that it is “a thing, an event that affects the poet’s feelings”.

For example, K. Khudaibergenov writes about this: “Things and events that cause feelings in poets can be similar or identical”. But they all act differently. If a poet is not touched by life, if he is “shy” to show his inner world and confines himself to counting and describing the external signs of things and events, then one poet can repeat not only another poet, but also himself” [12:84].

K.Orazymbetov places the subject in the ranks of categories that play a special role in creating the image of the poet and lyrical hero, and writes: “In some lyrical works, the author comes to the fore, and the lyrical hero becomes invisible”. On the contrary, in some works the lyrical hero stands before the eyes, and the author remains in his “shadow”. That is, we suffer together with the lyrical hero, we rejoice together, we feel ourselves inside the work, we are more aware of its emotional impact on us. Such features in the creation of a lyrical hero, an artistic image depend primarily on the skill of the author, his creative idea, his poetic vision, things, objects, his creative solutions, which are the basis for arousing feelings in the poet” [7: 22]. With this opinion, the scientist speaks of the need to pay attention to what affects the feelings (reason) of the poet in a lyrical work, and refers this to the number of issues rarely explored in literary studies [7:39-40].

Also noteworthy are the opinions of the famous literary critic K.Zharimbetov about the lyrical object. He distinguishes two groups of characters in lyrical works. 1. Subjective hero, i.e. lyrical hero. 2. Objective characters, i.e. participants other than the



lyrical hero, suggests that such characters perform an auxiliary service in the transmission of lyrical feelings and experiences [2:37-38].

That is, we conditionally divided the image of the author into a **generalized image of the author** and a **limited image of the author** according to a wide or narrow range of life phenomena, the level of the spiritual world of the poet.

There are sides connected in relation to the lyrical object of the generalized or limited image of the author. If the object can have a strong effect on the feelings of the poet, then the image of the author is generalized, that is, it will be able to convey feelings peculiar to many. And if the object cannot influence the poet's feelings sufficiently, then as a result, the recreated image of the author becomes dim, limited, narrow, worthless and insignificant.

Let's consider the poems where the image of the author is created, dividing them into two groups regarding the influence on the lyrical object:

1. Poems created under the influence of the same or similar to each other object, or the creation of several poems under the influence of the same object.

2. Poems created under the influence of separate, dissimilar objects (for example, an object that has influenced the feelings and thoughts of a poet in the process of creating one poem cannot be repeated in the creation of another poem).

The poet I. Yusupov has a well-known cycle of poems called "Orpheus", "Shoydania", "From the golden throne of the Virgin", "The stars have gone out in my heart", "Dignity", "Your young land is dry here".

In these poems, the image of the author is created, that is, they deal with events concerning the poet's personal life. In these works, the image of the author is one, as well as one object that contributed to the creation of these poems, awakened his inspiration, influenced the feelings and thoughts of the poet, this is the untimely death of the poet's beloved wife.

The scientist K.Orazymbetov, analyzing these poems from a scientific point of view, correctly argues that in them the literary hero is the poet himself, that these poems are autobiographical in nature, and that in them, the poet, through the personal grief and suffering of the hero, was able to influence the emotions of readers [6: 21].

In addition to these statements, we want to emphasize that in the above-mentioned poems, the image is not created of a lyrical hero, but a generalized image of the author. Since the hero in them may be typical from the point of view of displaying feelings touching for readers, but due to the fact that the poet highlights autobiographical facts, he still remains as the image of the author.

There are lines that closely connect these poems with each other. The first is that the hero is the same person in them (the poet himself), the second is that all these works were written in the same historical conditions (the object), that is, at the moment of bereavement due to the untimely death of the poet's wife. The image of the author created in these poems, written by the wounded heart of the poet due to the separation of his beloved wife, who dealt a heavy blow, reversed his fate, destroyed the poet's life path, leaves an eternal unfading trace in the memory of readers. And therefore, we evaluate this lyrical cycle of the great poet as the best example of poems created under the influence of the same object.

We also see the image of the author created in many lyrical works included in the collection "Жоллар" ("Roads") by the poet Sh.Seitova. For example, the following poems of the poet can be attributed to this group: "Китабымның "бет ашары" ("Preface of my book"), "Туңғыш хасыл" ("The First harvest"), "Қосық жазылажақ..." ("The verse is flowing..."), "Фольклоршы Қаллы аға Айымбетовтың отызымда айтса да қырықтан соң гүрсиндирген бір ақылы" ("The instruction of the folklorist Kally aga (brother) Aimbetov, expressed to me at the age of thirty, but saddened me after forty"), "Әкем Қазақбай Сейтовтың ядымда қалған ақылларынан" ("From the instructions of father Kazakbay Seitov, remaining in my memory"), "Умытылған "альбомнан" ("From the forgotten "album"), "Қайтымы жоқ – атылған оқ" ("There is no return – to a shot bullet"), "Ядтағы мөр" ("Printing in memory"), "Сағыныш" ("Sadness"), "Улым Бахтиярға үш ғаззелсымақ" ("Three gazelles to my son Bakhtiyar"), "Екинши неке" ("Second marriage"), "Улым, саған айтаман» (дүркин) ("Son, I dedicate to you" (cycle), "Кел, теріс қайтайық" ("Let's go back"), "Әкемнің жоралары" ("Father's friends").

The collection begins with the poem "Preface of my book". It is felt that the poem was created specifically for this collection. Since, in it, the main purpose of the author, the proposed collection to readers, the general public, is about the poet's sense and responsibility to a work of art, an artistic word, the presentation of a human and humanistic program to the people and society. So, the lyrical object that became the impetus for writing this poem is the poet's responsibility to the reader and the people. Here are examples from the poem:

Оңалсам – сезім менен,	If I correct myself, let it be with a feeling,
Ой менен оңалғайман,	Let me correct my thoughts,
Өз сөзім өзім менен,	Himself, together with his word,
Жоғалса жоғалғайман.	Let me get lost with him.

Қамсығар болса халқым,	If my people are sad,
Мен туңғыш жас алғайман!	The first tear will appear in my eyes!
Кім оған салса салқынын,	Who will be hostile to my people,
Шаш емес, бас алғайман!	I'm ready to blow their heads off [9: 5].

There is a poem by Sh.Seitova "Sadness", similar in content to the works of I. Yusupov, where the image of the author was created. The poem is dedicated to the poet's late wife, Bibisara. The similarity of this work to the marsiyam (cycles of poems) about the loss of I. Yusupov's wife was analyzed by us above, the object of these two poems are very close to each other, that is, the same objects caused the creation of these poems. But, in creating an artistic image, the poems of the two poets are fundamentally different from each other.



The poet is a special creature, a special world, the poet's creativity is a divine phenomenon. Since poems are not born by themselves. At such a moment, a poet needs a bird of inspiration, a muse, a heavenly horse with wings. These are abstract things that cannot be seen with eyes and touched with hands. They are felt only by the poets themselves. To awaken these things in the poet, he will need some kind of impetus to action. Literary critic K.Orazymbetov writes about the birth of the verse as follows: "They often say the phrase that poems are born through torment. The main reason for this is that if there is no literary object that does not motivate the poet's feelings, if the poet could not see this object, if he could not create an artistic and lyrical image through the appropriate detail, artistic means, techniques, then a good poem will not come out of it" [8:151]. So, if the poet has no inspiration, then the poem is not born, and if there is no object that has influenced the poet's feeling, then this means that inspiration does not awaken. These are related things. Poems written about the process of verse birth can also be found in our national poetry. For example, in the poems of the poetess Minaykhan Zhumanazarova «Илхам қусыма» ("Bird of Inspiration"), "Илхам периси" ("Muse") there is a similar state of mind. Here are examples from the poems of the poetess.

Кеше өз-өзимнен үйге сыймадым, Yesterday at home, I couldn't find a place for myself,

Бир муңды сийрат тынышымды алып. I was troubled by an incomprehensible sadness.

Қарап отырып-ақ, еңиреп жыладым, For no reason, for no reason, I cried, sobbed,

Ялғаншы дәстинен өренип жанып. My whole body was burning with a false life.

Кимгедур ах урып келди шағынғым, Someone wanted a revelation of the soul

Жеккелик курсаулап қәддим бүгилди. Loneliness broke me.

Кимгедур бас урып, келди табынғым, Someone wanted to bow down,

Күттим сарсылып кимдидур кимди. I was waiting for someone, someone with longing.

Сол пайыт қолыма туттым қәлемди, At this moment I picked up a pencil,

Дәртлерім төгилди қағазға саулап. My anguish and sadness poured onto the paper.

Бақсам сағыныппан илхам перимди, I realized that I was longing for my muse,

Сол екен күткенім сағынып, жаурап... That's who I was waiting for, crying my eyes out ... [3: 7].

After reading these lines, the first thing that comes to our mind is a sincere conversation between the poetess and her muse. She treats her muse as an animate object: "I was troubled by an incomprehensible sadness", "I realized that I was pining for my muse".

In these poems, where the image of the poet is created, we see the state of mind associated with the birth of the poem. Here is the agony that plunged the poetess into a "labor struggle" and made her suffer, the long wait for her muse, her slow appearance, the birth of a verse, the reflection of the poet's sufferings on paper, the melting of the mental anguish accumulated over a long time and the pleasure of the poetess from the fiery breath of the poem.

Poems of this content are also found in the works of other poets. For example, T.Matmuratov in the poem "Үш ай болды" ("It's been three months now") writes:

Үш ай болды, сағындым сени... I've been missing you for three months now...

Үш ай болды, қосық жазбадым. I haven't written poetry for three months.

Йош периси тәрк етті мени, My muse has left me,

Мен жарылып кете жазладым, I almost burst with longing [4: 82].

One of the poets who has his own voice in modern Karakalpak literature - B.Genzhemuratov in one of his poems noted: *A good poem is not written without the permission of the Almighty*. With his statement, the poet explains in poetic language that lyrical works do not originate without the influence of any object of the external environment, that the composition of poems is a divine phenomenon.

In the poem of this poet "Қарызым көп" ("I have a lot of debts") it is written in the form of a revelation with the scientist K.Orazymbetov on the day of the death of the great poet I. Yusupov.

The addressee of the lyrical "me" is known here. Let's try to find the answer to the question: what is the role of the object in creating the image of the author through examples from the poem.

Бахтыярда қосық жоқ. Қарақалпақтан жыр кетти...

"Тирилер"ден түңилип, бул дүньядан Тири кетти.

Енди ғана ержеткен Поэзия жетим қалды.

Шайырларды жылатып Уллы Ибрайым пийрим кетти...

Bakhtiar has no poems. The narrator left the Karakalpaks...

Disappointed in the "Living", he left the mortal world Alive.

Only matured Poetry remained an orphan.

The great mentor Ibrahim left, made the poets cry...

Бул дүньяға, жоражан, айтатуғын арызым көп,

Өзим билген хәм билмеген өгеуім шәрт парызым көп.

Пүткіл өмирим дауама желкемде қылыш турар:

Уллы Ибрайым шайырға жақсы қосық қарызым көп...



*I have many complaints about this world, my friend,
I have a lot of debts that I know and don't know.*

A sword will stand on my head all my life:

To the great poet Ibrahim, I owe a lot in poetry... [1: 31].

This poem is a bereavement, a kind of requiem. This is not only the personal grief of the poet B. Genzhemuratov, but the sadness of all Karakalpak poets, and it is raised to the level of grief of the whole people. Indeed, the death of I. Yusupov and the burial of his body to the earth was a great loss for Karakalpak literature.

Every line, every word, every punctuation mark in the poem fulfills a poetic meaning. For example:

Disappointed in the "Living", he left the mortal world Alive.

Here the word Alive in quotation marks directly indicates those empty people who are unworthy to be called people, the second word Alive with a capital letter is directed at the great poet I. Yusupov, who indicates that he is worthy of this word with a capital letter, as a great poet. Hence, it is necessary to understand the philosophical meaning of this saying that not all people are the same, some are fundamentally different from each other.

The poet's creativity is a field of word competition, which requires courage. Only those poets who have a brave word and a brave heart can stand on this field.

A sword will stand on my head all my life:

I owe a great poet a lot in poetry...

The author through these lines takes on great responsibility as the creation of good poems in Karakalpak poetry after the great poet. This responsibility is like a sword on the poet's head. To say such words, a poet will need to have a brave heart.

As for the lyrical object that caused the writing of this poem, it is undoubtedly the death of the great poet I. Yusupov and the dedication of his body to the earth. This sadness deeply wounds the author's heart and makes him suffer. As a result, this touching poem is born. Through this we want to put forward a scientific concept about the need for a good object for the birth of a good verse.

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Образ автора и лирический объект

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Резюме.

В данной статье рассматривается роль лирического объекта в создании образа автора.

Формой отражения эмоции через субъект в лирике является образ автора. Мы взяли образ автора как условно-обобщенный образ автора и ограниченный образ автора. Является ли образ автора обобщенным или ограниченным, также зависит от лирического объекта.

В циклах стихотворений поэта И.Юсупова «Орфей», «Шойдания», «От золотого трона Девы», «Звезды погасли в моем сердце», «Достоинство», «Сухая здесь твоя молодая земля» описываются события, связанные с личной жизнью поэта. В этих произведениях образ автора одинаков, как и объект, повлиявший на мысли поэта, пробудивший его вдохновение и вызвавший создание этих стихов, - безвременная смерть его любимой супруги.

Вот в этом аспекте вопросы авторского образа и лирического объекта исследовались в лирике Ш.Сейтова, Т.Матмуратова, М.Джуманазаровой, Б.Генжемуратова.

Стихотворение не рождается само по себе. Поэту для этого нужно вдохновение. А для того, чтобы пробудить вдохновение поэта, ему нужен лирический объект, который будет его мотивировать. В результате лирического объекта рождается эмоциональное стихотворение. Тем самым мы ввели научную концепцию о том, что для рождения хорошего стихотворения необходим хороший объект.

The image of the author and the lyrical object

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SUMMARY

This article discusses the role of the lyrical object in creating the image of the author.

The form of reflection of emotion through the subject in the lyrics is the image of the author. We took the image of the author as a conditionally generalized image of the author and a limited image of the author. Whether the image of the author is generalized or limited also depends on the lyrical object.

In the cycles of poems by the poet I. Yusupov "Orpheus", "Shoidania", "From the golden throne of the Virgin", "The stars went out in my heart", "Fazilat", "Your young land is dry here" describes the events related to the poet's personal life. In these works, the author's image is the same, as is the object that influenced the poet's thoughts, awakened his inspiration and caused the creation of these poems - the untimely death of his beloved wife.

It is in this aspect that the issues of the author's image and the lyrical object were studied in the lyrics of Sh.Seytov, T.Matmuratov, M.Dzhumanazarova, B.Genzhemuratov.

The poem is not born by itself. The poet needs inspiration for this. And in order to awaken the inspiration of the poet, he needs a lyrical object that will motivate him. As a result of a lyrical object, an emotional poem is born. Thus, we introduced the scientific concept that a good object is necessary for the birth of a good poem.



FEASIBILITY STUDY OF ENHANCING AGRICULTURAL PRODUCTIVITY IN KANDHAR BLOCK OF NANDED DISTRICT, MAHARASHTRA

Kshitija Deshmukh

ABSTRACT

Shekapur village in the Marathwada region of Maharashtra is predominantly an agricultural community with more than 90% of the land (over 500 acres) dedicated to cultivation. The village, surrounded by hilly terrain and situated next to the Manyad river, faces challenges such as limited access to nearby markets for crops like Sugarcane and Turmeric, as well as a lack of modern machinery. The majority of farmers are aged between 50 and 60 and rely on traditional farming methods. Intercropping is common among small and marginal farmers to maximize production on limited land. There is a need for advanced machinery to increase productivity. Groundwater depletion is a future concern as more than 50% of farmers rely on borewells for irrigation. Lack of awareness about government support schemes, market information, and workshops hinders the farmers' access to resources and knowledge. Livestock rearing is practiced as an allied activity, with buffaloes being the dominant livestock due to two local dairies. The availability of agricultural labor has reduced, and the majority of farmers have loans from the State Bank of India. Overall, the agriculture productivity of the village is moderate, and farmers believe it will take another 10 to 20 years to achieve the level of modern agriculture seen in Western Maharashtra.

KEY WORDS: *Shekapur, Marathwada, Maharashtra, Agriculture, Cultivation, Crop diversity, Machinery, Water availability, Livestock rearing, Agricultural labor*

INTRODUCTION

India, as a developing country, heavily relies on agriculture, which serves as the backbone of its economy. With approximately 60% of the population directly dependent on agriculture, it plays a crucial role in providing employment opportunities to half of the country's inhabitants. The agricultural sector contributes 18% to India's GDP and excels in the production of various crops such as pulses, rice, wheat, spices, fruits, sugarcane, and cotton. Maharashtra, the second most populous state, possesses a vast rain-fed cultivation area of 33,500 square kilometers. However, the state faces the challenge of 24% of its regions being affected by drought. Nanded, located in the Marathwada region of Maharashtra, occupies the southeastern part of the state. With a total area of 10,528 square kilometers, Nanded is home to a population of approximately 112 million. Agriculture serves as the primary occupation for the majority of the population, providing employment to around 85% of the people. The district predominantly cultivates kharif crops such as cotton, jowar, rice, tur, mung, and urid. Banana cultivation is also renowned in Nanded's horticulture sector. However, Kandhar, a block within the Nanded district, faces low agricultural productivity due to undulated land caused by surrounding hilly areas and the absence of proper irrigation systems, despite having access to the Manyad river. The livelihoods of the rural population in India, particularly small and marginal farmers who constitute about 85% of cultivators, face challenges related to declining profitability and increasing risks in agriculture. These vulnerabilities arise from factors such as limited scale of operation, lack of information, poor access to credit, weak market participation, and exploitation by intermediaries. Although agricultural cooperatives have long been the dominant form of farmer collectives, they have limitations, except for a few successful exceptions in dairy farming. In recent years, the formation of producer organizations has emerged as an effective approach to address the challenges faced by small and marginal farmers. Considering the importance of agriculture in the Kandhar block of Nanded district, Maharashtra, a study has been conducted with specific objectives. Firstly, the study aims to examine the existing agricultural practices and productivity in the selected panchayat. It will analyze factors such as cropping patterns, irrigation methods, technology adoption, and overall farming efficiency. Secondly, the research seeks to identify the risks, challenges, and market patterns in agricultural production. This includes assessing the impact of weather conditions, market fluctuations, pest infestations, and market accessibility on farmers. Thirdly, the study aims to explore existing and new techniques that can enhance agricultural productivity in the Kandhar block. This may involve promoting innovative irrigation methods, utilizing advanced farming technologies, improving soil health, and adopting sustainable practices. Lastly, based on the findings, an integrated plan will be developed to improve the agricultural pattern in the Kandhar block. This may include capacity-building programs, improved



access to credit and markets, infrastructure development, and knowledge-sharing platforms. Overall, the study aims to contribute to the sustainable development of agriculture in the Kandhar block of Nanded district. By addressing the objectives, it seeks to provide valuable insights and recommendations that can help farmers enhance productivity, reduce risks, and improve their livelihoods. The ultimate goal is to foster a thriving agricultural sector in the region, benefiting not only the farmers but also contributing to the economic growth and food security of Maharashtra and India as a whole.

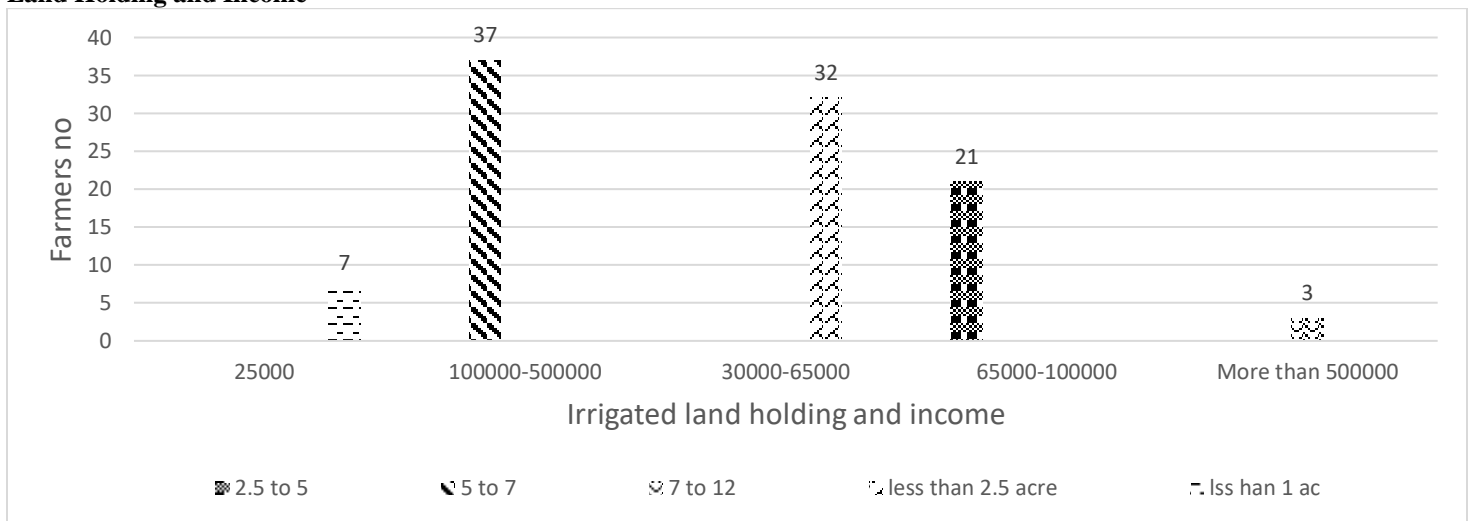
STUDY AREA AND METHODOLOGY

In the research study conducted in the Kandhar block of Nanded district in Maharashtra, a specific village called Shekapur Panchayat was chosen for investigation. The study period spanned from May 27, 2022, to July 12, 2022. The research design encompasses the overall strategy of the study, including the various components and the definition of research problems. The study employed different types of research designs such as qualitative and quantitative approaches (including surveys and case studies), experimental methods, literature reviews, and techniques like Focus Group Discussions (FGD) and Participatory Rural Appraisal (PRA) to address the research questions. The selection of the village for the study was purposive, while the respondents were chosen using the Stratified Random Sampling method. 100 farmers were selected as respondent.

RESULT AND DISCUSSION

Below are the results inferred from 100 sample survey. It is covering different factors responsible for agriculture productivity.

Land Holding and Income



Income is directly linked to the amount of irrigated land, as agriculture is the primary source of livelihood. Farmers with less than 1 acre of land earn up to Rs 25,000 annually. Over 50% of farmers earn up to Rs 100,000 with land up to 5 acres. 37% earn between Rs 100,000 and Rs 500,000 with land up to 5 acres. Only 3% of farmers own more than 7 acres and earn over Rs 500,000. The maximum landholding per farmer is 12 acres. Limited irrigated land results in lower production. Marginal farmers cultivate traditional crops like soybean and cotton due to lack of capital, while wealthier farmers focus on cash crops like sugarcane and turmeric. Marginal landholders rely mostly on traditional farming methods.



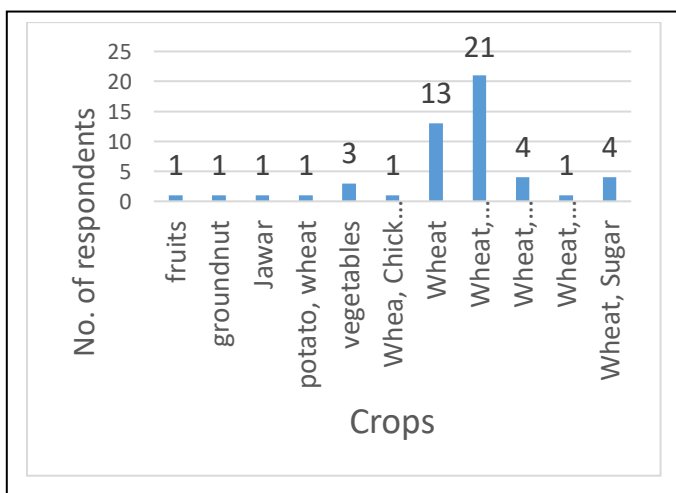
Changing trend of agriculture

Parameters	1970-80	1980-90	1990-2000	2000-2010	2010-2020
Rainfall	Drought	90%	50%	Drought	Drought+ heavy rain
Crops	Piwala, Groundnut, Moong	Zingari, White Tur, cotton,	Cotton, Chick pea, Groundnut, Til	Soyabean, vegetables.	Sugarcane, Turmeric, Fruits
Water Sources	Well, Rainwater	Well, River, Rainwater	Rainwater, well	Well, Borewells	Rainwater, River, Borewells
Irrigation system	Moat	Farrow system	Motor pump, open flood	Drip	Sprinkler
Fertilizers	Organic	Organic	Organic+ inorganic	Organic+ inorganic	Organic+ inorganic
Crop diseases	Unaware	Unaware	Aware- Boll worm, Root rot	45%	25%
Labor Availability	80%	80%	80%	35%	35%
Migration	20%-Agriculture work	20%-Agriculture work	20%-Agriculture work, Kiln making	40% Agriculture work, Kiln making, Education	45% Agriculture work, Kiln making, Education

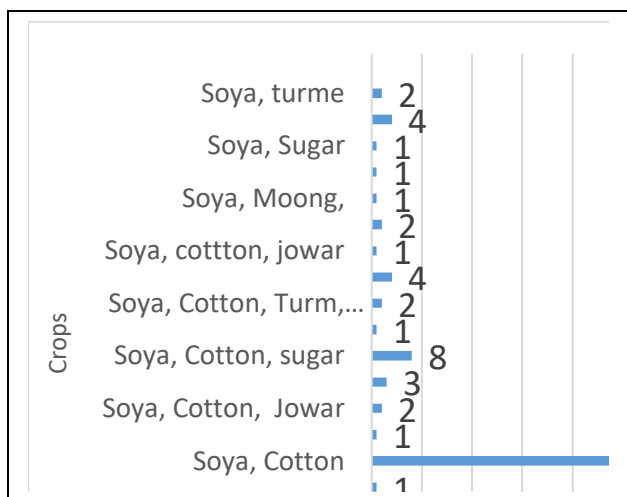
Over the years, the region experienced fluctuations in rainfall patterns. The 1970s-80s were marked by drought conditions, with limited rainfall of 90%, resulting in crops like Piwala, Groundnut, and Moong. Water sources relied on wells and rainwater, while a moat system facilitated irrigation. Organic fertilizers were commonly used, but there was limited awareness of crop diseases. Labor availability remained steady at 80%, with a portion of the population migrating for agricultural work. Throughout subsequent decades, rainfall and crop patterns varied, with periods of drought, improved rainfall, and a combination of both. Different crops were cultivated, water sources expanded, irrigation systems evolved, and fertilizers were used. Labor availability and migration patterns also changed over time.

Cropping Pattern

Among the 100 farmers surveyed, 76 of them engage in intercropping while only 24 practice monocropping. The prevalence of intercropping can be attributed to the fact that the majority of farmers in the village are small and marginal, opting to cultivate two crops on the same land. Specifically, they intercrop tur, moong, and groundnut. In contrast, farmers with larger landholdings prefer monocropping as they focus on large-scale production and perceive intercropping as a potential disruption to their crops. Therefore, small and marginal farmers play a significant role in cultivating tur and moong.



Type of Rabi crops

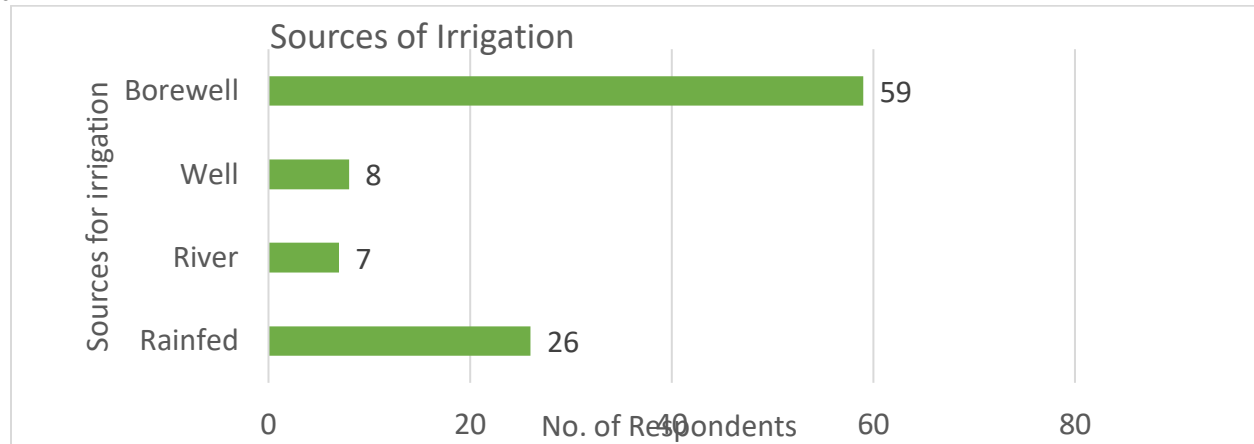


Type of Kharif crops



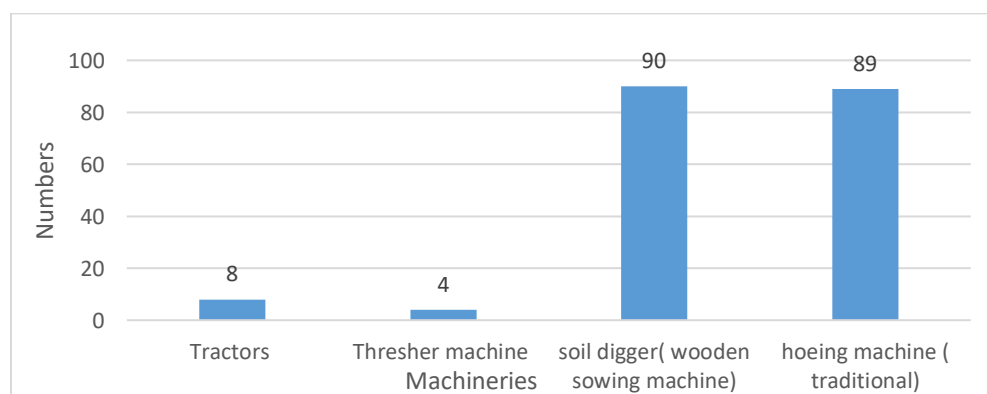
All the farmers in the village cultivate Kharif crops, and out of the 100 samples, 51 also cultivate rabi crops. Those with sufficient water availability and larger landholdings engage in both seasons of farming. In the Kharif season, all 100 farmers grow cotton, while only 4 do not cultivate soybeans. Some farmers also cultivate sugarcane and turmeric, although the limited market access in Ardhapur and Nijamabad, which are located 80 and 130 km away, respectively, poses challenges due to high transportation costs. Additionally, the farms are accessible only via dirt roads, making it difficult for large transportation vehicles to enter. During the rabi season, wheat production is prominent, and some farmers also grow groundnuts and chickpeas alongside wheat.

Irrigation



A majority of the farmers, over 50%, rely on borewells as their primary source of irrigation. Around 26% of the population depends solely on rainfed agriculture. Only a small percentage, 7 individuals, who own land near a river, utilize electric motors in the river for irrigation purposes. The excessive use of borewells poses a threat to the village's future, as it can lead to a decline in groundwater levels. Moreover, farmers do not receive any subsidies for adopting advanced irrigation techniques. Some individuals resort to borrowing from moneylenders to fund the construction of borewells. Given this data, it is evident that the village requires a comprehensive plan for water harvesting and conservation to address these challenges effectively.

Agriculture Machineries

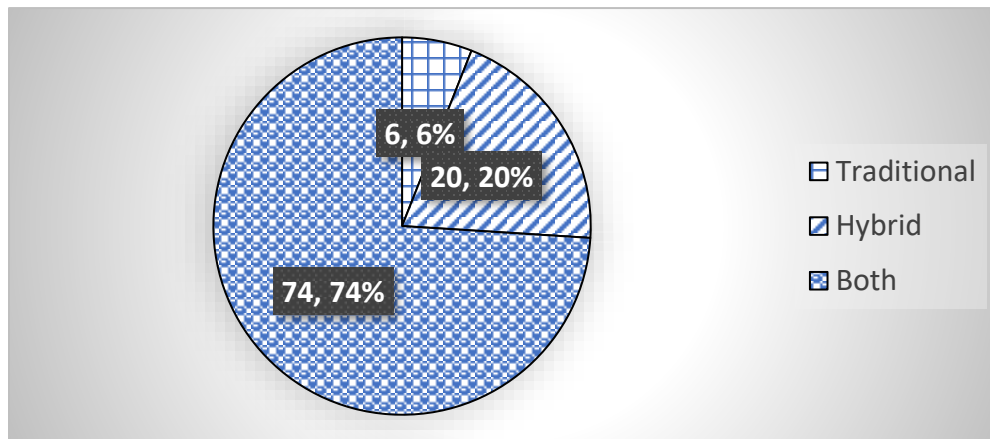


The villagers in this community lack knowledge about advanced agricultural machinery. With a total of 507 farmers in the village, there are only 8 tractors available, resulting in a significant gap in modern agricultural techniques. On average, each tractor is shared among 63 farmers for their cultivation needs, highlighting the scarcity of machinery. As a result, most farmers still rely on traditional agricultural instruments like wooden sowing machines and hoes. During a Focus Group Discussion (FGD), farmers expressed several reasons for this reliance. The high cost of machinery makes it unaffordable for them, and the village is not covered under the POCRA scheme, which provides subsidies for agricultural equipment. Additionally, farmers are unaware of the MAHA-DBT scheme. Renting machinery is also financially burdensome, and the limited availability of machinery restricts their reliance on it. Furthermore, the village lacks



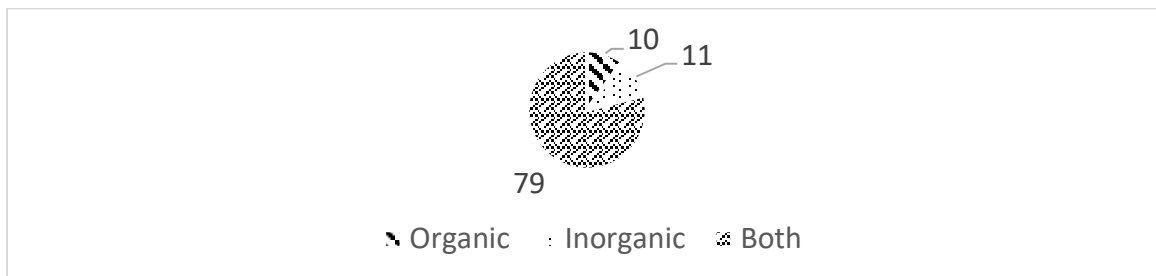
proper road infrastructure, preventing the entry of advanced machinery. There is no custom hiring center in the Kandhar block, exacerbating the situation. Although traditional instruments are less efficient, farmers are more comfortable using them. Some farmers have individually applied for machinery through the Panchayat but have not received any response. Farmers expressed their interest in adopting modern agricultural techniques but lamented the lack of information, training, and subsidies for such practices. The continued use of traditional instruments not only consumes more time and energy but also affects the quantity of agricultural produce.

Seed variety



Only 6 percent of the people are completely depending on traditional seeds. 20 percent farmers are totally depending on only hybrid seed varieties. 74 percent farmers are using both traditional and hybrid seeds. People are not believing that traditional seeds are good. They are not aware about the preservation techniques of traditional seeds. They are taking seeds from private shops. They are unaware about different varieties. Whatever shopkeeper is preferring them they are taking it for cultivation. This year 8 people got seeds from government after online registration under seed and fertilizers scheme.

Fertilizers



From the above chart it is inferred that 79 percent people are using both organic and inorganic fertilizers for their crops. Only 10 % people are completely using organic fertilizers like animal dung and vermicompost for their farms. 11 percent people are completely using chemical fertilizers for their agriculture. The organic fertilizer of animal dung is available in the village. Because more than 50 percent of the people are having livestock. But people are believing that it will not give more production. Another issue there is no any availability of manure pit in the village. Because of that the animal dung is not properly stored for decomposition.

Women participation

Out of the 100 individuals surveyed, only 8 women were identified as the primary decision-makers and landholders in farming. These women independently manage their agricultural activities. Among the sampled women, 74 had no formal education, 15 received primary education, and only 11 had education beyond the seventh grade. The village follows a system of early marriages, which contributes to limited education opportunities for girls. As a result, girls as young as 13 years old begin working in agriculture, gaining practical farming skills through hands-on experience. On average, women in the village dedicate 6 to 7 years of their working hours to agricultural activities, developing expertise in tasks like sowing, weeding, and harvesting. However, not all women possess technological skills related to modern agricultural practices.



Cost Benefit Analysis

The chart is about the cost benefit analysis. This is showing the profit and loss to farmers.

Particulars Crops	Kharif Crops				Rabbi Crops		
	Soya	Cotton	Jowar	Turmeric	Sugar	Chick Pea	Wheat
Land preparation cost	1000	1500	1000	1500	1500	1000	1000
Sowing (labor cost)	1500	800	1500	1600	1600	1500	1500
Cost on Machineries	2500	3000	2500	3000	3000	2500	2500
Cost on seeds	3700	1500	700	10000	10000	3500	2000
Crop protection cost	1400	3200	1500	2000	2500	1400	1400
Organic fertilizers	5000	5000	2000	5000	5000	0	0
Chemical fertilizers	1700	3400	1700	6800	7200	1400	1700
Weeding (labor cost)	4000	3000	2000	5000	5000	0	0
Irrigation cost	2000	6000	2000	5000	10000	3000	4000
Harvesting and processing	5000	4000	4000	7000	12000	4000	3000
Transport and others (opportunity Cost)	3000	5000	1000	3000	7500	2000	3000
Total Expenditure	25800	36400	19400	54400	49900	23300	25100
Total yield	8 quintals	8 quintals	12 quintals	10 quintals	50 ton	8 quintals	15 quintals
Income	40000	56000	26400	69800	110000	32000	34500
Profit, Income-Expenditure	14200	19600	7000	15400	40200	8700	9400

There is formula ‘profit= income – expenditure’ used for the calculating the profit. Here two costs are their input cost and output cost. In input cost it covered the land cultivation cost, sowing, fertilizers, pesticides, opportunity cost, etc. Whatever the production it will come under the output cost. The data from the table indicates that the highest profit is obtained from cultivating sugarcane. However, the area dedicated to sugarcane cultivation is limited due to the absence of a nearby sugar factory. Cotton, on the other hand, has the largest cultivated area and provides the second-highest profit after sugarcane. However, the profit from sugarcane is twice as much as that from cotton. Turmeric, despite yielding profits exceeding 15,000, is cultivated on a smaller scale due to transportation challenges.

Conclusion and Way Forward -The village of Shekapur has a total of 507 agriculture cultivators and encompasses 662 hectares of land. The fact that 536 hectares of land are under cultivation highlights the significance of agriculture as the primary livelihood. Cotton and soybean are the major crops, occupying over 75% of the land. More than 90% of the farmers in the village are classified as small and marginal farmers, with 466 falling into this category. In recent years, some farmers have begun cultivating cash crops such as sugarcane and turmeric. However, these crops only occupy 10% of the total land area. Since the year 2000, advanced irrigation techniques like drip and sprinkler systems have been introduced. The changing climate has posed significant challenges to agricultural production in recent years, with both floods and droughts affecting yields. Income levels of farmers vary based on the size of their landholdings. Those with less than one acre of land earn up to Rs. 25,000 annually, while those with 2.5 to 5 acres earn up to Rs. 100,000. Farmers with more than 7 acres of land generate an income of around Rs. 500,000. The villagers face several agricultural-related issues, including the lack of machinery, the absence of government seed and fertilizer centers, limited access to advanced irrigation systems, the unavailability of a nearby sugar factory, and the absence of agricultural product processing units. Proposed solutions include the establishment of custom hiring centers, promoting organic and integrated farming, and implementing watershed programs. The village has a bank located 6 kilometers away in Kandhar, and 35% of the villagers take loans from this bank. Approximately 23% of the farmers have benefited from loan waivers, which are granted based on repayment history and crop losses exceeding 50%. However, those who do not qualify for loan waivers and also face crop losses often turn to moneylenders to repay their bank loans, creating a paradox regarding the belief that bank loans rescue farmers from the clutches of moneylenders. Overall, the village has potential water availability, but productivity is hindered by small and marginal landholdings as well as the lack of advanced machinery. The villagers aspire to adopt advanced farming practices akin to those observed in western Maharashtra. Achieving this goal necessitates focusing on soil conservation, implementing advanced agricultural techniques, and receiving proper guidance from agricultural offices. With these measures in place, the villagers' dream of advancing their farming practices can be realized.



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SIGNIFICANCE OF NOSODES IN HOMOEOPATHIC TREATMENT OF ACUTE CASES

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ABSTRACT

This paper examines the significance of nosodes in homeopathic treatment of acute cases. Nosodes are homeopathic remedies prepared from pathological substances, such as disease products or tissues. They are believed to have the ability to stimulate the vital force and trigger the body's innate healing mechanisms. This study explores the use of nosodes in acute cases, where rapid and effective treatment is crucial. Through an analysis of relevant literature and case studies, it is evident that nosodes can play a significant role in the homeopathic management of acute conditions, offering promising results and expanding treatment options.

KEYWORDS: *Nosodes, homeopathy, acute cases, vital force, innate healing mechanisms, treatment options.*

INTRODUCTION

Homeopathy is a holistic system of medicine that aims to stimulate the body's own healing power. In acute cases, where rapid treatment is necessary, homeopathy provides an alternative approach that can be highly effective. One particular aspect of homeopathy that holds significance in the treatment of acute conditions is the use of nosodes. Nosodes are potentized remedies prepared from disease products or tissues. They are thought to have a deep action on the vital force, the body's life energy, and stimulate the innate healing mechanisms. This paper explores the significance of nosodes in homeopathic treatment of acute cases, examining their therapeutic potential and providing insights into their practical applications.

The Significance of Nosodes in Homeopathic Treatment of Acute Cases:

Nosodes play a vital role in the homeopathic management of acute cases due to their unique therapeutic properties. They are prepared from pathological substances, such as diseased tissues or secretions, and undergo the process of potentization to enhance their healing potential. Nosodes are believed to carry an imprint or energetic pattern of the disease, which can act as a stimulus for the vital force to recognize and initiate the healing process.

In acute conditions, where symptoms manifest rapidly and intensely, the use of nosodes can provide a targeted approach. Nosodes are often prescribed based on the principle of similars, where a remedy with similar symptomatology to the individual's condition is selected. This individualization of treatment allows for a more precise and tailored approach, increasing the likelihood of positive outcomes.

Several case studies and clinical reports have demonstrated the effectiveness of nosodes in acute conditions. For example, in acute infectious diseases such as influenza, diphtheria, or pneumonia, specific nosodes prepared from these diseases have shown remarkable results in reducing the severity and duration of symptoms. Moreover, nosodes have been found to be effective in acute allergic conditions, like urticaria or bronchial asthma, offering relief and reducing the need for conventional medications.

Miasmatic approach while using nosodes:

The miasmatic approach is an essential aspect of homeopathic philosophy, and it plays a significant role when using nosodes in homeopathic treatment. Miasms, as described by Samuel Hahnemann, are inherited disease tendencies or predispositions that can influence an individual's susceptibility to illness. There are three primary miasms in homeopathy: psora, sycosis, and syphilis, each associated with specific disease patterns and characteristics.

When considering the use of nosodes, the miasmatic approach helps homeopaths assess the underlying miasmatic influence on a patient's condition. Nosodes are often derived from diseased tissues or secretions associated with specific miasms. By matching the miasmatic background of the patient with the appropriate nosode, homeopaths aim to address the deeper miasmatic influence and stimulate the vital force toward healing.



For instance, if a patient presents with acute symptoms related to a sycotic miasm, such as recurrent urinary tract infections or genital warts, the homeopath may consider prescribing a nosode derived from the sycotic miasm, such as Medorrhinum. The nosode is selected based on the similarity of symptoms and the underlying miasmatic predisposition. By using the nosode, the homeopath intends to target not only the acute symptoms but also the deeper miasmatic imbalance contributing to the patient's susceptibility to recurrent infections.

The miasmatic approach provides a broader perspective on the patient's overall health and allows for a more individualized treatment plan. By addressing the underlying miasmatic predisposition, the homeopath aims to promote long-term healing and prevent the recurrence of acute symptoms.

It is important to note that the miasmatic approach is not solely based on the use of nosodes. Other homeopathic remedies, including constitutional remedies and other acute remedies, may also be employed in conjunction with nosodes to address the patient's complete symptom picture and miasmatic influence.

In conclusion, the miasmatic approach plays a crucial role when using nosodes in homeopathic treatment. By considering the patient's miasmatic predisposition and matching it with the appropriate nosode, homeopaths aim to address not only the acute symptoms but also the deeper miasmatic imbalances. This approach contributes to a more comprehensive and individualized treatment strategy, promoting long-term healing and preventing the recurrence of acute conditions.

CONCLUSION

The significance of nosodes in the homeopathic treatment of acute cases cannot be understated. Their unique therapeutic properties, derived from the energetic imprint of disease substances, enable them to stimulate the vital force and activate the body's innate healing mechanisms. By individualizing treatment based on the principle of similars, nosodes offer a targeted approach in acute conditions, providing effective and rapid relief.

While further research and clinical trials are needed to establish the full extent of nosodes' effectiveness, existing evidence from case studies and clinical reports supports their use in acute cases. Nosodes expand the range of treatment options available to homeopaths and offer a promising avenue for holistic management of acute conditions. Their integration into homeopathic practice can contribute to improved patient outcomes and a deeper understanding of the potential of homeopathy in acute care settings.

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IMPORTANCE OF KENT'S TWELVE OBSERVATION AT SECOND PRESCRIPTION

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ABSTRACT

This paper explores the importance of Kent's Twelve Observations at the second prescription in homeopathic practice. Kent's observations provide valuable guidelines for homeopaths to assess the progress of a patient's case and make informed decisions regarding the next prescription. This study examines the significance of each observation and its impact on case management, highlighting the crucial role they play in refining and individualizing treatment strategies. By understanding and applying Kent's Twelve Observations, homeopaths can enhance their prescribing accuracy and ultimately improve patient outcomes.

KEYWORDS: *Kent's Twelve Observations, second prescription, homeopathy, case management, prescribing accuracy, patient outcomes.*

INTRODUCTION

Homeopathy is a holistic system of medicine that aims to stimulate the body's innate healing ability. The selection of the appropriate remedy is a fundamental aspect of homeopathic practice. Kent's Twelve Observations, formulated by the renowned homeopath James Tyler Kent, provide essential guidelines for assessing the progress of a case and determining the next prescription. These observations help homeopaths evaluate the patient's response to the initial prescription, gather additional information, and refine the treatment plan. This paper examines the importance of Kent's Twelve Observations at the second prescription, highlighting their significance in optimizing case management and enhancing prescribing accuracy.

Brief detail about kent's twelve observation:

Kent's Twelve Observations also emphasize the importance of individualization in homeopathic treatment. Each patient responds uniquely to the prescribed remedy, and the second prescription allows the homeopath to further tailor the treatment plan to the specific needs of the individual. By carefully considering the observations, the homeopath can refine the selection of remedies, potencies, and dosages, ensuring a more accurate and personalized approach.

Kent's Twelve Observations are a set of guidelines formulated by the renowned homeopath James Tyler Kent. These observations serve as a valuable framework for assessing the progress of a homeopathic case and making informed decisions at the second prescription. Each observation focuses on specific aspects of the patient's response to the initial remedy and provides crucial insights into the dynamic nature of the case. Understanding and applying Kent's Twelve Observations can greatly enhance the accuracy and effectiveness of homeopathic prescribing.

The first observation emphasizes changes in mental and emotional symptoms. Homeopaths carefully evaluate any shifts in the patient's mental state, including changes in mood, temperament, or overall well-being. Positive changes in mental symptoms indicate progress and suggest that the remedy is acting on a deep level.

The second observation addresses changes in physical symptoms. Homeopaths pay close attention to any modifications in the patient's physical complaints, such as pain, sensations, or pathological conditions. Improvements or aggravations in physical symptoms provide valuable clues about the curative action of the remedy.

The third observation focuses on modalities. Modalities refer to factors that influence the intensity or character of symptoms, such as time of day, weather, or specific circumstances. Noting any changes in the modalities helps homeopaths refine their understanding of the remedy and its impact on the patient's condition.



The fourth observation pertains to the patient's general state and vitality. Homeopaths assess any changes in the patient's overall energy levels, strength, or vitality. Positive changes in the general state indicate progress and suggest a favorable response to the remedy.

The fifth observation involves evaluating any aggravations or ameliorations of symptoms. Aggravations refer to temporary intensification of symptoms after taking the remedy, while ameliorations refer to improvements or relief. Understanding these changes helps homeopaths determine the direction of cure and adjust the treatment plan accordingly.

The sixth observation focuses on the patient's dreams. Dreams often reflect the state of the patient's vital force and can provide valuable insights into the remedy's action and the patient's overall progress.

The seventh observation involves changes in the patient's thirst and appetite. Any modifications in thirst, hunger, or specific food preferences are carefully noted, as they can indicate shifts in the patient's vital force and response to the remedy.

The remaining observations address changes in sleep patterns, perspiration, elimination functions, and specific pathological conditions. Each observation offers valuable information to homeopaths, allowing them to refine their understanding of the patient's case and select the most appropriate remedy for the second prescription.

By closely monitoring and assessing these twelve observations, homeopaths can gather valuable data about the patient's response to the initial remedy and make informed decisions for subsequent prescriptions. The observations guide the homeopath in recognizing the direction of cure, assessing obstacles to healing, and tailoring the treatment plan to the individual's needs. By adhering to Kent's Twelve Observations, homeopaths can enhance the accuracy, effectiveness, and personalized nature of their prescribing, leading to improved patient outcomes and overall success in homeopathic practice.

The Importance of Kent's Twelve Observations at the Second Prescription:

Kent's Twelve Observations act as a roadmap for homeopaths at the second prescription, guiding them in the evaluation of the patient's progress and helping them make informed decisions. Each observation addresses a specific aspect of the patient's response to the initial remedy and provides valuable insights into the dynamic nature of the case. These observations include changes in mental and emotional symptoms, physical symptoms, modalities, aggravations, ameliorations, and more.

By closely monitoring the patient's symptoms in accordance with Kent's observations, homeopaths can identify the direction of cure, determine the remedy's curative action, and assess any obstacles or challenges in the healing process. The observations help in recognizing changes in the vital force and provide clues for selecting the most appropriate remedy for the subsequent prescription.

CONCLUSION

Kent's Twelve Observations play a vital role at the second prescription in homeopathic practice. They provide a systematic framework for evaluating the patient's response to the initial remedy and making informed decisions for subsequent prescriptions. By assessing changes in symptoms, modalities, aggravations, and other factors, homeopaths can refine the treatment plan and individualize the approach to better address the patient's dynamic condition. The observations contribute to enhanced prescribing accuracy, improved case management, and ultimately, better patient outcomes. Homeopaths who understand and apply Kent's Twelve Observations are equipped with valuable tools to navigate the complexities of the healing process and provide optimal care to their patients.

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A STUDY ON CONSUMERS' BEHAVIOUR TOWARDS ONLINE SHOPPING WITH SPECIAL REFERENCE TO COIMBATORE CITY

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ABSTRACT

The study investigated the consumers' behaviour towards online shopping reference to Coimbatore city. This paper first presents some key developments and challenges facing the problems and benefits of online shopping. Hereafter, it proposes what key challenges online shopping customers. The descriptive research design is the foundation of the investigation. The study has used both primary data and secondary data for analysis. Primary data collected through questionnaire and secondary data collected through journals, articles and from internet. The findings of the study were derived from the data examination and conclusion were provided based on the data examined.

INTRODUCTION

The chapter provides the background of online shopping. It also discusses the prospects, challenges and trends of online shopping. There has been a dramatic change in the way of consumers altered their way of shopping in the past decade where consumers are looking for a more convenient and time saving shopping experience. Website becomes the essence of online business to show their services and products. Internet gathers all competitors and consumers in one place. It brings new lane to promote, advertise products and services in market. This new innovative pattern of shopping not only brings a great number and wide range of merchandise to consumers, it also offers a huge market and numerous business opportunities. An increase in online shopping activities has forced companies to offer their products and services online to gain competitive advantage in the market place. The benefits for retailers are many and include their ability to reach and target a large number of people at the same time across the world, targeting people with different demographic profiles and improving the efficiency and effectiveness of the business.

REVIEW OF LITERATURE

- **Abhishek Chilka & Sandeep Chauhan (2021)¹** Online Shopping or internet shopping consists primarily of the distribution, buying, selling, marketing, advertising and servicing of products with the help of internet and other computer networks. India is witnessing the tremendous growth in online shopping. This paper studies the recent scenario, recent trends in online shopping in India. For example, the interested categories of product, preferred way to pay online. Today's online shopping platforms provide many offers to consumer which attracts the consumer and drives their business. Along with that there are also problems in online shopping like quality, security etc. India's online shopping market is constantly growing at good phase.
- **Manisha Kinker, N.K. Shukla (2021)²** performed a research study on "An Analysis of Consumer Behaviours towards Online Shopping of Electronic Goods With special reference to Bhopal and Jabalpur city". The minor factors that influences customer's attitudes towards electronic product online shopping are technological factors, assured quality, cash on delivery and various promotions and discounts. The attitude towards online shopping is different in Bhopal and Jabalpur city. After the data analysis, the researcher concludes that the electronic product online market takes a high percent of individuals shopping on it.

STATEMENT OF THE PROBLEM

Due to the rapid development of the technologies surrounding the internet, companies which are interested to sell their products through their website even though buyers and sellers can be thousands of miles apart, may belong to different parts



of the world, might speak different languages also. Since internet is a new virtual medium and so many potential consumers, the online retailers is most important to understand the wants and needs of consumers. The importance of analysing and identifying the factors influencing the consumer, when he or she decides to purchase on the internet is vital because new virtual market will bring significant differences to the consumers.

OBJECTIVES OF THE STUDY

- To analyse the impact of online shopper's purchasing decision.
- To ascertain the attitude of online shopper towards mobile application.

METHODOLOGY OF THE STUDY

The present study is based on both primary and secondary data. The Factors influencing Online Shoppers Behaviour in Erode city was made by personal discussions, online records by walk-through survey to arrive at technically feasible conclusions.

METHOD OF SAMPLING

SAMPLE TECHNIQUE

Convenience sampling, a Non-probability sampling technique has been used for this study.

SAMPLE DESIGN

The sampling plan is to be selected from the universe or population from Erode city has been represented in research area.

SAMPLE SIZE

For this study, 105 respondent's data are collected.

DATA COLLECTION

The task of data collection begins after a research problem has been defined. The data collection may be defined as the collection of required information from various sources. The data collection that relates to the study can be collected in two different ways,

- Primary data
- Secondary data

ANALYSIS AND INTERPRETATION

TABLE 1
TABLE SHOWING AGE GROUP OF THE RESPONDENTS

S. No	Age group	No. of Respondents	Percentage%
1	Upto 20 years	43	34%
2	21-30 years	67	54%
3	31-40 years	9	7%
4	Above 41 years	6	5%
	Total	125	100%

Source: Primary Data

INTERPRETATION

From the above table, it that 54% of the respondents under the category of 21- 30 years, 34% of the respondents under the category of Upto 20 years, 7% of the respondents under the category of 31-40 years, 5% of the respondents under the category of above 41 years.

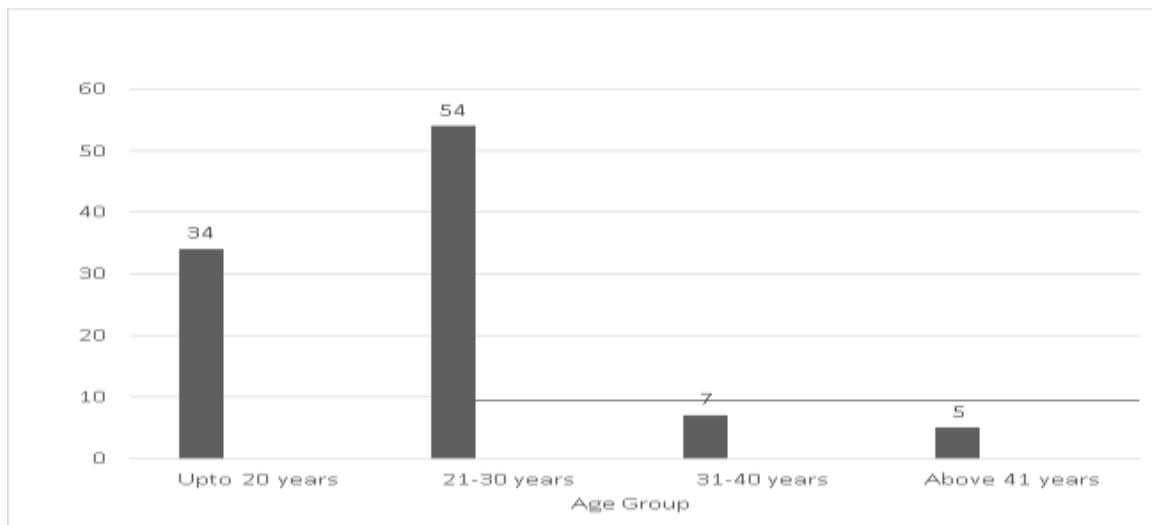


TABLE 2
TABLE SHOWING EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

S. No	Educational Qualifications	No. of Respondents	Percentage%
1	School level	8	6%
2	College level	75	60%
3	Professional	25	20%
4	others	17	14%
	Total	125	100

Source: Primary Data

INTERPRETATION

From the above table, it shows that 60% of the respondents under the category of College level, 6% of the respondents under the category of School level, 20% of the respondents under the category of Professional, 14% of the respondents under the category of others.

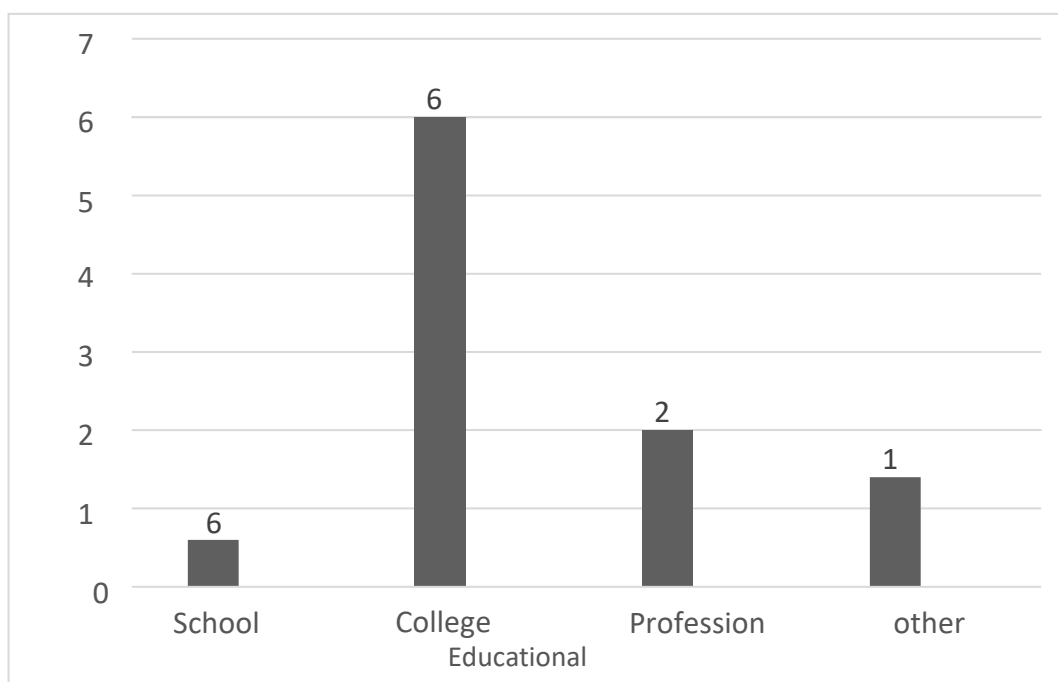




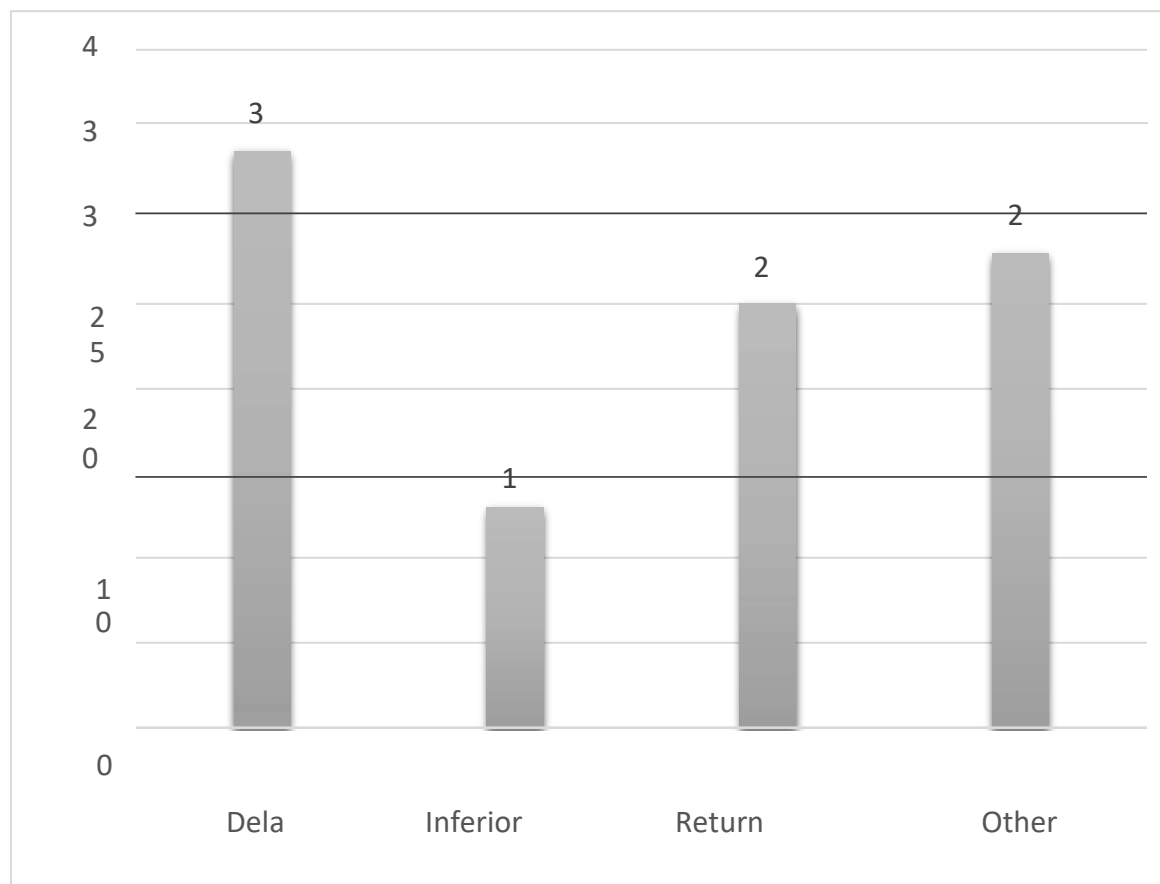
TABLE 3
TABLE SHOWING MAJOR PROBLEM FACED WHILE PURCHASING

S. No	Problems	No. of Respondents	Percentage
1	Delay	42	34%
2	Inferior quality	17	13%
3	Return problems	31	25%
4	Others	35	28%
	Total	125	100

Source: Primary Data

INTERPRETATION

From the above table, it shows that 34% of the respondents falls under the category of Delay, 28% of the respondents falls under the category of Other problems, 25% of the respondents falls under the category of Return problem, and 13% of the respondents falls under the category of Inferior quality.





FINDINGS, SUGGESTIONS AND CONCLUSION FINDINGS

- 54% majority of the respondents were under the age group of 20-30 years.
- 60% majority of the respondents were graduated.
- It is identified that 34% of the respondents were faced a problem receiving a product

SUGGESTIONS

- Web based technologies upgrade creative conceptualization that would improve the response from technology savvy consumers. So the firms have to invest in such new technologies.
- Internet environment has to be improved in the areas of art, dynamic, and interactive techniques. This improvement will give more visual appeal.
- One of the major drawbacks that the respondents have felt is no proper returning policy to the product. After getting opinion from the respondents, if the above said problem occurs, then they should be guided in a proper way. This will create a good website reputation and repurchasing power of the respondents.
- The vendors and service providers should avoid hidden charges. This will help to avoid increase in price of the product.

CONCLUSION

In the past, consumers had sufficient time to visit shopping centres, searching for various products. Many consumers prefer bargaining and decide the purchases after physical examination of the commodities. The entire process can range from a few hours to weeks depending on the product, quality, quantity and source of purchase. Today, there is a radical change in the entire scenario. Everything in today's world is Internet oriented like Electronic Data Interchange, E-Mail, E-Business and E-commerce. E-Commerce is exchange of information using network-based technologies. In the present high cost situation, e-commerce can be used as a competitive strategy. It successfully includes the entire online process of developing, marketing, selling, delivering, servicing and paying for goods and services. Online shopping is a vast growing technology. If it is properly utilized with assured safety and security for the transactions, it will thrive into a highly competitive and dynamic environment.

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2. **Manisha Kinker, N.K. Shukla (2021)** "A Literature Review on Shoppers Attitude And Buying Behaviour Towards Online Retailing" *International Journal for Research in Engineering Application & Management (IJREAM)* ISSN : 2454-9150 Vol-04, Issue-03, June 2018

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STUDYING THE MIASMATIC INFLUENCE IN THE CLINICAL PRESENTATIONS OF PSORIASIS

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ABSTRACT

This clinical representation aims to explore the concept of miasm in psoriasis, a chronic inflammatory skin condition. Miasm, a concept from classical homeopathy, refers to the underlying inherited predisposition that influences the development and progression of a disease. In this study, we review the literature on miasm in psoriasis and examine its potential clinical relevance. By understanding the miasmatic aspects of psoriasis, healthcare professionals can develop more individualized and effective treatment strategies for patients.

KEYWORDS: Psoriasis, miasm, chronic inflammatory skin condition, classical homeopathy, individualized treatment

INTRODUCTION

Psoriasis is a complex and multifactorial disease characterized by chronic inflammation of the skin, resulting in scaly plaques, itching, and discomfort. While conventional medicine primarily focuses on managing the symptoms of psoriasis, the concept of miasm in classical homeopathy offers a unique perspective on the underlying predisposition and susceptibility to the disease. Miasm refers to inherited energetic imprints that can influence the manifestation and course of various diseases. Understanding the miasmatic aspects of psoriasis may provide valuable insights into individualized treatment approaches and better patient outcomes.

METHODS

To explore the clinical representation of miasm in psoriasis, a comprehensive literature search was conducted in major scientific databases. Relevant studies, case reports, and reviews were analyzed to identify the key concepts and evidence related to miasmatic understanding in psoriasis. The findings were synthesized to provide a comprehensive overview of the topic.

Introduction: Psoriasis is a chronic inflammatory skin disorder characterized by the development of red, scaly plaques on the skin surface. It affects approximately 2-3% of the global population, making it one of the most prevalent autoimmune diseases. Psoriasis has a significant impact on the quality of life of affected individuals, causing physical discomfort and emotional distress. Understanding the etiology, pathology, and clinical features of psoriasis is crucial for accurate diagnosis and effective management of the condition.

Etiology: The exact cause of psoriasis remains unknown, but it is believed to involve a complex interplay of genetic, immune, and environmental factors. Genetic predisposition plays a significant role, as individuals with a family history of psoriasis are at a higher risk of developing the condition. Specific genetic variations, particularly in genes related to the immune system, contribute to an abnormal immune response, triggering the inflammatory processes observed in psoriasis. Environmental factors such as stress, infections, certain medications, and trauma can also act as triggers or exacerbating factors for psoriasis.

Pathology: Psoriasis is characterized by an accelerated turnover of skin cells, leading to the rapid proliferation of keratinocytes in the epidermis. In healthy individuals, the skin cell turnover occurs approximately every 28 days. However, in psoriasis, this process is dramatically shortened to around 3-4 days, resulting in the accumulation of immature skin cells on the surface. This rapid cell turnover is driven by dysregulation in the immune system, particularly involving T cells, dendritic cells, and cytokines. Abnormal activation of immune cells leads to increased production of pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF- α), interleukin-17 (IL-17), and interleukin-23 (IL-23), further perpetuating the inflammatory response.

Clinical Features: The clinical presentation of psoriasis can vary widely among individuals, but it typically manifests as raised, well-demarcated, red plaques covered with silvery-white scales. The most commonly affected areas include the scalp, elbows, knees,



lower back, and nails. Psoriasis can also involve other body sites, including the palms, soles, face, and genital regions. In addition to the skin involvement, individuals with psoriasis may experience itching, pain, and burning sensations. The severity of psoriasis can range from mild, with a few scattered plaques, to severe, with extensive skin involvement and significant impairment of daily activities. Psoriasis can also be associated with other systemic manifestations, such as psoriatic arthritis, nail changes, and an increased risk of cardiovascular diseases.

In conclusion, psoriasis is a chronic inflammatory skin disorder with a complex etiology involving genetic, immune, and environmental factors. The pathology of psoriasis is characterized by an accelerated turnover of skin cells and dysregulated immune responses. Clinically, psoriasis presents as red, scaly plaques, primarily affecting specific areas of the body. A comprehensive understanding of the etiology, pathology, and clinical features of psoriasis is essential for accurate diagnosis and the development of appropriate management strategies.

Miasmatic approach:Psoriasis, a chronic inflammatory skin condition, can be viewed through the lens of homeopathic miasm. Miasm is a concept in classical homeopathy that refers to an inherited predisposition or diathesis that influences the development and progression of diseases. Understanding the miasmatic aspects of psoriasis can help homeopaths in selecting appropriate remedies and guiding the overall treatment approach.

In homeopathy, three primary miasms are recognized: psoric, sycotic, and syphilitic. Each miasm is associated with specific disease patterns and characteristics. The psoric miasm is considered the most fundamental and is often associated with chronic, non-infectious diseases, including psoriasis.

Individuals with psoriasis exhibiting the psoric miasm may have a predisposition towards dryness, sensitivity, and a tendency to suppress emotions. They may also experience flare-ups triggered by external factors like stress, diet, or weather changes.

The sycotic miasm is characterized by excess or overgrowth, and it may influence certain forms of psoriasis. Those with a sycotic miasmatic influence in psoriasis may exhibit symptoms such as increased itching, moist or oozing lesions, and a higher likelihood of developing psoriatic arthritis.

The syphilitic miasm, associated with destructive processes, may play a role in severe or complicated cases of psoriasis, where deep ulcerations, intense inflammation, or systemic involvement are present.

In homeopathic practice, understanding the miasmatic background of a patient with psoriasis helps in selecting the most appropriate remedy. Homeopathic remedies are chosen based on the principle of "like cures like," where a substance that can produce symptoms similar to those experienced by the patient is used to stimulate the body's self-healing mechanism. By considering the miasmatic influence, the homeopath can match the constitutional characteristics and symptom patterns of the individual with the appropriate remedy, facilitating a deeper and more holistic healing response.

In summary, psoriasis can be analyzed through the perspective of homeopathic miasm, which considers inherited predispositions and disease patterns. Recognizing the miasmatic influence in psoriasis aids in selecting appropriate homeopathic remedies and guiding individualized treatment strategies. However, further research is needed to validate the clinical relevance and effectiveness of miasmatic understanding in the context of psoriasis and homeopathy.

RESULTS

The literature review revealed that miasmatic understanding in psoriasis is primarily based on classical homeopathic principles. Different miasms, such as psoric, sycotic, and syphilitic, have been associated with specific manifestations and characteristics of psoriasis. The psoric miasm is considered foundational and often present in individuals with psoriasis, while the sycotic and syphilitic miasms may influence the severity and complications of the disease. Miasmatic analysis can aid in selecting appropriate homeopathic remedies and guiding the overall treatment strategy.

CONCLUSION

The clinical representation of miasm in psoriasis provides a valuable framework for understanding the individual variations and susceptibility to the disease. Incorporating miasmatic analysis into the management of psoriasis can contribute to personalized treatment plans, considering the underlying inherited predisposition. By addressing the miasmatic aspects, healthcare professionals may enhance treatment outcomes and promote long-term remission in patients with psoriasis. Further research is warranted to validate the clinical utility of miasmatic understanding in psoriasis and explore its potential integration with conventional therapies.



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SYSTEMATIC REVIEW OF THE RELATIONSHIP BETWEEN TOBACCO SMOKE AND CARBON MONOXIDE: IMPACT ON HEALTH AND DISEASE

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ABSTRACT

Aim : The objective of this study is to evaluate the correlation between tobacco consumption and levels of exhaled carbon monoxide.

Material and Methods : To conduct the literature review, multiple databases and sources were utilized. The search was conducted using MeSH Terms related to tobacco and exhaled carbon monoxide. Initially, 421 titles were identified from these sources, and after screening, 118 records were examined, resulting in 25 research-related articles. The review adhered to the PRISMA guidelines for systematic reviews to ensure a standardized and rigorous approach to the evaluation of the selected studies. Results: Six randomized controlled trials were incorporated in the analysis, aiming to compare the association between tobacco consumption and exhaled carbon monoxide levels. The findings from all six trials consistently demonstrated a significant correlation between these two variables. Conclusion: To sum up, the analysis of research publications focusing on tobacco consumption and exhaled carbon monoxide (CO) levels yields valuable insights regarding the correlation between smoking behavior, CO levels, and the associated health implications. This body of literature enhances our understanding of the relationship between smoke & implications on well being, shedding light on the potential risks and consequences of tobacco use. Clinical Significance: Gaining a deeper understanding of these relationships can play a significant role in developing impactful strategies for smoking cessation. Furthermore, it can help raise awareness about the detrimental effects of tobacco smoke and emphasize the importance of reducing tobacco consumption. By leveraging this knowledge, we can work towards implementing effective interventions and public health campaigns aimed at promoting smoking cessation and improving overall population health.

KEYWORDS : Smoking cessation, tobacco, carbon monoxide

INTRODUCTION

Tobacco use remains a global public health concern due to its detrimental effects on individuals' health and the population as a whole. One essential marker for assessing tobacco smoke exposure is the measurement of exhaled carbon monoxide (CO) levels. Exhaled CO levels serve as a reliable biomarker for tobacco exposure and have been extensively studied in relation to different tobacco products, including different types of smoking methods [1] There is a general consensus that no amount of tobacco smoke exposure is considered safe. Among different forms of tobacco consumption, conventional cigarette smoking is the most widespread and carries substantial health hazards. Various research studies have explored the connection between tobacco use and exhaled carbon monoxide (CO) levels, revealing differences across different smoking methods.[2] A study conducted in Malaysia examined exhaled CO levels among tobacco and nicotine adult users, highlighting the differences between CC, EC, HTP users, and non-smokers .Additionally, another study demonstrated higher CO levels in CC users.[3] The measurement of exhaled CO in breath analysis has proven to be a rapid, non-



invasive, and established method for differentiating smokers from non-smokers . It is important to note that exhaled CO levels can vary depending on factors such as gender, body weight, and geographical location also.

In conclusion, the association between tobacco use and exhaled CO levels has been extensively studied. Exhaled CO levels serve as an important biomarker in assessing tobacco smoke exposure. The available literature demonstrates variations in exhaled CO levels among different tobacco products and user profiles. Understanding the association between tobacco use and exhaled CO levels contributes to our knowledge of dangers linked to tobacco consumption and aids in the formulation of effective smoking cessation strategies.

OBJECTIVE

To assess the relation between tobacco consumption and exhaled CO levels

MATERIAL AND METHODS

Complete articles of randomized controlled trials.

SEARCHED STRATEGY

The study included relevant literature from database like Science Direct, Lilacs, Gray Literature, Cochrane, and PubMed, focusing on the association between tobacco consumption and exhaled carbon monoxide levels. A comprehensive literature search was conducted using specific MeSH terms including 'tobacco', 'carbon monoxide', and 'monitored level'.

ELIGIBILITY CRITERIA

INCLUSION CRITERIA

- Randomized controlled trials
- Published over 5 years
- Articles available in English

EXCLUSION CRITERIA

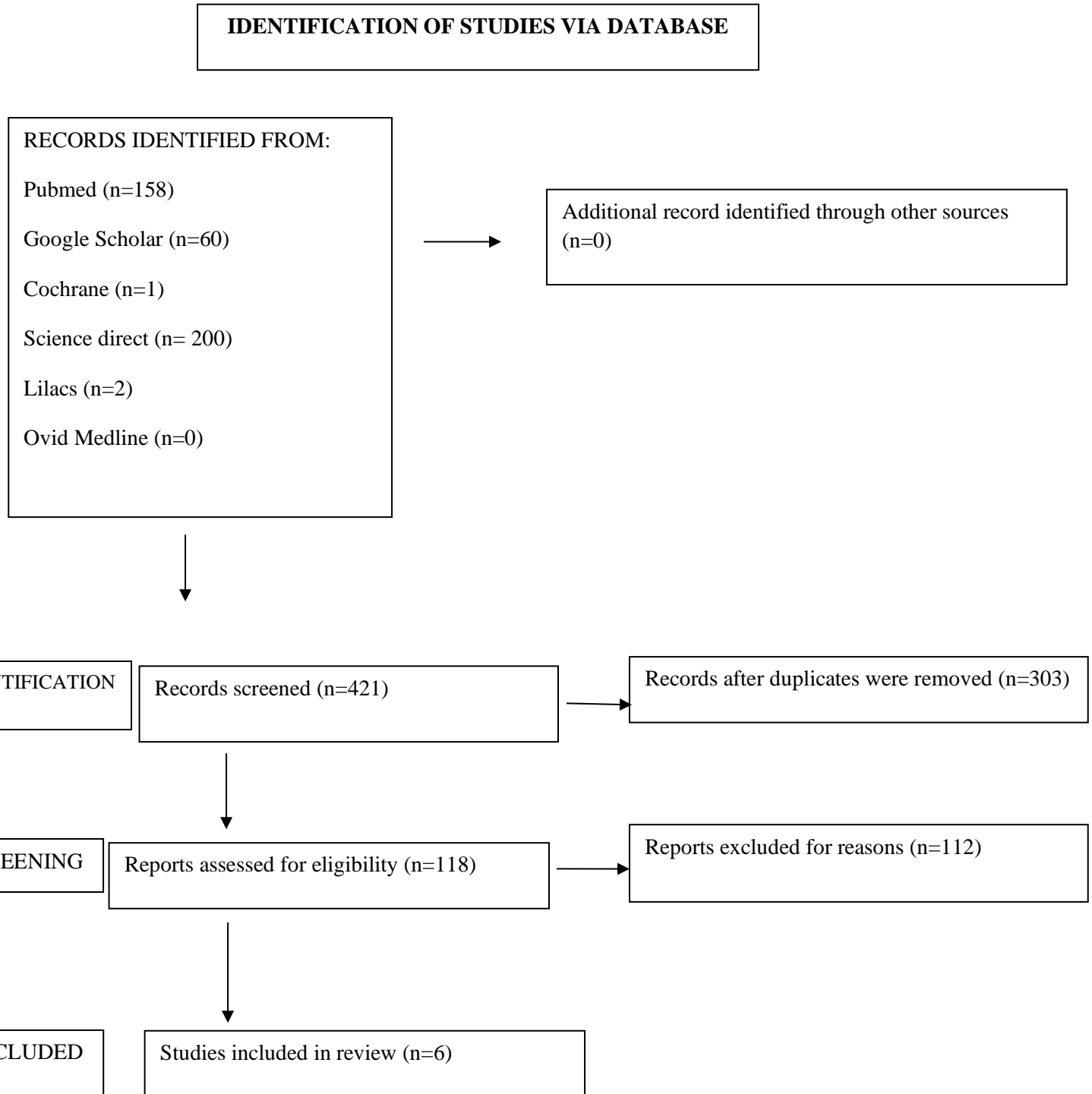
- Study design apart from randomized controlled trials
- Only abstract was available.

SEARCH ENGINES

- Pubmed, Cochrane, Science Direct, Lilacs, Google Scholar, Gray Literature, Ovid Medline



FIGURE 1 – Flow diagram indicates the number of studies identified, screened, assessed for eligibility, excluded and included in the systematic review





RESULTS

No detectable increases in exhaled carbon monoxide (eCO) were noted among the study participants following the use of the investigated heat-not-burn tobacco products (HTPs). The study revealed a notable within-subject impact on eCO levels when participants used their usual brand of traditional cigarettes compared to using HTPs. Nevertheless, no significant alterations in eCO levels were observed after using either of the two HTPs under investigation. The median eCO levels peaked at 4.5 parts per million (ppm) after 45 minutes for GLO and at 4.9 ppm after 15 minutes for IQOS. [10] In a separate study, it was observed that the sessions led to notable increases in exhaled carbon monoxide (eCO) and plasma nicotine levels. However, there were no significant differences in eCO or nicotine exposure between the active sessions and the placebo sessions. Interestingly, when alcohol was consumed during the session, participants exhibited higher inhaled volume, flow rate, and duration of the waterpipe (WP) session compared to the placebo session. Additionally, participants reported a more positive overall smoking experience and stronger smoking urges both before and after the smoking session following the alcohol session, in comparison to the placebo session. Although both sessions resulted in significant increases in eCO and plasma nicotine, there were no significant variations in eCO or nicotine exposure between the active (alcohol) sessions and the placebo sessions. [11] In a separate study, there was no significant disparity observed in the smoking cessation rate between the two groups after 24 weeks. The primary objective of the study was to assess the rate of 7-day smoking abstinence at the 24-week mark after randomization. This abstinence was defined as participants self-reporting no smoking during the week prior to the clinical visit at 24 weeks, which was confirmed by measuring exhaled carbon monoxide (ECO) levels of 8 parts per million (ppm) or lower. Participants who claimed to be abstinent but had ECO levels above 8 ppm or those who reported any smoking during the past week but had ECO levels at or below 8 ppm were categorized as current smokers. In summary, the main focus of the study was to evaluate the 7-day smoking abstinence at 24 weeks, with self-reported abstinence being verified by ECO measurements. Participants meeting the abstinence criteria were considered abstinent, while those not meeting the criteria were classified as current smokers. [12] In a different study, participants did not demonstrate a greater reduction in self-reported cigarettes per day (CPD) and exhaled carbon monoxide (eCO) compared to participants in the steady-state and placebo delivery groups. Throughout the study, eCO levels were measured as an indicator of smoke exposure. The measurements of eCO were conducted using the Micro Smokerlyzer carbon monoxide monitor from Bedfont Scientific Ltd during the initial visit and the final 2-week study visit. The findings revealed a significant decrease in exhaled carbon monoxide levels, indicating a reduction in smoke exposure among the participants. However, the specific details regarding the magnitude of the reduction and statistical significance were not provided in the available search results. In summary, the study assessed eCO levels at the beginning and end of the study, and a significant decrease in exhaled carbon monoxide levels was observed. This reduction suggests a decline in smoke exposure among the participants. [13] In a different study, the group that successfully quit smoking exhibited noteworthy reductions in pulse rate, systolic blood pressure, α -klotho, hemoglobin (Hb), and carbon monoxide (CO) concentration. The study involved twenty-eight participants, with 14 using varenicline and 14 using a nicotine patch. The analysis revealed significant decreases in pulse rate (PR), plasma levels of α -klotho, hemoglobin (Hb), and carbon monoxide (CO) concentration among all participants after 12 weeks. However, no changes were observed in other parameters. To summarize, the study demonstrated that pulse rate, plasma levels of α -klotho, Hb, and CO concentration were significantly reduced after 12 weeks in participants using either varenicline or a nicotine patch. However, no changes were observed in other parameters. [14] In a separate study, the effectiveness of the intervention was evaluated at 3, 6, 9, and 12 months based on various measures including cotinine tests, exhaled carbon monoxide (CO) levels, nicotine dependence, motivational stages of change, motivation to quit smoking, patterns of tobacco use, and smoking cessation rates. Following the 12-month follow-up period, significant variations in exhaled carbon monoxide (CO) levels were observed between the intervention group and the control group. [15].

DISCUSSION

The article aims to provide an in-depth analysis of the relationship between tobacco consumption and exhaled carbon monoxide (CO) levels. This discussion draws upon various publications and research studies conducted between 2018 and 2023 to explore this topic.

In a study, the disparities in carbon monoxide (CO) and cotinine levels were investigated among various user groups, including individuals exclusively using conventional cigarettes (CCs), heated tobacco products (HTPs), and electronic cigarettes (ECs). [10] The findings showed that individuals who exclusively used conventional cigarettes (CCs) or were dual users of CCs had elevated carbon monoxide (CO) levels in comparison to individuals who exclusively used heated tobacco products (HTPs) or electronic cigarettes (ECs). [11] A separate article examined the behaviors, nicotine dependency patterns, and the relationship between exhaled carbon monoxide (CO) levels and pulmonary function in adult users of conventional cigarettes (CCs), electronic cigarettes (ECs), and heated tobacco products (HTPs). [12] This study provides insights into the correlation between tobacco use, carbon monoxide (CO) levels, and pulmonary health. Additionally, previous research has consistently demonstrated the detrimental impact of tobacco smoke, as it releases toxic substances, including carbon monoxide, that can pose significant health risks. [13] The measurement of exhaled carbon monoxide (CO) levels has been utilized as a biomarker to evaluate smoking status and recent smoking patterns. Understanding the relationship



between exhaled CO levels and smoking behavior is essential for the development of effective smoking cessation interventions. [14] The impact of air pollution on exhaled carbon monoxide (CO) levels has been investigated in both smokers and non-smokers. This research emphasizes the significance of taking environmental factors into account when interpreting CO levels. [15] Furthermore, investigations have focused on evaluating the influence of heated tobacco products (HTPs) on carbon monoxide (CO) levels and comparing them with those of conventional cigarette smoking. Multiple studies have underscored the importance of monitoring exhaled CO levels in the context of smoking cessation endeavors. [16] Elevated levels of exhaled carbon monoxide (CO) have been linked to lower rates of success in smoking cessation. This underscores the significance of personalized treatments and ongoing support for individuals with higher CO levels in order to improve their chances of quitting smoking.

CONCLUSION

The article on tobacco consumption and exhaled carbon monoxide (CO) levels presents several key findings that shed light on this important topic. It emphasizes that by using those tobacco products that are heated (HTPs) or the e- cigarettes (ECs) results in lower exhaled CO levels compared to conventional cigarette (CC) use. This highlights the potential harm reduction aspect of HTPs and ECs in comparison to traditional smoking.

Additionally, exhaled CO measurements have proven to be a valuable non-invasive and immediate method for assessing an individual's smoking status. Measuring exhaled CO levels can provide healthcare providers and policymakers with valuable information for evaluating the effectiveness of tobacco cessation and prevention program. It also highlights the importance of considering factors such as saliva levels, tobacco consumption patterns, and demographic characteristics when examining the relationship between tobacco use and exhaled CO levels Those who used both of them including CCs and HTPs/ECs were found to smoke fewer CCs but consumed more tobacco overall compared to exclusive CC users. It also highlights the potential use of exhaled CO measurements as an indicator of cigarette consumption not only in clinical settings but also in community and workplace settings. This suggests the broad applicability and usefulness of exhaled CO levels as a biomarker for tobacco exposure. It is important to consider potential limitations when interpreting exhaled CO levels, such as false positive results and clinical disorders that can affect endogenous CO production. These factors should be taken into account to ensure accurate interpretation in clinical practice. In conclusion, the article provides valuable insights into the relationship between tobacco consumption and exhaled CO levels. The findings highlight the potential harm reduction aspect of alternative tobacco products, the importance of exhaled CO measurements in assessing smoking status, and the broader applications of this biomarker in various settings. Further studies are required to enhance our understanding of this topic and inform effective tobacco control strategies.

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FEASIBILITY STUDY OF HONEYBEE LIVELIHOOD IN UDALA AND BADASAHI BLOCK IN MAYURBHANJ DISTRICT, ODISHA

Soma Bhunia

ABSTRACT

Honey bees are efficient pollinators for various plants used in agriculture, horticulture, silviculture, fodder, and the wild. The focus on honey bees and their role as efficient pollinators in various agricultural and ecological settings. It highlights the different species of honey bees found in India and their importance in the collection of honey and non-timber forest products (NTFPs). Wild honey collection remains a prevalent practice among tribal communities, providing a significant portion of their income. However, collectors face challenges such as venturing into dense forests and the risk of accidents. Beekeeping, on the other hand, offers sustainable livelihood opportunities for small farmers and landless individuals, contributing to ecological and economic benefits. Successful beekeeping relies on factors like selecting suitable bee species, effective colony management, and the availability of bee-friendly flora. Abiotic and biotic factors, including climate, weather conditions, and mite infestations, also affect honey production. The study aims to assess the current status of honey bee livelihood, analyse market availability and benefits, and develop strategies to enhance productivity, particularly in the Mayurbhanj district of Odisha. The establishment of Farmer Producer Organizations (FPOs) and beekeeping projects can promote sustainability and provide income sources for both wild honey collectors and beekeepers.

KEYWORDS: *Honey bees, Agriculture and horticulture, Wild honey collection, Tribal communities, Beekeeping as a livelihood, Ecological and economic benefits, Market availability and benefits. FPO (Farmer Producer Organisation).*

INTRODUCTION

Honey bees are efficient pollinators for various plants used in agriculture, horticulture, silviculture, fodder, and the wild. Honey bees are known for constructing perennial colonies using wax, creating large colonies, producing surplus honey, and attracting foraging animals such as honey badgers, bears, and human hunter-gatherers. Currently, there are eight recognized species and 43 subspecies of honey bees worldwide. In India, four main types of honey bees are widely recognized such as Rock Bee (*Apis dorsata* Fabricius), Asian Honey Bee (*Apis cerana* Fabricius), Little Honey Bee (*Apis florea* Fabricius), Dammer Bees (*Trigona* spp. and *Melipona* spp.). Wild honey collection is still prevalent throughout the country and has ancient origins. Tribal communities living near forests heavily rely on wild honey collection, which accounts for 50% of their income, along with the collection of non-timber forest products (NTFPs). However, wild honey collectors face numerous challenges during their activities, including the risk of venturing into dense forests and the potential danger of falling from trees and hills. Globally, there are over 20,000 species of wild bees, and while some can be domesticated for beekeeping and management, the majority remain in their natural state. Beekeeping is considered a sustainable livelihood that offers ecological and economic benefits to small, marginal, and landless farmers. The profitability of the beekeeping industry depends on factors such as selecting appropriate bee species, effective colony management, and the availability of bee-friendly forage. Honeybees are essential as versatile pollinators, playing a crucial role in the extensive pollination of various crops, including field crops, vegetables, and orchard crops. The availability of surplus honey within a hive depends on the presence of nectar-secreting plants in the surrounding area. Thus, having suitable bee flora and an adequate carrying capacity for pollen and nectar are prerequisites for successful beekeeping. In addition to ecological factors, various abiotic and biotic factors also influence honey production by bees. Abiotic factors, such as climate and weather conditions, can impact bee activity and foraging behaviour. Biotic factors, such as mite infestations, can also affect honey production. The significance of honey and its medicinal uses are documented in ancient Ayurvedic texts. After India gained independence, efforts were made to revive traditional village industries, including beekeeping, through organizations like the Khadi Village Industries Commission (KVIC). These initiatives, along with research projects and coordinated efforts, have propelled the beekeeping industry in India, providing sustainable livelihood opportunities. This study aims to assess the current status of honey bee livelihood, analyze market availability and benefits, and develop strategies to enhance productivity in the sector. By establishing Farmer Producer Organizations (FPOs) and promoting beekeeping projects in the Mayurbhanj district of Odisha, both wild honey collectors and beekeepers can benefit from a sustainable source of income.



METHODOLOGY FOR STUDY

The feasibility study of Honeybee Livelihood is conducted in Udala and Badasahi block of the Mayurbhanj District, Odisha. The criteria use villages was where people are involved in wild honey collection and having the potential of doing honeybee livelihood. To understand all the aspects of the wild honey collection the study was conducted in Baniadhar and Kasikundala village in Udala Block and to find out the potential of beekeeping the study is conducted in Guabehera village in Badasahi Block. To conduct study the primary data were collected through random sampling method in 3 villages. In 2 village of Udala block total 50 sample were collected, each village 25 sample where people were only involed in wild honey collection. In Baniadhar village of Badasahi Block total 50 sample were collected where people have involved in other livelihood, in previous time who were involved in wild honey collection not in present time. Other than sample survey the data is collected by preparing PRA with community (Resource map, Mobility map, Trend analysis, pairwise ranking), case study, cash flow analysis was done. The secondary data were collected from Panchayat office, Agriculture office, Horticulture office, Forest office, FPO, NABARD and SOOVA etc.

RESULTS AND DISCUSSION

Socio-economic profile of wild honey collectors

Baniadhar and Kashikundala villages were inhabited exclusively by the Lodha tribes, who primarily engaged in the collection of wild honey. Additionally, they were involved in agricultural work, operating small shops, working with stones, and serving as intermediaries in the honey market. Within the villages, approximately 59% of the population was engaged in agricultural activities on their own land, while 23% worked on leased land. Nearly 96% of the villagers possessed less than 1 acre of land.

The task of collecting wild honey mainly fell upon the youth, as it required physical and mental strength. However, around 59% of the wild honey collectors had no formal education, which posed challenges in terms of maintaining quality, adopting technology, understanding the market dynamics, and setting appropriate prices. Consequently, this lack of education hindered their ability to maximize profits from their livelihoods.

Practice regarding to rearing and harvesting of honeybee

In Baniadhar village, every household is involved in wild honey collection, while in Kashikundala village, out of 65 households, approximately 53 households participate in this activity. These villages are located near the Similpal forest, the largest biosphere reserve in Odisha, where they gather wild honey and non-timber forest products (NTFPs). In the similpal forest only two types of honeybees are found like little bee and Rock bee. To access the honey, they travel 100 km into the forest, reaching locations such as Makdasi, Sarbasa, Kulipal, Devkunda, and Hadhadi. During their honey collection trips, they form groups and stay in the forest. They carry harvesting materials like buckets, knives, and pots for storing honey, as well as food, medicine, and other supplies. They mostly prefers honey collection in morning and night time to reduce the risk of bee attack.

No of people	2 to 4 days	5 to 7 days	7 to 9days	More than 9 days	Alone	total
3 to 5 people	6	2				8
6 to 10 people	7	12	8	1		27
More than 10 people	9	3	2			14
Blank					1	2
Grand total	22	17	10	1	1	51

Among the wild honey collectors, approximately 54% of the people prefer to venture into the forest with a group of 6 to 10 people and stay for 5 to 7 days. Around 28% of the participants prefer larger groups of more than 10 people, and they stay for 2 to 4 days. Going in larger groups reduces the time and effort required for honey collection, making it easier to gather honey within a shorter period. It also highlights the strong social bonding among the villagers. When going into the forest as a group, they generally prefer to have an experienced person with over 10 years of knowledge in honey collection. These experienced individuals possess better understanding of honey bee types, characteristics, sources, and various challenges associated with honey collection, as well as strategies to overcome them. After honey collection they kept a portion of beehive for regeneration of honey.

Gender vs wild honey collection

Women play a significant role in the activity of wild honey collection. They accompany their husbands to the forest for this purpose. In both villages, approximately 75% of the people engaged in wild honey collection allow their women to join them in the forest. However, they restrict them from directly collecting honey from risky locations such as trees and hills, where the danger to life is higher. Women's involvement mainly revolves around tasks like preparing food in the forest and gathering other non-timber forest products (NTFPs) such as Mahua, Sal leaves, mushrooms, and medicinal plants. These additional products serve as a source of extra income for them.

On the other hand, the remaining 25% of wild honey collectors do not include women in wild honey collection activities. This is because the collection areas are situated deep within the forest, spanning a distance of 100 kilometres, characterized by diverse flora



and various types of fauna. The risks of encountering wild animals and facing difficulties in climbing trees and hills for honey collection are high. Moreover, these individuals also need their wives to take care of elderly family members and children at home. In group

Belief related to wild honey collection

Superstition encompasses various belief systems held by individuals. When it comes to wild honey collection, people have different superstitions, such as worshipping gods, singing songs before going to wild honey collection, and consumption herbal plants in order to avoid bee stings. In Baniadhar and Kashikundala village approximately 51% of wild honey collectors hold superstitions related to their honey collection activities. Prior to venturing into the forest, they perform worship ceremonies for their village deities at home. Once in the forest, they worship the surroundings, considering the forest as a maternal figure that provides for them without expecting anything in return. The wild honey collectors those aged between 45 and 80, tend to place a higher belief in superstitions surrounding wild honey collection. For their belief they didn't use any safety cabinet during wild honey collection. Only 25% people use sack as a safety cabinet during honey collection. So, there is high risk of fall down from tree and hill.

Quantity & quality of wild honey production

In Baniadhar and Kashikundala villages, the villagers engage in honey collection during June, July, and December, with June being the most fruitful month. The duration of honey collection varies among individuals, with approximately 72% of respondents collecting honey for all three months, yielding an average of 6.3 to 9.3 kg per term. In the current year, around 80% of people earned an income ranging from Rs. 1,000 to 4,999 in June, as they ventured into the forest three to four times during this period, resulting in a higher yield.

Maintaining honey quality is not a priority for the wild honey collectors in both villages. They follow traditional collection methods and do not employ any technological processes. Plastic, nylon, steel, or aluminum pots are used for honey storage, with approximately 50% of collectors opting for plastic pots due to their affordability and lower risk of breakage compared to glass pots. The lack of knowledge regarding quality maintenance leads to an immediate sale of honey after harvesting, with no provisions for future storage. During honey sales, the SOOVA organization does not assess honey quality. Only 20% of respondents indicated that middlemen occasionally evaluate the quality using traditional methods such as observing if honey falls immediately when placed in cotton cloth (indicating duplicity), burning honey in cotton cloth, or pouring honey into a glass of water to check for immediate mixing (also indicating duplicity).

Challenges And Risk

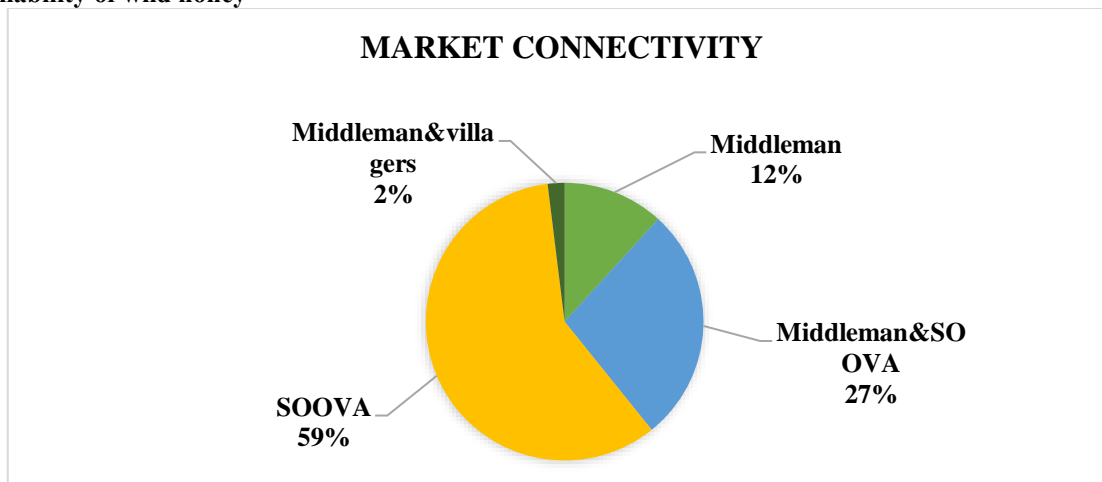
In Baniadhar village, all the household and in Kashikundala village, out of 65 households, around 53 households are engaged in wild honey collection, which has been an ongoing tradition. However, their involvement in wild honey collection exposes them to various constraints, some of which have resulted in fatalities.

Types of problems	Percentage	Category
Fear of fall down from tree and hill	65%	Problem 1
Animal attack	65%	Problem 2
Interfere of Forest officer	33.30%	Problem 3
Low honey price	45%	Problem 4
Bee attack	52.90%	problem 5
Health problem	72%	problem 6

Among the 51 respondents from both the village, 65% identified wild honey collection itself as problem 1, for which they lacked a solution. As a result, they relied on experienced individuals to track the hills. Approximately 65% of the participants ranked animal attacks as problem 2. Since they ventured deep into the forest, around 100 km, for honey collection, they faced a high risk of encountering wild elephants, bears, snakes, and other animals. To mitigate these risks, they preferred to go in groups and carry weapons. About 33.3% of the participants ranked the interference of forest officers in wild honey collection as problem 3. If officers noticed anyone collecting wild honey and other non-timber forest products (NTFPs), they confiscated the collected items, impacting their source of income. Therefore, they preferred to enter and leave the forest in the early morning to avoid detection. Approximately 45% of the participants ranked low honey prices as problem 4. The villages faced transportation challenges, leading them to sell their honey within the village to middlemen and organizations like SOOVA without any processing in low price then the actual market price. Bee attacks were ranked as problem 5 by 52.9% people. They didn't use any safety cabinet during wild honey collection. Additionally, as they lived inside the forest, bees often entered their homes and posed a threat to their children and other family members. About 72% of the people ranked health problems as problem 6. However, this issue was not considered major as they belonged to the physically and mentally resilient Lodha tribe. Due to climate changes in the forest and the physical demands of their work, they occasionally faced illnesses. In such cases, they relied on herbal medicines like Patalgoruda and Gangasiuli plants for recovery.



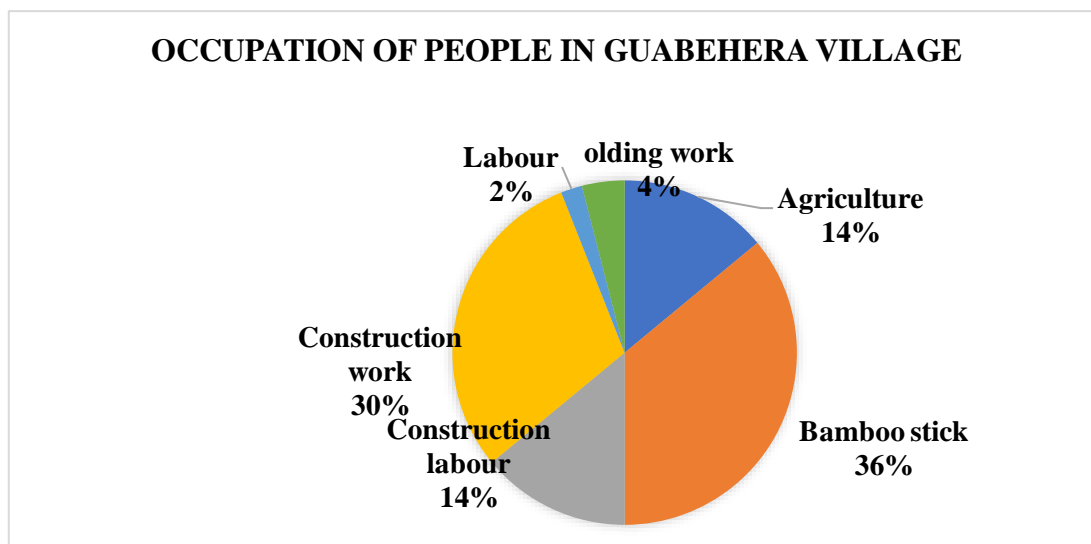
Market Availability of wild honey



The tribal people of Baniadhar and Kashikundala villages engage in wild honey collection, which contributes to less than 50% of their income. They sell their honey directly to middleman in their home itself, market (Khunta, Valagadia, Patsanipur, Mamudia, etc) and to FPO (Maa Durgadevi Producer Company Limited). In terms of honey marketing, 59% of wild honey collectors in these villages directly connect with the SOOVA organization Farmer Producer Organization (FPO) for selling their honey. Another 27% are connected with both middlemen and the SOOVA organization, while only 12% directly engage with middlemen at Rs. 200 to 300. A mere 2% sell their honey to local villagers in nearby markets Rs. 200 to 300. The preference for the SOOVA organization stems from its convenience—buying honey from every house at a fixed rate of Rs. 300 to 350 eliminates transportation costs and quality checks. Illiteracy prevails among the tribal residents of Baniadhar village, leading to limited market knowledge. They do not store their honey, immediately selling it to traders who visit their homes, as going to the market (more than 10 to 15 Km distance) is time-consuming, cost effective and transportation facilities are inadequate. Approximately 59% of the population in both villages lacks education, resulting in the use of symbols on pots as a means of measuring honey quantity instead of using weighing machines. This practice poses difficulties in handling and reading weight measurements.

STRATEGIES FOR HONEY BEE LIVELIHOOD

In Guhabehera village, approximately 34% of the population, belonging to the Scheduled Caste (SC), were engaged in Bamboo Artisan work. Only 14% of the villagers are involved in agriculture due to the problem of water scarcity. Agriculture work is primarily livelihood during rainy season. Around 34% of the people are directly involved in construction work, which includes individuals from all castes. Those engaged in agriculture and Bamboo Artisan work also participate in construction activities. To reach the construction site in Badasahi, they have to travel a distance of 4 km.

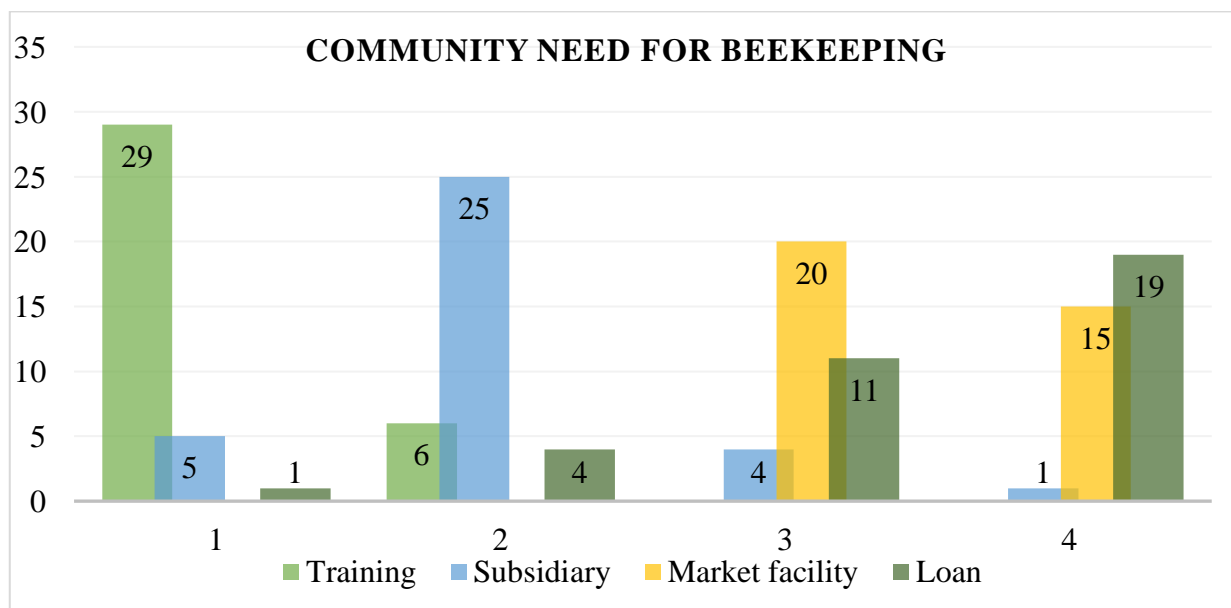




Farmers receive six months of work in agriculture, earning an income of Rs. 10,000. Construction work provides employment for nine months, as agricultural activities are postponed for three months during the rainy season. Skilled masons earn a wage of Rs. 400 per day, while helper masons receive Rs. 200. Due to inadequate transportation facilities within the village, they occasionally face challenges in reaching their work sites on time, resulting in delayed arrivals or staying home. The collection of Non-Timber Forest Products (NTFPs) provides a yearly income of Rs. 10,000. Major NTFPs collected include wild mushrooms, Mahua, and Sal leaves. Bamboo Artisan work offers year-round employment within the village, within women as primary livelihood. Considering their constraint in livelihood and availability of free time, beekeeping presents a potential opportunity for the villagers to engage in alongside their existing livelihoods. They can take care of their beehives during their spare time and continue with both Bamboo Artisan work and beekeeping.

COMMUNITY NEEDS AND PARTICIPATION

Around 70% of the villagers in Guabehera village express a willingness to engage in beekeeping. Among them, approximately 27 individuals (54%) have a "wadi" in their homes, consisting of various flowering and fruiting plants. This indicates the actual potential for beekeeping in the village due to the availability of suitable flora. The villagers are interested in beekeeping as it offers opportunities for income generation and serves as a new livelihood experiment. However, about 30% of the villagers do not wish to pursue beekeeping. Among this group, 16% have a "wadi" and possess the potential for beekeeping, but they choose not to pursue it due to a lack of knowledge and fear associated with beekeeping.



In Baniadhar village, a majority of the people express an interest in beekeeping and have various needs related to it. They emphasize the importance of training as their first priority to acquire knowledge about beekeeping. Additionally, they seek subsidies to initiate their beekeeping livelihood, as they prefer not to take personal financial risks. The availability of a market for selling their products is also a crucial requirement. Lastly, they express a need for loans to expand their beekeeping activities.

CONCLUSION

The feasibility study conducted in Udala and Badasahi blocks of Mayurbhanj District, Odisha, focused on understanding the current status of honey bee livelihood, analyzing market availability and benefits, and developing strategies for enhancing productivity. The study highlighted the significance of wild honey collection among Lodha tribes in Baniadhar and Kashikundala villages, along with other livelihood activities. Challenges faced by wild honey collectors, such as safety risks and low market prices, were identified. The need for education, training, market access, and safety measures was emphasized to promote sustainable honey bee livelihoods. In Guabehera village, potential for beekeeping alongside existing livelihoods was observed, with a majority expressing interest. Knowledge gaps and fear hindered participation in beekeeping. The study recommended interventions such as training, subsidies, market access, and loans to support beekeeping as a sustainable livelihood option. Addressing education, safety, and market knowledge emerged as crucial factors in promoting sustainable honey bee livelihoods in the studied villages.



WAY FORWARD

- Implement training programs to educate wild honey collectors and aspiring beekeepers about best practices in honey production, beekeeping techniques, safety protocols, and quality control. This will enhance their skills and knowledge, leading to increased productivity and preparedness for the market.
- Create farmer producer organizations (FPOs) or beekeeping cooperatives to facilitate collaboration, knowledge sharing, and market access for honey bee livelihoods. These platforms will enable collective action, resource sharing, and advocacy to benefit the beekeeping community.
- Forge partnerships with local businesses, retailers, and exporters to establish market linkages for honey bee products. Encourage value addition through processing, packaging, and branding, thereby improving product quality and attracting higher prices in the market.
- Invest in essential infrastructure, such as honey processing units, storage facilities, and transportation networks, to ensure proper handling and preservation of honey bee products. Promote the adoption of modern beekeeping technologies and equipment to enhance efficiency and productivity.
- Facilitate access to credit, loans, and subsidies to assist beekeepers in acquiring necessary equipment, inputs, and infrastructure. By overcoming financial barriers, beekeepers can invest in their livelihoods and experience sustainable growth.

Implementing these measures will strengthen the honey bee livelihood sector, fostering sustainable income generation, conservation of honey bee populations, and improved livelihood opportunities for wild honey collectors and beekeepers in the studied villages.

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EFFICACY OF ALCOHOLIC EXTRACT OF DHATAKI (WOODFORDIA FRUTICOSA) AGAINST CANDIDA ALBICANS FROM KAPHAJA YONIVYAPAT (VULVO VAGINAL CANDIDIASIS)

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ABSTRACT

Women represent the cornerstone of a family's overall health, ensuring they have access to quality care leads to improvement in health of children as well as the whole family. Vulvo vaginal candidiasis is the second most common infection among reproductive aged women with a single incidence of 75% and two or more episodes of 45% of women. Clinical features of vulvo vaginal candidiasis finds similarity with features of Kaphaja yonivyapad mentioned in ayurvedic classics. The drug Dhataki is attributed with Krimigna action in ayurvedic literature and studies have shown its antimicrobial action against various organisms. In the current study, action of alcoholic extract of Dhataki against *Candida albicans* is evaluated from vaginal swab sample collected from patients diagnosed with kaphaja yonivyapad (Vulvo vaginal candidiasis) by culture and sensitivity. With the current study, it is evident that the mean zone of inhibition of alcoholic extract of Dhataki possesses anti-microbial action against the fungus *Candida albicans*. Further, it is also obvious that as the concentration of aqueous extract of Dhataki increases, the zone of inhibition also increases.

KEYWORDS: Vulvo vaginal candidiasis, Kaphaja yonivyapad, *Candida albicans*, Culture and sensitivity, Dhataki, Alcohol extract

INTRODUCTION

Vulvovaginitis or inflammation of the vulva and vagina most commonly occurs in reproductive aged women and is usually secondary to infection. Candidal vulvovaginitis is responsible for about one third of cases¹. Candidal vulvovaginitis is caused by inflammatory changes in the vaginal and vulvar epithelium secondary to infection with candida species most commonly candida albicans. Candida is part of the normal flora in many women and is asymptomatic. Therefore candida vulvovaginitis requires both the presence of candida in the vagina as well as the symptoms of irritation, itching, dysuria or inflammation.

Vaginal swab culture and sensitivity is identified as a tool to identify such organism responsible for the infection and through sensitivity evaluation appropriate drug is selected for the management. Even though many drugs are attributed with krimighna action in Ayurveda, there are only a few works done on establishing the effectiveness of specific drug activity on specific micro-organisms. Hence such drugs need to be analysed for action against specific micro-organisms so that an upashaya effect of such drugs can be generated on micro-organisms invitro. Dhataki possesses krimighna action according to ayurvedic classes Taking over new methods like culture and sensitivity will strengthen existing ayurvedic knowledge for achieving improved diagnostic and curative abilities. Hence the present study is undertaken to review various attributes of the fungus *Candida albicans*, its laboratory diagnosis, culture, and evaluate Upashaya capability invitro by the sensitivity with extract of plant Dhataki.



Dhataki though ascribed with *Krimighna* action its efficacy on *Candida albicans* from vaginal swab sample has not been investigated. Hence in present work, alcoholic extract of *Dhataki*(*Woodfordia fruticosa*) for culture and sensitivity against *Candida* from vaginal sample of the subject are to be evaluated.

AIMS AND OBJECTIVES

To evaluate the sensitivity of alcoholic extract of *Dhataki*(*Woodfordia fruticosa*) against *Candida albicans* from vaginal sample of *Kaphaja yonivyapad* (Vulvovaginal candidiasis) patients by culture and sensitivity in vitro.

MATERIALS AND METHODS

A minimum of 30 subjects aged between 18-55 years irrespective of caste and religion, diagnosed with candidiasis presenting with following lakshanas- *Picchila yoni srava* (slimy thick vaginal discharge), *Kandu* (vaginal pruritis) with or without symptoms of *Alpavedana* (dull pain), *Panduta* (paleness) and *Pandu picchila arthava* ²(pale mucoid menstrual blood) from out-patients and in-patients departments of tertiary ayurvedic hospital, Hassan was included in the study. Microbial infections other than *candida albicans*, Pregnant and lactating women and omen on their menstrual phase were excluded from the study

RESEARCH DESIGN

An observational experimental study

METHODOLOGY

Alcoholic extract of Dhataki was prepared using cold maceration³ method using 50g each of fresh and clean *Dhataki* weighed using a weighing balance. The flowers were then crushed to powder in a clean mortar and pestle finely without adding water. Powdered 50gm was added to 250 ml ethanol taken in a 1000ml capacity conical flask. The conical flask was then plugged tightly with cotton and was sealed with tape. The conical flask was shaken manually for 10-15 minutes at an interval of every 3 hours during the daytime. The procedure was repeated for seven days. On the 7th day, the content of the conical flask was filtered, which yielded 210 ml of alcoholic filtrate. The filtrate was then kept over a water bath in a China dish at 60°C. 5 gram of alcoholic extract of *Dhataki* was obtained by this process.

Vaginal samples were collected from patients using sterile cotton swab. A portion of sample was used for direct microscopic characterization of fungi and from the remaining a loop full of inoculum was used for culture by streaking on Potato dextrose agar plates and was placed in incubator at 37°C and cultured for 24-48 hours. After 24-48 hours of incubation, the cultural characteristics like colony morphology were studied and microscopic observation was done

The results that showed positive cultures for *Candida albicans* was further examined for sensitivity with Dhataki. Sensitivity test was done using Agar well diffusion method. Cleaned the workplace in laminar airflow using 70% ethyl alcohol and switched on to UV for 20 minutes. Poured around 15 ml Potato Dextrose Agar media uniformly over the Petri dish, mixed well, and allowed the media to solidify for 30 minutes. One loop full of *Candida albicans* from 24-48 hours culture was transformed into the Potato Dextrose Agar plate (one for each extract) with a sterile, non-toxic cotton swab and swabbed over the media (lawn culture). Made six equidistant wells on both the plates with a sterile cork borer and added different concentrations of alcoholic extract into wells on the other plate. Tests were conducted for five different concentrations of aqueous and alcoholic extracts of *Dhataki* (3000 µg/ml, 2000 µg/ml, 2000 µg/ml, 1000 µg/ml, 500 µg/ml, 100 µg/ml) and with control of ethanol. Incubated the petri plates at 37°C for 24-48 hours. After the incubation period the zone of inhibition were measured in mm with a ruler.

ASSESSMENT CRITERIA

Initially 6 wells in each plate were charged with 6 different concentrations of alcohol extract of *Dhataki*. If the drug is sensitive a clear circular "halo" (known as zone of inhibition) appears around the well, indicating absence of fungi. If that zone appears, it shows that the particular drug is effective against *Candida albicans* fungi.

Analytical parameters

- Sensitive (S) zone
- Moderately sensitive (MS) zone
- Resistant (R) zone



OBSERVATION AND RESULTS

Invitro anti- bacterial activity of alcoholic extract of *Dhataki* was evaluated by agar well diffusion method and zone of inhibition was measured as shown in Table

Table No. 1 : Mean values of zone of inhibition different concentrations of alcoholic extract of *Candida albicans*

Different concentrations of alcoholic extract of <i>Candida albicans</i>	3000 µg/ml	2000 µg/ml	1000 µg/ml	500 µg/ml	100 µg/ml	Control
N	30	30	30	30	30	30
Mean	20.57	19.17	17.60	15.47	13.43	6.90

Table No. 29: Sensitivity test for alcoholic extract of different concentrations of Dhataki

Concentrations	3000 µg/ml			2000 µg/ml			1000 µg/ml			500 µg/ml			100 µg/ml			control		
	S	MS	R	S	MS	R	S	MS	R	S	MS	R	S	MS	R	S	MS	R
No. of samples	20	8	2	18	8	4	15	11	4	9	11	10	6	9	15	0	3	27

The present study shows that the susceptibility of *Candida albicans* against the alcohol extract of *Dhataki* is fairly evident between 26mm to 22mm. Hence it is considered as sensitive. 18 to 14mm is considered as moderately sensitive. 12 to 8mm is considered as resistant. Therefore, with the current study it is evident that candida albicans organism is sensitive to 3000µl, 2000µl, 1000µl; moderately sensitive to 500µl, whereas it is resistant to 100µl of alcoholic extract of *Dhataki*.

DISCUSSION

In the present study 40 subjects with *kaphaja yonivyapat* (vulvo vaginal candidiasis) were screened. Among them, 30 subjects fulfilled the diagnostic inclusion criteria, and the remaining 10 subjects were excluded. Among excluded samples were samples other than candida albicans and also samples of pregnant and lactating women. Plants and their constituents are the finest choice than any other synthetic chemical. Most of the formulations consist of plants and their phytochemical constituents as the chief component. In *Dhanwantari Nighantu*⁴ and *Kaiyyadeva Nighantu*⁵ *Dhataki* has been attributed with *Krimighna* action. In the present study, the cold maceration method was selected as it is easy to perform, economical and simple without using any complex instruments but yields a highly potent extract with several active principles. By assessing the mean values of the zone of inhibition shown by the alcoholic extract of *Dhataki* against *Candida albicans*, it was observed that the organism is sensitive to 3000µl and 2000µl and 1000µl; and moderately sensitive to 500µl; whereas it is resistant to 100µl. The phytochemical constituents present in the *Dhataki* alcoholic extract interferes with different mechanisms of candida, like altering the surface tension of the extracellular medium of organism cells, obstructing DNA of organism cells, complexing with extracellular and soluble proteins, etc. Different strains of fungus have anti-microbial effects including inhibition of various cellular processes followed by an increase in plasma membrane permeability and, finally, ion leakage from the cells⁶. Different concentrations of alcoholic extract of *Dhataki* showed different zones of inhibition. This is because different components diffuse at different rates that produce varying zones of inhibition against the fungus candida albicans. In higher concentrations of aqueous extract, the drug content is more, hence showing a significant zone of inhibition. On diluting the concentrations, the active constituents fully dissolve into the solution. So, the drug is incapable of giving antimicrobial action even though it reaches and is set at the cell membrane.

CONCLUSION

From this study, it is evident that the mean zone of inhibition of alcoholic extract of *Dhataki* (*Woodfordia fruticosa*) possesses antimicrobial action against candida albicans obtained from the vaginal sample of subjects diagnosed with *kaphaja yonivyapat* (Vulvo vaginal candidiasis). It is also evident that as the concentration of alcoholic extract of *Dhataki* (*Woodfordia fruticosa*) increases, the zone of inhibition for candida albicans also increases.

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COLLABORATIVE LEARNING: A NEW APPROACH OF MODERN TEACHING-LEARNING PROCESS

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ABSTRACT

Collaborative Learning is a method of teaching and learning in which students work on assignments and issues in cooperative teams. Collaborative Learning is a review article that starts with the definition of the word and moves on to the benefits brought about by using collaborative approaches to learning. The advantages of Collaborative Learning are broken down into four groups in this research: social, psychological, academic, and evaluation. Each of these may be broken down into even finer-grained categories.

KEYWORDS: Collaborative Learning, benefits, advantages

INTRODUCTION

Collaborative learning is gaining popularity for many good reasons. To get the most of this approach to learning, we must first appreciate its advantages. One must first grasp the nature of Collaborative Learning before forming an opinion on its efficacy (Annett, N., 1997). Collaborative learning is based on a philosophy of interaction and personal lifestyle in which each person takes responsibility for their own activities and acknowledges and appreciates the strengths and contributions of their peers. As a guideline for interacting with individuals in any setting including a group, it emphasizes the need of recognizing and praising the unique skills and perspectives of each participant. Each member of the group contributes to decision-making and understands and accepts his or her share of responsibility for the group's activities. In Collaborative Learning, members of a group work together to reach an agreement, as opposed to competing with one another for the best results. Practitioners of Collaborative Learning employ this idea in their daily lives and interactions with others, including at work, in their communities, at home, and in their families (Panitz, T., 1996). There are three methods in which people respond in response to the acts of others, as stated by Johnsons (2009), which are cited by Brown and Lara (2011). A person's activities may either aid in another person's success, hinder their achievement, or have no influence at all. It's also possible for people to:

1. Cooperating to achieve common educational objectives;
2. Competing with one another to reach a common objective that can be achieved by only a select few
3. Independently pursuing one's own aims with no consideration for the needs of others is an example of individualism.

They point to the Johnsons' review of the literature on education and claim that it shows how collaboration, as opposed to competition and individual effort, leads to:

1. Superior performance and increased output;
2. Better relationships characterized by care, support, and dedication, and
3. Improved mental health, social abilities, and confidence. This research set out to outline the primary gains that may be attributed to Collaborative Study.

MATERIAL & METHOD

This article provides an overview of collaborative learning by first defining the term and then describing its primary advantages. These advantages are then organized into four broad categories and further subdivided into specific themes to guarantee that the most salient ones are taken into account. Through a literature analysis on Collaborative Learning and its advantages, several problems are uncovered.

RESULTS

As a trend of the twenty-first century, collaboration represents an exciting new way for people to interact with one another. The shift from solitary efforts to teamwork and from independence to community has become more important as we face increasingly complex problems (Austin, J. E., 2000; Welch, M., 1998).



Putting students of varying abilities together to work on a same topic, or “collaborative learning,” has been the subject of much research and advocacy. This approach to teaching is often referred to as “Pair and Share” or “Teach and Learn.” The students are accountable for each other's and their own academic growth. Therefore, the achievements of one student contribute to the achievements of others.

According to Johnsons (1994), which Woods and Chen (2010) mention, Collaborative Learning is more likely to succeed than competitive or individualistic approaches if five conditions are met.

1. Positive dependency was recognized early on in collaborative learning;
2. Significant interaction for promotion;
3. Students who participated in early Collaborative Learning reported feeling a strong sense of personal ownership and responsibility for the success of the group.
4. Consistent application of the necessary social and groupwork abilities, and
5. Evaluation of existing group performance with the goal of enhancing future performance.

Collaborative learning has been shown to offer several advantages (Pantiz, T., 1999). Collaborative learning has many advantages, and categorizing them is a smart approach to keep them straight. Over fifty advantages of Collaborative Learning are listed by Johnsons (1989) and Pantiz (1999). The following is a list derived from their writings. This study provides a brief overview of these topics, classifying them into four broad headings: social, psychological, academic, and evaluation.

Social Benefits

1. Collaborative learning facilitates the growth of students' social networks;
2. Students and teachers may learn to appreciate one another's differences via group projects.
3. Collaborative learning fosters an encouraging setting for emulating and honing cooperative skills, and;
4. Learning communities are fostered via collaborative instruction.

Psychological Benefits

1. Putting students at the center of the learning process boosts their confidence;
2. Anxiety is alleviated by working together, and
3. Collaborative learning fosters admiration for educators.

Academic Benefits

1. Improved critical thinking is one of the many benefits of learning in groups.
2. encourages pupils to take an active role in their education
3. The academic outcomes of classrooms using the 3Cs of learning
4. Demonstrates effective strategies for dealing with problems
5. Large lectures can be personalized
6. Collaborative learning is extremely useful in inspiring kids to learn certain subjects.
7. Try out several approaches to grading in the classroom;
8. Assessments take in many forms in collaborative classrooms.

Culture nowadays tends to reward solo efforts and frown upon group efforts. Students may learn to work together more effectively by reflecting on their personal contributions to the group's success or failure and by understanding the kinds of actions that make that possible (Panitz; T., 1996; Cohen B.P. & Cohen, E.G., 1991). teachers may raise students' awareness of the importance of healthy, positive, helpful relationships.

DISCUSSION

The increased amount of time that students spend in groups is one of the most valuable aspects of Collaborative Learning. Activities beyond the scope of typical CLEs will be used to help teams bond and get to know one another. It's common for students to reach out to one another for advice during difficult times, and these conversations typically continue into subsequent terms (Bean, J., 1996).

Collaborative Learning techniques may be useful for both external and internal learning groups (Tinto, V., 1997). When students regularly engage with one another in a guided setting, they gain insight into one another's perspectives and develop skills for resolving social conflicts (Johnson, R.T., & Johnson, D.W., 1985).

As a result, relationships within a community become more stable (Cohen, S., & Willis, T., 1985). Collaborative learning fosters a more natural inclination to network professionally with the pupils. Outside of Collaborative Learnings, students often face challenges. Both the teacher and the student could feel more at ease discussing the matter, and the student might get more assistance from other student services units (Kessler, R.C., & McCollaborative Learningeod, J.D., 1985).

Positive diverse connections are fostered via Collaborative Learning, and an appreciation for variety is fostered through it (Swing & Peterson, 1982; Webb, 1980).

Collaborative Learning, as proposed by Johnson (1990), encourages constructive answers to social issues and creates a safe space in which to work through conflicts. There is no context that Collaborative Learning has been shown to lessen violence in.



According to Sherman (1991), the majority of social psychology textbooks devote significant space to discussing conflict, which may be sparked by either internal or external rivalry, and how it can be mitigated or avoided altogether by collaborative efforts.

Collaborative learning encourages constructive answers to social issues and provides a safe space for resolving conflicts (Johnson, R.T., Johnson, D.W., 1990; Messick, D.M., & Mackie, D.W., 1989). Students learn to take responsibility for one another in a Collaborative Learning environment (Bonoma, J., Tedeschi, J., & Helm, B., 1974). Collaborative learning encourages peaceful conflict resolution between classmates. In order to effectively debate ideas and argue for their perspectives, they must learn to do so without making their arguments personal (Johnson, D.W., Johnson, R.T., Holubec, E.J., 1984).

Collaborative learning helps students acquire more complex thought processes (Webb, N.M., 1982). Students make a sincere effort to study. The most productive kind of student engagement is when students work together. When students are working in pairs, one listens while the other person talks on the topic of inquiry. Through the process of ideation, discussion, quick feedback, and response to questions and remarks, both students and teachers gain experience in problem solving (Johnson, D.W., 1971; Peterson, P.L. & Swing, S.R., 1985).

Students require a foundation of knowledge to practice and perfect their critical thinking abilities. This foundational knowledge is frequently acquired via a process of repetition and memorization. It might be time-consuming, monotonous, or daunting to do something by yourself. Even though learning is a repetitious process, students may make it engaging and enjoyable by working together (Panitz, T., 1999).

Having students evaluate their own performance, that of their group, and the efficacy of their Collaborative Learnings strategies is common (Meier, M., & Panitz, T., 1996). Because of the group's close knit nature, its members are able to go further into a topic than they would on their own (Entwistle, N., & Tait, H. (1993)). Because of its student-centric nature, Collaborative Learning places equal weight on instruction and knowledge acquisition; it encourages learners to assume a larger share of educational accountability (Lowman, J., 1987).

Maintaining pupils is easier in a Collaborative Learning environment since students are more invested in their education and the learning process (Astin, A.W., 1977). Students learn to take charge of their own learning when they work together (Resnick, L.B., 1987).

Each student in a group is prepared to do their part and has been instructed on how to work effectively with the others in their group and to master the material they will be discussing. They are also given time to reflect on the group dynamics that led to actions like double-checking with neighbors to make sure everyone understood the homework. Students gain skills in self-management via these encounters.

Teachers may witness their students' interactions, explanations of their thinking, inquiries, and discussions of ideas and concepts more often when they engage in collaborative learning (Cooper, et al., 1984). Collaborative Learning assessment strategies provide several advantages over traditional test techniques (Cross, K.P., & Angelo, T.A., 1993). According to Johnsons (1990), in a classroom setting, pupils are more likely to believe they will succeed in meeting their learning objectives if their peers are also successful.

As a result, they aim for solutions that improve the lives of everyone involved. Individuals are more inclined to quit up when they hit a roadblock, while teams are more likely to come up with creative solutions. Students may be evaluated in a variety of ways while engaging in Collaborative Learning (Panitz, T., & Panitz, P., 1996). Students are less likely to experience anxiety in the classroom when they work together to solve problems (Kessler, R., P., & W., 1985).

Students see that their instructor is capable of judging not just their knowledge but also the quality of their thought processes. Teachers may discover more about their students' individual learning styles and academic progress via the conversations that take place throughout each Collaborative Learning activity, opening up the possibility of providing individualized support for each student.

CONCLUSION

Learning by Doing in Teams Better mental health, social competence, relationship quality, success and output; increased levels of caring, helpful, and dedicated connections; and self-esteem are only some of the common outcomes of Collaborative Learning in comparison to competitive and individualistic approaches.

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A STUDY ON PASSENGER PERCEPTION TOWARDS TRANSPORTATION WITH REFERENCE TO PRIVATE BUS IN COIMBATORE – TIRUPUR

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ABSTRACT

No transport business can survive without satisfying the needs of the passengers. In general, compared with other modes of transport, bus transport and its services are more indispensable, convenient and very easy to access. In certain situations, bus transport may suit with the needs of the passengers and facilitate more in all aspects. The present study aims to know the passenger perception towards using private bus in Coimbatore. Simple random sampling technique were used to identify the respondents among all people. Both primary and secondary data were used. Primary data collected from questionnaire and secondary data collected from E-Journals, Journals, Magazines, Websites etc., To analyze the collected primary data, tools like Simple Percentage, Chi-Square Analysis, Ranking analysis and Regression were used. From the study, it is found that most of the respondents use private bus because of affordable price.

KEY WORDS: Transport, Private Buses, Travelling.

INTRODUCTION

Transport is the movement of humans, animals and goods from one location to another. Transportation moves people and goods from one place to another using a variety of vehicles across different infrastructure systems. It does this using not only technology but also people's time and effort; producing not only the desired outputs of passenger trips and freight shipments, but also adverse outcomes such as air pollution, noise, congestion, crashes, injuries, and fatalities. If agriculture and industries are supposed to be the body of country, transport may be said to be the nerves and veins of the economy.

Infect, a well developed transport system has become a symbol of civilization "if agriculture and industry are the body and bones of national organism, transport and communication are its nerves. In the dynamic world, private bus has played an important role.

Bus transportation agencies in the government are under growing pressure to improve service and efficiency. Passengers' wants and expectations are changing when it comes to government or private services and their quality criteria. The Private Bus Transport Services in Coimbatore to Tirupur has been widely used to assess the quality of private-sector services, but it has been used less frequently in government services.

STATEMENT OF THE PROBLEM

Private buses play an equal role in passenger transport. The main motive for private buses is to earn profit. The population is growing quickly each day, as are the number of travellers travelling from one location to another. To meet the needs of the customers, all transportation sectors strive to provide high quality services to a range of social classes. However, they still won't be able to satisfy every passenger because there is a significant disconnect between the population increase, passenger expectations and the level of service that is provided by the transportation sector and what the general public expects from service providers. private buses are involved in unfair practices such as overloading, deviating from normal routes, not reaching destinations and unhealthy competition with each other and with scheduled buses.

OBJECTIVES OF THE STUDY

- To know the socio demographic condition towards transportation in private buses – Coimbatore - Tirupur.
- To measure the passenger's perception about the service provided by private bus.



- To analyse the factors influencing passenger perception of the quality of service provided by the sectors.
- To offer the suggestion to improve the transportation in private buses (Coimbatore – Tirupur).

SCOPE OF THE STUDY

This study aims to examine passengers perception towards transportation with references to private bus (Coimbatore – Tirupur). The present study covered Coimbatore to Tirupur cities only. In further study it may extend to other cities also\

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problems. It may be understood as a science of studying how research is done scientifically. It includes the overall result design , data collection methods, and analysis procedure.

RESEARCH DESIGN

The research design is the blueprint for the fulfilment of objectives and answering questions. It is a master plan specifying the method and procedures for collecting and analysing needed information.

DATA COLLECTION

Data was collected to both primary and secondary data source. Primary data was collected through survey method using questionnaire to conduct the study successfully. A questionnaire was designed for this purpose.

PRIMARY DATA

A primary data is a data which is collected for first time for the particular interest to collect more information. In this study, the primary data was collected using questionnaire.

SECONDARY DATA

Secondary data consist of information that already exists somewhere, having been collected for some other purpose. In this study, the secondary data was collected from studies, magazines, journals and websites.

SAMPLING TECHNIQUE

In this study the researcher used Simple Random Sampling.

SAMPLE SIZE

The sample size selected for this study is 175 respondents.

TOOLS USED FOR THE STUDY

The collected data were analysed and interpreted properly to find the results of the research work. Conventional tools like descriptive tables and percentage were used for the purpose of analysis. The graph and charts have also been made use of where ever necessary. Further, the following specific tools were used,

- Simple percentage analysis
- Rank analysis
- Weighted average analysis
- Chi-square analysis
- Regression

LIMITATION OF THE STUDY

- Time is a major limitation; extensive study was not possible mainly due to time constrain.
- The study is confined to Coimbatore - Tirupur private bus only
- The sample size taken for the study is limited only to 175 respondents.
- The respondents' views and opinions may hold goods for the time being and may vary.
- Sample size is tiny and may not fully reflect the population.

REVIEW OF LITERATURE

Gowri. K (2020) According to this report, passengers are satisfied with private bus services. It has been determined that most travellers prefer bus transportation to get from Coimbatore to Tirupur bus , and they typically arrange for private buses because they are



less expensive. The provision of transportation services is essential for human progress. To satisfy the traveling public, bus operators must provide effective services.

Additionally, it has been noted that passengers frequently encounter issues. As a result, bus operators should work to put the suggestions for problem prevention into practice in order to better serve the travelling public.

ANALYSIS AND INTERPRETATION

SIMPLE PERCENTAGE ANALYSIS

TABLE 1: AGE OF THE RESPONDENTS

S.NO	AGE IN YEARS	NO. OF RESPONDENTS	PERCENTAGE
1	Below 20	44	25.1%
2	21-30 years	98	56%
3	31-40 years	26	14.9%
4	Above 41 years	7	4%
	Total	175	100%

source: primary data

INTERPRETATION

The above table reveals that the age of the respondents .It is clear that 25.1% of the respondents are below 20 years ,56% of the respondents are between 21to 30 years, 14.9% of the respondents are between 31 to 40 years,4% of the respondents are above 41 years.

Majority (56%) of the respondents are between 21 to 30 years.

TABLE 2: REASON FOR PREFERRING THE PRIVATE BUS BY THE RESPONDENTS

S.NO	FACTORS	NO.OF. RESPONDENTS	PERCENTAGE
1	Low cost	30	17.1%
2	Easily available	70	40%
3	Speed	49	28%
4	Entertainment (songs, movies)	26	14.9%
	TOTAL	175	100%

source: primary data

INTERPRETATION

The above table reveals the reason for preferring the private bus by the respondents. 17.1%of the respondents are preferring the private bus for low cost, 40% of the respondents are preferring the private bus for easily available, 28% of the respondents are preferring the private bus for speed 14.9% of the respondents are preferring the private bus for entertainment (songs , movies).

Majority (40%) of the respondents are preferring the private bus for easily available.

RANKING ANALYSIS

Under this method the respondents are asked to rank the choices. This method is easier and faster. In this study the respondents are asked to rank the product which is mostly used by the respondents are used to rank as 1,2,3,4 and 5. It does not matter which way the items are ranked, item number one may be the longest or it may be the smallest.

TABLE 3: PRIVATE BUS MOSTLY PREFERRED BY THE RESPONDENTS

FACTORS	1(5)	2(4)	3(3)	4(2)	5(1)	TOTAL	RANK
SRT	96	37	16	21	5	175	I
	480	148	48	42	5	723	
KMS	33	71	46	19	6	175	III
	165	284	138	38	6	631	
ASM	35	39	80	14	7	175	IV
	175	156	240	28	7	606	
NMS	25	32	55	50	13	175	II
	125	128	275	100	13	641	
NANDHINI	30	27	44	43	31	175	V
	150	108	132	86	31	507	



INTERPRETATION

The above table shows the private bus mostly preferred by the respondents that are ranked based on the return by the respondents. SRT ranked as I . NMS is ranked as II . KMS is ranked as III . ASM is ranked as IV . NANDHINI is ranked as V .

WEIGHTED AVRERAGE ANALYSIS

Under this method, the respondents are asked to rank their choices. This method involves ranking of the items given. To secure a ranking of all the items involved, the researchers total the weights which are given to each item. The heighted weighted score is ranked first and correspondingly the other ranks are assigned.

$$\text{Weighted Average} = \frac{\sum f(x)}{N}$$

F(x) = weight allotted for each factor,
N= Number of respondents

TABLE 4: FACTORS THAT INFLUENCED RESPONDENTS TO TRAVEL IN PRIVATE BUS

FACTORS	1(6)	2(5)	3(4)	4(3)	5(2)	6(1)	TOTAL	MEAN SCORE
Travel time	111	32	13	13	2	4	175	5.28
	666	160	52	39	4	4	925	
Price	30	90	34	15	5	1	175	4.69
	180	450	136	45	10	1	822	
Quality of service	20	52	66	28	5	4	175	4.24
	120	260	264	84	10	4	742	
Availability	37	44	45	39	8	2	175	4.32
	222	220	180	117	16	2	757	
Punctuality	53	34	37	21	22	8	175	4.29
	318	170	148	63	44	8	751	
Comfort	28	25	59	16	12	35	175	3.63
	168	125	236	48	24	35	636	

INTERPRETATION

The above table shows the various factors that influence the passengers to travel in private bus.The highest mean score rise 5.28 for the travel time.

CHI- SQUARE ANALYSIS

A statistical test used to determine the probability of obtaining the observed by chance, under a specific hypothesis. It is used to test if the standard deviation of a population is equal to the specific value. Chi-square is a statistical significance test based on frequency of occurrence, it is applicable both to qualitative and quantitative variables. Among its many uses, the most common are tests of hypothesized probabilities or probability distributions, statistical dependence or independence and common population. A Chi-square test is any statistical hypothesis test in which the test statistic has a Chi-square distribution if the null hypothesis is true.



TABLE 5: RELATIONSHIP BETWEEN MONTHLY INCOME AND MONTHLY AMOUNT SPEND IN PRIVATE BUS

Monthly Income	Monthly Amount Spend in Private Buses				Total
	Below 100	101-200	201-300	Above 301	
Above 10000	24	18	5	2	39
10001-20000	13	13	13	7	46
20001-30000	13	19	18	11	61
Above 30001	7	11	7	4	29
TOTAL	57	51	43	24	175

To find out the association between Monthly Income and Monthly amount spend in private buses by the respondents, Chi-Square test is used and result is given below.

HYPOTHESIS

H₀: There is no significant difference between Monthly Income and Monthly Amount spend in private buses of the respondents.

H₁: There is significant difference between Monthly Income and Monthly Amount spend in private buses of the respondents.

CHI SQUARE TEST

Factor	Calculation	Df	Table Value	Remarks
Monthly Income	21.234 ^a	9	16.92	Rejected

INTERPRETATION

The Calculated Value of Chi-square is greater than the Table value. Hence, the Hypothesis is rejected stating that there is significant relationship between the monthly income of the respondents and their monthly amount spend in private buses by the respondents.

REGRESSION

Regression is often used to determine how many specific factors, such as the price of a commodity, interest rates, particular industries, or sectors influence the price movement of an asset. The aforementioned CAPM is based on regression, and it is utilized to project the expected returns for stocks and to generate costs of capital.

RELATIONSHIP BETWEEN AGE AND TRAVELLING IN PRIVATE BUSES

Table 6 :Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.328 ^a	.0108	.103	1.063

a. Predictors: (Constant), age

Table 7: ANOVA^a

Model	Sum of Squares	Df	Mean square	F	Sig.
Regression	23.635	1	23.635	20.917	.000 ^b
Residual	195.474	173	1.130		
Total	219.109	174			

a. Dependent Variable: Travel in private buses

b. Predictors: (Constant), Age



Table 8: Coefficients^a

Model	Unstandardized B	Coefficients std. Errors	Standardized Coefficient Beta	t	Sig.
(Constant)	1.357	.229		5.928	.000
Monthly Income	.506	.111	.328	4.574	.000

a. Dependent Variable: Travel in Private buses

INTERPRETATION

Table 6 shows that R square value is .0108, which means that independent variable i.e., Age causes 10.8% changes in the dependent Variable i.e., Travel in Private buses.

Table 7 anova results that p-value is .000 which is less than 0.05. It shows that there is significant impact between age and Travel in private buses .

Table 8 shows the coefficient results. As indicated that the beta value is .328 which means that the change in independent variable i.e. Age by one unit will bring about changes in the dependent variable i.e., Travel in Private buses by .328 units

Furthermore, the beta value is positive, which indicates the positive impact between two variables or in other words, when independent variable increase by one unit the dependent variable increase by .328

SUGGESTION

- In order to make buses to reach in time the proper accountability system should be adopted.
- In order to increase the satisfaction level of the passengers the bus crew should behave in co-operative, pleasant and helpful manner with passengers .
- In order to make passengers to feel more secured in traveling in private bus at least basic security facilities should be provided.
- In order to avoid problems of overload of passengers at peak hours buses should be scheduled time at proper .
- To make the passengers more aware about the various facilities provided by private bus like First aid box awareness increasing promotional strategies can be implement.
- The private bus should stop in all the stopping.
- The drivers should follow all the safety precautions.

CONCLUSION

Private buses play an equal role in passenger transport.Private transportation has become a necessary in daily activities. This has become essential for improving accessibility to education,employment, health and other services improvement of private transport service will make the city more sustainable.Passengers’ perception among the private bus transport services in Coimbatore to Tirupur passengers are satisfied with the service provided to them. After analysing the various problems and findings the passengers are satisfied to travel in a private bus.So, the private bus sector is suggested to take from necessary steps to consider friendly movement, attract passengers, and has to adopt new strategies, which will automatically highly improve passengers’ perception with the private bus in future.

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PURE AYURVEDIC MANAGEMENT OF HYPOTHYROIDISM - A CASE REPORT

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ABSTRACT

Thyroid hormones are very essential for normal metabolism, growth and development. It is extremely receptive and responds to stress and stimulation very quickly. According to recent studies, 13 out of every 100 people have thyroid issues. Among this, Hypothyroidism is one of the most prevalent thyroid disorder in India which is affecting one out of every ten persons. Although the diagnosis and treatment of hypothyroidism are considered as simple, there are large numbers of people with this condition who are not treated seriously. The main obstacle in Ayurveda is that there is no exact correlation of thyroid gland in Ayurvedic classics, where as the Galganda and Gandmala have been frequently used in the text. But Ayurvedic system of medicine is very futuristic and Caraka in 18th chapter of sutra sthana emphasized that there is no need to emphasize on the exact nomenclature of the disease. The thyroid condition can be compared as agni dushti. There will be a formation of ama because of that agni dushti. In a nut shell "ama is a precursor state of a substance in transformation". It results in स्रोतोरोधबलभ्रंशगौरवानिलमूढता: । आलस्यापक्ति निष्ठीव मलसङ्गारुचि क्लमा:। (अ. ह. सू. १३/२३). Using these principles Srotoshodhana, Agnideepana, Pachana and Vatanulomana are the main principles in the treatment of Hypothyroidism. Here a case study of a patient who suffered from hypothyroidism and was successfully treated with multifactorial approach of Ayurveda like shodhana and shamana is selected. After the treatment, TSH was reduced from 18.48 to 4.63µg/mL.

KERWORDS: Hypothyroidism, Agni, Shodhana, Shamana

INTRODUCTION

Hypothyroidism is caused when the thyroid gland secretes inadequate amounts of thyroid hormone. In both the developing and developed countries, hypothyroidism is a significant health concern. The prevalence of Hypothyroidism in India is 11%¹ which contributes to about 42 million people². Thyroid regulates the metabolism of the body, hence deficiency manifest as multi system involvement. Metabolism can be understood as paka in ayurveda, which is the function of agni. That is in Hypothyroidism pachana kriya is reduced due to mandagni. It can influence every organ in the body and alters the metabolism down to the molecular level. The prevalence of hypothyroidism is continuously increasing. It is extremely receptive and responds to stress and stimulation very quickly. So it is understandable why thyroid diseases have grown to be the second most prevalent endocrinal disorder. The disease hypothyroidism causes complications at its peak can result in threatening conditions³.

In Ayurveda texts, although there are no direct references found regarding hypothyroidism, based on its clinical presentation, it can be correlated with different pathological entities which are manifested either as symptoms or disease. The nidanas, for Rasapradoshaka, Agnimandya janaka, and kapha-vata prakopaka can be the causes for the development of hypothyroidism. The signs and symptoms of hypothyroidism described in modern medicine indicate that the kapha pradhana tridosha is a significant factor in the illness. It can be understood and evaluated based on the involved agni, dosha, dushya, srotas, and srotodusti, etc. Clinical symptoms of agnimandya are srotorodha, gaurava, anila mudhata, aalasya, apakti, malasanga, aruchi, klama⁴. These symptoms can be correlated with patient's chief



complaints. Due to apathya nidana sevana there is tridosha dushti, which causes jatharagni mandya, which results in dhatwagnimandya and finally uttarottara dhatu vikriti. The treatment was planned in such a way that it included amapachaka, agnideepana, and kapha-vata shamaka properties.

CASE REPORT

Patient Information

A female patient aged 31 yrs homemaker with married life of 5 years was registered from the outpatient department of Prasutitantra and Streeroga of SDM College of Ayurveda and Hospital, Hassan. Patient complaints of irregular menstruation since 8 months associated with lethargy, weight gain, hair fall and loss of appetite. Her Thyroid profile report showed a TSH level of 18.48 μ U/ml. No significant family history was found. Patient was not willing to take modern medication and she was under Ayurvedic medication for the same since few months but did not have satisfactory relief. So patient was advised for admission and appropriate pachakarma treatment was prescribed.

General Examination

Personal history revealed that patient was having disturbed sleep, sedentary life style. The patient was following a mixed diet. Also she was having reduced appetite, irregular interval of food with more intake of junk foods and cool drinks. Patient was following intake of madhura rasa pradhana ahara. Assessment of Dashawidha Pareeksha was done. Prakruti – Kapha vata Vikruti- Kapha pradhana tridosha, Sara – Madhyama, Samhanana - Madhyama , Pramana – Madhyama, Sathwa-Madhyama, Satmya-Madhura rasa pradhana, Abhyavaharana shakti- Avara, Jarana shakti- Avara, Vyayama shakti- Avara, Vaya- Madhyama. Asthasthana Pareeksha was performed. Nadi - 76 bpm, Mootra- 5-6 times/ day, Mala - Prakruta -Once a day, Jihwa- Alipta, Shabda – Spashta, Sparsha - Anushna sheeta , Druk – Prakrutha, Aakruti - Sthaulya

Menstrual history

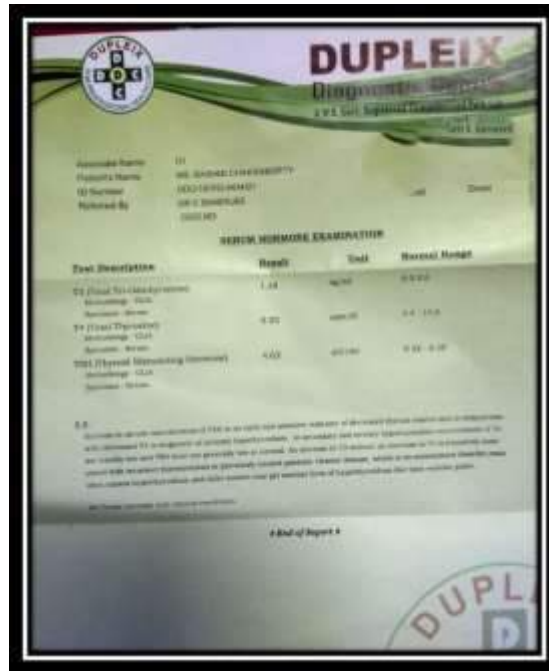
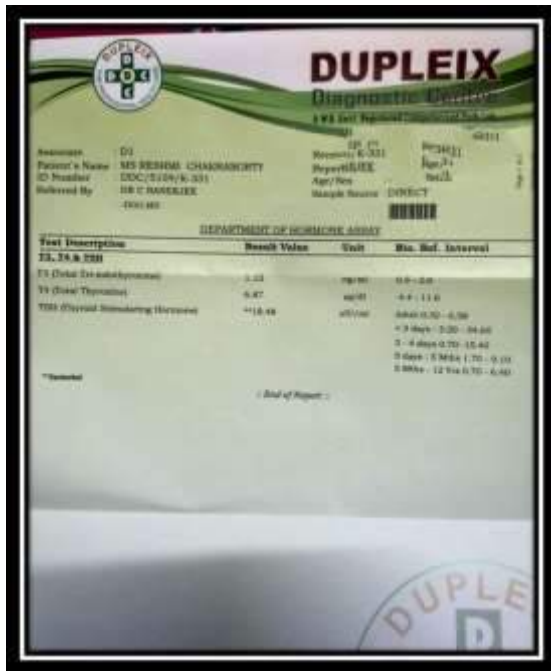
Menarche – 13 years of age
Menstrual history – irregular
3-4 days/ 45-60 days
No of pads – 2-3 pads/ day
Pain-Absent
Clots-Present
No foul smell

TREATMENT

The treatment was planned to relieve the kaphavarana and promote vatanulomana. After performing Snehana & Swedana karmas, Vamana was advised for this patient.

SR.NO	Therapeutic approach	Day	Medicines
1	Deepana pachana Sarvanga udwartana	3	Chitrakadi vati 1 tid , panchakola phanta 50 ml tid
2	Snehapana	4	Indukantha Ghrita (Starting from 30 ml then increased gradually up to Samyak Sneha-Siddhi Lakshan 120 ml)
3	Abhyanga followed by Baspa sweda and Ushna jala snana	1	Brihat saidavadi taila
4	Vamana karma (with Madanaphala 10 gm+Pippali 1 gm+Yashti madhu 5 gm+Saindhava 5 gm+Vacha 2gm)		

After vamana, Samsarsajana karma was followed for 5days. Then discharge medicines and Pathya-apathya in ahara and vihara was explained to the patient.



DISCUSSION

Hypothyroidism is hypo metabolic state resulting from inadequate secretion of thyroid hormones for prolonged period⁵. In hypothyroidism, agni is effected at the koshta and dhatu levels. This will leads to formation of Ama. The treatment for this patient was planned keeping the disease and symptoms in mind. Principle of management includes dhatwagni deepana, ama pachana, srotoshodhana, vata-kapha shamana. Classical vamana karma was done and on discharge tab Kanchanara guggulu 2 tid with luke warm water and Varunadi kashaya 15ml tid with equal amount of water was advised to the patient for three months along with Pathya - apathy ahara vihras was adviced. Patient was then advised to undergo TSH investigation after 3 months. Her TSH level reduced to 4.63 μ iu/ml from 18.48 μ iu/ml.

For deepana pachana, chitrakadi vati selected which improves Agni. Patient got improvement in appetite and feeling lightness of body which indicates that Ama pachana attained at the level of Jatharagni. Deepana Pachana was done untill nirama lakshana was attained. For Snehapana, Indukantha ghritha⁶ explained in udara roga was selected by considering the role of Kapha pradana tridosha. This helps in sroto-shodhana and Kapha dosha utkleshana. There was a decrease of weight at the end of Snehapana, which indicates Medo vilayana. Snehapana was done until samyak snigdha lakshana was attained.

The Vamana karma is indicated for Kapha pradana vikaras which acts through the virya of the dravyas. After snehapana and proper visramakala the vamana karma was conducted. Vamana karma because of its properties like Tikshna, Ashukaari, Vyavayi, Vikasi and formed with a predominance of agni and vayu mahaboota. But the main action is attained by the urdhwabhagahara prabhava possessed by the drugs. The drugs due to their virya will reach hridaya and dhamani thereby reaches Stula and anu srotas of sharira. Samsarjana krama is followed according to the type of shuddhi to restore the Jatharagni, Dhatawagni and Prakruta dhatus. Hence, Shodhana karma was helpful here as the condition is caused by ama, kaphavarana and Srotorodha and helps in removal of dushita doshas. Ayurveda identifies the dominance of Kapha dosha and Soumya dhatu as an important causative factor in artvakshaya and agnimandya condition, so removal of this is achieved by vamanakarma to maintain agni in the normal condition⁷. So here in this case it was beneficial for both hypothyroidism and arthavadushti. Kanchanara guggulu is a drug of choice for granthi vikara and galaganda⁸. The research data suggests that Guggulu corrects structure and function of the thyroid, significantly hypothyroidism and directly stimulates thyroid function probably through some enzymatic mechanisms⁹. Kanchanara and Guggulu had all the necessary properties of deepana, pachana, vata-kapha shamaka, shothahara, lekhana, bhedi, properties which helps to get rid of the cardinal symptoms of hypothyroidism. Guggulu contains the chemical constituents like oleoresin which was found to be highly potent and anti-inflammatory effect¹⁰. Varunadi kashaya is directly indicated for kapha and medoja conditions, mandagni and gulma which is very



useful in hypothyroidism¹¹ condition. The medicines were discontinued after 3 months, and a repeat thyroid profile was done. The value of T.S.H. was found to be 4.63 μ IU/ml. Then she was advised to undergo a thyroid profile routinely to monitor the values.

CONCLUSION

This case report is an observation and evidence to learn that with systematic Ayurvedic treatment modalities, hypothyroidism can be managed efficiently. Here, the prime importance was given for agni in all levels of treatment and we got best result for curing the signs and symptoms of the patient. The changes after treatment was proved with evidence of lab report also. Even though it is a single case, the results observed in this case are encouraging and the protocol followed in the case may be subjected to trial in a larger sample.

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COMPARATIVE ANALYSIS OF BANKING PRODUCTS AND SERVICES OF SBI AND HDFC

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ABSTRACT

The banking industry plays a vital role in the global economy, offering a diverse range of financial products and services to meet the needs of individuals and businesses. This study aims to conduct a comparative analysis of banking products, providing a comprehensive evaluation of various offerings in terms of their features, benefits, and overall performance. The comparative analysis encompasses an extensive examination of multiple banking products, including checking accounts, savings accounts, credit cards, loans, and investment options. Key factors considered in the evaluation include interest rates, fees and charges, accessibility, customer service, rewards and benefits, as well as the overall user experience. The findings of this study will provide valuable information for consumers, businesses, and financial institutions seeking to make informed decisions about banking products. By highlighting the strengths and weaknesses of different offerings, this research aims to enhance transparency, promote competition, and ultimately empower customers to select the most suitable banking products for their individual needs.

KEYWORDS: banking products, comparative analysis, features, benefits, performance, interest rates, fees, customer service, rewards, user experience.

INTRODUCTION

Banks play a critical role in a country's economic growth. Banks also help to improve capital mobility. India's banking system has a long list of notable accomplishments over the last three decades. The banking industry is now one of India's most important service industries. The availability of High-quality services is critical to the economy's success. Banks attention has turned away from Customer acquisition to customer retention. The introduction of products and services into the Banking sector has changed the way people work. The banking sector's policy has undergone Radical transformations and various customer-oriented products, such as internet banking, are available. Customer's workload has been reduced mainly because of ATM providers, Telebanking, and electronic payments.

REVIEW OF LITERATURE

- **Allred (2020)**, Banking services sector of India is experiencing a prolific growth in the development and distribution of innovative and quality services or products. There is a growing realization that the key for developing a sustainable competitive advantage is to become customer driven.
- **Rao (2018)**, This study attempts an investigation of the service quality and products process in public Sector banks, and the customers' satisfaction thereof. In addition, it will evaluate the existing Literature and establish the identity of the gaps in the literature, which will provide the Framework on which this research is based. One of the study's major contributions to the Advancement of knowledge is the investigation of the service quality process from a Comparative perspective of different commercial banks customer perceptions and Expectations.

STATEMENT OF THE PROBLEM

Occasionally, people must spend three to four hours going through a bank transaction. Sometimes the cost of the transaction is more than that of money deposited or withdrawn. Through banking products and services customers can conduct financial transactions. On the other hand, using banking products and services brings certain problems such as lack of knowledge to operate the technology, set-up cost, legal issues, Lack of relationship among bankers and customers, security, and privacy issues.

OBJECTIVES OF THE STUDY

- To analyse the relationship between SBI and HDFC
- Comparing and evaluating financial performance of SBI and HDFC.
- To know the customer satisfaction of products and services of SBI and HDFC
- To find out the problem faced by the customer while availing banking products and services.



METHODOLOGY OF THE STUDY DATA COLLECTION

Primary data is gathered from direct observation of data personally collected. It refers to that data which is collected for a specific purpose from the field of enquiry and is original in nature. For the project data were collected mainly through survey methods, using the tool questionnaire.

Secondary data were used in the study. The data required for the study was gathered from the annual reports of the respective banks through their website. Data is collected from the secondary sources, which include Annual Reports, Data published on bank websites and journals.

SAMPLE METHOD

It is a convenience sampling method that was used for the purpose of this study. Data was collected from the public.

SAMPLE SIZE

The sample size taken for the study is 150 respondents.

TOOLS AND TECHNIQUES USED

- Simple percentage
- Ranking analysis
- Weighted average analysis
- Chi-square

ANALYSIS AND INTERPRETATION

TABLE NO:01
TABLE SHOWING RANKING OF BANKING PRODUCTS OF SBI

S.NO	BANKING PRODUCTS	1 (5)	2 (4)	3 (3)	4 (2)	5 (1)	TOTAL	RANK
1	ATM	46 230	5 20	41 123	45 90	11 11	474	II
2	Interest package	33 165	19 76	54 162	35 70	5 5	478	I
3	Loan	33 165	10 40	64 192	31 62	9 9	468	III
4	Net banking	34 170	6 24	45 135	45 90	18 18	437	IV
5	Early cheque clearance	32 160	8 32	45 135	45 90	17 17	434	V
6	Phone banking	35 175	8 32	43 129	36 72	26 26	434	VI

SOURCE: Primary data

INTERPRETATION

From the above table 4.18, in the ranking analysis it is found that ATM (Rank 2), which comes next followed by interest package (Rank 1) loan (Rank 3), Phone banking (Rank 6), Netbanking (Rank 4), Early cheque clearance (Rank 5)

Ranking of banking products of SBI

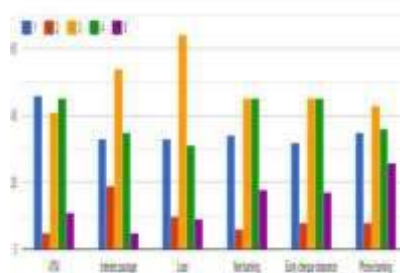




TABLE NO:02 SATISFACTION LEVEL OF SBI AND HDFC

S.NO	BANKING PRODUCTS AND SERVICES	Satisfied	Unsatisfied	Average	Highly satisfied	Highly dissatisfied	TOTAL	MEAN SCORE
1	Banking products available by both banks	73	2	56	15	2	573	3.82
2	Technology used in the bank	43	26	65	12	2	540	3.6
3	Willingness of the employee to help customers	43	4	82	15	4	511	3.40
4	Online services	41	6	64	30	7	542	3.613
5	Service of sending timely bank statement	43	3	64	11	27	522	3.48

Source: Primary Data

Satisfaction level of SBI and HDFC

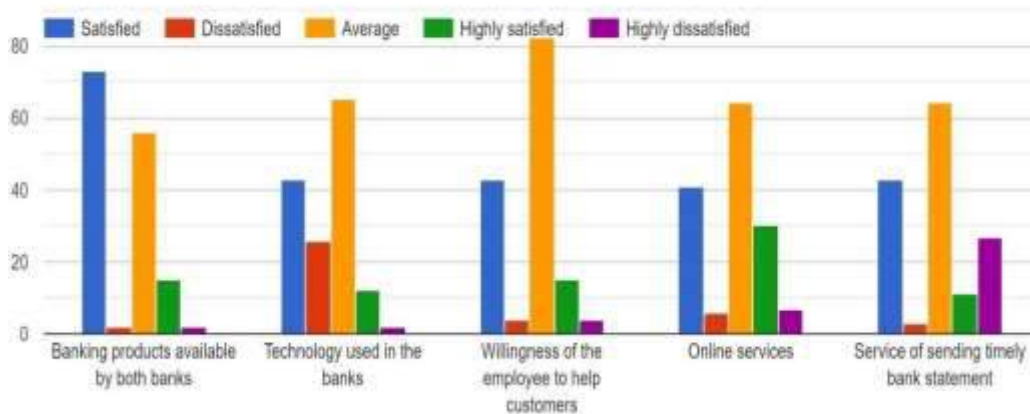


TABLE NO.03
TABLE SHOWING CHI-SQUARE ON OCCUPATION AND ACCOUNT FACILITIES

Occupation	Account facilities				TOTAL
	Savings account	Current account	Fixed deposit	NRI account	
Professional	25	2	1	1	29
House wife	23	2	2	0	27
Business	21	2	3	0	26
Student	57	7	3	1	68
TOTAL	126	13	9	2	150

To find out the association between Occupation and account facilities, chi square test is used and result is given below.

HYPOTHESIS

Ho-There is no association between Occupation and account facilities. H1-There is an association between Occupation and facilities.



CHI – SQUARE TEST

Factor	Calculation value	Degree offreedom	Table value	RESULT
Pearson chi –square	4.153 ^a	9	16.92	Accepted

INTERPRETATION

It is clear from the above table show that, the calculated value of chi-square at (0.05) level is greater than the table value. Hence the hypothesis is accepted. So it can be concluded that, There is no association between Occupation and account facilities.

FINDINGS, SUGGESTIONS AND CONCLUSION FINDINGS

- Majority of the respondents (RANK 1) towards interest package on ranking banking products of SBI.
- Majority of the respondents (RANK 1) towards ATM on ranking banking products of HDFC.
- The calculated value of chi square at 0.05% is less than the table value. Hence, hypothesis is accepted. So there is no significant relationship between profession and account facility.

SUGGESTIONS

- To Promote Financial Literacy Through Customer Education.
- To become a Trusted Advisor to Small Business Customers.
- To develop a Truly Omnichannel Customer Experience.
- To provide Customers with Self-Service Opportunities.
- To encourage customized Banking. With digital banking, back-office cloud and analytics can provide customers with a customized user experience with everything from a customized user interface to customized support, fees and services.
- To provide blockchain of the Future. Be Proactive Rather Than Reactive.
- To Ensure Customer Privacy and Security. Interact More with Customers.

CONCLUSION

The banking sector in India has been an ever-evolving time to time, measures have been introduced to evolve new dimensions of the banking sector. This study derives various conclusions from the research with respect to gap between customers perception & expectation of both HDFC & SBI. It has been proved in the study that HDFC provides better customer service in comparison to SBI. There is an urgent need to improve all the dimensions with special attention should be given to the Reliability & Responsiveness part. It is no denying fact that SBI is the topmost public sector bank of India, however if the top management doesn't think about improving service quality on an immediate basis in comparison to private sector banks that time will not be far enough when SBI loses substantial market share to Private sector banks like HDFC. HDFC is doing well on the tangibility and empathy dimension, whereas SBI is performing well on reliability, responsiveness, and assurance dimensions. Mainly SBI is doing well on insisting on error-free records, employees telling customers exactly what service will be performed and employees are never too busy to respond to customers. Whereas HDFC is performing well on giving customers individual customers and employees always being willing to help customers.

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REHABILITATION POTENTIAL AS THE BASIS OF THE PROCESS OF RESOCIALIZATION AND SOCIAL ADAPTATION OF YOUNG PERSONS AFTER ISCHEMIC STROKE (Literature Review)

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ABSTRACT

Nowadays stroke is still a completely unresolved problem of the modern medical community, leading to a high percentage of death, and in case of survival - to disability. Disability after suffering a brain accident occupies a leading position among all causes of disability in patients, which significantly worsens the quality of life of patients and complicates the process of their resocialization and social adaptation. This article is devoted to the concept, principles and criteria of rehabilitation potential, as well as factors influencing it.

KEYWORDS: *ischemic stroke, young age, resocialization, social adaptation, rehabilitation potential.*

Recently, in modern society, the problem of socialization and social adaptation of young patients who have had ischemic stroke has become of great relevance. (1).

Persons of working age after suffering a brain accident face a number of problems that can lead to their complete desocialization due to social and mental self-isolation due to the remaining neurological deficit. In this regard, close attention is paid to the study of the process of resocialization (1,2).

Resocialization is one of the aspects of rehabilitation, which is based on the process of mastering social norms (3), as well as restoring lost or strengthening weakened functions, including social (4). E. Giddens defined the process of resocialization as one of the types of personal change, as a result of which a person becomes characterized by behavior that differs significantly from the previous one. (5,6).

For the process of resocialization, the completeness of the use of the technology of rehabilitation measures is of great importance, which not only contribute to the restoration of lost skills and abilities, but also accelerates the resocialization and social adaptation of patients.

One of the main components of the resocialization process is the determination of the rehabilitation potential, which is formed from 4 aspects: medical (degree of restoration and compensation for lost functions), psychological (state of psychological status), social (restoration of everyday and professional skills) and family and public (degree of restoration of social connections) (2,7).

Many researchers consider the rehabilitation potential as a complex of psycho-physiological properties of a sick person, his illness and its consequences for the body. According to Gitkina L.S. et al. (1999), rehabilitation potential is an integral indicator of taking into account the reserve capabilities of the body, the potential of the patient's personality and the influence of his environment on the process of restoring functional capabilities, daily activities and professional suitability of the patient. Korolev A.A. et al. (2014) defined the rehabilitation potential as a reasonable probability of achieving the intended goals of medical rehabilitation in the planned period of time, taking into account the nature of the disease, its course, individual resources and compensatory capabilities while maintaining a stable somatic and mental state of the patient, his high motivation in relation to the upcoming rehabilitation treatment (7,8). Sokrut (2015), in turn, considers this issue as a reflection of the ability of patients to endure various rehabilitation measures and achieve the highest possible level of restoration of lost functions (9).

In 1973 Belov V.P. and Efimov I.N., they were the first to propose the use of the term "rehabilitation potential" and defined it as a complex of biopersonal and socio-environmental factors that form the basis of the patient's resocialization (10).

Korobov M.V. spoke about the rehabilitation potential as the patient's ability, under specific conditions and with appropriate support, to launch the biological and psycho-sociological reserves of adaptive-compensatory processes and mechanisms underlying the restoration of impaired health, disability and social status (11).



In general, the potential for resocialization is an indicator that assesses the capabilities of a diseased organism and the influence of various factors on the restoration of lost functions, household and professional skills, and social adaptation.

RP consists of 6 components (12,13,14), which include:

1. Basic anatomical and physiological component, consisting of an assessment of the degree of physical development and performance, mental and physiological endurance, psycho-emotional stability.
2. Psychophysiological component - a complex of unaffected functions and personality traits, determined during testing by the method of functional loads and pharmacological tests, as well as methods of functional diagnostics.
3. The professional labor component is defined as the possibility of restoring professional status and professional skills and adapting to work.
4. The educational component is the restoration of the ability to possess knowledge, skills and abilities in the field of one's professional activity.
5. Socio-environmental component - the ability to carry out independent household and social activities.
6. Social and household component - restoration of self-service skills.

There are 4 levels of rehabilitation potential:

High RP – the probability of a complete restoration of health, all types of life, working capacity and social status, or partial restoration of a lost function with full household, social and professional adaptation.

Average RP – the probability of maintaining a neurological deficit of mild or moderate degree with incomplete recovery of working capacity and the need for outside assistance (group III disability).

Low RP – a pronounced neurological deficit persists, all types of life activities are significantly limited, with the restoration of self-service skills.

RP is absent while maintaining a pronounced neurological deficit, inability to self-service and lack of labor and professional adaptation.

The degree of rehabilitation potential is influenced by a variety of factors that can be grouped into 3 groups:

1. medical factors,
2. social factors,
3. psychological factors.

Of great importance in determining the RP of patients with ischemic stroke at the inpatient stage of rehabilitation are medical factors, namely:

- localization and size of the ischemic focus. It has been established that with damage to the cortex or the adjacent subcortical one, there is a possibility of a high RP than with damage to deep structures. But even with a minimal lesion in the area of the medulla oblongata or internal capsule, as well as with extensive damage to the right or left hemisphere in the basin of the cerebral artery, there is a persistent neurological deficit, which indicates a low RP;

- the severity of the course of IS, the nature and severity of the neurological deficit and cerebral symptoms, the presence of polysyndromicity (impairment of the motor and sensory spheres, speech disorders, etc.). At the same time, the severity of symptoms is directly dependent on the location and size of the pathological focus;

- indication of pre-stroke transient ischemic attacks or transient cerebrovascular accident;

- the presence and severity of one or more background diseases such as cerebral atherosclerosis, arterial hypertension, coronary heart disease, diabetes mellitus, alcoholism, vasculitis, etc.

- organization of the rehabilitation process: stages and the beginning of rehabilitation activities, duration and continuity.

When assessing "rehabilitation potential", rehabilitators use the International Classification of Functioning, Disabilities and Health, which was approved by WHO member countries at the 54th World Health Assembly on May 22, 2001 (WHA Resolution, 2001). This classification describes health domains and health-related domains, which include two main lists: 1. body functions and structures and 2. activity (15).

Many scientists and specialists distinguish 3 degrees of rehabilitation potential: high, medium and low.

High potential criteria are:

1. partially or completely reversible processes of neurological deficit;
2. harmonious or ergopathic type of attitude towards the disease in combination with an open personality behavior;
3. there is a complete restoration of former social roles;
4. family members have irregular employment, a general readiness for the implementation of rehabilitation measures and the environmental availability of rehabilitation funds.

The average rehabilitation potential is determined, in the case of:

1. maintaining moderate or mild impairment of neurological function in the patient;
2. sensitive and hypochondriacal type of attitude to the disease and the absence of pronounced character traits and behavioral patterns in the patient;
3. partial restoration of the patient's former social roles;
4. lack of accessibility of the environment, but in the presence of other indicators of family and social rehabilitation.



The low rehabilitation potential is determined when:

1. the preservation of a pronounced functional defect in the patient is predicted;
2. there is a non-adaptive attitude to the disease in combination with a hidden, distrustful behavior of the patient;
3. there is an inability to return to the performance of previous social roles, as well as to adapt to modified circumstances;
4. the patient's family members do not have the opportunity to work in an irregular mode, or she is not ready to carry out rehabilitation measures to cure her relative.

Thus, the assessment of the rehabilitation potential in the acute period of ischemic stroke gives us the opportunity to predict the outcome, an individual differentiated approach to rehabilitation treatment, the selection of adequate rehabilitation measures and, accordingly, determine the quality of life of such patients.

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THE ROLE OF MIASMS IN PATHOLOGICAL CASES: A COMPREHENSIVE REVIEW

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ABSTRACT

This research paper provides a comprehensive review of the role of miasms in pathological cases. Miasms, a concept introduced by Samuel Hahnemann, the founder of homeopathy, refer to underlying predispositions or energetic imbalances that can lead to the manifestation of diseases. The paper explores the historical development of the miasmatic theory and its significance in understanding and treating pathological conditions. It examines the three primary miasms proposed by Hahnemann, namely Psora, Sycosis, and Syphilis, and their corresponding symptoms, manifestations, and treatment approaches. The paper also discusses the modern perspectives on miasms and their relevance in contemporary medical practice. Finally, it highlights the potential challenges and controversies associated with the concept of miasms and proposes areas for future research.

KEYWORDS: *miasm, psora, sycosis, syphilis, potency, pathology, similimum.*

INTRODUCTION

Background and historical development of miasms

Definition and Conceptual Framework of Miasms

The Three Primary Miasms

Psora: The miasm of chronic diseases Symptoms, manifestations, and treatment approaches

Sycosis: The miasm of suppressed conditions Symptoms, manifestations, and treatment approaches

Syphilis: The miasm of destructive diseases Symptoms, manifestations, and treatment approaches

Modern Perspectives on Miasms

Integration of miasmatic theory with other medical systems

Evidence-based studies and clinical observations

Contemporary understanding of miasmatic influences

Challenges and Controversies

Criticisms and skepticism surrounding miasms

Limitations and difficulties in diagnosing miasms

Ethical considerations and patient perspectives

Future Directions and Conclusion

Potential areas for further research

Integration of miasms into personalized medicine



CONCLUSION AND SUMMARY OF KEY FINDINGS

By examining the historical context, clinical applications, modern perspectives, and challenges associated with miasms, this research paper aims to enhance the understanding of the role of miasms in pathological cases. It provides a foundation for further research and encourages discussions on the integration of miasmatic theory into contemporary medical practice.

The miasmatic approach to pathological cases emerged in the field of medicine during the 18th and 19th centuries, particularly through the work of Samuel Hahnemann, the founder of homeopathy. Hahnemann proposed that diseases were caused by disturbances in the vital force or life energy of an individual, and these disturbances manifested as symptoms of illness. He believed that these disturbances were caused by miasms, which were inherited or acquired predispositions to specific diseases.

In the context of homeopathy, miasms refer to underlying constitutional imbalances or tendencies that make an individual susceptible to certain diseases or symptoms. Hahnemann identified three main miasms: Psora, Sycosis, and Syphilis.

Psora: This miasm was associated with chronic diseases and considered the root cause of many ailments. Hahnemann believed that it originated from a suppressed skin eruption (such as eczema or scabies) and caused a range of symptoms, including digestive issues, allergies, and mental disorders.

Sycosis: Sycosis was associated with venereal diseases, particularly gonorrhea. It was believed to cause symptoms such as abnormal growths, warts, joint problems, and urinary disorders.

Syphilis: Syphilis was associated with the sexually transmitted infection of the same name. According to Hahnemann, it caused various physical and mental symptoms, including ulcers, skin lesions, nervous system disorders, and emotional disturbances. In the miasmatic approach, the homeopath would assess the patient's symptoms, medical history, and family background to identify the underlying miasmatic influence. Based on this assessment, a homeopathic remedy would be selected to address the specific miasmatic disturbance and stimulate the vital force to restore balance and health.

It's important to note that the miasmatic approach has been controversial and is not widely accepted in conventional medicine. The understanding of diseases and their causes has evolved significantly since the 19th century, and contemporary medical practices rely on evidence-based approaches and scientific research to diagnose and treat pathological cases.

Homeopathy is a system of alternative medicine that was developed in the late 18th century by Samuel Hahnemann. It is based on the principle of "like cures like," which means that a substance that causes symptoms in a healthy person can be used to treat similar symptoms in a sick person. Homeopathic remedies are highly diluted substances that are believed to stimulate the body's natural healing processes.

Advocates of homeopathy believe that it can be used to treat a wide range of health conditions, including acute and chronic diseases. They argue that homeopathic remedies are safe, gentle, and have no side effects. Homeopathy is often sought for conditions such as allergies, respiratory infections, digestive disorders, musculoskeletal pain, anxiety, and skin conditions, among others.

The practice of homeopathy involves a detailed assessment of the patient's symptoms, physical and emotional characteristics, and overall health history. A homeopath then prescribes a remedy that closely matches the individual's unique symptom profile. Homeopathic remedies are typically derived from plant, animal, or mineral sources and are prepared through a process of dilution and succussion (vigorous shaking).

CONCLUSION

Homeopathy is a system of alternative medicine that is based on the principle of "like cures like" and involves the use of highly diluted substances to stimulate the body's natural healing processes. However, the effectiveness of homeopathy in managing pathological cases is highly debated, with scientific studies generally finding little to no evidence of its efficacy beyond a placebo effect.

While some individuals may report positive experiences with homeopathic treatments, it is important to approach homeopathy with caution and to consult with a qualified medical professional for a proper diagnosis and evidence-based treatment. Homeopathy should not be used as a substitute for conventional medical care in the management of pathological conditions.



It is essential to rely on treatments that have been extensively researched, tested, and proven effective through rigorous scientific methods. Medical professionals who follow evidence-based practices are best equipped to provide appropriate care and guidance for individuals with pathological conditions.

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A CASE STUDY ON AYURVEDIC MANAGEMENT OF CHRONIC SINUSITIS W.S.R TO DUSHTAPRATISHYAYA

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INTRODUCTION

Chronic sinusitis or Chronic rhinosinusitis is an inflammation of the paranasalsinuses and nasal cavity where the symptoms last more than 12 weeks .The sinuses most commonly involved is the maxillary followed by ethmoid, frontal and sphenoid. When, more than one sinus are involved called as (multisinusitis). Sometimes all the sinuses are involved, resulting in pansinusitis.The clinical picture of this shows the predominance of in the Kaphavata dosha and can be correlated with *Dushta Pratishtyaya* .This case study show that Ayurvedic treatment which give effective results in Chronic sinusitis.

CLINICAL PROFILE OF THE PATIENT

A 29 year male patient visited the OPD of Shalakyatantra department at Dhanvanatari Ayurvedic Medical college and hospital Bareilly on 20/04/2023 with the following complaints:

OPD/IPD No-1XX49

AGE/SEX-29 years/ Male

Date of Admission-20/04/2023

Date of Discharge-26/04/2023

Follow up - 1st Follow up - After 10 days ,2nd Follow up –15days after 1st followup ,
3rd Follow up –30days after 2nd followup

CHIEF COMPLIANT

- Nasal blockage specially in the morning hours ,Frequent & severe sticky discharge from nasal cavity, Heaviness over eyes and head region, severe headache since 5 Years.
- Sneezing more than 10 bouts in a day /occasionally.
- Post nasal dripping-present.
- Alter in smell perception /occasionally.
- Frequent Headache of Severe intensity (3-4 episodes in a week)
- Occasional Nausea , Anorexia .
- Aggravating factor- change in weather & dusty atmosphere, intake of fruits, cold beverages,
- Relieving factor- nasal decongestant drops .

PERSONAL HISTORY

- Appetite-Poor
- Bowel-Constipated
- Bladder -Normal
- Sleep-altered due to nose block
- Built- Normal

HISTORY OF PAST ILLNESS

- Drug History - Was under Antihistamine and steroids for more than 1 year and got symptomatic relief
- Family History - Not significant



- Surgical History -
 - * 4 Years back Rhinoplasty was done. He Remained symptoms free for 8 months but developed all symptoms again after that.
 - * Underwent polypectomy 5 years ago.

EXAMINATION OF PATIENT

GENERAL EXAMINATION

- CNS-well oriented to person , place and time.
- CVS-S1, S2 is audible , No murmur.
- RS-No obvious deformity , with B/L clear chest , no added sound present.
- Digestive system-decreased appetite and constipation.
- Endocrine system & Excretory system -revealed no abnormality clinically.

LOCAL EXAMINATION

Nasal Cavity

Anterior Rhinoscopy

- Anterior Part of inferior & middle turbinates with their meatus : Hypertrophied left side
- Mucosa:Thick , Pale and sticky
- S shaped deformity

Posterior Rhinoscopy

- left tonsillar hypertrophy – present

Sinus tenderness: Bilateral Maxillary and Ethmoidal sinus tenderness -Present

INVESTIGATION

- AEC-448/cumin
- CT PNS- suggestive of Chronic Maxillary Sinusitis.

MANAGEMENT

Following treatments were administered at **Indoor day care visit In April 2023**

Nasya-

- **Poorvakarma of Nasya:**mild jatrurdwa abhyanga done with Ashwagandha bala lakshadi taila
- **Swedana:**Dashamoola kashaya nadi swedana.
- **Nasya:**Anutaila 12 drops were used for 7 days.
- **Kavala :**After Nasya patient was advised Kavala with lukewarm water along with saindhava and Turmeric powder .
- **Dhoompana:**was given with Haridra varti.

Avagundana-

- Performed with Tulsi+Haridra churna+Dhanyaka twice in a day
- With Nasyam following oral medications were also given-**
- Pippalyasava 20ml mixed with 40 ml of warm water twice a day after food.
- Haridra kanda 5 gm twice a day along with warm water.
- Lakshmi vilasa rasa 250 mg tablet made powder and used twice a day after food along with honey
- Chitraka Hareetaki lehya 1 tsp twice a day after food with warm water and steam inhalation at bed time daily with Nostris capsule (advised during discharge).

Patya and apatya during treatment: During 7 days of hospital based treatment patient was advised to not to take head bath. Patient was further advised to avoid AC completely, day sleep, curd –banana etc, all in one to avoid sheeta , guru & kaphaj aahar vihar.

Discharge medicines: After 7 days of hospital based treatments patient was advised to continue all oral medications as mentioned above , also advise to take Chitraka Hareetaki lehya and steam inhalation at bed time daily with Nostris capsule (kottakal)



FOLLOWUP

1st Follow up - After 10 days

Examination: Rhinoscopy

- Lower & ant. Part of the septum : Normal
- Anterior Part of inferior & middle turbinates with their meatus : Hypertrophied
- Mucosa: Pink/Pale/Red/Normal : Normal
- Pharyngeal tonsil : Present
- Nasal septum: Deviated : Y/N : Yes, S shaped deformity
- Obstruction of Nose : Y/N- No
- Loss of smell- No
- Headache-Reduced significantly
- Sinus tenderness- left maxillary sinus mild tenderness present

Treatments advised:

- Patient was advised to follow both *Aharaja* and *viharaja pathyas* .
- *Pratimarsha nasya*- With *Anu Taila* 2+2 drops in each nostrils before food twice daily.
- All oral medications to be continued.

2nd Follow up –15days after 1st followup

Examination: Rhinoscopy

- Nasal Discharge- Reduced a lot.
- Nasal Obstruction- No
- Nasal Mucosa –Normal
- Smell Perception-normal
- Sneezing- Absent
- Headache- Number of attack had been reduced (2 attacks were observed)
- Sinus tenderness- Absent

Treatments advised:

- Patient was advised to follow all *Aharaja* and *viharaja pathyas*.
- *Pratimarsha nasya*- With *Anu Taila* 2+2 drops in each nostrils before food twice daily.
- And advised only to continue *Chitrakarhitakilehya*.

3rd Follow up –30days after 2nd followup

Examination: Rhinoscopy

- Nasal Discharge- very less & occasionally.
- Nasal Obstruction- No
- Nasal Mucosa –Normal
- Smell Perception-Normal
- Sneezing- Absent
- Headache- Absent

Treatments Advised:

- Patient was advised to follow all *pathya & apathyas* .
- *Pratimarsha nasya*- With *Anu Taila* 2+2 drops in each nostrils before food twice daily .
- *Chitraka Hareetaki Lehya* 1 tsp in night only with warm milk for 1 month.

OBSERVATIONS & RESULTS

- Patient came with the history of Nasal blockage specially in the morning hours , Frequent & severe sticky discharge from nasal cavity, heaviness over eyes and head region along with episodes of severe headache .
- Patient was using modern medicines to get symptomatic relief.
- All symptoms of patient reduced much after *Anutaila nasya & Avagundana*.
- Patient was getting regular follow-ups & symptoms & complaints got further reduced.
- There was significant improvement in sinusitis condition after hospital based *Nasya* & other treatments & got further



improved in follow up visits.

DISCUSSION

- A large number of Ayurvedic drugs are used in *Dushta pratishyaya* treatment, where *Gudardraka nasya* has given significant result which can't be advised in extremely hot and humid weather conditions .
- The present study was aimed to evaluate the therapeutic efficacy of the Ayurvedic Management of *Nasya & Avagundana* along with oral medication in prevention and improvement of Chronic Sinusitis Cases specially in extremely hot and humid region.
- It may be the probable mode of action of *Shodhana marsha nasya of Anutaila & Avagundana*, the vitiated doshas which are adherent to the srotasas i.e channels become soft , get displaced from its places because liquification action of drugs used during procedure (*Dushta kapha* got cleared and *gati of prana* and *udana vata* got regulated)
- Above mentioned medicines for oral treatment that patient got significant improvement, because of it content dries the excessive secretions in sinuses and nasal cavity , improves digestive power and immunity.

CONCLUSION

In patients of Chronic Sinusitis there was marked reduction of symptoms.No unwanted effect of therapy was observed during treatment and during followup period So it can be concluded that these Ayurvedic procedure along with oral medicines are very effective in management of Chronic Sinusitis. but to establish this effect further study of longer duration and larger sample is required.



A STUDY ON DIFFERENT DIMENSIONS OF KOLHI VILLAGE IN VAIJAPUR BLOCK OF CHHATRAPATI SAMBHAJI NAGAR DISTRICT IN MAHARASHTRA

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ABSTRACT

The Kolhi village in India is a geographically distinguishable place where a diverse community resides. The village relies primarily on agriculture for livelihood, with crops like cotton, maize and millet being cultivated. The villagers have strong cultural and traditional practices, celebrating festivals and worshipping deities. However, the village faces development challenges such as inadequate infrastructure, healthcare facilities, and waste management systems. Gender-based wage inequalities exist, and dowry practices persist in marriages. Interventions focusing on infrastructure development, livelihood empowerment, and sustainable farming practices are needed to address these issues. Collaboration among local authorities, NGOs, and community members is crucial for holistic development in the village.

KEY WORDS: *Crop cycle, Participatory Rural Appraisal (PRA), Multidimensional Poverty Index (MDPI).*

1. INTRODUCTION

“The soul of India lives in its villages”

A village is a geographically distinguishable place which is habitat of some human beings who live in groups called ‘family’ are socially, culturally and economically interrelated. According to census data of 2011, 68.84% Indians are stayed in village which is around 833.1 million people live in 640,867 different villages. The size of these villages varies considerably. 236,004 Indian villages have a population of fewer than 500, while 3,976 villages have a population of 10,000. Villagers are mainly depending on the primary sector for the livelihood most of them are farmers, but the fishing, mining and daily labour also contribute a lot in the rural livelihood. India is the land of diversity so have their own unique characters.

A village Kolhi located on the bank of river Borinala. A big temple of Babaji and other different temples are there. Due to the river and highway, village gets divided into two parts. Dam is situated in the Kolhi village named as ‘Shivayogi Dam.’ After the construction of dam, cash crops became a trend in the village. In the middle of the village, statue of Chhatrapati Shivaji is situated.

2. METHOD

The area selected to understand the ecosystem is Kolhi village of Vaijapur block at Aurangabad District in Maharashtra. According to Tripathy and Khan (2020) the participatory tools are most efficient tools to understand a village deeply. Thus, same methodology is used to collect the data. Where homogeneous groups of people were invited and optimum ignorance was followed.

3. DISCUSSION

Language: Language spoken in the Kolhi village is Marathi.

Caste: Community is divided into different castes in Kolhi village. Number of people belonging to OBC & Open category in village is 1213, Number of people belonging to Scheduled Castes is 162 and from Scheduled Tribes is 192.

Practices: Total six built temples are present in the village. People from all castes can go to all temples. For each family a ‘family deity’ is there. Once in a year, people go to that particular temple.

People worship the god regularly. Every morning, they go to the temple and pray. If a person in the house gets ill, house members would go with him to the Pada (2 Km distance from the center of the village) to get cured by the holy water. Educated people usually go to the doctor; but the majority of the people go for the traditional healer.

4. MARRIGE

The group discussion revealed that the average age of marriage for men is 24–26 and for women is 22–24. Because there is no marriage hall in the hamlet, most weddings take place in the vicinity of temples, while wealthy families often arrange their



ceremony in either Vaijapur or Aurangabad. If the financial situation is poor, individuals would arrange marriages in their backyards. The community still uses the dowager system. Rich families donate 2-3 lakhs in dowry, whereas impoverished families give just one lakh. The wealthy family spends between 5 and 6 lakhs, whereas the impoverished family only spends between 1 and 2 lakhs. Most individuals do not provide dowries in the form of cash to the groom's family. They will give it in the form of gold jewels, vessels, vehicle form.

5. FESTIVALS

Every event is given extra prominence because people highly value culture and tradition. Every community celebrates the holiday in accordance with some defining component of its traditions and religion. They observe holidays like Makar Sankranti, Vat Purnima, Pola, Dussehra and Diwali among others. In the hamlet, there are two well-known festivals: the Devdongari Baba Yatra and the Mhasoba Yatra.

Makar Sankranti: Makar Sankranti is determined by the solar cycle and marks the precise moment when the Sun enters Capricorn.

Vat Purnima: Married women observe this occasion. They fast on this day to protect their husbands' health and to revere Savitri.

Pola: It demonstrates love and deep ties between people and animals. Farmers who own bulls are arming their animals in various ways. Bull used to relax all day on that day.

Dussehra: The girls and ladies enthusiastically participate in this celebration. The goddess Durga is receiving their prayers. At night, girls play dandiya. In the village, there are rangoli competitions.

Diwali: The main holiday in the hamlet is Diwali, when people buy new cloths and a wide range of food products. Each household spends between Rs. 15000 and Rs. 18000 on this occasion.

Devdongari Baba Yatra: The local Saint was there, named 'Devdongari.' People have belief on him. So, they celebrate his birth anniversary every year.

Mhasoba Yatra: According to the people belief, Mhasoba is the god who protects the boundary of the villages. People have that belief so they celebrate Mhasoba Yatra.

6. LIVELIHOOD

It is clear from a study of 45 households that agriculture and animals connected to agriculture are the main sources of income. 60% of individuals rely mostly on agriculture for their income. Despite having strong natural resources including the availability of water and feed, 30% of the population raises animals as their primary occupation. A primary occupation for 22.22% of people is wage labour. 11% of people make their primary living from their company. 6.78% people are Drivers.

Crop cycle

The main crop of the village is cotton, maize, millet, Tur, Green gram, Soya bean, Ginger Kharif crops and Wheat, Jowar, Red gram. From following crop cycle, it is seen that seedling to harvesting crop length. It can be understood from below table,

Table 1: Season and crops

Season	Crops
Kharif	Cotton
Kharif	Maize, Millet, Pigeon Peas, Green Gram, Black Gram, Soybean
Rabbi	Ginger, Sugarcane and Wheat and Jowar
Zayat	Red Gram, Cauliflower

(Source: Primary data, PRA, Crop Cycle)

Wage pattern: There is an inequality in wage pattern for male and female. Male getting 250 rupees per day for a farming labour work while women get 175 rupees per day.

7. ECONOMICAL

Economy of the village is mainly depended on the agriculture. For understanding the economic condition of the village Global multidimensional poverty index, Wealth ranking (Participatory appraisal tool) have used.



Poverty

The state of being poor is known as poverty. Inequality causes the poverty because marginalized people from the section of society are deprived from basic needs such as health, education, proper means of livelihood.

MDPI sample survey – The indicator which displays the state of village based on three factors such as health, education and standard of life. It has 10 indicators for these three dimensions are health (child mortality, nutrition), education (years of schooling, enrolment), and living standards (water, sanitation, electricity, cooking fuel, floor, assets). It first detects which of these 10 deprivations each household encounters, then labels households as poor if they suffer deprivations across one -third or more of the weighted indicators.

As from 45 household sampling survey in village subtotal is shown below,

Table 2: Details about MDPI

Village	Health subtotal	Educational subtotal	Standard of the living subtotal	MDPI
Kolhi	0.063938	0.06625	0.07095	0.2011

Health

The value of 0.063938 suggests that the village Kolhi experiences relatively low levels of deprivation in terms of health indicators. Because unavailability of primary health care centers. They are not health conscious, mainly women avoid proper health care. List awareness about health insurance is there in the village. Proper health education is not getting provided.

Education

The value of 0.06625 implies that the Kolhi village does not have secondary and higher secondary schools. The percentage of dropouts is 30% after the 7th standard. Comparing to boys’ girls’ dropout ratio is high due to early marriages practice. Student have to travel from 10 Km for further education. As per CBSC, teacher-student ratio should not exceed 30:1 but Kolhi village have 32 :1.

Standered of Living

These indicators include access to water, sanitation, electricity, cooking fuel, floor quality, and possession of assets. The value of 0.07095 indicates that the village of Kolhi faces a higher level of deprivation in terms of living standards compared to health and education. This suggests that the village struggle with basic amenities and infrastructure necessary for a decent standard of living. Because of unemployment, poor transportation, unavailability of bank and availability of credit.

The MDPI is the overall multidimensional poverty index for the village of Kolhi, combining health, education, and standard of living indicators. The value of 0.2011 represents the proportion of households in the village that experience deprivations in at least one-third across these dimensions. It indicates that the village as a whole face a relatively high level of multidimensional poverty.

8. CONCLUSION

Livelihood Patterns: Kolhi village predominantly rely on agriculture as their primary livelihood, with 60% engagement. Livestock farming and labor work also contribute significantly. Business and service sectors have a smaller presence. Understanding these livelihood patterns is crucial for designing targeted development interventions.

Development Challenges: Kolhi village face several development challenges. Like, lacks essential facilities such as filtered drinking water due to mismanagement, unavailability of school after 7th standard, a PHC, a library, kaccha roads, unemployment, smoking and alcoholism. Addressing these challenges is essential for improving the quality of life and overall development in the village.

9. WAY FORWARD

Awareness and Intervention on Alcoholism and Smoking: To tackle the persistent issues of alcoholism and smoking, a well-organized and strong awareness campaign should be implemented. It is crucial to engage the community actively, ensuring that the campaign is culturally sensitive and tailored to their specific needs. Ongoing monitoring and evaluation are necessary to measure the effectiveness of interventions and bring about lasting behavioral changes.

Sustainable Water Management: Given the water shortage issue, the community's initiatives, such as tree plantation and collaboration with organizations like Paani Foundation, have been commendable. To build upon these efforts, a comprehensive water management strategy should be implemented. This may include rainwater harvesting, efficient irrigation techniques, and



promoting water conservation practices. Empowering the youth and involving them in sustainable water initiatives can play a vital role in addressing the water scarcity problem and ensuring long-term resilience.

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DEVELOPMENT AND CHARACTERISATION OF POLYHERBAL PHYTOSOME GEL FOR DERMOCOSMETIC APPLICATIONS

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ABSTRACT

Novel drug delivery system is a new approach to drug delivery the shows the limitations of the traditional drug delivery system. The effectiveness of any herbal medication is depend on the delivery of effective level of the therapeutically active compound. Therefore, phytosomes are recently introduced herbal formulations that are better absorbed and as a result they produce better bioavailability than the conventional phyto-molecules or botanical extracts. The aim and objective of the study is to develop polyherbal phytosome gel for dermocosmetic application using Couroupita Guianensis and Cassia Fistula extract. The phytosome are prepared by reflux method and were optimized. The formulations of phytosomes were analyzed for measurement of particle size & zeta potential, drug content, drug entrapment efficiency, percentage yield, in-vitro drug release studies and Exvivo permeation study. Then incorporate this phytosomal complex into gel formulation. Polyherbal phytosome gel formulation were evaluated by spreadability, drug content, measurement of pH, homogeneity, rheological studies.¹

KEYWORDS: *novel drug delivery system, phytosomes, couroupita guianensis, cassia fistula, polyherbal phytosomal gel*

INTRODUCTION

Phytosomes

Phytosomes are a novel and advanced form of herbal extracts that are designed to enhance the absorption and bioavailability of phytoconstituents found in plants. The term "phytosome" is derived from the Greek word "phyto," meaning plant, and "soma," meaning body or cell. It refers to a complex composed of a phytoconstituent or plant extract and a phospholipid molecule.

Phytosomes are created through a specialized process known as phytosome technology, where the phytoconstituents are combined with phospholipids, usually derived from soybeans or sunflower oil. Phospholipids are natural substances found in cell membranes, and their structure allows them to form a complex with the phytoconstituents, improving their solubility in both water and fat. This unique structure enhances the absorption and delivery of the active compounds to the target cells and tissues.

The formation of phytosomes helps overcome the limitations of conventional herbal extracts, which often have poor solubility in water and limited absorption in the body. By attaching the phytoconstituents to phospholipids, phytosomes are able to mimic the body's natural cell membranes, facilitating their transportation across biological barriers.

The benefits of phytosomes include improved bioavailability, enhanced absorption, increased stability, and targeted delivery of the active compounds to specific tissues or organs. Phytosomes have been extensively studied and utilized in various areas, including nutraceuticals, cosmetics, and pharmaceuticals.

Structure of Phytosomes

Phytosomes are complex of phospholipids and active phytochemicals, bound in their structure obtained by the reaction between phosphatidylcholine (or any hydrophilic polar head groups) and plant extracts in an aprotic solvent.

Applications of phytosomes:

- Hepatoprotective eg: Silymarin phytosomes
- Antioxidant eg: green tea phytosome, grape seed phytosome
- Anti carcinogenic property eg: grape seed phytosome



- Anti mutagenic property eg: grape seed phytosome.
- Anti inflammatory activity eg; curcumin cholesterol phytosomal complex
- Immuno modulatory eg: Echniacea phytosomes¹b)GELS

Gels are semisolid preparation intended for use on the skin or the mucous membrane. This is a semi-rigid structure in which the movement of dispersing medium in dispersed phase is limited by an interweaving three-dimensional system of particles. Vast quantities of watery or hydro alcoholic fluid are entangled in a system of colloidal solid particles which may comprise of organic polymers from synthetic or natural origin or inorganic substance.

Structure of Gels

The gelling agent which forms network by interlinking particles results in the rigidity of gel. Type of force which causes the linkage of particles and its nature govern the arrangement of system and gel properties. The single particles show isometric aggregates or spherical cluster of minute molecules or solomacromolecules.

Applications of Gels

- Used in soft and hard gel pills.
- Preparation of suppositories: Glycerin in suppositories BP.
- Gels are used to create continuous release formulation.
- Used for drug administration to various routes such as topical, intranasal, intraocular, vaginal, rectal and intramuscular and parenteral in some cases.
- They are widely used in food and cosmetic industry.
- Phosphoric acid and sodium fluoride gel used in dental care.

ACTIVITIES

Uses of *Couroupita Guianensis*

Antioxidant activity: It has long been recognised that naturally occurring substances in higher plants have antioxidant activity. Among those substances, the flavonoids that are widely distributed in plants have the ability to scavenge free radicals, superoxide and hydroxyl radicals by single-electron transfer. An antioxidant exerts its antioxidant activity through various mechanisms, including chelating ferrous iron, degrading peroxide, and scavenging free radicals. In our experiments, the antioxidant activity of *Couroupita guianensis* has been investigated by a DPPH radical scavenging activity².

Antitumor activity: The leaf of *C. guianensis* consists of isatin compound that has cytotoxicity against human carcinoma cell lines. It has the potential to be used as a chemotherapeutic agent against cancer. Isatin isolated from floral parts exhibited cytotoxicity against HL60 cells

Anti bacterial activity: *C. guianensis* shows good antimicrobial activity but low antimycobacterial activity. The plant extract of *C. guianensis* is equipotent to standard drugs such as paracetamol in its analgesic activity and indomethacin in its anti-inflammatory activity.

Anti inflammatory: The outcomes display that *Couroupita guianensis* fractions have anti-inflammatory effect, partly due to a reduction on cell migration and inhibition on cytokines and inflammatory mediators production

Anti fungal: Indirubin is one of the important chemical components of *C. guianensis* which is used as an antifungal agent, particularly to cure fungal diseases, dermatophytic and skin lesion diseases. It is active for the treatment of chronic myelocytic leukemia²

Other activities: it will shows anti ulcer, anti diabetic, anti emetics

Uses of *Cassia Fistula*

Anti bacterial: in *Cassia fistula*, the distilled water, acetone and ethanolic extracts of leaves show excellent antimicrobial activity against Gram negative bacteria i.e., *E. coli* and only distilled water and ethanolic extracts are found to be inhibitory for Gram positive bacteria i.e., *Bacillus subtilis*

Anti fungal: The in vitro findings justify the use of *Cassia fistula* in traditional medicine practice for the treatment of some fungal infections. However, study on the toxicity of the crude extracts and the compounds isolated from this plant should be assessed to ensure their eligibility to be used as sources of modern medicines.



Laxative: *Cassia fistula* is widely used in traditional Persian Medicine as a mild laxative. The rate of chronic constipation increases above the age of 60.

Anti oxidant: The order of antioxidant activity in *Cassia fistula* extracts displayed from higher to lower level as methanolic extracts of pulp, methanolic extracts of seed, hexane extracts of pulp, and hexane extracts of seed

Other activities: *Cassia fistula* L possess hepatoprotective and antitussive characteristics. It contains antibacterial and antifungal properties. *Cassia fistula* L is used for healing of wounds and gastrointestinal illness. It is an excellent source of glycosides, tannins, and flavonoids

MATERIALS AND METHOD

Extraction methods of *Couroupita Guianensis*

Decoction extraction method: For the decoction, method was followed as previously used by Li et al., 5 g of dried powder was extracted with 100 mL of deionized water at 100°C for 30 min in a water bath.

Ethanol Maceration Extraction Method: For the ethanolic maceration, method was followed as previously used by An, 5 g of dried powder was extracted with 100 mL of 50% aqueous ethanol at 25 °C for 42 h in static condition.

Methanolic Maceration Extraction Method: For methanolic maceration, method was followed as previously used by Cai et al. 55, 5 g of dried powder was extracted with 100 mL of 80% aqueous methanol at 35°C for 24 h in an incubator .

Cold Percolation Method: For cold percolation extraction, method was followed as previously used by Parekh and Chanda 56, 10 g of dried powder was taken in 150 mL petroleum ether in a conical flask, plugged with cotton wool and then kept on a rotary shaker at 120 rpm for 24 h. After 24 h, it was filtrated through eight layers of muslin cloth and the solvent was evaporated from the powder. This dry powder was then taken in 150 mL of deionized water and was kept on a shaker at 120 rpm for 24 h.

Microwave Assisted Extraction Method: For microwave assisted extraction, method was followed as previously used by Jaitak et al. 57, 1 g of dried powder was extracted with 200 mL of deionized water in a conical flask in a microwave (Magicook 20S (Galaxy), India) at different power levels ranging from 20-160 W with extraction time range between 30 sec to 5 min with a temperature range of 10-90°C.

Infusion Extraction Method: For infusion extraction, method was followed as previously used by Martins et al. 58, 2 g of dried powder was extracted with 400 mL of boiling deionized water and were left to stand at room temperature for 5 min⁵.

Soxhalation method: *Couroupita guianensis* leaves was successively extracted by using the Soxhlet assembly taking the different solvents such as Petroleum ether, Chloroform and Methanol based on the increasing polarity. All the extracts were evaporated to remove excess of solvent in a water bath. These extracts were then stored in air tight container at cold temperature (approx. 15°C)⁶.

Extraction of *Cassia Fistula*

Maceration: 5g petals of flower dried under shade was made into a paste in a mortar. The paste obtained was stirred with 50mL of organic solvent for nearly 3 hours, using a magnetic stirrer, in an Erlenmeyer flask. The yellow colored solution was decanted and the residue was again extracted twice with the same solvent. The extracts were combined together and concentrated in a rotary evaporator. The dried mass is collected and used as such for GC MS analysis and for antioxidant assay. The solvents used are dichloromethane, ethyl acetate and n-hexane.

Soxhalation method: The flowers of *C. fistula* were dried in shade and powdered in a mechanical grinder. The powder (25.0gm) of the plant materials were initially de-fatted with petroleum ether (60- 80°C), followed by 900 ml of hydroalcohol using a Soxhlet extractor for 72 hrs at a temp. not exceeding the boiling point of the solvent. The extracts were filtered using Whatman filter paper (No.1), while hot and concentrated in vacuum under reduced pressure using rotary flask evaporator and dried in a desiccator. The hydroalcoholic extract yield a dark brownish solid residue weighing 6.750 gm (27.0% w/w) respectively. The extracts were kept in sterile bottles, under refrigerated conditions, until further use. The dry weight of the plant extracts was obtained by the solvent evaporation and used to determine concentration in mg/ml. The extract was used directly for DPPH assay, total phenol and ferrous reducing power content and also for assessment of antioxidant capacity through various chemical assays⁷

FORMULATION OF PHYTOSOMES

phytosomes can be prepared by REFLUX METHOD:

The specific amount of cassia fistula, couroupita guianensis extract and soya lecithin were placed in a 100 ml round bottom flask



and 50ml of methanol was added as reaction medium. The mixture was refluxed and the reaction temperature of the complex was controlled to 50 °C for 3 hrs. The resultant clear mixture was evaporated and 20 ml of N- hexane was added to it with stirring. The precipitated was filtered and dried under vacuum to remove the traces amount of solvents. The dried residues were gathered and placed in dessicators and over night and stored at room temperature.

EVALUATION OF PHYTOSOMAL COMPLEX

1. Microscopic view

Optical microscopy was used for characterization of the complex. The complex was suspended in buffer and a drop was placed on a slide and covered with a cover slip. Microscopic view of the complex was observed at a magnification of 45X⁹.

2. Percentage Practical Yield

Percentage practical yield was calculated to know about percent yield or efficiency of any method, thus its help in selection of appropriate method of production¹⁰.

Phytosomes prepared were collected and weighed to determine practical yield from the following equation:

$$(\%) \text{ Yield} = (\text{Practical yield}) \times 100 / (\text{Theoretical yield})$$

3. Entrapment efficiency

100 mg of phytosomal complex were centrifuged at 2000 rpm for 30 min using a Remi centrifuge to separate phytosomes from an entrapped drug. Concentration of the free drug as the supernatant was determined by measuring absorbance at 279nm using UV-Visible spectrophotometer¹¹. The percentage drug entrapment was calculated by using the formula,

$$\text{Entrapment efficiency } (\%) = (\text{Total amount of drug}) - (\text{amount of free drug}) \times 100 / \text{Total amount of drug}$$

4. Drug content

Phytosomes equivalent to 10 mg of drug was accurately weighed and taken into a 100 ml volumetric flask. The contents of the flask was dissolved in small quantity of ethanol and sonicated for 30 minute. Volume was adjusted to 100 ml with ethanol. Contents of the flask were filtered and drug content was determined spectrophotometrically using UV spectrophotometer after appropriate dilutions⁹

5. Scanning Electron Microcopy (SEM) Analysis:

To detect the surface morphology of the phytosome, SEM of complex was performed by Scanning Electron Microscope. The powder samples of phytosomes was sprinkled onto the tape.

The aluminum stubs were placed in the vacuum chamber of scanning electron microscope. The sample was observed for morphological characterization using secondary electron detector attached to scanning electron microscopy¹².

Formulation of gels of Phytosome Complex

- Preparation of gel: Gel bases were prepared by separately dispersing Carbopol 934 in distilled water with constant stirring at a moderate speed using mechanical shaker. The pH of all the formulations was adjusted to 5.5 - 6.5 using triethanolamine
- Incorporation of Phytosomal complex into the gel: The solution of phytosome complex was prepared in 0.1 ml of ethanol in another beaker and was added to the Carbopol base. Different formulations were prepared using varying concentration of gelling agent. Prepared gels were stored in suitable containers at room temperature for further studies.

EVALUATION OF GELS OF PHYTOSOME COMPLEX

1. Homogeneity

All developed gels were tested for homogeneity by visual inspection after the gels have been set in the container. They were tested for their appearance and presence of any aggregates¹¹.

2. Measurement of pH

The pH of the phytosome gels were measured with the help of digital pH meter. 0.5 g of phytosome gel was dissolved in 50 ml of distilled water and stored for two hrs. The measurement of pH of each formulation was determined¹⁰.

3. Drug content

1 g of the prepared gel was mixed with 100ml of suitable solvent. Aliquots of different concentration were prepared by suitable dilutions after filtering the stock solution and absorbance was measured at 279 nm¹⁰.

4. Rheological study

The measurements of viscosity of prepared gels were carried out with Brookfield Viscometer (pindle type S-96). The readings of each formulation were taken¹¹.

5. Spreadability

On a glass plate of 10×5cm, 350mg emulgel was taken and another plate of same sized was dropped from a distance of 5cm. After 1 minute the diameter of the circle spread was measured¹⁰.



CONCLUSION

Numerous investigations and research studies reported antioxidant property of *cassia fistula* and *couroupita guianensis* against skin diseases. The objective of the study was to combine them and formulate into phytosome, a novel drug delivery system which enhances the absorption and bioavailability of water soluble plant actives. Reflux method employed for the preparation of phytosome using and soya lecithin. The formulation thus made was optimized for maximum entrapment efficiency. The formulated phytosomes were screened for antioxidant activity which concluded that the phytosomes showed antioxidant activity. Thus, the phytosome of the combination of *cassia fistula* and *couroupita guianensis* is useful for dermocosmetic applications.

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EFFICACY OF AQUEOUS EXTRACT OF KAMPILLAKA (MALLOTUS PHILIPPENSIS) AGAINST PATHOGENIC BACTERIA FROM DUSHTAVRANA (NON-HEALING ULCER)

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ABSTRACT

Vrana ropana or wound healing is a natural process occurring in the body. It gets delayed and transfigured to *Dushtavrana*, due to the vitiation of *Doshas* and microbial action, are analogous with Non-healing ulcer. Chronic non-healing ulcers affect as an economic burden to the healthcare system, by reducing the quality of life for those who are affected and often leading to serious events such as limb amputations or even premature deaths. *Kampillaka* is a drug mentioned for *Krimihara* and *Vranaropana* and studies have shown its anti-microbial effect against various micro organisms. In the current study the aqueous extract of *Kampillaka* (*Mallotus philippensis*) against pathogenic bacteria is evaluated in pus samples of subjects diagnosed with *Dushtavrana* by culture and sensitivity. With the current study it is evident that the mean zone of inhibition of aqueous extract of *Kampillaka* possess antimicrobial action against *Staphylococcus spp.*, *Pseudomonas spp.* and *E.coli*. Further it is also obvious that as the concentration of aqueous extract of *Kampillaka* increases, the zone of inhibition also increases.

KEYWORDS: Non-healing ulcer, *Dushtavrana*, *Kampillaka*, Pus culture and sensitivity, *Staphylococcus spp.*, *Pseudomonas spp.* and *E.coli*

INTRODUCTION

Vrana ropana or wound healing is a natural process occurring in the body. It gets delayed and transfigured to *Dushtavrana*, due to the vitiation of *Doshas*¹ and microbial action. The symptoms of *Dushtavrana* mentioned by *Acharya Susruta* are analogous with Non-healing Ulcer like *Deergha kaalanubandhi* (chronic-6 weeks), *atyartha vedana* (severe pain), *paka*(suppuration), *amanonja gandha* (unpleasant odor), *shotha* (inflammation), *puyasrava*²(pus discharge).

One of the Indian studies on the epidemiology of chronic wounds, estimated the prevalence at 4.5/1000 population³. Popularity towards traditional, complementary and alternative medicines are increasing globally⁴. At this situation, more Ayurvedic drugs with wound healing properties has to be exploited with evidence-based study. In Ayurvedic Classics, lot of drugs are mentioned for its *Vrana ropana* and *Krimighna* actions but a very few has been evaluated for their actions through in vitro study.

Kampillaka is one such drug which is mentioned as both *Vrana nashana* and *Krimihara*⁵ The extract is known to contain flavonoids, glycosides, tannins, proteins and amino acids⁶. Hence in present work, culture and sensitivity is taken as a tool to evaluate the concept of *upashaya* and *anupashaya* in vitro to revalidate the activity of *Kampillaka* against the Pathogenic bacteria by culture and sensitivity in *Dushtavrana* with special reference to Non-healing Ulcer.

AIMS AND OBJECTIVES

To evaluate the sensitivity of aqueous extract of *Kampillaka* (*Mallotus philippensis* Muell. Arg.) against Pathogenic bacteria from Pus sample of *Dushtavrana* (Non-healing Ulcer) patients by culture and sensitivity in vitro.



MATERIALS AND METHODS

Thirty patients fulfilling diagnostic and inclusion criteria, of non-healing ulcer of at least more than six weeks duration with *Puyasrava* and with or without following *Dushtavrana lakshanas:Kandu, Amanojna gandha, Atisamvruta, Atimrudu, Atyavasanna, Rakta, Krishna, Pandu varna*, covered with *Putimamsa, Shotha, Paka, Unmargi vrana*, excessive *Dushta shonita* discharge, within 18-70 years of age, from a Tertiary Ayurvedic Hospital in Hassan was selected for the study. Diagnosed subjects of varicose vein ulcer, tubercular and malignant ulcers and with any other complications which may interfere with the course of study were excluded from the study.

RESEARCH DESIGN

An observational experimental study

METHODOLOGY

The extracts of *Kampillaka* was prepared by hot extraction method by Soxhlet extraction. 150 grams of *Shodhita Kampillaka (Phala raja)* coarse powder placed inside a thimble in a filter paper, which was loaded into the main chamber of the Soxhlet extractor. The Soxhlet extractor was placed into a flask containing 750 ml of distilled water. Extraction done for 2 days. The extract liquid then placed on water bath and collected the extract and weighed. 5.25 grams of *Kampillaka* was obtained by this procedure.

Early morning pus sample was collected from the subjects fulfilling the diagnostic and inclusion criteria. Further culturing was done on McConkey and Muller Hinton Agar (MHA) plates by streaking method using one loop full of inoculum. The plates were then kept for 24–48 hours culture in incubator at 37°C. After 24-48 hours of incubation, the cultural characteristics like colony morphology were studied^{7,8,9}. Different concentrations of aqueous extract of *Kampillaka* were prepared by dissolving 3gm of aqueous extract in 9ml of distilled water that gave a stock solution carrying 3000µl of drug concentration. From the stock solution, different concentrations like 2000µl, 1000µl, 500µl, 100µl, of the aqueous extract were prepared and used distilled water as a control. MHA plates were uniformly swabbed with sterile non-toxic cotton swab (lawn culture). The different concentrations of drug were then subjected to antibacterial sensitivity test by agar well diffusion method. Six equidistant wells were made on the plates with the help of a sterile cork baurer. 3000µl of aqueous extract of different concentrations were poured into labelled wells on different plates, including the control (distilled water). All the plates were incubated at 37°C for 24 hours and then zone of inhibition was measured with a ruler in mm.

Table No.1: Organisms Identified

Organism	Frequency	Percentage
Staphylococcus spp	12	40.0
Pseudomonas spp	11	36.7
E coli	7	23.3

Table No. 2: Colony characteristics of *Staphylococcus spp.*

Culture Characters	Organism identified
Size- 2.2 mm Shape – Round Surface –Smooth Elevation- Raised Edge – Entire Opacity- Opaque Colour of colony- Yellow Consistency – Buttery	<i>Staphylococcus spp.</i>

Table No. 3: Colony characteristics of *E-coli*

Culture Characters	Organism identified
Size- 2.2-3 mm Shape – Round Surface –Smooth Elevation- Raised Edge – Entire Opacity- Opaque Colour of colony- Grey to white Consistency – Buttery	<i>E-coli</i>



Table No. 4: Colony characteristics of *Pseudomonas spp.*

Culture Characters	Organism identified
Size- 2.2 mm Shape – Oval Surface –Smooth Elevation- Raised Edge – Entire Opacity- Opaque Colour of colony- Bluish green Consistency – Buttery	<i>Pseudomonas spp.</i>

Assessment Criteria

If the drug is sensitive, a clear ‘halo’ (zone of inhibition) appears around the well that denotes the absence of bacteria which indicates the drug is effective against that bacterium.

Observation and Result

Invitro anti-bacterial activity of aqueous extract of *Kampillaka* was evaluated by agar well diffusion method and zone of inhibition was measured as shown in table.

Table No. 5. Mean values of zone of inhibition at different concentrations of aqueous extract of *Kampillaka* against pathogenic bacteria

Different concentration of aqueous extract of <i>Kampillaka</i>	3000µl	2000µl	1000µl	500µl	100µl	Control
Total number of patients (N)	30	30	30	30	30	30
Mean zone of inhibition in mm	16.6	13.77	11.4	9.93	8.2	0

The present study shows that the susceptibility of pathogenic bacteria’s like *Staphylococcus*, *Pseudomonas* and *E.coli* against the aqueous extract of *Kampillaka* is fairly evident between 20 to 18 mm,hence it can be considered as sensitive. 16 to 12 is considered as moderately sensitive. 10 to 08 is considered as resistant. Therefore, with the current study it is evident that the pathogenic organisms like *Staphylococcus spp.*, *Pseudomonas spp.* and *E.coli* are moderately sensitive to 3000 µl and 2000 µl and resistant to 1000 µl ,500 µl and 100 µl of aqueous extract of *Kampillaka*. The distilled water, which was used as control does not show any sensitivity and it proves the efficacy of the drug in comparison to the various other concentrations, used.

DISCUSSION

For early and uncomplicated healing of *Vrana*, local treatment should given utmost importance along with oral medications. Once the healing of the Ulcers is initiated, then the area should be kept free from further ulcerations. A chronic ulcer with copious discharge and slough is considered as *Dushtavrana*.

Curative action is shown by most of the plant drugs by their *Krimighna* (anti-microbial) property. Sensitivity test for existing *Ayurveda* drugs is important as it direct the use of these drugs within a narrow spectrum of activity, thus specific indication. Present study is on culture and sensitivity of various pathogenic bacteria from pus sample of patients suffering from *Dushtavrana* (Non healing ulcer) with aqueous extract of *Kampillaka*. Therefore before conducting the culture and sensitivity test, pharmaceutical preparation of aqueous extract of *Kampillaka* was essential. Pharmaceutical processing is a technique which converts natural products into therapeutically potent dosage form, which is easily absorbable in the biological system. In this study the aqueous extract of *Kampillaka* was prepared using Soxhlet extraction method.

Acharya Charaka enlist *Kampillaka* as one of *Phalini dravya*¹⁰ with *Katu rasa*, *Laghu*, *Rooksha*, *Teekshna guna*, *Ushna veerya* and *Katu vipaka*¹¹ possess *Vrana ropana* action. *Acharya Susruta* quoted *Kampillaka* in *Shyamadi varga*¹² with special indication in *Dushtavrana*¹³. The drug is also mentioned in various *Nighantus* such as *Kaiyyadeva Nighantu*, *Dhanvantari Nighantu*, *Raja nighantu* and in *Rasa Ratna Samuchaya*¹⁴. It is *Krimighna*, *Vranaapaha*, *Virecanopaga*. Thus implementation of novel approaches like culture and sensitivity methods would reinforce existing *Ayurvedic* knowledge and help in achieving improved diagnostic and curative abilities. Hence present study is undertaken to study various attributes of different pathogenic bacteria as laboratory diagnosis, its culture by pus culture from *Dushtavrana* (Non healing ulcer) patients and sensitivity against *Kampillaka*.



In aqueous extract, better sensitivity was observed in higher concentration because of more concentration of active molecules. As the concentration decreases, the active molecule content also decreases which might not be capable to destroy the capsule or disrupt the cell membrane or act against the antigens produced leading to the resistance of the organism towards it. Depending on the type of strain of organism, virulence level may vary. Cell constituents help the bacteria to attach to the host cell and prevention of phagocytes from other immune modulator helper cells. While conducting sensitivity, phytochemical constituent of the extracts interact with enzymes and proteins of the cell membrane causing its disruption to disperse a flux of protons toward the cell exterior which will cause cell death or inhibit amino acid biosynthesis of microbial cell. On other hand hydrophobic characteristics of these extracts enable to react with protein of microbial cell membrane and mitochondria to disturbing their cell structures and permeability. Different mechanism such as altering the surface tension of the extracellular medium of cell, ability to complex with extracellular and soluble proteins, to obtrude with bacterial DNA etc. likewise for different strains of bacteria, it has been proposed that the mechanism of antimicrobial effects involves the inhibition of various cellular processes which lead to an increase in plasma membrane permeability and further ion leakage from the cells. Meanwhile for various concentration of the same drug, it might show different zone of inhibition. Because the different components diffuse at different rates may have been responsible for the varying zone of inhibition against microorganisms. The difference in susceptibility of various microorganisms may be attributed to their intrinsic properties and permeability of cell surface to the extracts. Still active phytochemical constituents fails to thrive with antimicrobial action because of cytological characteristics of organisms. Porosity of cell membrane varies from cell to cell via different conditions and the membrane inhibits cell structure perturbations because of its defence to phytochemical components. It is further evident from the zero zone of inhibition obtained by using distilled water as a control against aqueous extract. This clearly emphasis the antimicrobial action the drug *Kampillaka*.

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AUTOMATED LIVER TUMOR SEGMENTATION USING DEEP TRANSFER LEARNING AND ATTENTION MECHANISMS

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ABSTRACT

Accurate and efficient segmentation of liver tumors is essential for precise diagnosis, treatment planning, and monitoring of patients. To address these limitations, we proposed a novel framework called Deep Transfer Attention Network (DTAN) that integrates transfer learning and attention mechanisms for automated liver tumor segmentation. As a feature extractor, the DTAN model leverages a pre-trained convolutional neural network (CNN) to learn high-level representations from liver MRI images. To capture fine-grained spatial dependencies and emphasize tumor regions of interest, we introduce an attention mechanism that adaptively weights local features based on their relevance to the liver tumor segmentation task. We evaluate the model using metrics such as Hausdorff distance, Dice coefficient, specificity and sensitivity. The combination of transfer learning and attention mechanisms enables the extraction of discriminative features and enhanced understanding of spatial context, leading to more accurate and reliable liver tumor segmentation results. The proposed framework holds significant potential in supporting radiologists and clinicians in making timely and informed decisions for liver tumor diagnosis, treatment planning, and patient management.

KEYWORDS: CNN, DTAN, Liver Tumor Segmentation, transfer learning, attention mechanisms.

1. INTRODUCTION

With liver cancer, liver tumor poses a significant health challenge worldwide being the fourth important cause of cancer and the sixth most mutual cancer-related deaths globally. Accurate and efficient segmentation of liver tumor shows a crucial part in precise diagnosis, monitoring of patients and treatment planning [1]. Medical imaging techniques, such as magnetic resonance imaging (MRI), have proven instrumental in visualizing liver tumors and providing vital information for clinicians.

Deep learning models have demonstrated remarkable success in several fields, including medical image analysis. These models can automatically learn and extract meaningful representations from large-scale datasets, enabling them to capture intricate patterns and make accurate predictions [2]. However, when it comes to liver tumor segmentation, existing approaches encounter difficulties in capturing the intricate features and spatial relationships across different tumor regions within the liver [3].

Capturing the intricate features within liver tumors is crucial because tumors can exhibit heterogeneous characteristics. For instance, tumors may contain areas with varying degrees of malignancy, different tumor subtypes, or regions of necrosis [4]. Accurate segmentation of these regions is essential for guiding treatment decisions, such as surgical resection or radiation therapy, and assessing treatment response over time.

Moreover, spatial relationships between different tumor regions play a critical role in accurately delineating tumor boundaries. Tumors can have irregular shapes, invade adjacent structures, or exhibit complex internal structures [5]. Existing approaches often struggle to capture these spatial dependencies, leading to incomplete or inaccurate tumor segmentations.

The proposed Deep Transfer Attention Network (DTAN) for automated liver tumor segmentation makes several significant contributions:

- The DTAN model leverages transfer learning by using a pre-trained CNN as a feature extractor, enabling the learning of high-level representations from liver MRI images and capturing relevant features for accurate liver tumor segmentation, even with limited training data.
- The DTAN model integrates an attention mechanism to adaptively weigh local features, allowing for fine-grained spatial dependencies and accurate segmentation of liver tumors by emphasizing relevant tumor regions.



The paper's remaining sections are as follows: Section 2 introduces the proposed DTAN model, integrating deep learning, attention mechanisms, and transfer learning for advanced liver tumor diagnosis. Section 3 details the utilization of transfer learning and attention mechanisms in the DTAN model for feature extraction and spatial dependency capture from liver MRI images. Section 4 presents the evaluation of the DTAN model's performance using metrics such as Dice coefficient and Hausdorff distance, confirming the effectiveness of transfer learning and attention mechanisms in extracting discriminative features. Finally, Section 5 concludes by emphasizing the potential of the DTAN framework to assist radiologists and clinicians in accurate liver tumor segmentation for informed decision-making.

2. RELATED WORKS

Some of the papers based on the Liver tumor segmentation are reviewed below,

Amin *et al.* [6] proposed method involves enhancing image quality using a local Laplacian filter and utilizing a semantic segmentation model with features extracted from a pre-trained VGG16 model and passed through a U-shaped network.

Li *et al.* [7] selected UNet++ structure as the baseline, incorporating a context-aware feature encoder to enhance deep network degradation and an efficient attention module to effectively combine spatial information for improved feature map depth. Furthermore, with Dice Loss the cross-entropy loss function was replaced by optimizing parameters of network.

Balasubramanian *et al.* [8] suggested a novel deep learning model for segmentation and classification of liver tumor, involving a three-stage process: pre-processing of CT images, liver segmentation using Mask R-CNN, and tumor classification, including contrast improvement, noise reduction, and liver separation using the Mask R-CNN model on CT abdominal images.

Tummala and Barpanda [9] proposed a curriculum learning strategy to develop an overcomplete U-Net model for liver tumor segmentation, addressing challenges posed by variations in tumor characteristics, and enabling accurate learning of tumor artifacts for improved diagnosis and therapy planning in liver cancer treatment.

Hanschet *et al.* [10] proposed a deep learning-based approach utilizing the late hepatocellular phase of DCE-MR in a multi-model training strategy and an anisotropic 3D U-Net architecture was proposed for segmentation of liver tumor.

Rahman *et al.* [11] proposed a more capable method for liver and tumor segmentation in CT image volumes by combining ResNet and UNet models into a hybrid ResUNet model, addressing the gap in liver segmentation and performing region of interest assessment using a publicly available 3D dataset IRCADB01.

Zhang *et al.* [12] proposed a Decoupled Pyramid Correlation Network (DPC-Net), incorporating attention mechanisms to exploit high- and low-level features in FCN. The network utilized SemCor modules to enhance spatial details and SpaCor modules to emphasize global semantic information.

Sahliet *et al.* [13] proposed a new analytical detection method for liver tumor segmentation in CT images was proposed, utilizing an encoder-decoder structure and automatic algorithms based on architectures of Seg-Net and U-Net to improve the localization and breakdown of metastatic lesions in medical imaging.

Zheng *et al.* [14] proposed, a 4D DL model based on convolutional long short-term memory (C-LSTM) and 3D convolutional for hepato-cellular carcinoma (HCC) lesion segmentation, utilizing dynamic contrast-enhanced (DCE) MRI images through 4D information to extract spatial and temporal domain features.

Amin *et al.* [15] offered, a three-part model comprising synthetic image generation, segmentation and localization was employed, utilizing an optimized generative adversarial network for synthetic image generation and an improved localization model incorporating YOLOv3 detector with deep features from pretrained ResNet-50 models removed.

Table 1: Comparative analysis of the existing methods on liver tumour segmentation

Authors	Methods Used	Advantages	Disadvantages
Amin <i>et al.</i> [6]	VGG16	-improves image quality and the accuracy.	-potentially limiting its applicability
Li <i>et al.</i> [7]	UNet++	-improves the accuracy and robustness of the Network.	-Its performance may vary depending on the specific dataset and task.
Balasubramanian <i>et al.</i> [8]	APEST Net	-provides accurate liver tumor segmentation and classification.	-Influenced by the quality and variability of the input CT images.
Tummala and Barmanda[9]	U-Net	-capturing high-level structures effectively.	- performance and generalizability of the proposed approach on the data used.
Hanschet <i>al.</i> [10]	3D U-Net	-improves the accuracy and efficiency	- influenced by factors such as dataset variability, imaging artifacts.
Rahman <i>et al.</i> [11]	ResUNet	-improved efficiency and accuracy from CT image volumes.	-influenced by factors such as variations in tumor characteristics, image quality.
Zhang <i>et al.</i> [12]	DPC-Net	-effectively leverages both low- and high-level information.	-may increase computational requirements.
Sahliet <i>al.</i> [13]	U-Net	-aiding in diagnostic and treatment effectiveness.	- applicability to different datasets.
Zheng <i>et al.</i> [14]	C-LSTM	-It combines spatial and temporal information.	-increase computational for training and inference.
Amin <i>et al.</i> [15]	U-Net	-improved localization, allowing for more accurate.	-limit the model's performance in handling specific variations.

3. PROPOSED DEEP TRANSFER ATTENTION NETWORK MODEL

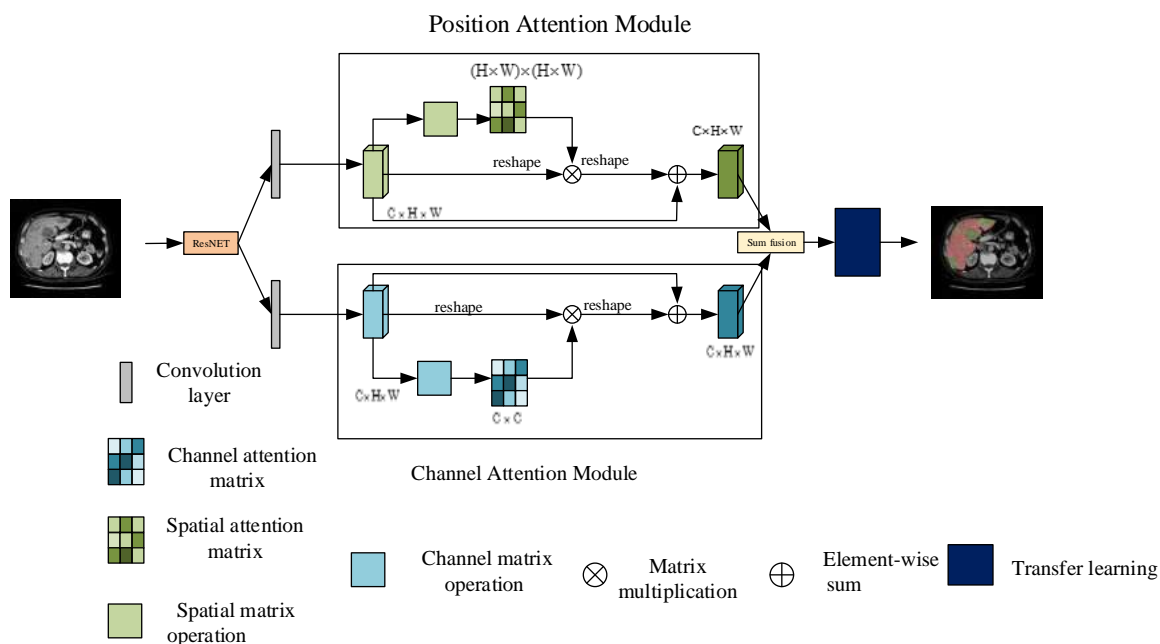


Figure 1: Structure of the Proposed Deep Transfer Attention Network Model



We proposed a novel framework called Deep Transfer Attention Network (DTAN) for automated liver tumor segmentation in fig 1. The DTAN model integrates transfer learning and attention mechanisms, leveraging a pre-trained CNN for feature extraction and an attention mechanism to emphasize relevant regions, enabling accurate segmentation by capturing fine-grained spatial dependencies and intricate features.

3.1. Dataset Preparation

A comprehensive dataset of liver MRI images, including both tumor and non-tumor cases. Preprocess the dataset by standardizing the image intensities, resizing the images to a consistent resolution, and dividing them into training and testing sets.

3.2. Pre-training the Deep Transfer Attention Network (DTAN)

Utilize a pre-trained DTAN, ResNet, which has been trained on a large-scale dataset (e.g., ImageNet). Remove the fully connected layers from the DTAN, keeping the convolutional layers intact. Freeze the weights of the pre-trained DTAN to prevent them from being modified during training. Pre-training DTAN refers to the process of training the network on a large dataset or a related task before fine-tuning it for a specific target task. This pre-training step helps initialize the DTAN's weights and learn general features that can be useful for various computer vision tasks. The main advantage of pre-training a DTAN is that it enables transfer learning, where knowledge gained from one task or dataset is transferred to another task. By leveraging pre-trained weights, the DTAN can benefit from general visual representations learned from a large dataset, even when the target dataset is limited. This can lead to faster convergence, improved generalization, and better performance, especially when the target dataset is small or lacks diversity. Overall, pre-training a DTAN provides a powerful strategy to initialize and leverage convolutional neural networks for various computer vision tasks, reducing the need for training large models from scratch and enabling effective transfer of learned knowledge.

ResNet

A pretrained Residual network with the dilated strategy is employed as the backbone. Residual Network (ResNet) is a deep learning architecture that has been widely used in various computer vision tasks, including image segmentation. Liver tumor segmentation is one such task where ResNet has been applied successfully. The goal of liver tumor segmentation is to identify and delineate the boundaries of tumors within liver images. This task is crucial in diagnosis of medical image, treatment planning, and monitoring the progress of liver diseases. Deep learning techniques, such as ResNet, have shown promising results in automating this process. By utilizing residual connections, ResNet is known for its ability to train very deep neural networks. These connections allow the network to absorb residual mappings, permitting the network to capture fine-grained details effectively. This is especially important for tasks like liver tumor segmentation, where accurate boundary delineation is essential. Liver tumor segmentation is a complex task, and the ResNet architecture is just one of many possible approaches. Researchers continually explore and develop new methods, combining various architectural components and techniques, to further improve the efficiency and accuracy of segmentation of liver tumor.

Residual Block

The development of ResNet, also known as residual networks. These ResNets are constructed using Residual Blocks, which have played a pivotal role in overcoming this challenge.

The mathematical equation of Residual block is as shown in equation (1),

$$H(y) = F(y) + y \quad (1)$$

Rearranging the Equation (1), we get

$$F(y) = H(y) - y \quad (2)$$

In the Residual block, the output of the considerable layers denoted as $H(x)$, is obtained based on the input vectors x within a residual block. To learn the key objective of the residual block is the true output $H(y)$ as shown in Eq 1 and fig. 1 $F(y) + y$ by utilizing a feedforward neural network that incorporates identity shortcut connections. These shortcut connections are responsible for maintaining computational complexity and occur due to the input. To express this mathematically we can refer to Eq2, where $F(y)$ represents the residual function

The function $F(y)$ is often represented by matrix multiplication interlaced with activation functions and normalization operations.

Convolutional Layers (CL)

In the Deep Transfer Attention Network (DTAN), the last two ResNet blocks undergo modifications to extend the final feature map dimension and increase the dimension reduction. The CL within the DTAN module plays a crucial role in automated tumor detection, also segmentation within liver medical images. It applies learnable filters to input image patches, extracting relevant features such as edges, textures, and tumor-specific patterns. The CL learns these features through training and helps highlight tumor regions, supporting diagnosis, treatment planning, and patient monitoring for liver cancer.



Calculating the spatial dimensionality of the convolution layer's output, we tend to use the following formula as,

$$\frac{(R - V) + 2P}{S + 1} \tag{3}$$

where V denoted as the input volume size, (i.e., height × breadth × depth),

R denoted as the receptive field size

P is the amount of zero padding set and

S denoted as the stride

Position and Channel Attention Module (PAM & CAM)

The features are provided into two, parallel attention model and channel attention model. To capture spatial relationships, features are processed by parallel spatial and channel attention modules, generating a spatial attention matrix, performing matrix multiplication with the original features, and obtaining final representations through element-wise summation.

Position Attention Model (PAM)

To capture rich contextual relationships, position attention module is introduced, that enhances local features by coding a broader series of contextual information and adaptively aggregating spatial contexts. Assumed a limited feature $L \in \mathfrak{R}^{C \times H \times W}$ we first fed it into a CL to generate M as well as K are two new feature maps, where $\{R, L\} \in \mathfrak{R}^{C \times H \times W}$. At that time we reshape them to $\mathfrak{R}^{C \times N}$, here $N = W \times H$ represents the total number of pixels. After that a multiplication of matrix is performed among the transpose of K as well as M .

$$p \in \mathfrak{R}^{N \times N} :$$

$$p_{ij} = \frac{\exp(M_j \cdot K_i)}{\sum_{j=1}^N \exp(M_j \cdot K_i)} \tag{4}$$

where p_{ij} measures the j^{th} position's impact on i^{th} position. The most similar feature representations of those position contributes to greater correlation among them.

while, we fed feature L into a CL to create a $D \in \mathfrak{R}^{C \times H \times W}$ as new feature map and reshape it to $\mathfrak{R}^{C \times N}$. And multiplication of matrix between D and the transpose of S is performed and the result is reshape to $\mathfrak{R}^{C \times H \times W}$. Then, a scale parameter α is multiplied and an element-wise sum operation is performed with the features L and the final output $E \in \mathfrak{R}^{C \times H \times W}$ is obtained:

$$F_i = \alpha \sum_{j=1}^N (s_{ij} D_j) + A_i \tag{5}$$

Channel Attention Model (CAM)

From the PAM, the CAM is altered and directly the map of channel attention $K \in \mathfrak{R}^{C \times C}$ from the original features $L \in \mathfrak{R}^{C \times H \times W}$ is calculated. Specifically, we reshape L to $\mathfrak{R}^{C \times N}$, and then a matrix multiplication between L and the transpose of L is performed.

$$K \in \mathfrak{R}^{C \times C} :$$

$$Q_{ij} = \frac{\exp(M_i \cdot M_j)}{\sum_{j=1}^C \exp(M_i \cdot M_j)} \tag{6}$$

where k_{ji} measures the i^{th} channel's impact on the j^{th} channel. Moreover, a multiplication of matrix among the transpose of K and L is performed and then reshape their result to $\mathfrak{R}^{C \times H \times W}$ finally the result by a scale parameter β and implement an element-wise sum operation is performed with L to obtain the final output $E \in \mathfrak{R}^{C \times H \times W}$:



$$F_i = \beta \sum_{j=1}^K (x_{ji} M_j) + M_j \tag{7}$$

Attention Mechanism (AM)

The AM in the DTAN model selectively weights and emphasizes important regions or features in the input data, enhancing the model's ability to capture fine-grained spatial dependencies and emphasize tumor regions. It dynamically assigns weights based on relevance, guiding the model's focus during liver tumor segmentation. The attention mechanism consists of an Encoder module that transforms the input data into a semantic vector and a Decoder module that generates the output data based on the transformed vector. The attention mechanism's equation defines the weight assignment process.

$$u_j = \tanh(W_j h_j + b_j) \tag{8}$$

$$\alpha_j = \frac{\exp(u_j^T u_n)}{\sum_j \exp(u_j^T u_n)} \tag{9}$$

$$h_j = \sum_j \alpha_j h_j \tag{10}$$

where: α_j is the attention score for $j - th$ word sentence; u_i is the result of a full connection operation of the hidden layer vector;

h_j ; W_j and b_j are the height, weight matrix and bias term of attention calculation; u_n is a randomly improved context vector, which is efficient.

Sum Fusion

To leverage contextual information, we combine features from two attention modules by transforming their outputs with a CL and performing an element-wise sum fusion. A final CL generates the prediction map, while avoiding memory-intensive cascading operations. Our straightforward attention modules seamlessly integrate into the FCN pipeline, enhancing feature representations without a significant increase in parameters.

Transfer Learning

Transfer learning in DTAN leverages a pre-trained CNN, such as ImageNet, to improve feature extraction, overcome limited data challenges, and enhance generalization in liver tumor segmentation. The pre-trained model captures generic visual features applicable to various tasks. Transfer learning addresses data limitations and aids faster convergence, preventing overfitting. By extracting discriminative features, DTAN achieves accurate liver tumor segmentation, while adaptability and reduced complexity are ensured by removing fully connected layers from the pre-trained model.

4. EXPERIMENTAL RESULTS

The DTAN model is evaluated on a labelled training dataset and its segmentation performance is optimized. The trained model is then tested on an independent dataset using metrics such as Hausdorff distance, Dice coefficient, specificity and sensitivity.

3.6.1. Hausdorff distance

$$H(A, B) = \max(h(A, B), h(B, A))$$

The Hausdorff distance quantifies dissimilarity between sets/shapes, reflecting their shape and location. It is used in image processing and computer vision for tasks like shape matching and evaluation, aiding segmentation accuracy and image alignment.

3.6.2. Dice coefficient

$$\left(\frac{2 * |A \cap B|}{(|A| + |B|)} \right)$$

The Dice coefficient measures the overlap between predicted and ground truth masks in image segmentation, indicating segmentation accuracy. A higher coefficient signifies better performance, commonly used in medical image analysis for tasks like tumor segmentation.

4.1 Comparative Analysis

Table 2 shows the performance of proposed DTAN model with existing methods such as DPC-Net [12], and C-LSTM [14]. The proposed DTAN model achieved the better segmentation performance than other methods for liver tumor segmentation. Our method achieves dice value of 82.11% and Hausdroff Distance value of 13.78%.

Table: 2 Dice and Hausdroff Distance for proposed and existing models

Methods	Dice (%)	Hausdroff Distance (%)
DPC-Net [12]	76.4	5.339
C-LSTM [14]	80.9	12.76
Proposed DTAN model	82.11	13.78

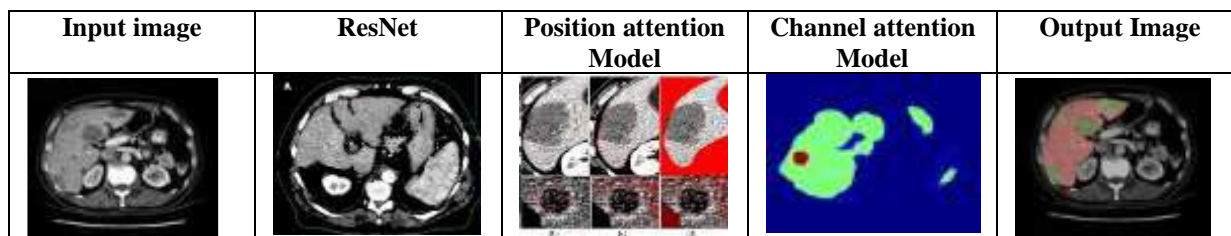


Figure: 2 Segmentation Results

5. CONCLUSION

In this paper weintroduces the Deep Transfer Attention Network (DTAN), which combines transfer learning and attention mechanisms to achieve state-of-the-art liver tumor segmentation performance. By capturing intricate features and spatial relationships, DTAN provides accurate results, holding promise for aiding radiologists and clinicians in liver tumor diagnosis, treatment planning, and patient management, enhancing precision and efficiency in clinical settings.

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USE OF ZIPGRADE: A REVOLUTIONARY TOOL FOR GRADE 7 TEACHERS IN CHECKING STUDENTS' LONG TEST AND UNIT TESTS

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ABSTRACT

The assessment of students' learnings allows the teachers to determine the how well the students learn. Assessment plays a significant role in determining the quality of education. This is particularly so when students are properly assessed using various appropriate methods of assessment. Teachers make records of the learners' progress by checking the outputs of every learner. Before, checking the learners' output is much easier since learners are also doing it by themselves right after taking the exams, however this is not possible in the current situation. Teachers are now the one doing this task alone making it difficult and quite slow.

This study aims to provide teachers with a new way of checking the learners' output using the ZipGrade phone application. This software can help in checking multiple choice tests, quizzes, and assessments instantly by using Android device's camera as a grading scanner. ZipGrade is a grading app that makes grading effortless while capturing, storing, and reporting with useful data on assessments.

The rapid application development will be used in this study. A training workshop for the 15 grade 7 teachers of Don Manuel Rivera Memorial National High School will be conducted in order to give the respondents the knowledge about the benefits of the ZipGrade application and how to use it. The set of data that will be collected from the survey will be tabulated for statistical treatment purposes. It will be analyzed and later be interpreted. The findings of this study will then be used to develop a decision on the implementation of the utilization of ZipGrade in checking students' outputs.

The wide utilization of this software will truly make teachers' work lighter and better and will bring a huge impact to the way teachers get results from the learners' outputs, making the process of submitting reports much faster most specially in this time of pandemic where all the tasks are given to the teachers alone without the help of the learners.

KEYWORDS: Assessment, checking, output, software, learners, reports

I. CONTEXT AND RATIONALE

Doing assessment is an integral part of the teaching-learning process. This allows teachers to ensure students learn what they need to know in order to meet the learning objectives. This helps the teachers decide whether there is a need to do remediation or not. On the other hand, checking the learners' output is another task connected to assessment, it is the most important part of the evaluation process, through checking the learners' output, teachers will be able to get results and do some necessary actions like remediation or making some intervention.

In our current situation, this COVID-19 pandemic has brought us to a new way of teaching-learning process, shifting all educational activities from face-to-face mode of learning to online learning including discussions up to the assessment. However, not all the learners are capable of adapting to the new educational setup, in this case, some students continue learning using the modular distance learning modality where all of their learning materials are printed. Due to this, the submitted outputs of the learners from modular distance modality are needed to be checked manually, making checking the students' outputs (long test and unit tests) become more challenging unlike from checking the learners' outputs from online distance modality that are automatically checked through the use of several google applications. Furthermore, gathering and recording numerous results of students' outputs add burden to the checking of outputs alone, compared to the practice done long before the distance learning, where students are the ones to check the tests, teachers can record and submit reports instantly. Giving a more vivid representation, if a particular teacher has 5 sections with 50 students each, basically he has 250 papers to monitor and check for a single long test alone.



Incorporating technologies in everyday tasks nowadays is not new, people constantly seek for changes that will make lives and works lighter and faster. Therefore, in this action research, the use of phone application “Zip Grade” aims to help teachers efficiently and effectively on checking students’ long tests and unit tests faster than ever, revolutionizing how teachers perform tasks in checking long tests and unit tests.

II. ACTION RESEARCH QUESTIONS (Objectives)

This study aims to seek for the impact of using Zip Grade as a revolutionary tool for grade 7 teachers in checking students’ long tests and unit tests.

Specifically, this study seeks to answer the following questions:

1. What is the mean level of grade 7 teachers’ load in terms of:
 - 1.1. section; and
 - 1.2. students?
2. What is the mean level of Grade 7 teachers’ load in checking:
 - 2.1. long tests; and
 - 2.2. unit tests?
3. What is the frequency of number of Grade 7 teachers who are familiar on using mobile device application exam checker (ZipGrade)?
4. What is the mean level of the time spent in checking long test and unit test in terms of:
 - 3.1 manual checking; and
 - 3.2 using zip grade?
5. What is the speed level of time spent on submitting the test results in terms of:
 - 5.1. Manual checking; and
 - 5.2. Using ZipGrade?
6. Is there a significant difference between the time spent on manual checking and the use of Zip Grade?



III. INNOVATIONS/INTERVENTION/STRATEGIES

The launching of the utilization of a software called ZipGrade to the grade 7 teachers of Don Manuel Rivera Memorial National High School will help in alleviating the time being spent in checking the students’ outputs.

The researchers will propose a Training workshop for the participant that will teach them on how to use the software. The training will also tackle the benefits of using this software and the impact that it will make towards the teachers’ task productivity.

IV. METHODOLOGY

- a. Participants and other sources of data information

Purposive sampling technique will be used in the selection of the respondents. Purposive sampling is a common method of non-probability sampling.

Non-probability sampling does not involve random selection of sample elements where some elements of the population do not have a chance to be included in the sample (Perreno & Jimenez, 2006).

The respondents of this study will be composed of 15 Grade 7 teachers from different departments of Don Manuel Rivera Memorial National High School.



b. Data Gathering method

The researchers will use rapid application development of research. This research will be adapting a software that will be utilized by the participants.

Data will be gathered through survey-type questionnaire. The questionnaire will be grouped into three parts: Teaching Load Profile, Software Awareness, and the Observation on the difference of time spent between checking the outputs manually and using the software.

c. Data Analysis Plan

The set of data that will be collected from the survey will be tabulated for statistical treatment purposes. It will be analyzed and later be interpreted. The findings of this study will then be used to develop a decision on the implementation of the utilization of ZipGrade in checking students' outputs.

V. RESULTS AND DISCUSSION

Table 1. Level of Grade 7 Teachers' Teaching Load

	Mean	Verbal Interpretation
Section	Online	1.40
	Modular	3.87
Students	Online	1
	Modular	3.93

Legend:	Verbal Interpretation
4.21-5.00	Extremely Loaded
3.41-4.20	Loaded
2.61-3.40	Slightly Loaded
1.81-2.60	Comfortable
1.00- 1.80	Extremely Comfortable

Table 1 shows the level of grade 7 teachers' teaching load in terms of number of sections and number of students they handle for the school year 2020-2021.

It reveals that grade 7 teachers are "Loaded" with number of sections and students under modular distance learning with a mean of 1.40 for number of sections handled and a mean of 3.93 for the number of students handled. On the other hand, grade 7 teachers are "Extremely Comfortable" on the number of sections and students they handle who are under online distance learning.

Table 1 clearly reflects that grade 7 teachers are bombarded with a high number of students under modular distance learning which might affect the speed of checking their outputs for S.Y. 2020-2021.

Table 2. Level of Grade 7 Teachers' Checking Load

	Mean	Verbal Interpretation
Long Tests	3.87	Loaded
Unit Tests	3.07	Loaded

Legend:	Verbal Interpretation
4.21-5.00	Extremely Loaded
3.41-4.20	Loaded
2.61-3.40	Slightly Loaded
1.81-2.60	Comfortable
1.00- 1.80	Extremely Comfortable

Table 2 shows the level of grade 7 teachers' checking load in terms of long tests and unit tests.

This indicates that grade 7 teachers are "Loaded" with a number of test papers to be checked for the school year 2020-2021 having a mean of 3.87 for the long tests and a mean of 3.07 for unit tests.

Figure 1. Frequency of Grade 7 Teachers’ Familiarity on Digital Test Paper Checking Application

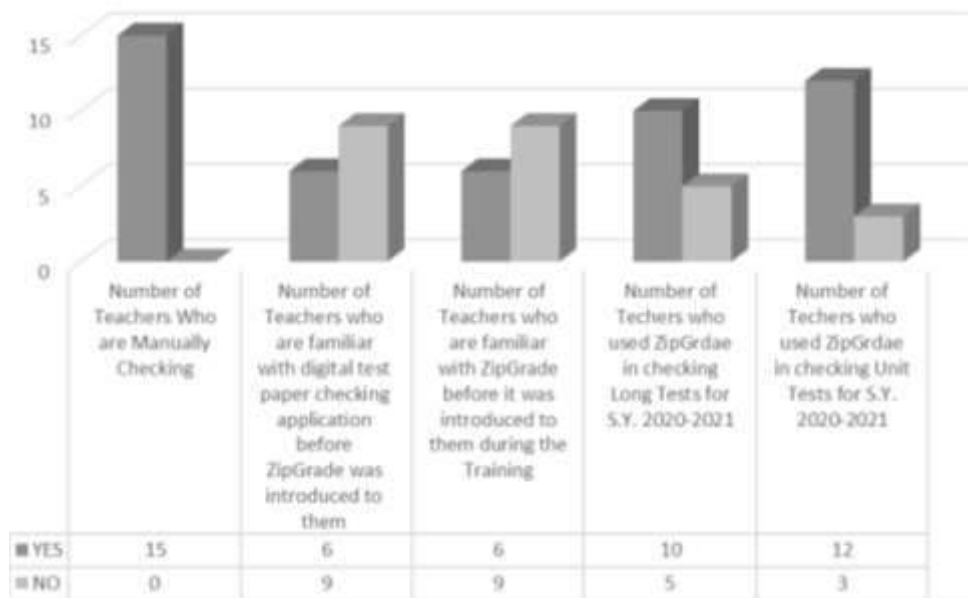


Figure 1 shows the frequency of grade 7 teachers’ familiarity on digital test paper checking application.

This illustrates that 100% (15) of the population are manually checking the students’ outputs even if 40% (6) of the population are familiar with some digital test paper checking applications. It also reveals that 40% (6) of the population – the same sample, are already familiar with the ZipGrade Application before it was introduced to them during the conduct of the training. Moreover, 66.67% (10) of the population applied the use of ZipGrade Application that they have learned during the training for checking their long tests while the remaining 33.33% (5) of the population remained in manually checking their long tests. In terms of checking the unit tests, the percentage of the population who applied the use of ZipGrade in checking has increased to 80% (12) and the percentage of the population who remained in manually checking the unit tests decreased to 20% (3).

Table 3. Level of Grade 7 Teachers’ Time spent in checking Long Tests and Unit Tests

	Mean	Verbal Interpretation
Manual Checking	3.47	Slow
Using ZipGrade	1.27	Extremely Fast

Remarks	Verbal Interpretation
4.21-5.00	Extremely Slow
3.41-4.20	Slow
2.61-3.40	Moderately Slow
1.81-2.60	Fast
1.00- 1.80	Extremely Fast

Table 3 shows the level of grade 7 teachers’ time spent in checking the long tests and unit tests.

It reveals that teachers have a “Slow” productivity with a mean of 3.47 when they manually check long tests and unit tests compared to the speed they spent when they use ZipGrade giving them “Extremely Fast” speed in checking both the long tests and unit tests with a mean of 1.27. This suggests that the use of ZipGrade increases the speed of time spent on checking the students’ long tests and unit test.



Table 4. Level of Time on Submitting Test Results

	Mean	Verbal Interpretation
Manual Checking	2.47	Slow
Using ZipGrade	4.53	Extremely Fast

Legend:	Remarks	Verbal Interpretation
4.21-5.00	2 days before the deadline	Extremely Fast
3.41-4.20	1 day before the deadline	Fast
2.61-3.40	On the deadline	Moderately Slow
1.81-2.60	1 day after the deadline	Slow
1.00- 1.80	2 days or more after the deadline	Extremely Slow

Table 4 shows the level of time spent by teachers on submitting test results in terms of manual checking and on using ZipGrade.

This implies that teachers tend to submit test results “Extremely Fast” when they checked the students’ output using ZipGrade with a mean of 4.53. On the other hand, test results are submitted on “Slow” speed when teachers manually checked the students’ outputs with a mean of 2.47. This signifies that the use of ZipGrade in checking the students’ output can decrease the time spent on checking students’ output in order to hasten the submission of test results.

Table 5. Difference Between the Time Spent on Manual Checking and Using ZipGrade

	Mean	t-value	Significant value	Verbal Interpretation
Manual Checking	2.47	-8.16	0.05	Significant
Using ZipGrade	4.53			

Table 5 shows the result of t-test on finding the significant difference between the time spent on using ZipGrade and on manual checking of students’ output.

It can be gleaned from the t-value of -8.16 that makes the null hypothesis be rejected which is significant at 0.05 level. This shows that there is a significant improvement in the speed of time spent by the teachers in checking the students’ output when they use ZipGrade because of the remarkable increase of mean at 4.53.

VI. SUMMARY, CONCLUSION AND RECOMMENDATIONS

This part includes the summary, conclusion, and recommendation of the researcher based on the data gathered.

In this time of pandemic teachers need to put extra effort in checking student’s outputs. Through checking the learners’ output, teachers will be able to get results and do some necessary actions like remediation or making some intervention. The Zip Grade is one of the researcher’s initiative to make it easier for teachers to check students output.

The summary expressed are the following:

1. It reveals that grade 7 teachers are “Loaded” with number of sections and students under modular distance learning with a mean of 1.40 for number of sections handled and a mean of 3.93 for the number of students handled. On the other hand, grade 7 teachers are “Extremely Comfortable” on the number of sections and students they handle who are under online distance learning. It clearly reflects that grade 7 teachers are bombarded with a high number of students under modular distance learning which might affect the speed of checking their outputs for S.Y. 2020-2021.
2. The results of the level of grade 7 teachers’ checking load in terms of long tests and unit tests indicates that grade 7 teachers are “Loaded” with a number of test papers to be checked for the school year 2020-2021 having a mean of 3.87 for the long tests and a mean of 3.07 for unit tests.

100% (15) of the population are manually checking the students’ outputs even if 40% (6) of the population are familiar with some digital test paper checking applications. It also reveals that 40% (6) of the population – the same sample, are already familiar with the ZipGrade Application before it was introduced to them during the conduct of the training. Moreover, 66.67% (10) of the population applied the use of ZipGrade Application that they have learned during the training for checking their long tests while the remaining 33.33% (5) of the population remained in manually checking their long tests. In terms of checking the unit tests, the percentage of the population who applied the use of ZipGrade in



checking has increased to 80% (12) and the percentage of the population who remained in manually checking the unit tests decreased to 20% (3).

3. The results of the level of grade 7 teachers' time spent in checking the long tests and unit tests reveals that teachers have a "Slow" productivity with a mean of 3.47 when they manually check long tests and unit tests compared to the speed they spent when they use ZipGrade giving them "Extremely Fast" speed in checking both the long tests and unit tests with a mean of 1.27.

This suggests that the use of ZipGrade increases the speed of time spent on checking the students' long tests and unit test.

4. The results of the level of time spent by teachers on submitting test results in terms of manual checking and on using ZipGrade. This implies that teachers tend to submit test results "Extremely Fast" when they checked the students' output using ZipGrade with a mean of 4.53. On the other hand, test results are submitted on "Slow" speed when teachers manually checked the students' outputs with a mean of 2.47.

This signifies that the use of ZipGrade in checking the students' output can decrease the time spent on checking students' output in order to hasten the submission of test results.

5. The researcher used t-test on finding the significant difference between the time spent on using ZipGrade and on manual checking of students' output. It can be gleaned from the t-value of -8.16 that makes the null hypothesis be rejected which is significant at 0.05 level.

This shows that there is a significant improvement in the speed of time spent by the teachers in checking the students' output when they use ZipGrade because of the remarkable increase of mean at 4.53.

FINDINGS

1. Based on the data gathered by the researchers most of the respondents were loaded with number of sections and students under modular distance learning and extremely comfortable on the number of sections and students they handle who are under online distance learning. Teachers have a slow productivity when they manually check long test and unit test.
2. After the implementation of Zip grade in checking students output teachers have extremely fast speed in checking both the long test and unit test.
3. The findings reveals that the use of ZipGrade increases the speed of time spent on checking the students' long test and unit test. Therefore the null hypothesis was rejected.

CONCLUSION

The Zip Grade is more useful to teachers in correcting student's long test and unit test. It aids teachers in analyzing the result of assessment. With Zipgrade teachers can increase the speed of time spent in checking the students' outputs.

RECOMMENDATION

The following are hereby recommended based on the results and implications of the study:

1. Teachers must utilize ZipGrade (Digital Test Paper Checking Application) on checking the students' outputs – Long tests and Unit Tests.
2. School must conduct training on using ZipGrade (Digital Test Paper Checking Application)

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TECHNOLOGY ADOPTION AND ITS ROLE IN ENHANCING CUSTOMER SATISFACTION IN BANKING SECTOR

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ABSTRACT

Times are changing and today's digital world is having wide spread effect on an array of consumer behavior, including how we handle our finance. Electronic and mobility are key trends for financial institutions to keep track of balance consumes aren't ready to sever all ties with their local bank branches just yet. Banking all over the world is experiencing a fast and far-reaching renovation due to the constant influence of information technology and fantastic developments in the technology of telecommunications and electronic data processing. Banks are now reengineering the way in which their services can be reached to their customers by bringing in flexibility in their distribution channels. Technology is now taking banks to their home and offices, 24 hours a day, 365 days a year through ATM, telephone and personal computers. The financial supply chain is undergoing a dramatic change.

KEY WORDS: Bank, internet, digital, development.

INTRODUCTION

Modern banking facility has an increasingly important influence in modern society because of the importance of finance in our life. Banking sectors are developing day by day. Lot of innovations is happening in this sector. Globalization made a great impact in the life style of urban as well as rural area. In India major part of rural people is, they are less educated and also the most of them are not aware about the new facilities available to them. In case of banking sector also this is happening. Thus a study about the use and awareness of modern banking facility has social value. Today the sophisticated Information technology has taken important place in the future development of financial services, especially banking sector evolution are affected more than any other financial provider groups.

STATEMENT OF PROBLEM

Nowadays people are very busy so they are not ready to spend their time in branch banking. Due to this reason use of self technology advancement is increasing day-by-day. Customer satisfaction is important one in today's banking. So it is important to study the customer awareness and satisfaction level towards technology advancement in banking sector. This study one of such an attempt. Through this research can find out the problems which are faced by the customers.

Technology plays an important role in Indian banking sector. In future day's traditional banking will be stopped completely. So the customers of banks have to be known about this kind of banking technologies. Because they are the users; they are the operators; they are the beneficiaries. So it is necessary to examine the knowledge of the customers on banking technology. Thus the study analyzes the customers adoption, impact, satisfaction and their problem in using modern banking technologies. Technologies are growing day by day in banking sector also there are a lot of technological innovations are implemented some of them are innovation of smart cards, internet banking, mobile banking etc. This innovation leads to development of banking sector traditional system to modern system. Sometimes these developments are not reaching at rural people. The present study attempts to find out use and awareness of the response of customers about it. The study is therefore entitled as "Technology adoption and its role in enhancing customer satisfaction in banking sector"



OBJECTIVES OF STUDY

- To study the areas where the technology advancement is being used by the banks as a new developing digital technology.
- To study about the application of Technology advancement in banking sector.
- To study the area where technology advancement is being used by the banking industry.
- To study the problem faced by the customers during using of new technology advancement in their bank transaction.

SCOPE OF THE STUDY

At present there are several technological advancements were included in the banking services. Generally everybody having ATM cards and credit cards, in this situation banks may take steps to reduce the procedure for the operations of the above services. So customer's response is very important one for the implementation of this type of services. But globally every transaction through electronically done by the people. So In India also moving forward to implement every transaction through electronically. So there are wide scope is available for the implementation of technological advancement in their activities in India

RESEARCH METHODOLOGY

Research Methodology is a set of various methods to be followed to find out various information's regarding market strata of different products. Research Methodology is required in every industry for acquiring knowledge of their products.

RESEARCH DESIGN

The study undertaken was descriptive in nature as it provides description of the state of affairs, as it exists at present "technology adoption and its role in enhancing customer satisfaction in banking sector".

METHODS OF DATA COLLECTION

SOURCE OF DATA

The information relevant for the study was drawn from secondary data, which alone was not sufficient. Primary data was collected through survey method using questionnaire to conduct the study successfully. A questionnaire was designed for this purpose.

PRIMARY DATA

Data that has been collected from first-hand-experience is known as primary data. Primary data has not been published yet and is more reliable, authentic and objective. Primary data has not been changed or altered by human beings; therefore its validity is greater than secondary data. Primary data is information collected by the researcher directly through instruments such as surveys, interviews, focus groups or observation.

SECONDARY DATA

Secondary data is the data that have been already collected by and readily available from other sources. Such data are cheaper and more quickly obtainable than the primary data and also may be available when primary data can not be obtained at all.

TOOLS FOR ANALYSIS

- Simple percentage analysis
- Average Rank analysis
- Weighted Analysis analysis
- Chi-square test
- Correlation analysis

LIMITATION OF THE STUDY

The study is confined to the following limitations. This study is undertaken to the Coimbatore city only. So the findings may not be generalized in broader perspective.

- Due to time constraints the sample is restricted to 155 respondents.
- The survey is conducted only in selected areas in Coimbatore city The study largely is based on the perception of



the respondents

- The customers were reluctant in answering the questions pertaining.
- The data was collected through structured questionnaire and analyzed based on the information given by the respondents
- The accuracy of the figures and data depends on the respondent.

REVIEW OF LITERATURE

A literature review is survey of scholarly sources (such as books, journal articles, and theses) related to a specific topic or research question.

Raechel Johns and Brace Perott (2020) in their study “the impact of technology advancement in banking sector on business-customer relationships (are you being self-served)”, illustrated how technology had dramatically altered the way business operate in a business to business (B2B) context and had profound influences on services, altering the way services were delivered. It was believed that the increased use of self service technologies (SSTs) impacted on B2B relationships.

ANALYSIS AND INTERPRETATION

SIMPLE PERCENTAGE ANALYSIS

Gender

Table 4.2.1 describes the gender of the respondents. It is categorized as male, female and others.

Table 4.2.1: Gender of the respondents

Gender of the respondents	Number	Percentage
Male	75	48.4%
Female	80	51.6%
Others	-	-
Total	155	100

Sources: Primary data

Interpretation

Table 4.2.1 shows that out of the total of the respondents taken for the study, 75 (48.4%) respondents were male and 80 (51.6%) respondents were female.

Inference

It is concluded that majority 51.6% of the respondents were female.

Occupation

Table 4.2.2 describes the educational occupation of the respondents. It is categorized as student, government employee, business and private employee.

Table 4.2.2 Occupation of the respondents

Occupation of the respondents	Number	Percentage
Student	48	31%
Government employee	22	14.2%
Business	50	32.3%
Private employee	35	22.6%
Total	155	100

Sources: Primary data

Interpretation

Table 4.2.2 shows that out of the total of the respondents taken for the study, 48(31%) respondents were student, 22(14.2%) respondents were government employee, 50(32.3%) respondents were business, and 35(22.6%) respondents were private employee.

Inference

It is concluded that majority 32.3% of the respondents were business. Experience of respondents in banking service

Table 4.2.3 describes the experience of respondents. It is categorized as less than year, 2-4 year, 5-7 year and more than 8 years.



Table 4.2.3 Experience of respondents in banking service

Experience of respondents	Number	Percentage
Less than a year	14	9%
2-4 year	85	54.8%
5-7 year	38	24.5%
More than 8 years	18	11.6%
Total	155	100

Sources: Primary data

Interpretation

Table 4.2.5 shows that out of the total of the respondents taken for the study, 14(9%) respondents are having less than a year, 85(54.8%) respondents were having 2-4 year ,38(24.5%)respondents were having 5-7 year, and 18 (11.6%) respondents were having more than 8 year .

Inference

It is concluded that majority 54.8% of the respondents were have experience for 2-4 year.

Technology advancement provided by bank

Table 4.2.4 describes the experience of respondents . It is categorized as less than a year, 2-4 year, 5-7 year and more than 8 years.

Table 4.2.4 technology advancement provided by bank

Technology advancement	Number	Percentage
ATM	39	25.2%
Mobile banking	64	41.3%
Internet banking	43	27.7%
Credit card	9	5.8%
Total	155	100

Sources: Primary data

Interpretation

Table 4.2.4 shows that out of the total of the respondents taken for the study, 39(25.2) respondents were have ATM, 64(41.3%) respondents were have mobile banking ,43(27.7%) respondents were have internet banking, and 9 (5.8%) respondents were have credit card .

Inference

It is concluded that majority 41.3% of the respondents were have mobile banking.

Awareness of Technology Advancement

Table 4.2.5 describes the Awareness technology advancement . It is categorized as fully aware, partially aware, not aware and no idea .

Table 4.2.5 Awareness technology advancement

Awareness Technology advancement	Number	Percentage
Fully aware	41	26.5%
Partially aware	68	43.9%
Not aware	30	19.4%
No idea	16	10.3%
Total	155	100

Sources: Primary data

Interpretation

Table 4.2.12 shows that out of the total of the respondents taken for the study, 41(26.5%)respondents were fully aware, 68(43.9%) respondents were partially ware,30 (19.4%) respondents were not aware, and 16 (10.3%) respondents were no idea .



Inference

It is concluded that majority 43.9% of the respondents were partially aware.

RANK ANALYSIS

Rank for internet banking services by the respondents

Factor	Rank 1(5)	Rank 2(4)	Rank 3(3)	Rank 4(2)	Rank 5(1)	Total	Rank
ATM	86	6	25	19	19	155	I
	430	24	75	38	19	586	
Creditcard	16	78	26	33	2	155	II
	80	312	78	66	2	538	
Debitcard	13	29	79	28	6	155	V
	65	16	237	56	6	380	
Mobile banking	19	44	44	44	4	155	IV
	95	176	132	88	4	495	
Door step banking	35	30	55	12	23	155	III
	175	120	165	74	23	507	

Sources: Primary data

INTERPRETATION

It could be observed from the table 4.3.1 internet banking services by respondents has been calculated.

- ✓ According 155 Respondents ,ATM placed as FIRST RANK
- ✓ According to 155 respondents, credit card placed as SECOND RANK
- ✓ According to 155 respondents, door step banking places as THIRD RANK
- ✓ According to 155 respondents, mobile banking placed as FOURTH RANK
- ✓ According to 155 respondents, debit card placed as FIFTH RANK

INFERENCE

Majority of the respondents used ATM as major, debit card and other services are last in ranking.



WEIGHTED ANALYSIS

Factors Influencing the Respondents to use Technology Advancement Service

Levels	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean score
Factor	1(5)	2(4)	3(3)	4(2)	5(1)		
Easy to access	95	35	15	5	5	155	6.19
	475	140	45	25	5	690	
Never carry cash	23	89	36	5	2	155	3.909
	115	356	108	25	2	606	
Reducing fear of theft	20	44	72	16	3	155	3.4
	100	176	216	32	3	527	
Create Confidence	33	59	42	18	3	155	3.65
	165	236	126	36	3	566	
Reducing banking formalities	28	62	47	9	9	155	3.58
	140	248	141	18	9	556	
Everything Accountable	30	65	48	11	1	155	3.72
	150	260	144	22	1	577	
Increase countries economic status	32	65	41	14	3	155	3.70
	160	260	123	28	3	574	

Sources: Primary data

INTERPRETATION

The above table shows that mean score 6.19 mean score for easy to access, 3.909 mean score for never carry cash, 3.4 mean score for reducing fear of theft, 3.65 mean score for create confidence, 3.58 mean score for reducing banking formalities, 3.72 mean score for everything accountable, 3.70 mean score for increase countries economic status.

INFERENCE

The table shows that easy to access has highest mean score of 6.19



CHI-SQUARE TEST

Relationship between education and awareness technology advancement of the respondents

Education	Awareness of technology advancement				Total
	Fully aware	Partially aware	Not aware	No idea	
Under Graduate	20	31	10	8	69
Post graduate	15	21	8	2	46
School level	3	9	7	2	21
Professional	3	7	5	4	19
Total	41	68	30	16	155

To find out the association between education and awareness of technology advancement of the respondents, chi-square test is used and result is given below.

HYPOTHESIS

- H0: There is no significant relationship between education and awareness of technology advancement
- H1: There is significant relationship between education and awareness of technology advancement

Chi-square test

FACTOR	CALCULATED VALUE	D.F	TABLE VALUE	REMARKS
Education	10.449 a	9	16.92	Accepted

Interpretation

It is clear from the above table that the calculated value of chi-square is less than the table value. Hence the hypothesis is accepted stating that there is no significant relationship between education and awareness of technology advancement of the respondents.

CORRELATION ANALYSIS

Relationship between gender and holding bank account indifferent sector by the respondents

Gender	Pearson correlation	Gender	Account
		1	0.058
	Sig(2-tailed)		0.472
	N	155	155
Account	Pearson correlation	Gender	Account
		0.058	1
	Sig(2-tailed)	0.472	
	N	155	155

Correlation is significant at the 0.05 level (2-tailed)

Interpretation

Table 4.5.1 shows that correlation of gender and account of banking sector hold by the respondents was found to be no relation and statistically insignificant ($r=0.058, p<.001$). Hence H_0 was supported. There is no significant relationship between gender and holding bank account in different sector by the respondents.



CONCLUSION

The result of the study shows that customers are using only few facilities of various Advance banking technology services available. The solution of the puzzled workload only through automation and advance banking technology services and keeping easily availability of these services to all strata of public which needs lot of training and awareness programmes both to existing employees and customers. In this connection relationship between management and customers utilizing advance banking technology services the emerging problems are to be redefined from its originality to provide the services to all type of customers in all location. In other words millions and millions of advance banking technology customers totally depends upon the advance banking technology services, not only for their bread and butter but also for their necessities of luxury goods. So it is evidenced that the Indian banking scenario is under the changing process from man to machine and also in the nature of progressing in privatization to automation.

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OPTIMIZATION OF REHABILITATION IN COMBINED MENISCUS KNEE INJURY AND ANTERIOR CRUCIATE LIGAMENT IN SPORTSMEN

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ABSTRACT

The article analyzed the data of 84 sportsmen of various qualifications who were at the postoperative stage for the restoration of the anterior cruciate ligament and meniscus resection. All study participants were injured while playing sports: football - 50.6%; martial arts - 23.5%; volleyball - 11.8%; weightlifting - 8.2%; athletics 5.9%. The period from the moment of surgical interventions to the recovery stages of physical rehabilitation was 1.6 ± 0.8 years.

KEY WORDS. Rehabilitation, sportsmen of various qualifications, anterior cruciate ligament, knee meniscus, injury.

INTRODUCTION

Most often, the cause of knee joint injuries are sports games, which are characterized by high intensity of movements, rapid switching during the game moment, and force load on the body. All this requires high physical fitness from athletes. In the statistics of sports injuries, knee joint injury occupies one of the leading places, which is why this topic is very relevant [8].

The most common diseases of the musculoskeletal system among sportsmen include: bruises, dislocations, sprains, ruptures of ligaments and tendons, muscle ruptures, bone fractures, osteoarthritis. Injuries to the musculoskeletal system occur mainly when an external destructive force acts on various parts of the body or when a certain segment of the musculoskeletal system is overstressed. Bruises, dislocations and sprains are the most common types of injuries [9].

The anterior cruciate ligament is the main component in the kinematics of the knee joint and provides approximately 85% of the total restraining force during anterior translation [1]. It prevents excessive medial and lateral rotation of the tibia, as well as varus and valgus loads (Matsumoto, 2001). Due to the presence of many mechanoreceptors, the anterior cruciate ligament performs a proprioceptive function (Singh, 2020). Therefore, damage to the anterior cruciate ligament is not just an injury to the musculoskeletal system, but a neurophysiological dysfunction of the knee joint [3].

Since the role of the anterior cruciate ligament in the kinematics of the knee joint is very important and when it is injured, instability of the knee joint occurs, a comprehensive program of physical rehabilitation is required (van Melick, 2016). Since injuries of the anterior cruciate ligament are relatively common knee injuries among the sports contingent [2,5,7], recovery measures after this injury today require constant improvement. Indicators such as the patient's age, level of physical activity and subjective symptoms of instability in daily life should be taken into account when developing a phased physical rehabilitation program [4,6].

As practice shows, only physiotherapeutic treatment does not fully restore the amplitude of knee movements, so the question of creating a comprehensive program for strengthening and restoring proprioception and training normal walking remains relevant.

Until recently, the issues of injuries in sports have been insufficiently covered, apparently out of a false fear of discrediting the sport. However, professional sports, like any other kind of work, must be properly studied and socially protected.

For this reason, **the aim of the study** was Evaluation of the effectiveness of complex rehabilitation in combined injuries of the meniscus of the knee joint and anterior cruciate ligament in sportsmen.



MATERIALS AND RESEARCH METHODS

The study analyzed the data obtained by 84 athletes of various male qualifications. Qualification of athletes - candidates of master of sports, master of sports to masters of sports of international class, specializing in such sports as freestyle wrestling, judo, football, volleyball, weightlifting and athletics. All examined patient- sportsmen were at the post-operative stage of restoration of the anterior cruciate ligament and meniscus resection, aged 19 to 34 years, the average age is 26.6±1,8 years. The sportsmen had no previous history of knee injuries. On average, the period from the moment of surgical interventions to the recovery stages of physical rehabilitation was 1.6±0,8 years.

All participants in the study were injured while playing sports: football n = 43 (50.6%); martial arts - n = 20 (23.5%); volleyball - n = 10 (11.8%); weightlifting - n = 7 (8.2%); athletics - n = 5 (5.9%) (Fig. 1).

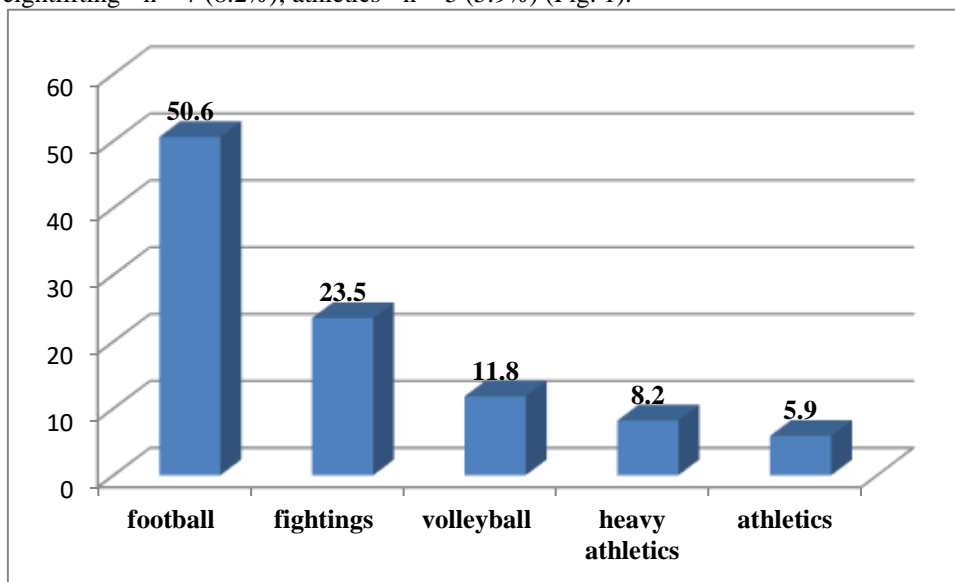


Figure 1. Distribution of sportsmen depending on the sport

All patients were hospitalized, after surgical interventions, in the scope of operations to restore the anterior cruciate ligament and partial or complete removal of the meniscus (meniscectomy). From the total number of sportsmen, depending on the methods of rehabilitation, 2 groups were formed: the main group - 41 patients - on the background of standard therapy, treatment according to the program of rehabilitation measures using physical rehabilitation; control - 44 patients - patients received standard therapy.

RESEARCH RESULTS

The physical development of sportsmen was assessed according to the parameters shown in Figure 2.

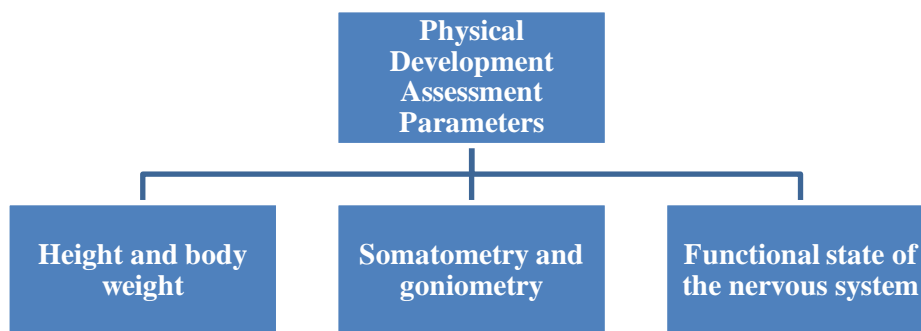


Figure 2. A comprehensive assessment of the physical development of sportsmen

Upon admission, all sportsmen measured height, which in the main group was 174.1±6 cm, and in the control group - 175±6.9 cm. The dynamics of thigh muscles determined the initially pronounced muscle hypotrophy in both observation groups. Table 1 shows



the analysis of somatometry indicators in the study groups before surgery, and in the following observation periods - 7 weeks, 3 months, 6 months (table 1).

Table 1
Analysis of somatometry indicators of the studied sportsmen - patients

Index	Groups		Observation period						
			Before surgery	7 weeks	3 months	6 months	R 1	R 2	ΔM
Circle hips	Main	ZK	41.3 ± 1.1	43.6±0.4	44.7 ± 1.3	47.4 ± 0.8	< 0.001	0.13	12
		OK	40.2 ± 1.2	37.6±0.5	41.7 ± 1.4*	45.5 ± 1.0	< 0.001	0.04	13
Circle hips	Control	ZK	42.2 ± 1.0	43.1 ± 0.7	43.7 ± 0.9	45.3±0.6	0.045	0.12	7.3
		OK	40.3 ± 1.3	39.2±0.6	40.5 ± 0.7*	42.6 ± 1.4	0.06	0.07	6.9
Circle shins	Main	ZK	38.9 ± 1.1	37.1 ± 1.2	40.6±1.0	43.2 ± 0.8	0.003	0.05	12.8
		OK	36.7± 1.4*	32.4 ± 1.3	36.5 ± 1.1*	42.8±0.7*	< 0.001	0.006	19
Circle shins	Control	ZK	36.8 ± 1.2	35.3±1.4	37.7 ± 1.2	39.8 ± 1.3	0.02	0.04	7.3
		OK	34.7 ± 1.2	31.6 ± 1.0	34.6 ± 1.1	37.8 ± 1.4	0.03	0.004	8.7

P 1 - statistical significance of differences in the group (before surgery / 6 months of observation)

P 2 - statistical significance of differences between groups (6 months of observation)

ΔM - growth rate, percentage change in indicators (before surgery / 6 months of observation)

*p<0.05, **p<0.001 – stat. reliability of differences compared to the previous period

ZK - healthy limb; OK - operated limb

As can be seen from Table 1, by 6 months after the surgical interventions, there is a difference in the volume of the thigh muscles (in the main group it was 6.1±1.9 cm, in the control group it was 5.3±1.1 cm). Upon completion of the physical rehabilitation program, there was an increase in muscles in the main group by 13.2% in the healthy limb and 20% in the operated one; in the control group - by 7.7% and 9.9%, respectively (p≤0.05). By 6 months in the main group, the difference between the volumes of the leg muscles was 0.6 ± 1.8 cm and 1.7 ± 2.1 cm.

The obtained results of active flexion of the limb during goniometry were lower than those of the passive one. After 3 months, in most cases, the range of passive movements was completely restored; the volume of active movements of this level was achieved between 5-6 months, 1 month after the operation. By 6 months, the amplitude of active and passive movements was restored in almost all trainees in the main group, which was statistically significantly higher in relation to the indicators of the control group (Fig. 3 and 4).

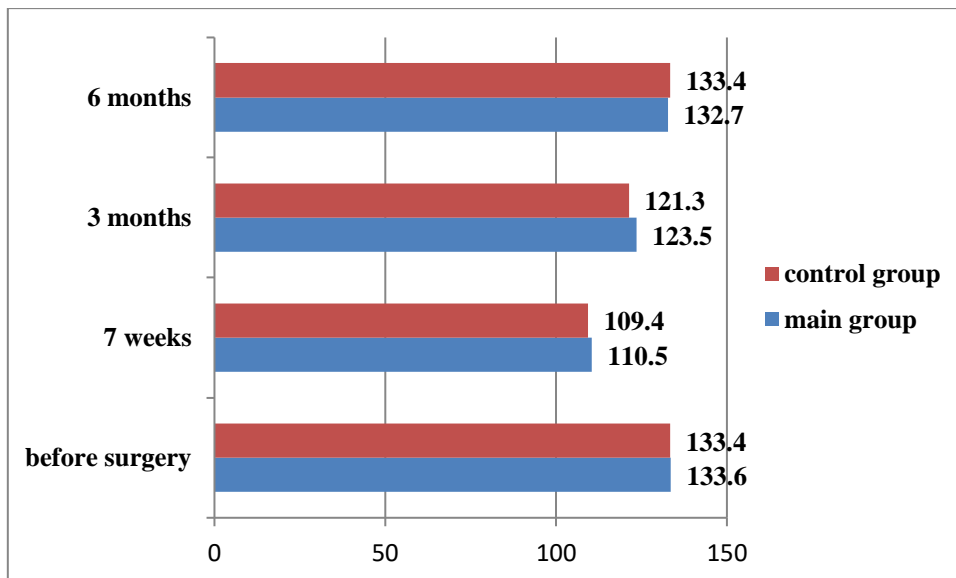


Figure 3. Analysis of indicators of active flexion during goniometry in the group of patient sportsmen.

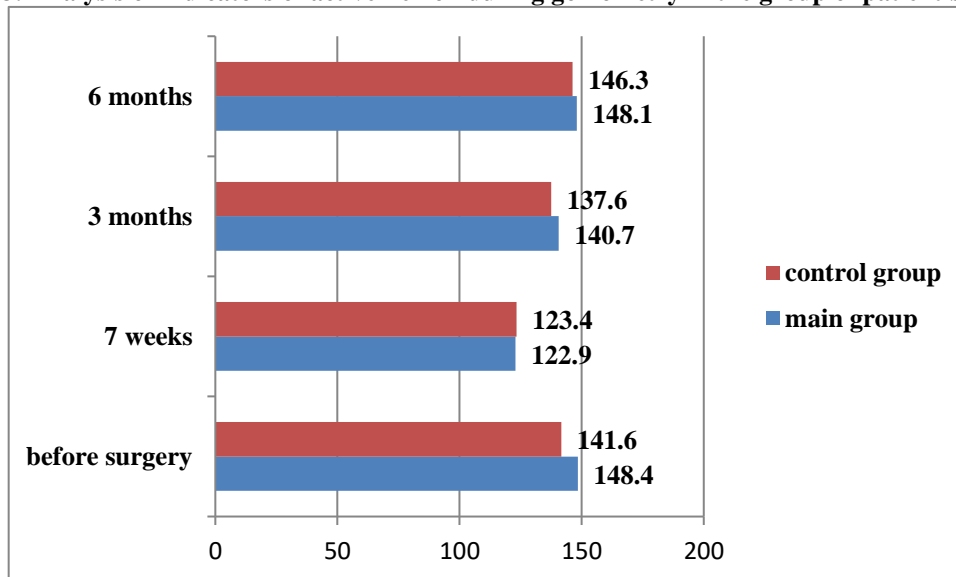


Figure 4. Analysis of indicators of passive flexion during goniometry in the group of patient sportsmen.

As can be seen from Table 2, the indicators of manual muscle testing of the quadriceps muscle in the two groups were almost the same, but by the end of the third month of recovery measures there was a movement, while it was more favorable for the athletes-patients of the main group (the growth rate was 4.6). The obtained results of manual muscle testing further indicate a more effective impact of the developed physical rehabilitation program.



Table 2

Analysis of the results of manual muscle testing (in points) of the quadriceps muscle of the studied sportsmen - patients

Groups	Observation period						
	Before surgery	7 weeks	3 months	6 months	R 1	R 2	ΔM
Main group	2.3±1.2	2.5±2.1	3.1±1.6	4.8±1.1	0.412	0.622	4.6
Control group	2.2±1.4	2.4±1.9	2.6±2.1	3.2±1.4	0.201	0.324	2.8

P 1 - statistical significance of differences in the group (before surgery / 6 months of observation)

P 2 - statistical significance of differences between groups (6 months of observation)

ΔM - growth rate, percentage change in indicators (before surgery / 6 months of observation)

*p<0.05,**p<0.001 – stat. reliability of differences compared to the previous period

During the high-speed force testing, changes were determined in all the studied parameters (Table 3). The highest share fell on the results of the athletes of the main group when performing the zigzag jump test and on overcoming 6 meters on the operated limb, where the increase was 59.3% and 13.2%, respectively. According to all conducted control and pedagogical tests, the results of the limb symmetry index by the sixth month showed over 90%, which indicates the functional restoration of the operated limb.

Table 3

Indicators of speed-strength abilities and stability of the knee joint

Index	Limb	Groups	Observation period			
			3 months	6 months	P1	P2
Jump from places (cm)	On two legs	OG	182±4.8	189±4.7	0.52	0.51
		KG	178.3±5.3	184±5.4	0.48	
Triple jump (m)	ZK	OG	4.8±0.2	5.2±0.1	0.23	0.47
		KG	4.6±0.4	4.2±0.2	0.37	
	OK	OG	3.5±0.2	4.9±0.2	0.54	0.27
		KG	3.4±0.5	4.1±0.4	0.36	
Jump on overcoming 6 meters (s)	ZK	OG	2.2±0.6	2.0±0.2	0.23	0.38
		KG	2.3±0.2	2.2±0.2	0.58	
	OK	OG	2.4±0.2	2.1 ± 0.4*	0.04	0.07
		KG	2.6±0.3	2.5±0.3	0.73	

P 1 - statistical significance of differences in the group (before surgery / 6 months of observation)

P 2 - statistical significance of differences between groups (6 months of observation)

ΔM - growth rate, percentage change in indicators (before surgery / 6 months of observation)

*p<0.05,**p<0.001 – stat. reliability of differences compared to the previous period

ZK - healthy limb

OK - operated limb

The obtained data of the Romberg test (Table 4) by 3 months after the operation determined a significant difference between the parameters of the healthy and operated limbs. By 6 months, it increases between the main and control groups. According to statistical calculations for 6 months, there is a significant difference between the groups at $p \leq 0.05$.



Table 4
The result of the vestibular stability test and the Romberg test

Index	Groups	Observation period					
		7 weeks	3 months	6 months	R 1	R 2	ΔM
Test for vestibular stability, (cm)	OG	8.1 ± 1.1	5.9±1.3	4.4 ± 1.2	0.03	0.52	-47.6
	KG	7.2 ± 1.3	6.9±1.2	7.0±1.3	0.582		-7.7
Romberg test, standing, legs together, (c)	OG	-	> 1 min	> 1 min	-	-	-
	KG	-	> 1 min	> 1 min	-	-	-
Romberg test, leg to leg right forward, (c)	OG	-	> 1 min	> 1 min	-	-	-
	KG	-	> 1 min	> 1 min	-	-	-
Romberg test, leg to leg left forward, (c)	OG	-	> 1 min	> 1 min	-	-	-
	KG	-	> 1 min	> 1 min	-	-	-
Romberg test, standing on the ZK with open eyes, (c)	OG	-	42.8 ± 3.7	55.3 ± 3.9*	0.008	< 0.001	30.5
	KG	-	38.4 ± 2.1	44.6 ± 2.9	0.243		15.9
Romberg test, standing on the ZK with closed eyes, (c)	OG	-	18±1.1	26.8 ± 1.6**	< 0.001	0.012	44.2
	KG	-	13.7 ± 1.2	20.5 ± 1.7*	0.036		38.2
Romberg test, standing on OK with open eyes (c)	OG	-	34.4 ± 3.6	42.2 ± 3.7	0.178	0.062	22
	KG	-	25.7 ± 2.8	30.3 ± 3.6	0.243		15.6
Romberg test, standing on OK with eyes closed, (c)	OG	-	10.4±1.2	20.8+ ± 1.5**	< 0.001	< 0.001	97.3
	KG	-	5.8±0.9	8.9 ± 1.3*	0.006		69.6

P 1 - statistical significance of differences in the group (before surgery / 6 months of observation)

P 2 - statistical significance of differences between groups (6 months of observation)

ΔM - growth rate, percentage change in indicators (before surgery / 6 months of observation)

*p<0.05,**p<0.001 – stat. reliability of differences compared to the previous period

CONCLUSION

Thus, the studies of the level of development of proprioception after a knee joint injury made it possible to identify the problem of the need and possibility of returning the sports contingent to the training process using a physical rehabilitation program, the main purpose of which is not only to restore the functional activity and work of the knee joint, but also to prevent the occurrence of secondary injuries. .

Since the usual methods of physical rehabilitation, including massage and physiotherapy, have a low resolution in the treatment of knee joint injuries, it is necessary to use special programs aimed at restoring soft tissues and joint mobility by restoring motor function based on an adapted anatomical structure.

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IMMUNOPROPHYLAXIS AND VACCINATION OF ATHLETES FROM COVID-19

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SUMMARY

This article provides data on the problems of immunoprophylaxis during the Covid-19 pandemic. The main changes concerning the body as a whole, as well as the immune system, are summarized. The problems of vaccination among the sports continent with a detailed algorithm are also considered.

KEYWORDS: coronavirus, Covid-19, vaccine, vaccination, immune system, immunoprophylaxis, athletes.

COVID-19, or coronavirus, has dramatically changed the lives of people around the world, including the sports contingent. Despite ongoing efforts to combat COVID-19, its effects may remain for many years or even decades. A clear example of changes in life after the pandemic was the increase in the number of people working at home, implementation of online learning, online training of athletes, increase of the usage of social networks were actively introduced. In addition, the pandemic contributed to an increase in the frequency of various latent types of disorders and other anxiety conditions [2,4]. All this dictates an increase in the activity of research work to solve the problems of vaccination, which is especially relevant for athletes, given the specifics of their occupation.

If we turn to history, vaccination and immunoprophylaxis has a rather long historical path, when the first reports of improvements in clinical conditions in patients appeared, for example, when children were vaccinated against measles and mumps [3]. There was a significant decrease in the number of cases, during immunization (vaccination) the disease proceeded with unexpressed clinical manifestations and regressed significantly and faster, while the clinical manifestations of the disease were not as pronounced as compared to those who were not vaccinated.

According to the definition given by the World Health Organization (WHO), "vaccination is a simple, safe and effective way to protect against diseases before a person comes into contact with their pathogens. Vaccination activates the body's natural defense mechanisms to form resistance to a number of infectious diseases and makes the immune system stronger" [5].

But, it should be noted that in the light of the latest literature data, there is a scientific consensus that vaccination is a fairly safe and effective way to combat infectious diseases and destroy them [6]. However, there are limitations to its effectiveness. Sometimes the defense does not work, due to the lack of response of the host's immune system, or an inadequate response. This may be due to the presence of clinical factors such as diabetes, steroid use, co-infection, or age [7]. It may also be due to genetic causes, such that the host's immune system lacks strains of B cells that can generate antibodies suitable for efficient reaction and binding to pathogen-associated antigens.

Vaccination is the most effective method of preventing infectious diseases. Widespread immunity due to vaccination is largely responsible for the worldwide eradication of smallpox and the limitation of diseases such as polio, measles and tetanus in most countries of the world [8].

The emergence of the New Coronavirus 2 (SARS - CoV-2), its ubiquitous spread around the world, has posed a global challenge to the health system in terms of strengthening preventive measures, as well as developing vaccines to reduce the incidence rate and prevent further spread.

Immunoprophylaxis and vaccination are one of the effective ways to combat this disease, which has quite serious complications and manifestations. The activation of the immune system begins with an immune response to the introduction of the virus, which turns on the innate immunity and antigen-specific reaction of bone marrow (B-cells) and thymus (T-cells).

Vaccination is the safest and most effective way to prevent infectious and viral diseases. The effectiveness of the action and the epidemiological effect of vaccination of the population against various diseases (influenza, respiratory infections) have been



proven more than 30 years ago. In connection with the development of immunology as a science, new methods for studying the effects of vaccines on the body of vaccinated patients became available, which made it possible to approach the disclosure of immune mechanisms and the effects of vaccines in the post-vaccination period.

According to the latest data, vaccines can be considered not only as drugs capable of creating protection and immunity to invasive and non-invasive forms of the disease, but also capable of activating the innate and adaptive mechanisms of the immune system. This allows us to conclude that the vaccine preparation in the early stages of the post-vaccination period is an immunotropic agent.

Modern vaccines created against respiratory infections with improved production technology contain adjuvants or conjugates that, when introduced into the body of patients, work as immunotropic drugs, showing at the beginning a non-specific transient effect with a subsequent protective effect on existing pathogenetic agents. It should be noted that the duration of the preservation of cellular memory has not been determined, but it is obvious that when the molecular and cellular mechanisms of the body's immune system are activated or reactivated upon contact with a foreign antigen, it is of priority importance, since the outcome of the disease depends on its functional activity.

In the sports world, COVID -19 has significantly limited sports activities, which has contributed to the postponement or cancellation of a large number of national and international competitions. This caused the issue of vaccination against the new virus among elite athletes to become relevant. Sports doctors have faced a number of challenges, including the effects of exercise on vaccine effectiveness, possible side effects, and selecting the most appropriate vaccine.

Population studies have shown an increase in the effectiveness of vaccines with elevated antibody titers in individuals who performed moderate-intensity exercise before vaccination, however, the evidence is not conclusive and requires research and study of the mechanisms of the immune response after vaccination of athletes.

Given the emergence of new vaccines against COVID -19, questions have arisen about the choice of the most preferred vaccine for athletes. The main thing in choosing a vaccine is its availability, the presence of special requirements for storage and transportation, for example, among elite athletes who are preparing to participate in major competitions, have carefully regulated and pre-planned training schedules, while any breaks in training associated with vaccination processes can have a negative impact on the body of athletes, causing various acute symptoms of the disease, as well as post-vaccination reactions. This leads to the fact that vaccination in athletes is always critical, especially if the vaccine is repeated after 3-4 weeks, when severe side effects occur. As such, sports physicians should be aware of athlete-specific factors, such as scheduling vaccinations in the context of peak training, or during periods of deceleration prior to major competitions.

Based on the foregoing, the staff of Samara State Medical University and the author developed the organizational framework for conducting immunoprophylaxis (COVID-19) among the sports contingent, taking into account temporary recommendations based on the version of the 8th revision of the Ministry of Health of the Republic of Uzbekistan.

ORGANIZATION AND IMPLEMENTATION OF VACCINATION AGAINST COVID-19 OF THE SPORTS CONTINGENT

Immunoprophylaxis consisted in vaccination against COVID-19 of the sports contingent according to epidemic indications. According to the temporary recommendations adopted by the Ministry of Health of the Republic of Uzbekistan (8th version), vaccination can be carried out if the organization has a license that provides for the performance of works (services) for "vaccination (prophylactic vaccinations)".

The organization and implementation of vaccination against COVID-19 of the sports contingent is provided by a formed working group. Vaccination against COVID-19 is carried out by health workers who have been trained in the use of immunobiological drugs for the immunoprophylaxis of infectious diseases, the organization of vaccination, vaccination techniques, as well as in the provision of medical care in an emergency or urgent form, the rules for observing the "cold chain".

To implement vaccination activities, it is necessary to appoint responsible persons, with the development and approval of standard operating procedures, algorithms, vaccination schedule (taking into account the storage time of the thawed vaccine), routing schemes, action plans for the implementation of the "cold chain" when storing the vaccine, including a contingency plan in the event of an emergency.

Vaccination against COVID-19 of the sports contingent was carried out with the Gam-COVID-Vac vaccine (hereinafter referred to as the vaccine), according to the instructions for use, for athletes who do not have medical contraindications, registered in accordance with the generally accepted rules for the registration of Pharmaceuticals, vaccines and sera in the Pharmaceutical Committee Uzbekistan [1].

When vaccinating a sports contingent, it is necessary to follow the procedure for introducing vaccines in a certain sequence and on time.

Indications for use: Prevention of novel coronavirus infection (COVID-19) in adults over 18 years of age.

Contraindications for use are:

- hypersensitivity to any component of the vaccine or a vaccine containing similar components;
- history of severe allergic reactions;
- acute infectious and non-infectious diseases, exacerbation of chronic diseases;



- vaccination is carried out 2-4 weeks after recovery or remission. For non-severe acute respiratory viral infections, acute infectious diseases of the gastrointestinal tract, vaccination is carried out after the temperature normalizes;

- pregnancy and breastfeeding period;
- age up to 18 years (due to lack of data on efficacy and safety).

Contraindications for the injection of component II:

- severe post-vaccination complications (anaphylactic shock, severe generalized allergic reactions, convulsive syndrome, temperatures above 40°C, etc.) to the injection of component I of the vaccine.

It was used with caution in: chronic diseases of the liver and kidneys, endocrine diseases (severe disorders of the thyroid gland and diabetes mellitus in the stage of decompensation), severe diseases of the hematopoietic system, epilepsy and other diseases of the central nervous system, acute coronary syndrome and acute cerebrovascular accident, myocarditis, endocarditis, pericarditis.

Due to lack of information, vaccination may pose a risk for the following patient groups:

- with autoimmune diseases (stimulation of the immune system can lead to an exacerbation of the disease, especially care should be taken in patients with autoimmune pathology, which tends to develop severe and life-threatening conditions);
- with malignant neoplasms.

Special instructions: in patients receiving immunosuppressive therapy, and patients with immunodeficiency may not develop a sufficient immune response. Therefore, the use of drugs that suppress the function of the immune system is contraindicated for at least 1 month before and after vaccination due to the risk of reduced immunogenicity.

The decision to vaccinate should be based on an assessment of the benefit/risk ratio in each specific situation.

The Gam-COVID-Vac vaccine was obtained by a biotechnological method that does not use the SARS - CoV - 2 virus pathogenic for humans. The drug consists of two components: component I and component II. Component I includes a recombinant adenoviral vector based on human adenovirus serotype 26 carrying the S protein gene of the SARS virus - CoV -2, component II includes a vector based on human adenovirus serotype 5 carrying the S protein gene of the SARS virus - CoV -2. Adenovirus vector - genetically modified adenovirus. The vaccine induces the formation of humoral and cellular immunity against coronavirus infection caused by the SARS virus - CoV -2. Vaccination is carried out in 2 stages with an interval of 21 days.

It is necessary to adhere to all strict rules, especially clearly indicated in the methodological manuals.

Vaccination against COVID-19 of the sports contingent is carried out in accordance with the requirements of SanPiN No. 02-39-07 Supplement No. 3 of 2015 and Order of the Ministry of Health of the Republic of Uzbekistan No. 31 of February 15, 2021. "About the preparation and holding of mass vaccination against coronavirus infection" in the vaccination rooms of medical organizations, in compliance with the regime of cleaning, ventilation, disinfection. In the vaccination room, it is necessary to have written instructions on the procedure for cleaning and disinfecting the premises [9]. Before vaccination against COVID-19, the person to be vaccinated or his legal representative is informed by medical workers about the need for vaccination, possible post-vaccination reactions and complications, as well as the consequences of refusing to vaccinate; an athlete's questionnaire (Form 1) is issued for filling out; information material and informed voluntary consent to medical intervention is issued (form 2).

Form 1. Athlete Questionnaire

1. FULL NAME. _____
2. Date of Birth: _____

Questions - answers : YES NO

3. Are you sick now?
4. Have you had contact with people with infectious diseases in the last 14 days?
5. Have you had COVID-19? (if yes, then when)
6. In the last 14 days, have you experienced:

- Temperature increase
- A sore throat
- Loss of smell
- Runny nose
- loss of taste
- Cough
- Difficulty breathing

7. Have you had a flu/pneumococcal or other vaccination?

If "yes", indicate the date: _____

8. Have you had allergic reactions?
9. Do you have chronic diseases?

Specify which: _____



Form 2. "Voluntary consent to vaccination against coronavirus infection (COVID-19)"

for vaccination _____
(name of vaccine)

(this voluntary consent was drawn up in accordance with the order of the Ministry of Health of the Republic of Uzbekistan "On the preparation and conduct of mass vaccination processes against coronavirus infection" No. 31 dated February 15, 2021)

I, _____ (FULL NAME)

residing at the address : _____
(actual residential address)

born in _____, I hereby confirm that I have been informed by the doctor:

- that preventive vaccination is the injection of a medical immunobiological preparation into the human body to create specific immunity to coronavirus infection (COVID-19). The vaccine was obtained in a biotechnological way, which does not use the SARS-CoV-2 virus pathogenic for humans. The drug consists of two components: component I and component II;
- about the need for preventive vaccination, 2 stages of vaccination and contraindications to its implementation;
- possible post-vaccination complications (general: a short flu-like syndrome characterized by chills, fever, arthralgia, myalgia, asthenia, general malaise, headache and local: pain at the injection site, hyperemia, swelling), which can develop on the first or second day after vaccinations and are allowed within 3 consecutive days;
- on the need for a mandatory medical examination before the vaccination stages (and, if necessary, a medical examination);
- on compliance with the instructions of medical workers.

I had the opportunity to ask any questions and I received exhaustive answers to all questions.

Having received full information about the need for prophylactic vaccination _____ to prevent coronavirus infection caused by the SARS-CoV-2 virus, possible vaccination reactions and post-vaccination complications, I confirm that I understand the meaning of all terms and voluntarily agree to vaccinate _____ to prevent coronavirus infection caused by the SARS-CoV-2 virus.

I, the undersigned _____
(Full Name)

(voluntarily agree)

for vaccination _____, for the prevention of coronavirus infection caused by the SARS-CoV-2 virus).

Date: _____
(signature)

Doctor: _____ Date: _____
(last name, first name, patronymic) (signature)

This informed consent is signed in duplicate.

Before vaccination, the general practitioner, infectious disease specialist examines the athlete, conducts thermometry, takes anamnesis (including epidemiological), measures saturation, heart rate, blood pressure, auscultation of the respiratory and cardiovascular systems, examination of the pharynx and fills out the Examination Form before vaccination against COVID-19 (Form 3). The doctor warns the athlete about possible post-vaccination complications and gives him a memo with informational material (Form 4).

Form 3. Doctor's Examination Before Vaccination Against COVID-19

1. Date of inspection
2. Full name of the patient
3. Date of birth
4. Body temperature
5. General condition (Not) satisfactory
6. Lungs (underline as appropriate) Breathing is vesicular, hard
Wheezing: none (dry scattered, moist, crepitant)
7. Respiratory rate
8. Saturation
9. Heart (underline as appropriate) Tones: clear, muffled, deaf.
Rhythm: regular, arrhythmic



10. Heart rate, blood pressure
11. Have you been in contact with infectious patients? (underline as appropriate) Yes, no
12. Have you had COVID-19? (underline as appropriate) Yes, no
13. Flu shot? / Pneumococcus? (underline as appropriate) Yes, no
14. Reaction to previous vaccines (describe) Yes, no
15. Allergic reactions (underline as appropriate) No, yes (describe which ones)

Form 4. Patient's reminder about vaccination against COVID-19 with the " _____ " vaccine

Dear athlete! Your good health is our main goal! And in order to fully realize our potential in achieving the main goal, we ask you to follow some (basic and important) rules that will help us in our work:

After vaccination, on the first or second day, short-term general (a short flu-like syndrome characterized by chills, fever, arthralgia, myalgia, asthenia, general malaise, headache) and local (soreness at the injection site, hyperemia, swelling) reactions can show up. Less common are nausea, dyspepsia, loss of appetite, and sometimes an increase in regional lymph nodes, perhaps the development of allergic reactions.

It is recommended not to wet the injection site for 3 days after vaccination, not to visit a sauna, a bath, not to take alcohol, to avoid excessive physical exertion. With redness, swelling, soreness of the vaccination site, take antihistamines. With an increase in body temperature after vaccination - non-steroidal anti-inflammatory drugs.

"Gam-COVID- Vac " - a combined vector vaccine for the prevention of coronavirus infection caused by a virus SARS-CoV-2

Vaccination is carried out in two stages:

I component (day, month, year) _____

II component (day, month, year) _____

Possible side effects:

After vaccination on the first or second day, short-term general (a short flu-like syndrome characterized by chills, fever, arthralgia, myalgia, asthenia, general malaise, headache) and local (soreness at the injection site, hyperemia, puffiness) reactions can show up. Less common are nausea, dyspepsia, decreased appetite, and sometimes an increase in regional lymph nodes, perhaps the development of allergic reactions.

It is recommended not to wet the injection site for 3 days after vaccination, not to visit a sauna, a bath, not to take alcohol, to avoid excessive physical exertion.

With redness, swelling, soreness of the vaccination site, take antihistamines. With an increase in body temperature after vaccination - non-steroidal anti-inflammatory drugs.

If the condition worsens after 3 days, immediately inform the local doctor at the clinic at the place of residence. For life-threatening symptoms, call an ambulance.

The results of the athlete's examination, as well as permission to administer the vaccine or withdrawal from vaccination due to the presence of contraindications for vaccination, must be recorded by the doctor in the medical records.

Vaccination against COVID-19 is carried out by health workers trained in the organization and technique of vaccination, as well as emergency procedures in case of post-vaccination complications.

To ensure the proper temperature regime of storage (not lower than 18°C) in a medical organization, it is necessary to have serviceable freezing equipment that can hold a stock of medical immunobiological drugs, as well as the required number of thermal containers and ice packs for them for the departure of mobile medical teams and in case of emergencies associated with the exit from building freezing equipment, in case of power failures.

Before vaccination, the vial with component I or II must be removed from the freezer and kept at room temperature until completely thawed. After thawing, it is allowed to store an opened 3.0 ml vial for no more than two hours at room temperature. Storage of the thawed drug in 0.5 ml vials is not allowed. Not allowed: the presence of ice residues in the vial, repeated freezing of the vial with the solution and shaking the vial!

To withdraw each dose of vaccine from the multi-dose vial a sterile syringe with a sterile needle is used. Do not leave the needle in the cap of the vial to take subsequent doses of the vaccine. The vaccine is injected intramuscularly into the deltoid muscle (the upper third of the outer surface of the shoulder), if it is impossible to administer it into the deltoid muscle, the drug is injected into the vastus lateral muscle of the thigh. The injection of the drug intravenously is strictly prohibited.

After vaccination, the packages of used vaccines are stored and at the end of the working day they are transferred to the responsible employee for removal from the drug movement monitoring system (DMMS).

The vaccine "Sputnik" is registered according to a special registration procedure, in connection with which it is necessary to notify the Ministry of Health and the Department of Sanitary and Epidemiological Surveillance of the Republic of Uzbekistan about each fact of using the drug by transferring information and entering it in the registration log.



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CHANGES IN IMMUNE INDICATORS AND FORMATION OF ADAPTATION CAPABILITIES OF ATHLETES' BODY

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SUMMARY

A comparative analysis and experimental study of the possibility of using immunological indicators to determine the activation of adaptation processes was carried out. Preliminary studies show the presence of a close relationship between the ongoing biochemical and immunological processes, which makes it possible to use them as predictors in assessing the adaptive capabilities of the body in athletes involved in various sports.

KEYWORDS: *immunological parameters, adaptation, athletes, antibodies, endogenous bioregulators.*

The study of the specific mechanisms of adaptation of the body under the influence of various extreme factors, including physical, mental, social, is an urgent task that requires a comprehensive scientific study. Even the most general knowledge about the patterns of adaptive processes of the body have strategic importance for understanding the biological essence of this phenomenon, substantiating the theory and methodology of adaptive physical culture [3,6]. For a professional athlete, adaptation is determined by the need for his body to adapt to physical loads in a relatively short period of time [1,4,5].

Achievements in sports and conquering the heights of Olympus are the result of persistent, sometimes exhausting training, requiring the athlete, his body to turn on adaptive adaptation mechanisms. Increased demands on the systems of the body are due to ever-increasing physical activity over a short period of time [2,7,8,9]. The development of adaptive mechanisms determines the further physical performance, the general condition of the athlete and his success.

The formation of the adaptive mechanisms of the athlete's body is due to an increase in the functional activity of biochemical processes - endogenous bioregulators (EB). Emerging excessive loads, increased physical activity lead to active metabolic rearrangements, with changes in the levels of endogenous mediators related to various humoral regulatory systems [8,11,12].

As literature sources show [10,12], the levels of concentration and functional activity of endogenous bioregulators during the formation of adaptive mechanisms can be determined by changes in immunological parameters, which include natural antibodies (AT), which serve as early markers of emerging maladaptive processes in the body. The study of the dynamics of the level of change in these indicators makes it possible to assess the processes of recovery after exercise, with subsequent recommendations on the normalization of training processes that determine the prognosis and further success of athletes' achievements.

The goal is to determine the level of antibodies as endogenous bioregulators involved in maintaining body homeostasis in athletes, to study the diagnostic significance of immunological parameters as markers for predicting the formation of adaptive mechanisms.

MATERIALS AND METHODS OF RESEARCH

A study was made of blood serum samples obtained from athletes: 18 judokas and 15 football players aged 16-18, who have been involved in sections for no more than 4 years. Blood serum sampling was carried out before the sports load and after it. The control group included healthy volunteers who do not go in for sports professionally, but are equal in age (n=18). Stress testing was carried out on a bicycle ergometer with an increasing load of 50 W up to a pulse of 170 beats/min, followed by ELISA to determine the level of antibodies to endogenous bioregulators in the blood serum, with statistical processing of the results obtained.



RESEARCH RESULTS

The level of antibodies to serotonin, histamine, dopamine, glutamate, GABA, angiotensin in the blood serum of athletes involved in judo and football was studied. The data of endogenous bioregulators have been studied due to the fact that they ensure the maintenance of homeostasis in the body of athletes and determine the development of adaptive mechanisms resulting from increased physical activity (Table 1).

Table 1
Changes in the levels of antibodies to the main mediators of endogenous bioregulators

Antibodies	Antibody values				
	Control (n =18)	Football (n =15)		Judo (n =18)	
		at rest	under load	at rest	under load
serotonin	0.78±0.05	0.97±0.387	0.87±0.26	0.78±0.05	0.80±0.14
histamine	0.76±0.13	0.87±0.25	0.83±0.18	0.68±0.10*	0.70±0.12
dopamine	0.71±0.05	0.78±0.16	0.88±0.15	0.67±0.11	0.69±0.10
glutamate	0.78±0.18	1.18±0.28*	1.06±0.22*	0.97±0.13*	1.07±0.18*
GABA	0.74±0.10	0.98±0.20	0.99±0.20*	1.08±0.21*	1.09±0.25*
angiotensin	0.67±0.18	0.83±0.21	0.77±0.16	0.98±0.16*	1.07±0.20*

* $p < 0.05 =$ relative to control

As can be seen from the results obtained, for athletes involved in football, in comparison with the control group, an increase in the level of antibodies to glutamate before exercise was found. Other indicators practically remained within the normal range. The use of a stress test led to an increase in the content of antibodies to GABA, while maintaining an elevated level of antibodies to glutamate. In the group of athletes involved in judo, in contrast to football players, the levels of antibodies were increased to histamine, glutamate and GABA, which increased after exercise.

Apparently, the determination of antibodies to GABA and glutamate has a diagnostic value, because these endogenous bioregulators cause and determine the reactions of inhibition and excitation in the nervous system. In the groups of studied athletes, their synchronous increase in both antibodies to glutamate and GABA was noted, which indicates the activation of processes in the central nervous system, which are the result of the intensification of physical activity.

Changes in the level of antibodies to histamine in the group of judokas may be associated with the occurrence of post-training hypotension with increasing loads, and the activation of histamine causes a change in glucose delivery to the muscles.

CONCLUSION

Conducted preliminary studies among athletes involved in football, judo show the need to determine their immunological parameters - antibodies to endogenous bioregulators, which are markers of the activation of adaptive processes that occur in response to an increasing volume of physical activity, ensuring the maintenance of homeostasis in the body. The results of the study can be of practical use, because the study of antibodies to endogenous bioregulators can later become a diagnostic test that will allow to identify early biochemical disorders that occur as a response to increasing physical activity and the development of adaptive mechanisms for the sports and training process, which requires further research among athletes involved in various sports.

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FACIAL EMOTIONAL RECOGNITION USING MOBILENET BASED TRANSFER LEARNING

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ABSTRACT

In the real world detecting a facial emotion is challenging and complicated. To identify the subtle differences in facial expressions, Facial Emotion Recognition (FER) requires the model to learn. For image recognition tasks, a convolutional neural network (CNN) is a type of deep learning model that is commonly used. CNNs are able to learn features from images that are relevant to the task at hand, such as facial expressions. A pre-trained CNN is a CNN that has already been trained on a large dataset of images for another task, such as image classification. Pre-trained CNNs can be used to improve the performance of CNNs for other tasks, such as facial emotion recognition. The main difference between a CNN and a pre-trained CNN is that a pre-trained CNN has already learned to extract features from images that are relevant to the task at hand. This means that a pre-trained CNN can be used to improve the performance of a CNN for the task at hand without having to train the CNN from scratch. Here we use MOBILENET as the pre-trained convolution neural network used with the help of the transfer learning technique. MOBILENET is a pre-trained CNN for FER, because it is efficient and accurate. EmoNet is a proposed mobile facial expression recognition system that utilizes the power of transfer learning and the efficiency of the MOBILENET model. The system aims to accurately classify facial expressions in real-time on mobile devices, making it accessible and user-friendly. The data is collected, pre-processed, and fed into the MOBILENET model for feature extraction. Stochastic gradient descent (SGD) is employed to train the pre-processed model, and its performance is evaluated using precision, recall, F1-measure, and accuracy metrics. Through experimental analysis and performance visualization, EmoNet demonstrates high estimation values and superior severity-level classification results compared to other models. This system offers a promising solution for efficient and accurate facial expression recognition, with potential applications in various domains, including emotion detection, human-computer interaction, and social robotics.

KEYWORDS: CNN, EmoNet, Facial Emotional Recognition, MOBILENET, Pre-trained CNN.

1. INTRODUCTION

Based on facial expressions, Facial Emotional Recognition (FER) is a technology that aims to detect and analyze human emotions [1]. One real-world problem with FER is its limited accuracy, especially when it comes to recognizing subtle emotional cues or expressions in individuals from diverse cultural backgrounds. For example, certain cultures may have unique facial expressions that differ from the standard dataset used for training FER models, leading to misinterpretations [2]. Challenges in FER include handling variations in lighting conditions, occlusions, and individual differences in facial features. [3]

Deep neural networks, which require large amounts of labeled data and computationally intensive training assisting techniques for FER rely on machine learning algorithms. However, these techniques often suffer from biases, lack of generalizability, and privacy concerns associated with facial data collection [4]. Moreover, FER systems can be susceptible to adversarial attacks, where slight modifications to a face can deceive the system into misclassifying emotions [5]. Addressing these drawbacks and developing more robust, culturally diverse, and privacy-respecting FER models remains an ongoing challenge.

The architecture of EmoNet model for Facial emotion recognition makes several significant contributions,

- EmoNet leverages MobileNet and transfer learning to achieve efficient and accurate facial expression recognition on mobile devices.
- Designed for mobile devices, providing accessibility and convenience for facial expression recognition tasks.
- Demonstrates high estimation values and outperforms other models in severity-level classification, ensuring superior accuracy and effectiveness.



- Potential applications in various domains, such as emotion detection, human-computer interaction, and social robotics, enhancing experiences and interactions in these areas.

The paper's remaining sections are as follows: Section 2 our proposed EmoNet model have been explored in facial emotion recognition, including traditional methods and deep learning approaches. Challenges remain in accurate detection and efficient deployment on resource-constrained devices. In section 3, Proposed EmoNet Model is a mobile facial expression recognition system that combines transfer learning with MobileNet. It uses MobileNet as a pre-trained CNN for feature extraction, followed by training with stochastic gradient descent (SGD). In section 4, Extensive experiments and performance visualization demonstrate EmoNet's accuracy and effectiveness in facial emotion recognition as accuracy metrics. In section 5, EmoNet offers an efficient and accurate solution for real-time facial expression recognition on mobile devices. Its transfer learning and MobileNet integration make it accessible and user-friendly, with potential applications in emotion detection, human-computer interaction, and social robotics domains.

2. RELATED WORKS

Some of the papers based on the facial emotional recognition are reviewed below,

In their work, Kim and Song [6], proposed to generate feature transformation for emotional expression representation, quantifying contrast between facial features, and recognizing emotions based on polar coordinate understanding of angle and intensity (i.e.) Arousal-Valence space.

Banskota *et al.* [7] proposed, a modified CNNEELM approach was employed to enhance accuracy and reduce processing time in facial emotion recognition during training. The system incorporated optical flow estimation for motion detection in facial expressions and extraction of peak images. Successfully recognizing six facial emotions (happy, sad, disgust, fear, surprise, and neutral) was achieved using the proposed CNNEELM model.

Siddiquet *et al.* [8] proposed, a standardized framework for comparing and contrasting FER models. A lightweight convolutional neural network (CNN) was trained on the AffectNet dataset, which is a diverse and extensive dataset for facial emotion recognition. The CNN was embedded within the application and demonstrated the capability of instant, real-time facial emotion recognition. Santoso and Kusuma [9] modified, the classification layer with the SpinalNet and ProgressiveSpinalNet architectures and adopted the state-of-the-art models in ImageNetto

improve the accuracy. The classification was performed on the FER2013 dataset, which was openly shared with the public on Kaggle.

Devaramet *et al.* [10] proposed, a compact and robust service named Lightweight EMotionrecognitiON (LEMON) for Assistive Robotics. LEMON leveraged image processing, Computer Vision, and Deep Learning (DL) algorithms to effectively recognize facial expressions. The DL model employed in the research was built upon Residual Convolutional Neural Networks, which integrated a blend of Dilated and Standard Convolution Layers.

Alamgir and Alam [11] proposed, to identify and categorize facial expressions into seven distinct emotions. The collected dataset images underwent pre-processing to remove noise, followed by extraction of significant geometric and appearance-based features. From the extracted feature set, the most relevant features were carefully selected.

Kumari and Bhatia [12] proposed, deep learning-based FER tool. Initially, the obtained dataset was applied to a joint trilateral filter to remove the noise. Then, contrast-limited adaptive histogram equalization was applied to the filtered images to improve the visibility of images.

Alsharekh [13] proposed, a CNN model was employed as an efficient DL technique for emotion classification from facial images. The algorithm introduced an enhanced network architecture specifically tailored to handle aggregated expressions detected by the Viola Jones (VJ) face detector. Through a series of experiments, the internal architecture of the proposed model was fine-tuned to achieve optimal performance.

Vats and Chadha [14] proposed, FER framework, Swin Vision Transformers (SwinT) and squeeze and excitation block (SE) were utilized to tackle vision tasks. The approach involved incorporating an attention mechanism, SE, and SAM within a transformer model to enhance model efficiency, considering transformers typically demand extensive data.



Dubey *et al.* [15] provided, a comprehensive assessment of the current progress in this field was conducted, analyzing both the potential benefits and challenges associated with the adoption of facial emotion recognition technology. Its rising popularity was observed in movie and music recommendation systems.

Table 1: Comparative analysis of the existing methods on facial emotional recognition

Authors	Methods Used	Advantages	Disadvantages
Kim and Song [6]	CNN	-Generating features related to emotional expression and enhances emotional representation learning.	-Depend on the quality and diversity of the training data, and its generalizability to different datasets.
Banskota <i>et al.</i> [7]	CNNEELM	-Improved accuracy during the training session.	-may introduce errors or limitations in capturing subtle facial expression changes.
Siddiquet <i>et al.</i> [8]	CNN	-It provides a Standardized approach for comparing and contrasting FER models, allowing for more consistent evaluation.	-Limit the recognition accuracy compared to more complex and deep neural networks, potentially affecting.
Santoso and Kusuma [9]	VGGNet	-modification of the classification layer improved the accuracy of the classification results.	-may limit the generalizability of the findings to other datasets or real-world scenarios.
Devaram <i>et al.</i> [10]	DRCNN	- It provides a compact and robust solution in Assistive Robotics, enabling better human-robot interaction and assistance.	-Its complexity and Resource requirements, may pose challenges in real-time implementation and deployment.
Alamgir and Alam [11]	DBRO	-The potential to accurately identify and categorize facial expressions, which can aid in various applications.	-Accurately extracting relevant features and achieving robust performance across different datasets and variations.
Kumari and Bhatia [12]	CNN	-Recognition tool can effectively reduce noise and enhance image visibility, improving the accuracy.	-Enhancement techniques may introduce artifacts or distortions in the images, potentially affecting the accuracy.
Alsharekh [13]	CNN	- It provides an efficient and accurate approach for classifying emotions from facial images.	-Limitations in accurately capturing subtle facial cues, potentially affecting the performance of the proposed algorithm.

Vats and Chadha [14]	SwinT	-Squeeze and excitation block improves the efficiency and effectiveness, even with limited data.	-Limit the model's ability to capture the full complexity and variability of facial expressions, potentially affecting the accuracy and generalizability.
Dubey <i>et al.</i> [15]	CNN	-Music and movie recommendation systems had become popular.	-Challenges such as accurate emotion detection, and limited availability of labeled emotional data pose difficulties in implementing system at scale.

3. PROPOSED EMONET: MOBILE FACIAL EXPRESSION RECOGNITION SYSTEM

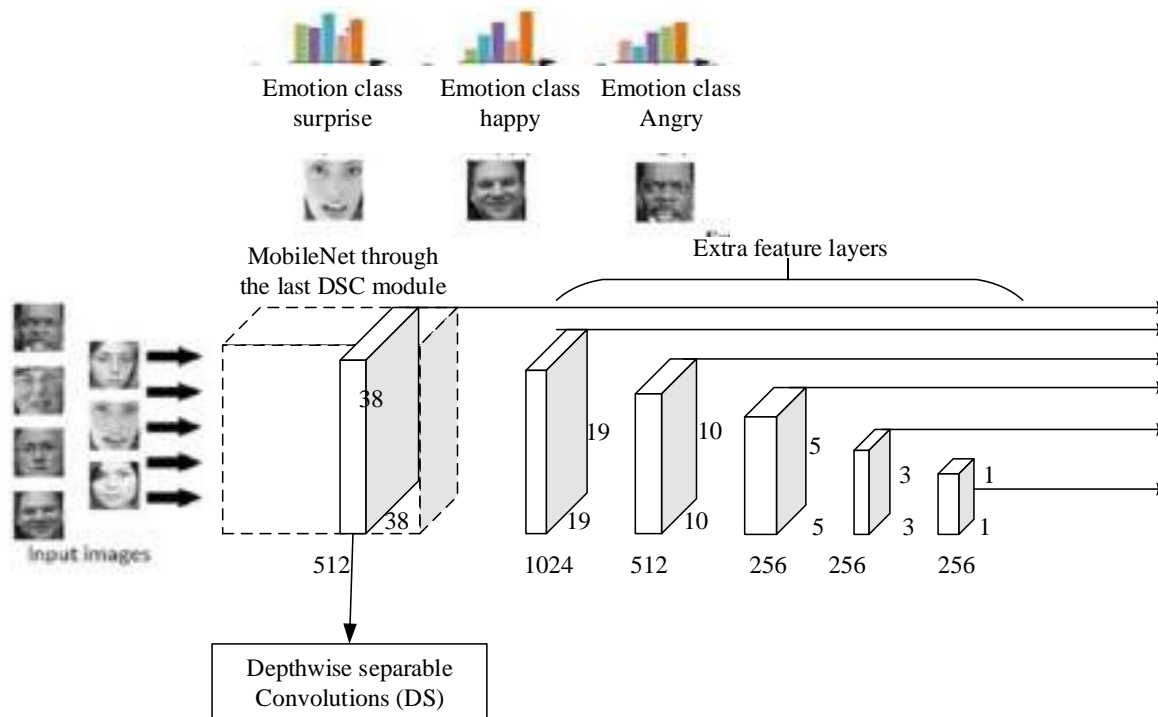


Figure 1: Architecture of EmoNet model

The challenges in Facial Emotional Recognition (FER) include the quality and diversity of training data, limitations in optical flow estimation, difficulties in real-time implementation and deployment, capturing subtle facial cues, extracting relevant features, and addressing the scarcity of labeled emotional data. Overcoming these challenges is essential for the development of accurate and reliable FER systems. In this research, the proposed system EmoNet employs MOBILENET as a pre-trained CNN for facial expression recognition. It involves data collection and pre-processing, feature extraction using the MOBILENET model, training the model with SGD, evaluating its performance, analyzing results, and comparing them with other models. The approach demonstrates high accuracy and effective classification of facial expressions.

3.1 Data Collection and Pre-processing

The facial expression recognition system collects data, which consists of images or video frames of faces with labeled expressions. The collected data is pre-processed by normalizing the pixel values, for normalizing pixel values common technique is used called



as min-max normalization and also removing some noises like Gaussian, salt and pepper, speckle noise, motion blur, and illumination variations are present in the images.

$$\text{normalized_value} = (\text{pixel_value} - \text{min_value}) / (\text{max_value} - \text{min_value})$$

3.2 Pretraining the EmoNet Model

EmoNet model refers to the process of using a pre-trained convolutional neural network (CNN) called MobileNet as the foundation for the EmoNet model. MobileNet is already trained on a large dataset for a different task, such as image classification, and has learned to extract relevant features from images. By leveraging transfer learning, EmoNet takes advantage of MobileNet's pre-learned feature extraction capabilities and fine-tunes it specifically for facial expression recognition. Already trained MobileNet CNN as a starting point and adapting it to accurately classify facial expressions. This approach saves time and computational resources by avoiding the need to train the model from scratch and enhances the performance of EmoNet for facial emotion recognition.

Mobile Net

MobileNet is a pre-trained CNN architecture designed for efficient and accurate facial expression recognition on mobile devices. It applies convolutional layers to extract features from input facial images, using depthwise separable convolution to reduce computations. Pooling layers downsample the feature maps, capturing high-level features. Fully connected layers classify the features into facial expressions, and a softmax activation produces probability scores. MobileNet's lightweight design enables real-time emotion recognition on mobile devices, making it suitable for emotion detection, human-computer interaction, and social robotics applications.

Depthwise separable convolutions

Depthwise separable convolutions in CNNs reduce computational complexity by applying separate convolutions to input channels and combining the outputs through pointwise convolutions, resulting in efficient models suitable for mobile devices. By separating spatial and channel-wise operations, depthwise separable convolutions significantly reduce parameters and computations, maintaining accuracy while enabling deployment on resource-constrained devices.

3.3 Training with Stochastic Gradient Descent

Training with stochastic gradient descent (SGD) involves dividing the pre-processed facial expression data into batches. The MobileNet model, along with additional layers, is initialized with random weights. Images are passed through the network, predictions are compared to the true labels using a loss function, and gradients are computed using backpropagation. The weights are updated using SGD to minimize the loss function. This iterative process continues for multiple epochs, gradually improving the model's performance.

Transfer Learning (TL)

Transfer learning (TL) is a technique that uses a pre-trained model's knowledge to improve performance. The pre-trained model, like MobileNet, is trained on one task (e.g., image classification) and learns to extract relevant features. These features are then applied to a different task, such as facial emotion recognition. By preserving the pre-trained model's weights and feature extraction capabilities, the model starts with a higher performance level and can converge faster. Transfer learning is particularly useful when data is limited or specialized expertise is required. It has shown effectiveness in domains like natural language processing, computer vision and audio processing, enhancing the accuracy and efficiency of deep learning models applied to new tasks.

3.4 Experimental Results

Once the model is trained, it is important to calculate its performance on a held-out test set. This step helps to determine how well the model will generalize to new and unseen data. Metrics as accuracy is computed to assess the model's performance.

Accuracy

Accuracy measures the proportion of correct predictions as true positives and true negatives out of the total instances, assessing the overall performance of a classification model like EmoNet in facial expression recognition.

$$\text{Accuracy} = \frac{TP + TN}{TI}$$

4. COMPARATIVE ANALYSIS

Table 2 indicates the performance of proposed EmoNet model with existing methods such as CNNEELM [7], and CNN [13]. The proposed EmoNet model achieved the better segmentation performance than other methods for Facial emotion recognition. Our method achieves CK⁺ dataset of 97.62% and FER 2013 dataset value of 99.17%.

Table: 2 CK⁺ dataset and FER 2013 dataset for proposed and existing methods

Methods	Accuracy	
	CK ⁺ dataset (%)	FER 2013 (%)
CNNEELM [7]	96.23	98.11
CNN [13]	90.98	89.2
Proposed EmoNet	97.62	99.17



Figure: 2 Recognition Results

5. CONCLUSION

In this paper, facial emotion recognition is a challenging task that requires identifying subtle differences in expressions. Transfer learning with MobileNet, an efficient and accurate pre-trained CNN, enhances performance. EmoNet utilizes MobileNet and transfer learning for real-time, user-friendly facial expression classification on mobile devices. Using stochastic gradient descent and evaluation metrics, EmoNet achieves high estimation values and superior classification compared to other models. It offers an effective solution for precise and efficient facial expression recognition, applicable to emotion detection, human-computer interaction, and social robotics.

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REVIEW ON EFFICIENCY ENHANCEMENT TECHNIQUES FOR EVACUATED TUBE SOLAR COLLECTORS

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ABSTRACT

As the demand of renewal sources of energy is increasing due to the degradation of conventional sources, Solar energy is getting vital importance as it is used in solar water heating in household and various industries. This research paper focuses on the performance enhancement techniques of the evacuated tube collector by various method, these include by using phase change material, nanofluids, reflectors and hybrid techniques and reviews were studied in which the system would give better results. The reviewed paper concluded that using phase change material, compound parabolic reflector and nanofluid simultaneously would give optimum results for better performance in evacuated tube collector.

1. INTRODUCTION

With population growth the demand for energy utilization has increased for various needs since conventional source of energy is depleting therefore the use of renewable sources plays a vital role in today's world. Solar energy plays a major role in such uses as it does not cause any harmful effect or depletion of natural resources also it is cost-effective and it has immense potential for which it has been used in various technologies. Solar energy is environmentally friendly and important for human life [1]. As it is considered an essential source of energy it has gained popularity globally due to which it has experienced massive growth [2]. Solar energy has various applications as it can be used for cooling, heating, and solar design in air conditioners, water heaters, etc. Solar energy is mainly used for domestic water heating in residential buildings and industries. Solar water heaters are mainly preferred because it has less influence on global warming and minimum cost and it extends the lifespan of the working system [3]. Heaters mainly used are flat plate and evacuated tube collectors for water heating. Nowadays evacuated tubes are preferred because due to their shape, it is able to receive heat from all directions which is helpful in their high-efficiency generation. An Evacuated tube collector performs better than a flat plate, especially when working with high temperatures [4].

Evacuated tubes consist of glass tubes which are made up of borosilicate material which has low thermal expansion and is resistant to external conditions. It consists of an outer tube that has low reflectivity and high transmissivity through which radiation can pass through, it has a minimum reflection that reduces the heat loss from the system and is resistant to outside weather condition. The tubes consist of absorber coating which is helpful in absorbing heat in high amount for better performance of the system [5]. Also, ETC has demonstrated that the combination of selective coating and effective suppressor results in good performance of the system in high temperatures, vacuum is created between the outer surface of the inner glass tube and the inner surface of the outer glass tube which helps in reducing the conduction and convection losses of the system [6]. An Evacuated tube collector is preferred over a flat plate collector because apart from having high efficiency, it impedes heat loss from the tube of the system [7]. It can also be concluded that the geographical area, temperature, radiation and mass flow rate are the various factors on which the performance of the system depends. This research mainly works on various heat transfer techniques which will help in improving the performance of the system. Evacuated tube collectors can be classified as follows :

- A. All glass ETCs : As the name suggests all the tubes are made up of glass, and the water from bottom of the tube travels upwards in evaporated form because of solar radiation and due to density difference it travels upwards and we get heated water. As this process occurs naturally therefore it is called thermosyphon solar water heater.
- B. Heat Pipe ETCs : This type of evacuated tube consists of the heat pipe along with aluminium fin placed inside the tube which helps in trapping the solar energy from the sun and heating the fluid or refrigerant used within the tube.
- C. U tube ETCs : These type of evacuated tube consist of heat pipe made up of copper which has good heat absorbing capability and due to U shape the transmission of fluid from inner to outer surface of the tube takes place easier. Also an absorber coating is provided which helps to imbibe large amount of radiation.

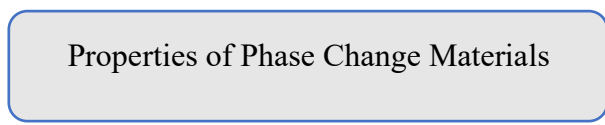


2. HEAT TRANSFER ENHANCEMENT OF EVACUATED TUBE COLLECTOR

- a) Using thermal energy storage (TES) materials : Basically these materials are used when the amount of energy requirement is large usually during night where no or less solar radiation is present. These materials absorb latent heat and release same when in need.
- b) Use of Nanofluid : nanofluid basically helps in enhancement of heat transfer performance in different types of heat pipe and increasing the efficiency of the system [8] .
- c) Using Reflectors : Used in increasing the amount of solar radiation from the present amount which helps in better performance of the system and also other methods such as baffels, twisted tapes can also help in bringing out optimum results.
- d) By means of hybrid techniques : these are used when two or more than two techniques are used to increase the heat transfer rate of the system

2.1 Performance enhancement using Thermal Energy Storage Materials

Many research work has been carried out in which TES materials are used in the evacuated tubes. These materials store the latent heat required when the radiation is low and can later be used to heat up the fluid when required. Usually these materials are called phase change materials they utilize latent heat when required to change the phase from solid to liquid when releasing energy and vice versa. Due to its good properties it is used along with evacuated tube to improve or enhance the performance of the system. Certain properties of such materials are described below:



Thermal	Chemical	Physical	Economical
Required PCM temperature	Non reactive	Low vapour pressure	Easily Available
High thermal conductivity	is non (flamable, toxic and corrosive)	High density	Low cost
High latent and specific heat	Congenial with container material	Phase change density is small	Can be reused

Fig. 1. Properties of Phase Change Material

2.1.1 Reviews in using PCMs along with Evacuated tube collector

Papadimitratos et al. evaluated that when two different PCMs Trtriacontane and Erythritol were used whose melting temperatures are 72 °C and 118 °C an 26% improvement can be seen when compared with evacuated tube without phase change material [9]. K Chopra et al. concluded that when the tube was integrated with SA-67 PCM with five different flow rates of (8,12,16,20,24 L/hr) the thermal efficiency varied from 79-87% also the energy efficiency was 32.73% higher than the normal evacuated tube collector [10]. Also Vivek R. Pawar et al. says when PCM is embedded with copper porous in heat pipe evacuated tube collector system with radiation in peak increases the temperature by 21°C with maximum energy efficiency of 85.64% and saving in hot water production was 11.57% [11]. Li- Feng et al. tells that when there is reduction in PCM melting point from 50-35°C it can elevate the efficiency of the ETC-PCM device as material with HMP remains solid during day thus, it has less effect on the output of the system cannot be reduced and latent heat of 160 KJ/Kg has best performance [12]. Piotr Felinski et al. suggest latent heat storage (technical grade paraffin) inside the evacuated tube collector the charging efficiency of the collector ranges from 33 to 66% was obtained depending on radiation and temperature of the PCM ,also the annual solar fraction was increased by 20.5% with storage [13]. Yong-Li et al. tells PCM can reduce energy fluctuations by storing excess thermal energy and releasing to night. When melting temperature of PCM was 323K the reduction of the heat transfer fluid is 7.4 K. Thermal η and storage temperature η 50.72 and 19.2% also enlarging glass tube leads increase in both efficiencies [14]. Chopra et al. analyzed performance of evacuated tube with and without phase change material (palmitic acid) and concluded that daily exergy efficiency and η_{th} of the collector with PCM enhanced within the range of 28–35%, and 36–44% as compared without PCM [15]. Abokersh et al. says when 0.8 kg of paraffin wax (Alex wax 600) was filled in each evacuated tube, the heat transfer takes place through convection process, where the collector’s efficiency was 14% higher without fin that is 85.7% [16].



2.2 Performance Enhancement using nanofluids

Previously the performance of the evacuated tube was analysed using methods to capture the radiation of sun on the outer surface of the tube. Nowadays ways are taken out which would increase the performance of the system by allowing materials inside the tube to enhance its working, one such way is by using nanofluid.

2.2.1 Introduction to Nanofluid

Nanofluid is prepared when the nanomaterial of unit size (1-100nm) is used along with the base solution to form the colloidal mixture. These are then inserted into the tube to increase the thermal performance and efficiency of the system.

2.2.2 Advantages of using nanofluid

These particles used in nanofluid have higher conductivity and high heat transfer coefficient. Due to its small size the nanofluid are more stable in pipe clogging because of which it is used in variety of applications. It also reduces the heat transfer surface of the thermal system, also the concentration of the particle can be varied to increase the performance of the system.

2.2.3 Effects of nanofluid in ETCs

Table 1 Reviews for previously studied nanofluid and its outcome

Author	Model/ ETC type	Nanofluid/ Avg size (nm)	Volume Percent	Obseervations
Sarafeldin et al.(2019) [17]	Experimental/ Thermosyphonic	Water/WO ₃ (90nm)	0.014,0.028, 0.042	- shows that temp difference was 21% raised by adding WO ₃ - heat transfer increased by 23% - thermal optical η reached 72.8%
Huseyin Kaya et al. (2020) [18]	Numerically/ U tube	Pure water/U tube	1,2,3,4	-highest efficiency obtained was 67.1% for 4.0vol% nanofluid which was 19.1% higher than Pure water
Javad et al. (2016) [19]	Experimental/ Thermosyphonic	Distilled water/ Al ₂ O ₃ (40nm)	0.03 and 0.06	-shows maximum η 57.63% for 0.06vol% of nanofluid with flowRate of 60l/hr
Mahbulul Et al. (2018) [20]	Experimental/ Heat pipe	Water/ Carbon nanofluid (1-2nm)	0.05,0.1, 0.2	- results indicated 66%η of nano-fluid and 56.7%in normal water with 0.2vol%
Roonak et al. (2018) [21]	Experimental/ Heat pipe	Water/Cuo Water/TiO ₂ Water/MWCNT	0.1	- using MWCNT, CuO, TiO ₂ η increased by 25,12,5% as compared to normal water
Adel A Eiden Et al. (2018) [22]	Experimental/ Heat pipe	Acetone /Al ₂ O ₃ Acetone CuO (20,25nm)	0.25, 0.5	- system should be charged with nano-fluid for performance enhancement 20-54% and η (15-38%)
MD Hassan (2023) [23]	Experimental/ Heat pipe	SWCNTs	-	- says that using SWCNT maximum η enhanced of 93.43% repectively
Kaya et al. (2018) [24]	Experimental/ U tube	Water/ethylene-glycol/ZnO (30nm)	1,2,3,4	- says maximum η was 62.87% for 3vol % and mass flow of 0.45kg/s
Kaya andArslan (2019) [25]	Neumerical/ U tube	Water- Ethyleneglycol/ MgO, Ag and ZnO	1,2,3,4	- maximum collector effectiveness is 68.7% at 4vol% with water Ethylene-glycol/Ag nanofluid and is 26.6% efficient then water



From the above reviewed papers it can be concluded categories of ETSCs are investigated and it was found that the thermosyphon and U-pipe models are suitable for low-temperatures applications ($T < 100$ C) while the heat pipe model is appropriate for medium and high-temperatures ones ($100 < T < 300$ and $T > 300$ C) [26].

2.3 Performance Enhancement Techniques using reflectors and other methods

Reflectors are basically used in evacuated tube collector system to reflect more amount of solar radiation to the heating plate which would help in increasing the efficiency of the system upto maximum and also inserted baffels and other means can also help in achieving the same.

Shaowai Chai et al. says that reflective coating is as a method to heighten the thermal η due to solar irradiation could be reflected by the coating on the lower half of the outer glass tube and concentrated to the essentric inner absorber, best coating angle is senn to be 180° , also thermal efficiency can reach upto 72% at radiation of 750 W/m^2 and temp. of 70°C the efficiency is raised by 10% [27]. A .Veera Kumar et al. says that when the experiments were performed between the flow rates of 100-1000kg/hr the maximum temperature of 42.8°C was achieved with efficiency of 35.13% at 100kg/hr and also when baffels are inserted there is an increase in thermal η and says baffel length has positive effectc on thermal efficiency asnd temperature rise [28]. Hong- Jin Joo et al. tells inserting twisted tapes enhances the heat transfer performance by eliminating the stagnant flow and reducing the degree of flow slowness. Twisted tapes improves the overall performance by 7.7% [29]. Yu Yuan et al. performed experiment with solar dish collector along with evacuated cylindrical tube recievers and concluded that thermal efficiency of the system was about 47.3% [30]. Saleh et al. suggests impact of using upper, lower, upper and lower reflectors increased the thermal efficiency 76.25% as compared to without reflectors and thermal performance curved η increased by 16% respectively [31].Guangbai Ma et al. tells that using compound parabolic collector along with ETC the instantaneous efficiency based on gross area can reach to about 0.46 at temperature of 150°C and novel CPC can produce steam from water with temperature about $108\text{-}145^\circ\text{C}$ during sunny days [32]. Aseem Dubey tells that using dual slope solar distiller can bring out the energetic and exergetic η about 0.8-0.6 with flow rate of 0.01-0.24kg/s the overall exergy and gross efficiency was found to e 4.9 & 1.7 % increase respectively [33]. Selvakumar et al. inspected the working of parabolic trough integrated ETSC using therminol D-12 as the fluid to transfer suggested that the outcome possessed by the system was 30% more thermal efficiency as compared with normal [34]. F. Chen compared compound parabolic collector and normal evacuated tube collecotr and found that the average optical efficiency for CPC was 70.5% and for normal collecotr it was 55.7% respectively [35].

2.4 Performance enhancement techniques using Hybrid Technique

Hybrid technique are usually used to increase the performance of the system by increasing the heat transfer enhancement or the efficiency in this technique two or more materials such as PCM, nanofluid, and also changing the tilt angle may help to bring better result.

Enzy Elshazly et al. analysed working fluids MWCNT/ Al_2O_3 , and hybrid MWCNT/ Al_2O_3 in 50:50 ratio were experimentally examined for the thermal efficiency enhancement of the ETC. For each type of nanofluid four volume concentration of (0.5,0.25,0.01,0.005)%. Results says using hybrid MWCNT/ Al_2O_3 50:50% delivers an efficiency boost of about 20% overusing Al_2O_3 , and it was found that the utilization of 0.5% MWCNT/water nanofluid at 3.5 L/m can enhance the ETSC's energy and exergy efficiency to reach 73.5% and 51% respectively while reaching approximately 60% and 44% for Al_2O_3 , and 69% and 38% for hybrid MWCNT/ Al_2O_3 (50:50%) under the same test conditions [36]. Fuyi Cui Says using water, Fe_3O_4 nanofluid and Fe_3O_4 /MWCNT hybrid nanofluid concluded when hybrid system was used in ratio of 1:4 the maximum thermal efficiency was 26.4% higher and exergy efficiency os using 0.1% hybrid and normal fluid η were 55.2 & 42.1% [37]. Shady M. Henein et al. when water, MgO and MWCNT were used with mass flow rates of 1-3L/min the increase in optical efficiency was about 78.1%, average heat gain increased from 240-495W also the enhancement in the inlet and outlet temperature difference by 56% and reduction in gross area by 36% this hybrid also caused reduction in CO_2 reductions and helps in energy savings [38]. Ipek Aytac et al. says using MgO- CuO/water hybrid nanofluid with flow rates of 0.016,0033 and 0.050kg/s tells thermal efficiency of deionized water was 49.62 and 56.18%, and average thermal efficiency was around 69.89 and 77.21% overall ot helps in improving the thermal performance of the system [39]. Saurabh Agrawal et al. reviews investigated that the thermal enhancement of ETC with various hybrid systems such as ETC with CPC reflector and paraffin wax, nanofluid and reflectors, and paraffin wax embedded with nanofluids. It was found that by using PCM incorporated with CuO nanoparticles, maximum thermal enhancement of 88.5% was attained for 3 l/h of mass flow rate [40]. Mohammed J. Alshukri says that influence of integrating Micro ZnO and nano-CuO particles along with paraffin wax used as PCM the two different tanks of different particles were used and that is nano-CuO particles with paraffin was and ZnO with same the efficiency improvement was seen as 36.8-50% and 25.3-41.4% [41]. Pablo Sampaio Gomes et al. says when experiment was performed with parabolic concentrator using multilayer graphene based with different mass flow rates and best performance was found at 40l/hr further the concentrator increased efficiency by 298%. And MLG nanofluid with 0.00045vol%and 0.00068vol% increased thermal efficiency by 31% and 76% in comparison with base fluid [42].



3 CONCLUSIONS

This review paper mainly focuses on the parameters which would help in increasing the efficiency of the evacuated tube collector system for which the phase change material, nanofluids, reflectors and hybrid materials are taken into considerations and it draws the following results:

- Phase change materials are used to store energy of materials, when it melts a large amount of energy is released when required and then it again solidifies. In this review the PCMs are mixed in ETCs and the maximum thermal efficiency was found to be between 79-87% with different flow rates.
- The nanofluids are basically used to increase the heat transfer and thermal efficiency of the system. In this paper various nanofluids are reviewed and better performance can be seen with SWCNT with efficiency enhancement of 93.43% can be seen.
- The reflectors helps to capture heat in solar collectors, they can be of various types such as flat, diffused, solar dish collector, parabolic trough and CPC. Paper concludes that using upper, lower, upper and lower reflectors increases the efficiency for about 72%. And also among different reflectors CPC possesses better outcome.
- Hybrid techniques consist of using more than one technique which would help in improving the performance of system such as PCM, reflectors, nanofluid etc at same time. In the reviewed paper the better results were seen in using CPC reflector, with paraffin wax and CuO nanofluid increased the efficiency by 88.5%

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EFFICACY OF LIBRARY AND INFORMATION SCIENCE (LIS) IN THE STUDY OF HOMOEOPATHY

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ABSTRACT

This paper explores the efficacy of Library and Information Science (LIS) in the study of homeopathy. It examines how LIS principles, methodologies, and resources can support research, information organization, retrieval, and dissemination within the field of homeopathy. The paper highlights the importance of utilizing LIS techniques to enhance the efficiency and effectiveness of studying homeopathy, ultimately leading to improved healthcare practices.

KEYWORDS: *Library and Information Science, homeopathy, research, information organization, information retrieval, information dissemination, healthcare practices.*

INTRODUCTION

Library and Information Science (LIS) plays a crucial role in supporting various academic disciplines, including healthcare. In the context of homeopathy, LIS can provide valuable tools and methodologies to enhance the study and understanding of this alternative medical system. Homeopathy relies heavily on comprehensive research, well-organized information, and efficient dissemination of knowledge. This paper explores the efficacy of LIS in meeting these requirements and its impact on the study of homeopathy.

LIS offers various resources, such as databases, digital libraries, and online platforms, which provide access to a vast array of scholarly articles, research papers, and other relevant literature. These resources facilitate comprehensive literature reviews, aiding researchers in identifying existing studies, evaluating evidence, and identifying knowledge gaps within the field of homeopathy. By utilizing LIS techniques, researchers can conduct more informed and evidence-based studies, leading to a deeper understanding of homeopathy.

Furthermore, LIS principles, such as information organization and retrieval, help categorize and classify homeopathic information, making it easily accessible to researchers and practitioners. With the application of standardized metadata and indexing, information related to homeopathic remedies, treatments, and clinical trials can be efficiently organized and retrieved, enabling researchers to retrieve specific information quickly. This enhances the efficiency of research and contributes to a more systematic and structured approach to studying homeopathy.

LIS also plays a crucial role in information dissemination within the field of homeopathy. Through the development of digital repositories, online journals, and open-access platforms, LIS facilitates the dissemination of research findings, promoting knowledge sharing and collaboration among researchers and practitioners. This accessibility to information enhances the overall advancement of homeopathy, allowing for wider dissemination of evidence-based practices and contributing to the overall growth and development of the field.

Efficacy of LIS in studying Homoeopathic science

The library plays a crucial role in studying homeopathic science by providing essential resources, facilitating research, and promoting knowledge dissemination. The importance of the library in the study of homeopathy can be summarized as follows:

Access to Literature

Libraries house a vast collection of books, journals, research papers, and other publications related to homeopathy. These resources are invaluable for students, researchers, and practitioners seeking to delve into the theories, principles, and practices of homeopathic



science. Libraries ensure easy access to a diverse range of literature, allowing individuals to explore various perspectives and gain a comprehensive understanding of the subject.

Research Support: Homeopathy requires a strong foundation in scientific research. Libraries provide access to specialized databases, online platforms, and digital repositories that contain a wealth of scholarly articles and research studies. These resources assist researchers in conducting literature reviews, examining existing evidence, and identifying gaps in knowledge. Libraries also offer guidance on research methodologies and help researchers navigate through the complex landscape of homeopathic research.

Information Organization and Retrieval

Libraries employ effective information organization techniques to categorize and classify homeopathic literature. Through cataloging, indexing, and metadata tagging, libraries ensure that resources related to homeopathy are organized in a systematic manner. This aids in efficient information retrieval, allowing researchers and students to locate specific information quickly. The organized structure of library holdings enhances the overall efficiency of studying homeopathic science.

Historical References

Homeopathy has a rich historical background, with numerous pioneers and significant works. Libraries preserve historical texts, manuscripts, and archival materials related to homeopathy, providing valuable insights into its origins and evolution. Access to these historical references allows researchers and students to trace the development of homeopathic theories and understand their relevance in contemporary practice.

Interlibrary Loan Services

In situations where a specific resource is not available in a local library, interlibrary loan services facilitate access to materials from other libraries. This service expands the scope of available resources and ensures that researchers and students can access even rare or specialized publications related to homeopathy. Interlibrary loan services play a crucial role in promoting comprehensive and in-depth studies within the field.

Collaboration and Networking

Libraries often serve as spaces for intellectual engagement, fostering collaboration and networking among researchers, students, and practitioners. They provide a platform for discussions, seminars, and workshops related to homeopathy, facilitating the exchange of ideas and knowledge sharing. Libraries also host special collections and resources specific to homeopathy, creating a sense of community among individuals interested in the subject.

Libraries are of paramount importance in studying homeopathic science. They provide access to a wide range of literature, support research endeavors, organize information efficiently, preserve historical references, offer interlibrary loan services, and foster collaboration and networking. The library's role extends beyond being a repository of books; it serves as a hub for knowledge acquisition, research support, and intellectual engagement, contributing significantly to the advancement of homeopathy as a field of study.

CONCLUSION

The efficacy of Library and Information Science in the study of homeopathy is evident in its ability to support research, information organization, retrieval, and dissemination. By utilizing LIS principles, methodologies, and resources, researchers and practitioners in homeopathy can benefit from a more systematic and efficient approach to studying this alternative medical system. LIS enhances the availability and accessibility of relevant information, promotes evidence-based practices, and fosters collaboration among researchers. As the field of homeopathy continues to evolve, the integration of LIS will further contribute to its growth, ultimately benefiting healthcare practices and patient outcomes.

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ISSUES OF TRAINING MILITARY PERSONNEL (EMPLOYEES) TO SHOOT AT MOVING TARGETS

ҲАРБИЙ ХИЗМАТЧИ (ХОДИМ)ЛАРНИ ҲАРАКАТДАГИ НИШОНЛАРГА ҚАРАТА ЎҚ ОТИШГА ТАЙЁРЛАШ МАСАЛАЛАРИ

ВОПРОСЫ ОБУЧЕНИЯ ВОЕННОСЛУЖАЩИХ (СЛУЖАЩИХ) СТРЕЛЬБЕ ПО ДВИЖУЩИМСЯ ЦЕЛЯМ

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ANNOTATION

This article investigated and analyzed scientific research on the preparation of military personnel (employees) for shooting. Scientific and theoretical proposals and recommendations for tackling a variety of problems were made based on the findings of the research analysis. The outcomes of real experiments supported these proposals.

KEY WORDS: *military personnel, personnel, shooting, rate of fire, target, moving target.*

Аннотация: Ушбу мақолада ҳарбий хизматчи (ходим)ларни ўқ отишга тайёрлаш масалалари юзасидан олиб борилган илмий изланишлар ўрганилиб таҳлил қилинди. Ўрганишлар таҳлилларига кўра, бир қанча муаммоларнинг ечими сифатида илмий назарий таклиф ва тавсиялар берилди. Ушбу таклифлар амалда тажриба-синов натижалари билан асослантилди.

Калит сўзлар: ҳарбий хизматчи, ходим, ўқ отиш, тезкор ўқ отиш, нишон, ҳаракатланувчи нишон.

Аннотация: В данной статье были изучены и проанализированы научные исследования, проведенные по вопросам подготовки военнослужащих (служащих) к стрельбе. По результатам анализа исследований были даны научно-теоретические предложения и рекомендации по решению ряда проблем. Эти предложения были обоснованы результатами практических экспериментов.

Ключевые слова: военнослужащие, личный состав, стрельба, скорострельность, мишень, движущаяся цель.

Today, great importance is attached to the professional training of military personnel (employees) in the Armed Forces of the developed countries of the world. Especially in combat situations, the skills of military personnel are very important. Training military personnel (personnel) to fire in real combat situations includes several components. These are psychological, physical, tactical, technical, and legal training.

Concerning this topic, Russian academics A.A. Popov, A.A. Rozhkov, and N.V. Zhelezkin [1] established a structural model of employees' readiness to prevent criminal actions using firearms. This model incorporates legal, psychological, tactical, and technical components.



It is important that all elements of this model form a single system. Therefore, the components of the model offered for the training of military personnel (employees) should be developed to a degree of expertise in professional training.

According to the analysis of scientific works dedicated to the study of practical cases of firearm usage by military servicemen (employees) (I.A. Kalinichenko,[2] A.S. Kalinnikov,[3] T.S.Kupavtsev[4], V.G. Lupy[5], S.V.Naumenko[6], A.N.Sadkov[7], A.I.Ushakov[8], E.V.Flusov[9]), the following characteristics of collisions during shooting with offenders have been identified: shooting at a short distance of up to 10 meters is frequent, the rate of fire between opposing sides is highly differentiated, there is no time to aim, and shooting must be combined with leaving the approaching firing line.

Thus, the training of military personnel (employees) in the tactics of using firearms should include:

within a limited time, taking quick aim and shooting by immediately raising the weapon or without aiming (intuitive shooting);

quickly leaving the line of fire approaching (including after moving) and in motion (including from a car);

to stationary, moving, single, or group targets;

different positions in limited visibility conditions

with adjectives ("standing", "kneeling", "lying down");

under the influence of various confounding factors;

shooting with delays in firing when changing the magazine.

Researchers V.Y. Dubrovsky, Y.V. Vetrova, and A. I. Kudinova [10] discussed the possibility of using "duel shooting" exercises by employees of internal affairs bodies in their research work. They also discussed the conditions and procedure of these exercises, as well as the tasks facing the shooter for accurate shooting. They distinguished six stages of movement in the process of performing exercises: 1. Preparation stage; 2. Reaction stage; 3. Acceleration stage; 4. Braking phase; 5. Descent stage; 6. Holding and aiming after the shot and the phase of returning to the initial position.

The previously described stages are carried out sequentially, and the weapon is inserted into the target position in a calm and controlled manner. All of these operations must be carried out accurately and quickly to ensure quick and precise shooting.

The review of scientific studies on the subject of training military personnel (employees) to fire reveals that there are several problematic aspects in this regard. Therefore, the conditions of exercises performed in practical shooting exercises in training military personnel (employees) for shooting should be focused on solving the above problems.

For this purpose, short-range shooting exercises at moving targets in practical shooting exercises will help military personnel (employees) quickly improve their shooting skills and bring their training closer to the real situation. A training shooting exercise was undertaken with a group of military personnel (employees) to test this theoretical concept in practice. The training exercise was organized by current regulations, and the firing time was determined by a gunner's timer.

Results of experiments

Exercise name	The number of cartridges (for each exercise), pcs.	Average time to shoot, seconds
Shooting at fixed targets from short distances. (3,5,7m)	3	4,165
Shooting at moving targets from short distances. (3,5,7m)	3	3,2575

Table 1. The sum of the results obtained from shooting exercises performed under the same conditions on fixed and moving targets

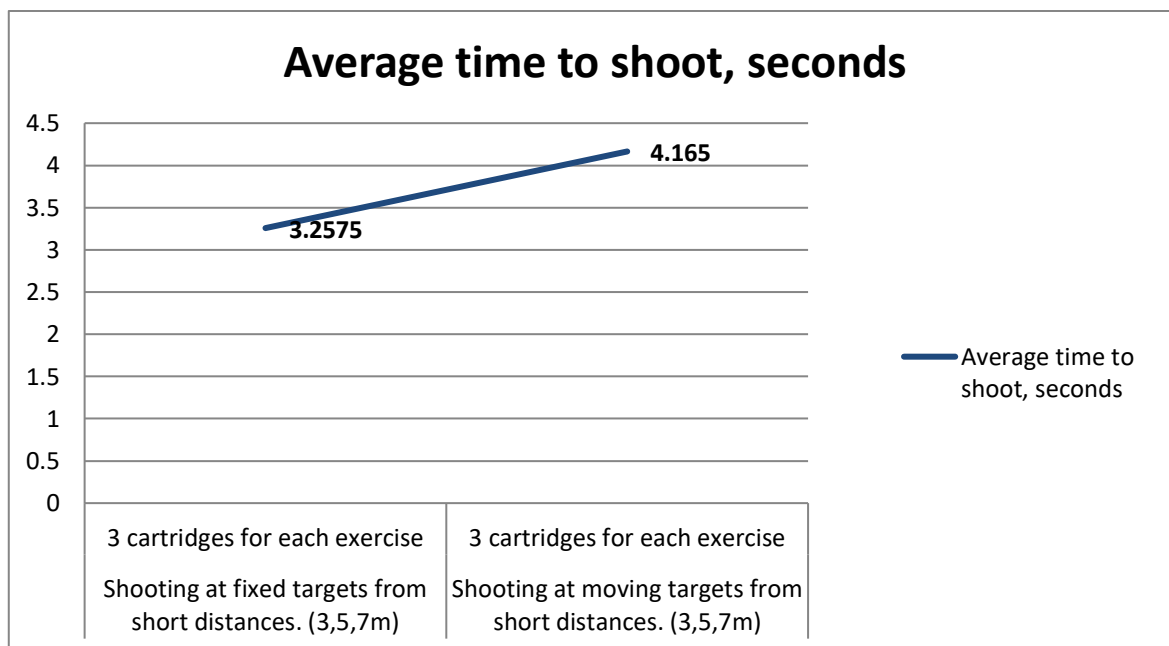


Figure 1. The sum of the results obtained from shooting exercises performed under the same conditions on fixed and moving targets (in graphical form)

According to the experiment's findings, shooters spent an average of 4.165 seconds training with fixed targets and 3.2575 seconds performing identical exercises with moving targets. On moving targets, it can be seen that training time was reduced by about a second (See Figure 1). The exercise did not have a time constraint. This implies that the movement of the target forces the shooter to move quicker.

According to the analysis of the scientific works studied and the results of experimental tests, there are a number of problems for successful shooting in combat situations, for training military personnel (employees) in this direction, and several factors that affect the achievement of good shooting results. More extensive use of "shooting exercises at moving targets" in shooting training can be used as a partial solution to these challenges. Consequently, it is possible to achieve the following outcomes:

- tactical shooting skills of military personnel (employees) will be improved;
- exercises closer to the real situation can be carried out;
- to make quick and correct decisions when facing the enemy will be taught;
- by conducting exercises based on various combat or conflict scenarios, the legal aspects of the use of weapons will be explained.

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IMPACTS OF SPORTS-SPECIFIC DRILLS ON SKILL PERFORMANCE VARIABLES AMONG MALE COLLEGE-LEVEL HANDBALL PLAYERS (A PILOT STUDY)

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ABSTRACT

Handball represents a unique combination of three fundamental athletic disciplines: running, jumping, and throwing. A training program known as sports-specific drills has been designed specifically to enhance athletic performance by targeting skill proficiency. These drills focus on improving game-specific abilities such as throwing accuracy, shooting precision, passing proficiency, as well as overall attributes including speed, power, endurance, flexibility, mobility, and agility. The primary objective of this study was to investigate the impact of sports-specific drills on skill performance variables among male college-level handball players. To accomplish this goal, a sample of five male handball players from CMS college of arts and science in Coimbatore district, aged between 18 and 25 years, was randomly selected. The study adopted a single-group design, where all participants underwent assessment using standardized tests for various skill performance variables. Throwing ability was evaluated using the 9-meter front throw test, shooting accuracy was measured using the one-armed throw test, and passing proficiency was assessed through the overhead pass test. The experimental group, consisting of the five participants, underwent a four-week period of sports-specific drills as part of a pilot study. The results of the study indicated a significant difference in the criterion variables. This difference was attributed to the implementation of sports-specific drills, which led to notable improvements in the throwing ability, shooting accuracy, and passing skills of the male college-level handball players. In summary, the study highlighted the effectiveness of sports-specific drills in enhancing skill performance variables among male college-level handball players. The findings suggest that the targeted training regimen positively influenced throwing ability, shooting accuracy, and passing skills. These results underscore the potential of sports-specific drills to enhance overall performance in handball by improving specific game-related skills.

KEYWORDS: Sports Specific Drills, Throwing Ability, Shooting Accuracy and Passing, and Handball Players.

INTRODUCTION

Handball has become one of the popular sports in the world and is known for its speed. This game is also a part of Olympic Sport. The simple rules of this game, minimal ground and equipment facilities and the speed of game itself along with the scope for players to exhibit their exclusive skills makes it as a popular game among even the schools and educational institutions. An effective handball player needs to possess several physical and mental abilities such as high-speed action, neuro muscular coordination, explosive jumping and hand power with proper aiming at goal. Additional abilities like explosive power of arms and legs, sprint velocity and kinaesthetic feeling in ball control add to the playing efficacy. These physical activities, most crucial for playing Handball, are considered anaerobic mainly because of the speed at which the game is played. In the recent days, a Handball player is required to possess the longitudinal dimensions like stature, arm span, hand span and length. sports specific drills is physical activity designed specifically to increase overall efficiency as an athlete in the sport that choose. An individual could become more physically fit overall and make some progress as an athlete with sports specific drills. In sports, team training refers to a series of physical activities designed to improve a player's physical or motor skills. The training programmed should be particularly created based on the components that are needed for the talent or technique in sport when it comes to players who are at a higher level or above the basic level. Consequently, a player needs this kind of particular sports specific drills for success in sports. Thus, the present study has been carries out to study the effects of sports specific drills skills performance variables of men college level handball players through sports specific drills.

METHODOLOGY

The objective of this study was to examine the impact of sports-specific drills on skill performance variables among male college-level handball players. To accomplish this goal, a sample of five male handball players from CMS college of arts and science in Coimbatore district, aged between 18 and 25 years, would be randomly selected. The study utilized a single-group design, where



participants' skill performance variables were evaluated through standardized tests. Throwing ability was assessed using the 9-meter front throw test, shooting accuracy was measured through the one-armed throw test, and passing proficiency was evaluated using the overhead pass test. A pilot study group consisting of five participants would undergo a four-week period of sports-specific drills. The study aimed to investigate the effects of these drills on the skill performance variables of the college-level handball players.

CRITERION MEASURES

The subjects of sports specific drills pilot study would be assessed on the selected skills performance variables by the standardized test items before and after the training period of four weeks.

Table-I

S.No	Criterion Variables	Test Items	Unit of Measurements
Skill performance variables			
1	Throwing Ability	Zinn Team Handball Skill Battery (1981)	In Points
2	Shooting Accuracy		In Points
3	Passing		In Points

TRAINING PROGRAMME

The sports-specific drills lasted for a total duration of 60 minutes and involved an incremental increase in load for two of the skill performance variables. The training sessions were conducted on three alternative days per week, specifically on Monday, Wednesday, and Friday. Throughout the four-week period of sports-specific drills, the subjects followed a structured routine. Each session began with a 15-minute warm-up period, followed by the implementation of various sports-specific drills.

These drills included activities such as jump shots, running with backwards throws, jump pushes, box jumping, full-court dribbling, dribbling routines, fast break shooting, 7-meter target shooting, deep runs, roll and shoot exercises, and dodge ball throws for a duration of 45 seconds each. Finally, the session concluded with a 10-minute cool-down period to facilitate the subjects' recovery and relaxation.

STATISTICAL TECHNIQUES

To assess the effects of sports-specific drills on the skill performance variables of college-level men handball players, the data were analyzed using paired t-tests. The significance level was set at a confidence level of 0.05, which is considered appropriate for this study. The paired t-test was chosen as the statistical analysis method to compare the pre- and post-intervention measurements and determine whether there were significant changes in the skill performance variables following the implementation of sports-specific drills

RESULTS

Table-II

Relationship of Mean, SD and 't'-Values of Skill Performance Variables between Pre & Post Test of the Sports Specific Drills of Handball Players

	Variables	Test	Mean	S.D	t values
Sports specific drills	Throwing Ability	Pre test	23.00	1.58	10.61*
		Post test	25.60	2.07	
	Shooting Accuracy	Pre test	24.60	2.07	9.79*
		Post test	27.00	2.54	
	Passing	Pre test	27.60	2.07	9.79*
		Post test	30.00	2.54	

*Significant at 0.05 level of confidence

Table-II displays the mean values of the pre-test and post-test scores for the sports-specific drills group. The pre-test and post-test mean values for throwing ability were 23.00 and 25.60, for shooting accuracy were 24.60 and 27.00, and for passing were 27.60 and 30.00, respectively. The corresponding t-ratios were 10.61, 9.79, and 9.79, respectively.

Considering a confidence level of 0.05 and a degree of freedom of 4, the critical t-value from the table is found to be 2.77. Since the obtained t-ratios were greater than the table value, it indicates significant changes in throwing ability, shooting accuracy, and passing of the handball players following the implementation of sports-specific drills.



Figure-1 provides a graphical representation of the mean values for the sports-specific drills group. It visually depicts the improvements observed in throwing ability, shooting accuracy, and passing among the handball players after undergoing the sports specific drills.

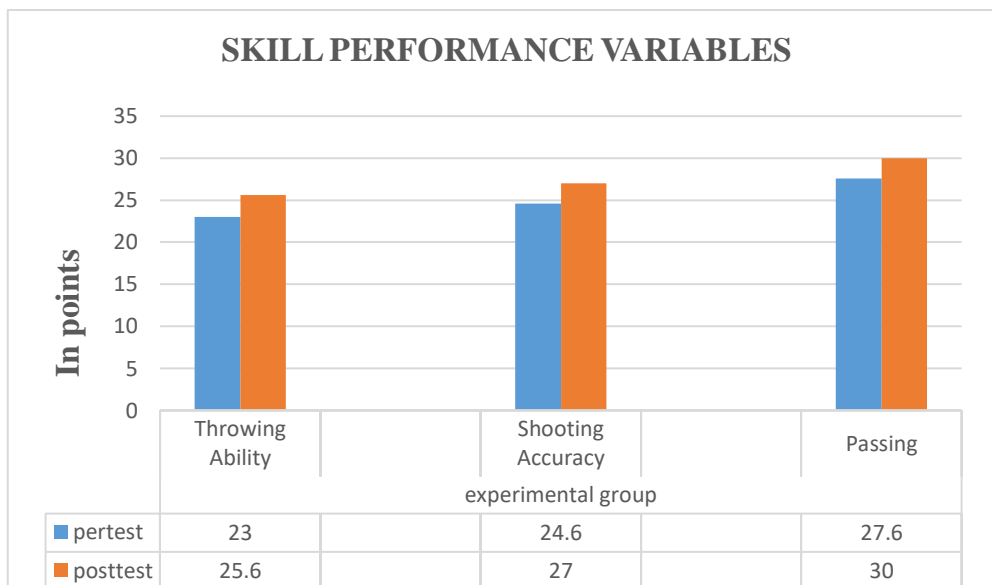


FIGURE-1: BAR DIAGRAM SHOWING THE PRE-TEST & POST-TEST ON SKILL PERFORMANCE VARIABLES OF SPORTS SPECIFIC DRILLS

DISCUSSION ON FINDINGS

Sports-specific drills have proven to be highly beneficial for college-level men handball players. This study aimed to investigate the impact of sports-specific drills on throwing ability, shooting accuracy, and passing among college-level men handball players. The participants were assigned to a sports-specific drills group, where they underwent specific drills targeting these skills. The sports-specific drills not only improved throwing ability, shooting accuracy, and passing, but also enhanced other aspects such as game tactics, anaerobic capacity, quickness, and eye-hand coordination. Additionally, the drills contributed to improvements in various physical fitness components, including speed, agility, and power.

The results of the study demonstrated a significant positive effect of the sports-specific drills on throwing ability, shooting accuracy, and passing among college-level men handball players. These findings align with previous studies conducted by **Hermassi et al. (2019)** and **Luteberget et al. (2018)**, further supporting the effectiveness of sports-specific drills in improving handball performance.

Overall, the study underscores the value of incorporating sports-specific drills into training programs for college-level men handball players, as these drills can lead to notable enhancements in throwing ability, shooting accuracy, and passing skills.

CONCLUSIONS

The study findings indicate that the practice of sports-specific drills had a positive impact on improving the throwing ability, shooting accuracy, and passing ability of college-level men handball players. Additionally, it was observed that there was a progressive improvement in these selected criterion variables among the sports-specific drills group over the course of the four-week training program.

The results suggest that the individualized effects of the sports-specific drills group were statistically significant, indicating a positive and significant improvement in throwing ability, shooting accuracy, and passing among college-level men handball players. However, it is important to consider the limitations of the study when interpreting these findings.

In conclusion, the study highlights the effectiveness of sports-specific drills in enhancing the performance of college-level men handball players, specifically in terms of throwing ability, shooting accuracy, and passing. These findings contribute to the understanding of the potential benefits of incorporating targeted drills into training programs to improve specific skills in handball.



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THE EDUCATION AND THE SOCIAL EMPOWERMENT OF RURAL WOMEN IN INDIA

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ABSTRACT

The education empowerment of women is providing education and the social development of the women from their early ages to the higher education, which can lead to overall development of the family in political, economic and social development of the women and the family, we have seen some positive literacy rate in Indian state by increase in the literacy rate, but when we compare India's literacy rate with the western nations, there is lot of social changes has to be done from the school years, some old religious beliefs and the traditional customs are still causing constraints for women to get free education, especially in the northeast region, tribal population and the depressed, dalit classes are still far to reach the expected results., especially the rural girl children. Education awareness can be done in this was a little structure in India as various forms and where is performed has been done by the previous, but due to lack of implementation and lack of flexibility in the various states in the country India still depending on old schemes and policies, without proper social and scientific measures to overcome the education obstacles, India is one of the most populated countries in the world after China but due to lack of implementation of various education schemes, even the change of the governments, will affect the change in the old policies and the rules. Women's empowerment is very essential for the growth and the social development of the nation, to achieve gender equality in social, political and the economic progress in the state. The research paper explains the various schemes by the government for women (rural women) and the obstacles for the the schemes.

KEY WORDS: Dalit Rural Education, Rural women education, social development schemes.

INTRODUCTION

Education is one aspect of socialization by which behaviors, essential for effective participation by state, society, are acquired by members of the society, part of this learning is done in an informal atmosphere, at home within the family structure, neighborhood or peer group learning is also formally done in schools, colleges and universities, which are formal institutions of education. For improvement of education in India, expression in rural India, India needs lot of investment, investment especially in digital investment for providing education for rural India and for scheduled caste and scheduled tribe, some of the hilly states, union territories in India still lag from internet connectivity, and the plans of various education schemes for farmers for girl children in India but due to lack of implementation in several states in India, Learning affects personality. Providing basic education facility to the girl child can change the social structure and the progress of the nation.

Schemes for the rural people for increase in Literacy rate:

- The Sarva Siksha Abhiyan is an initiative of 2001, and to date around 83 amendments have already been made under this scheme. The Sarva Siksha Abhiyan (SSA) was the GOI of the very first initiative in India; this program was launched to provide free studies in a time bound manner.
- The preamble states that gender equality is a fundamental principle, and women's equality is a fundamental right. The state is required by the constitution
- Its core responsibility and to give clear direction through well-thought-out policies and guidelines. But among the other difficulties they encounter—many of which are made worse by financing, proper educational infrastructure, hospitality. Given the significant proportion of women working in agriculture around the world, improving rural female literacy is essential for the welfare of people, as well as for overall economic production.



Major issues for improving schooling to weaker sections of the society

- **Early Marriage:** rural India has witnessed millions of girls' marriages at early age. In rural India, girls are regarded other's wealth so girls are denied get much value from their parents and society as compared to boys, families in rural India who do not follow the government's rule regarding the appropriate age of marriage.
- **Unsafe Environment:** The violence against girls has now become a grave problem in different parts, in the present decade; we have seen a number of cases related to violence against girls in the state. Such issue is not the violation of human rights but also it plays a big role in denying girls' education. Almost every day we hear and read in newspapers about hundreds of cases against girls. Such frequent incidents show that to what extent our environment has become unsafe for girls.
- **Lack of Toilet Facility:** many schools even in today's time do not have separate toilet facilities. It has been noticed that girls do not feel comfortable in schools due to lack of girls' toilet facilities. Menstruation is the natural process of a girl's monthly cycle that may start anywhere at any point of time. When a girl gets her menstruation at school so in this tough situation, everyone expects that there should be a separate girl's toilet or bathroom facilities. This is the hard reality that many schools situated in villages either do not have toilet facilities or do have so dirty toilets. Many girls do not go to schools because of lack of water and hygiene facilities, many schools situated in remote places, villages still have only mixed toilets and girls feel uncomfortable to use it due to lack of privacy and comfort.

FINDINGS

- In this background, Beti Bachao Beti Padhao (BBBP) Scheme was launched by the Hon'ble Prime Minister on 22nd January, 2015 in Panipat, Haryana to address the issue of decline in CSR and related issues of empowerment of girls and women over a life.
- India has not improved to provide equality in education in rural and for rural women.
- Lack of implementation of the schemes in India is the major constraint for giving education for rural and for poor women in India

CONCLUSION

Many schemes has been launched in India, but due to political and economic pressure and changes in the government, has made many schemes in India to wait and watch, like wasting the resources in the country, India needs to change its policy and schemes in the world, but some schemes are in progress, but the supply. Some traditional and the social living style has to be improved to give education for the female counterparts for improving in the society, for the overall development of the human nature with good schooling and the education.

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ELEMENTS OF IMPULSIVE BUYING BEHAVIOUR IN POST MILLENNIAL

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ABSTRACT

Consumer Behaviour has been a concept existent for a long time and it is important for marketers to comprehend the buying behaviour of consumers while making purchases, so that strategies can be formulated appropriately, their needs, preferences & motives can be understood and catered to appropriately. There are various kinds of consumers, each possessing differing characteristics because of which a study needs to be undertaken to understand that. With the help of this research report, the concept of impulsive buying behaviour will be evaluated i.e. the purchases that take place on the spot/spontaneously without prior research or consideration. Traditionally, a buying process was followed in which a systematic purchase procedure having a methodological approach was followed, but, with time there have been changes in this and consumers have started making impulsive purchases as well especially when it comes to the current generation that is Post millennial. Although it is evident that all kind of products aren't purchased impulsively, but there are certain products for which it does take place quite extensively. This will be studied in detail along with the various factors impacting impulsive purchases. Factors can include Demographic, Social, Cultural, Psychological, etc. and besides that, certain influences also exist such as friends, family, social media, celebrities, discounts, individual choices etc. Along with this, the research will help in gaining an insight regarding the satisfaction of consumers after making decisions impulsively.

KEYWORDS: Impulsive Buying, Buying Behaviour, Consumer Buying, Purchases Factors

INTRODUCTION

Impulsive buying refers to the kind of purchases that take place without prior consideration or the intention to purchase certain products. It is referred to as a spontaneous action which occurs at the spur of the moment & is undertaken by consumers owing to several factors that influence it, such as friends or family, social media, personal desires, price, offers, advertisements etc. Post millennials is the target audience whose impulsive buying will be studied with the help of this research. Impulsive buying is observed for various products like chocolates, apparel, jewellery, electronics and several others. It is unplanned and often based on irrational thinking of individuals. As marketers, there is a huge scope in this aspect in order to increase the sales because of the likelihood of customers to purchase something without the actual intent to.

As a part of Impulsive Buying, there can be largely two kind of factors that come into consideration which include the following:

- Consonant based factors- This refers to the degree of stability of a product or service. It illustrates the fact that the Impulsive purchases made by an individual are in line with their desires, financial situations and inner feelings or characteristics.
- Dissonance based factors- These factors are the ones having a desire to resolve something i.e. wherein a person tries to control the urge they have to buy a product or service the main reason being that they feel it might negatively impact them or the satisfaction.

With time, there have been several changes taking place in terms of consumer behaviour, and one among these is the decision making/ buying process along with the purchase intention. Consumers have started making purchases on the spot i.e. impulsively. Based on a study conducted by Master et al. in 2020, they have concluded that Impulsive buying can be understood in the form of certain



perspectives including: (1) Rationality, (2) Emotions, (3) Cognition, (4) Communication & persuasion (5) Advertisements. There are several factors that exert an influence on the Impulsive Buying behavior of consumers consisting of the following:-

- 1) **INTERNAL FACTORS**- These refer to factors that exist within an individual i.e. internal cues and lead to a considerable influence on the Consumer behaviour.
 - Consumer Emotions- They play an important role in influencing the buying decisions of consumers in various ways. For instance, if a consumer possesses feelings of excitement, trust it will lead to a positive behaviour whereas, on the other hand, negative emotions like anger, disappointment or so, tend to discourage consumers from making purchases.
 - Consumer Motivation- Motivation refers to a force that drives individuals to do a particular thing. Motivation can arise from various factors such as, personal needs, values, desires, goals etc. When a consumer is motivated, he/she would extensively seek out for information, evaluate alternatives, and make purchases based on what they feel will satisfy them the most.
 - Consumer Personality- Different individuals have different kinds of personalities and varying traits like extraversion, openness, introversion, etc this influences how a consumer perceives a product or makes decisions regarding it. Their preferences, attitudes and buying intention can be significantly influenced by their personality traits.
 - Consumer Perceptions- A consumers perception regarding a product or service influences whether or not they will go ahead with making an impulsive purchase. Some factors include, perceived value of a product or a service, perceived quality, as well as the benefits that will be attained through owning it.
 - Consumer Attitudes- Attitudes refer to the predispositions that consumers have towards a product or a service. It influences their willingness to make a purchase. Their attitudes can be either favourable or unfavourable. Some individuals have an attitude of favouritism towards a brand, sometimes towards a product and even towards taking risks or saving money.
 - Values & Beliefs- Beliefs refer to how consumers see the world and interpret information regarding it. A consumer might have certain beliefs about a product i.e. whether or not something will be able to satisfy their needs or wants. They also have beliefs about brands and consequences of making purchases in such a manner, each of which will impact their decisions related to impulsive buying.
- 2) **EXTERNAL FACTORS**- i.e. those beyond the direct control of an individual and exist in their immediate or social environment leading to a certain degree of influence on their behaviour. They involve stimuli that lure consumers to purchase certain products.
 - Visual merchandising- This refers to creation of a visual appeal so as to lure the customers into making impulsive purchases. It attracts the consumers attention, creates a connect, makes the need seem urgent, stimulates senses due to the attention that is captured and this is another factor impacting impulsive buying behaviour of consumers.
 - Consumer Promotions (discounts, offers, coupons)- Promotions are quite beneficial when it comes to attracting consumers. Even if they do not actually need a product, when they are provided with discounts, they tend to make a purchase quite spontaneously without thinking of the actual needs or even evaluating its requirements or benefits.
 - In store shopping environment- At times, the environment in a store is created in such a manner that the consumers are attracted to it the way products are displayed and demonstrated so, the ambience tends to influence consumers in making impulsive purchases.
 - Family & friends- Family and friends are among the primary reference groups for an individual. When we want any kind of information, they are the first ones we resort to. Thus, based on the influence or suggestion of a consumer's family or friends, they tend to make an impulsive purchase.
 - Social media/celebrities- Celebrities are individuals who people consider as role models and often look up to them. If they recommend or promote product consumers are likely to associate it with them and go ahead with an impulsive purchase due to the same.
- 3) **SITUATIONAL & PRODUCT RELATED FACTORS**
 - Store location- Based on the location/ proximity of a store, the buying decisions of a consumer can be impacted to a considerable extent.
 - Time of shopping- People tend to shop at various times of the day. It could be during the morning, afternoon, evening and night as well. Their emotions, and state of mind at a particular point of time might vary quite significantly when compared to another therefore this also impacts their impulsive or spontaneous decision making.



- Seasons- Individuals needs in varying seasons are quite different from each other. Depending upon that, their tendency to buy impulsively also varies and differs.
- Shopping habits- Consumers possess differing characteristics and their shopping habits considerably vary from each other. Some consumers shop a specific brand on a regular basis, while some look for variety in their purchases, certain consumers also shop to satisfy themselves and try to make them believe that the purchase made has been worthwhile. So, depending upon the habits of the consumers, their decisions related to making impulsive/spontaneous purchases will be impacted.
- Product & features- A major contributor to the impulsive buying behaviour of consumers is often the product itself. Based on how consumers perceive the product, whether or not it is considered to be valuable to them, they tend to make decisions. The features of the product should be attractive and must serve some purpose, accordingly they may proceed with making impulsive decisions related to the specific product.

4) **DEMOGRAPHICS & SOCIO-CULTURAL FACTORS** like:

- Gender- It is quite evident that based on gender, individuals needs and preferences vary quite significantly. Prior studies show that, women are more likely to engage with impulsive buying as compared to men, they show their emotions freely and have certain roles and statuses in the society, so, gender also plays a significant role in influencing impulsive buying decisions of consumers.
- Age- Various prior researches suggest that age has a significant impact on the impulsive buying behaviour of consumers. Younger consumers tend to be more impulsive and make spontaneous decisions whereas older people are more rational while making their purchase decisions.
- Disposable income- Income can impact an individual's buying habits in various ways. Disposable income to be specific, refers to the income of an individuals which they are willing to spend after the basic needs have been fulfilled. It impacts impulsive buying as those individuals having a higher disposable income are more likely to engage in more impulsive buying behaviour and are less worried regarding budget constraints. Whereas, on the other hand, people with a low income might engage in impulsive buying in a way such that their desires can be met through products that they cannot otherwise afford.
- Store employees- Employees exert a considerable degree of influence when it comes to an individuals buying decisions. They provide product recommendations, help in cross selling and at the same time, and exercise a degree of social influence which impacts impulsive buying behaviour and decisions of consumers.
- Other customers- At a store, when we see other individuals buying a certain product we might be intrigued to try and purchase it as well, this often results in impulsive behaviour of consumers.

As explained above, consumers impulsive buying decisions are significantly impacted by various factors. It is not necessary for each of the factors to co-exist at a given point of time. It could randomly be prevalent based on circumstances or specific situations and can impact a consumer or his/her Impulsive purchase decisions.

TYPES OF IMPULSIVE BUYING BEHAVIOUR

- 1) Pure impulse buying: In this, a certain type of product is often positioned close to the checkout counters in stores; this encourages emotional impulse buying. These goods could be wrapped or packaged in a welcoming manner. Despite the fact that the purchase would go against their usual purchasing habits, people behave very emotionally and make the purchase. In other words, a standard impulse purchase.
- 2) Reminded impulse buying: Reminder-based impulse purchases are the next category of these purchases. In it, the customer didn't want to purchase the product, but the way it was displayed and presented in the store, whether online or offline, made them want to actually end up buying it.
- 3) Suggestion or fashion-oriented impulse buying: At times, one might see a product displayed on a counter and compare it to another one, then at the back of our mind, we as a buyer tend to justify our need to purchase the product. Even though they purchase it without the actual need to, this justification on their behalf inspires them to make the purchase and prove to them that the decision is driven by logic as compared to their Emotions.
- 4) Planned impulse buying: The fourth category of Impulsive purchases is what is referred to as planned impulse buying. In this, Low prices or offers in product offerings are factors that serve as a trigger for this kind of buying. In this again, the buyer might end up purchasing something that they might or might not need.



RESEARCH OBJECTIVES

- To understand the kind of products for which impulsive buying takes place
- To study the various factors that impact impulsive buying
- To determine the satisfaction of consumers after making impulsive purchases

LITERATURE REVIEW

Jelena Franjković et al. (2022) With time, the habits of consumers have been changing and to meet their needs and expectations, store environment plays a crucial role in influencing consumer buying. A few of the factors that form a part of store environment include visual merchandising, in store layout, display, organization, graphics etc. It can be concluded that, even price, promotional tools are a few of the strongest tools to increase Impulsive buying. ChandanParsad, Mukesh Kumar (2021) Their study shows how mood and consumers emotions play a pivotal role in determining the buying behaviour of consumers. It focuses on how promotions also have an impact on the individuals' choices. They concluded that mood regulation, shopping values are though provoking and impact the Impulsive Buying Behaviour of consumers across various occupations, age as well as income groups. Malter et. al (2020) As per their research, Impulsive Buying is studied from various perspectives such as rationality of processes, emotional sources, cognitive influences arising due to various social factors, communication and advertising as well.

ShipraMathur (2019) Based on the study, she has categorised the factors influencing Impulsive buying into two broad types i.e. Intrinsic & Extrinsic factors. A few of the intrinsic ones being: A consumers mood, their emotions, seeking experiences, enjoyment while shopping, gender, personality, self-esteem, materialism, etc and Extrinsic ones including: the ease of shopping, individual needs, advertisements, shelf life of the product, display of the products, culture, overall store environment, in store browsing, situation based factors, social influences.

Elizabeth Chinomona, Mosidi Elizabeth Montso (2019) With the help of their study, they have identified several factors that influence Impulsive buying behaviour consisting of gender, age, materialism, psychological factors, besides these, need for uniqueness, price of products and services, past experiences also considerably Influence Impulsive buying behaviour. Since impulsive purchases take place on the spur of the moment those shoppers who always make purchases with the help of a shopping list may not engage in impulsive purchases.

Abhishek Pandey, Krishna Kant Bharti (2019) Impulsive Buying refers to a decision which has not been planned for and takes place in the spot. It is undertaken not because consumers need the product/service but because they feel the urge to purchase it at that moment. There are several sources and factors that impact this kind of behaviour to be portrayed by consumers consisting of: External Stimuli and the environment of the store, Internal stimuli like the motivation, personality of an individual, etc, Situational and Product related factors such as the location, time of shopping, type and category of the product, etc.

Dr. Satinder Kumar, Ms. Arshveer Kaur (2018) Impulsive buying behaviour refers to a sudden desire of consumers to make purchases. Several factors have an impact on Impulsive buying and the extent varies from consumer to consumer. A few among them are personal consumers behaviour, situational factors, promotions, friend groups, etc. This impulsive behaviour that is possessed by consumers can be properly studied and then worked upon in order to make it work well in favour of the organisation and satisfying the customers at the same time.

Laura Aragoncillo and Carlos Orús (2017) With the study undertaken by them, it can be understood that, Impulsive buying exerts a considerable influence on the Consumer buying behaviour, as per them, Social media serves as one of the sources that impacts the Impulsive decisions made by consumers. Besides that a factor like store environment also exerts a certain degree of influence on Impulsive behaviour by sensory stimulation.

Dr. S. Vasanthi, Ms. M. Sumetha (2016) their study concludes that several factors impact consumer buying behaviour consisting of consumers psychology, demographic, socio-cultural, situational factors. Even internal and external stimuli impact their decisions. Impulsive buying has its own drawbacks too & certain people tend to hesitate while making impulsive decisions as there is a possibility that they might regret their decisions post making the purchase. Certain consumers also find pleasure in impulsive buying



as it is relished and become a habit for many consumers. This reflects consumers capacity of making decisions at the spur of the moment.

KhagendraNathGangai, Rachna Agrawal (2016) personality is said to be one of the key factors impacting consumer behaviour and through their study they aimed at understanding the extent and scope of the impact. They concluded that involvement with products, hedonic experiences and impulsive buying along with store environment, gender, and personality traits play a significant role in influencing impulsive behaviour.

Vidha Pradhan (2016) Her research helped in understanding several factors that trigger Impulsive buying behaviour a few of which are cash flow availability, consumers mood, price of products, layout of the store, product and it's promotion, the overall environment of the store and their reference groups consisting of family, friends, other references. The study showed that not all factors are equally applicable to all consumers however at large, these form a majority of the influences. It can be concluded that some products are bought impulsively like personal care products, grocery and accessories. It is also important for marketers to understand this behaviour possessed by these consumers so that strategies can be formulated accordingly so as to maximize the benefits in their favour.

Luniya P and Verghese. M. (2015) With the help of their study, it can be understood that there are various determinants of impulsive consumer behaviour involving: Demographic factors i.e. age, gender, income, occupation, etc, Environmental factors like Merchandising, In-store promotions, other atmospheric factors like lighting, ambience, music, Individual determinants like mood, emotions, values, culture, beliefs, self image, etc. and not to forget, the Product itself, it's price and how well it has been promoted, communicated and informed to the consumers.

AnantJyoti et al. (2014), INTRINSIC FACTORS AFFECTING IMPULSIVE BUYING BEHAVIOUR—EVIDENCE FROM INDIA; their study aimed at examining certain factors that impact impulsive buying behaviour of consumers & concluded that, personality traits like extraversion, conscientiousness etc along with an individual's culture are some of the variables that influence Impulsive buying behaviour. It also showed that Impulsive buying behaviour does not vary with one's gender, rather is similar for both.

Clinton Amos, William C.Kenson (2014), The study shows that there are certain variables such as disposition, situations and socio-demographic factors that impact impulsive buying behaviour of consumers. It has been observed that situational factors have the strongest relationship with impulsive buying and situational factors involve buyer's mood, physical surroundings including atmospherics, time and social factors.

Parmar Vishnu and Ahmed Rizwan Raheem (2013) Through their study, they concluded that consumers are most likely to make impulsive purchases in situations when products are offered at discounts or are provided free of cost. Among the various factors that influence impulsive buying, visual merchandising plays a significant role as, a well arranged, decorated and aesthetically pleasing environment is likely to motivate the consumers to make purchases impulsively.

G. Muruganatham& Ravi Shankar Bhakat (2013) Impulsive buying has a huge contribution to sales in general, there are different factors that lead to impulsive buying like culture, income, lifestyle, physical environment of the store, reference groups, store locations, gender, age, discounts and promotions offered. Impulsive buying being a universal concept, it can be used by businesses in order to benefit them, proper strategies can be formulated through proper analysis of this type of consumer behaviour.

RESEARCH METHODOLOGY

The data collected will be Primary in nature, i.e. it will be gathered using a questionnaire formulated on Google Forms and sent to the target audience. The Quantitative responses will be interpreted and converted into Qualitative ones, for better understanding.

Research Design:The research design will be a combination of descriptive as well as causal. Descriptive research will help in understanding various aspects like what is impulsive buying, why it takes place etc and Causal research design will help in determining the causes i.e. the factors influencing impulsive buying behaviour along with the effect it has on the consumers satisfaction.

Data Collection Tool: Questionnaire formulated with the help of Google Forms **Sample size:** 80 respondents



Sampling Technique: The Sampling Technique that is used is Probability Sampling i.e. Simple Random Sampling wherein, any individual can be picked, with each of them having an equal probability to be selected as a part of the sample being studied.

Target Audience: Post millennials consumers i.e. those individuals who are born between the years 1997 to 2012 i.e. the ones who are currently in the age range of 12-27years will be targeted.

Data Interpretation & Analysis: The data interpretation will be done in a percentage form based on the responses collected and an analysis will be undertaken. The tool that will be used, in order to test the hypothesis is Chi Square Test, which is a non- parametric test.

Secondary Data: In terms of secondary data, in order to gather the necessary and relevant information about impulsive buying behaviour of post millennials consumers, certain secondary sources such as Google Scholar, Journals, Articles, Websites and Books will be used.

HYPOTHESIS TESTING

H0= Post millennials consumers are not satisfied after making impulsive buying decisions

DATA ANALYSIS

Chi- square test is one of the simplest, most widely used & reliable Non-parametric test. It is represented by the symbol χ^2 which is a Greek symbol. In it, there is a set of Observed and Expected data in which the magnitude of discrepancy is studied in order to test the hypothesis.

Taking the level of significance as 5 percent for the hypothesis

Options	Females	Males	TOTAL
1: Not at all Satisfied	1	1	2
2: Somewhere Unsatisfied	1	1	2
3: Neutral	27	11	38
4: Somewhat Satisfied	21	9	30
5: Extremely Satisfied	4	4	8
TOTAL	54	26	80

Table 1

The observed values can be understood as-

Count of Satisfaction Level	Column Labels					Grand Total
	Extremely satisfied	Neutral	Not at all satisfied	Somewhat dissatisfied	Somewhat satisfied	
Row Labels						
Female	4	27	1	1	21	54
Male	4	11	1	1	9	26
Grand Total	8	38	2	2	30	80

Table 2

While, the Expected values are as follows based on calculations

Count of satisfaction level	Column labels					Grand total
	Extremely satisfied	Neutral	Not at all satisfied	Somewhat dissatisfied	Somewhat satisfied	
Row Labels						
Female	5.4	25.65	1.35	1.35	20.25	54
Male	2.6	12.36	0.65	0.65	9.75	26
Grand total	8	38	2	2	30	80



Expected frequency= Row total× Column total/ Grand Total

Table 3

$\chi^2 = (\text{Observed} - \text{Expected Value})^2 / \text{Expected value}$

Calculated value of Chi Square= 0.739565034

Degree of freedom = (r-1)× (c-1)

Number of Rows= 2 so, 2-1= 1 and number of columns= 5 so, 5-1= 4

Therefore, 1×4= 4 Degree of freedom

Level of significance= 5%

Table value= 9.49

Since, the table value is greater than the expected value i.e. 9.49 (Table Value) > 0.73 (Calculated Value), the Hypothesis H₀ is accepted

This indicates that Post millennials consumers are not satisfied after making impulsive purchases which holds true based on the hypothesis testing performed with the help of Chi- square test.

FINDINGS

73.8% Post millennials consumers who answered the survey and engage in Impulsive Buying are between the age range of 20-23 years. 96.3% of the consumers have made Impulsive/Spontaneous purchases. The products for which majority of the Impulsive purchases take place consist of- Food & Beverages leading with 63.7%, followed by Apparel i.e. Shoes & Clothing with 61.3% and then Beauty and Personal Care products contributing to 47.5%. The products having the least impulsive buying among the respondents are, Electronics i.e. Gadgets & Devices, Accessories/Jewellery. The Factors that influence Post millennials buyers impulsive buying decisions involve: Personal interests and desires contributing to 68.8%, along with Promotions and Discounts provided contributing to 48.8% and then Influence/recommendations of Family and Friends i.e. 42.5%. The two factors that contribute the least in Influencing Impulsive Buying of Post millennials consumers are Store Employees i.e. 8.8% and Word of mouth i.e. 13.8%. For 87.5% of the consumer, Price does impact the Impulsive Buying decisions of the Post millennials Consumers while for 12.5% there is little or no impact due to price. Based on the responses regarding the price range for which Post millennials consumers make impulsive purchases, it can be understood that generally, 53.8% of them make Impulsive decisions for products of a lower value i.e. for products below the price range of 2000₹. While 26.3% of them also make spontaneous purchases for products ranged between 2001-5000₹ as well.

If the consumers are provided with more discounts for a product, 61.3% of them might go ahead with buying it even if they didn't initially intend to buy it. While, 26.3% of them will definitely go ahead with the Impulsive purchase when given more discounts. Of the consumers who took the survey, it can be understood that 50% of the consumers consider themselves to be Neutral buyers i.e. neither too spontaneous nor too well planned while 28.7% feel that they are somewhat planned and on the other hand, 12.5% among them feel that they are somewhat unplanned.

On a scale of 1-5, the extent to which the consumers purchases have been favourable with regards to impulsive purchases are: 60% of them have been neutral i.e. neither too favourable nor too unfavourable, while for 22.5% the Impulsive Buying experience have been somewhat favourable and for 10% the experiences have been somewhat unfavourable. 51.2% consumers might still continue to make purchases in an unplanned manner, based on the situations they have to deal with and 30% will certainly go ahead with making such purchases. The major reasons contributing to the continuity of impulsive purchases consist of the discounts and offers provided i.e. 66.30% consumers feel this way, along with Visual Appeal and Presentation of the products that is 48.8% and Personal experiences with regards to impulsive buying i.e. 42.5%. While 1.3% of the respondents would not like to continue making impulsive purchases. To determine the satisfaction of consumers after making impulsive purchases, the responses revealed that, 47.5% Post millennials consumers were neutral regarding their satisfaction while 37.5% were somewhat satisfied, 10% were extremely satisfied whereas, 2.5% were not at all satisfied with it. 58.75% Consumers have regretted making impulsive purchases while, 41.25% consumers have not regretted making these spontaneous or impulsive purchases.

CONCLUSION

The Impulsive Buying Behaviour of Post millennials consumers is influenced by a variety of factors such as, individual characteristics or internal factors like motivation, perception, personality, emotions and attitude, along with situational factors like the location, time



of shopping, their buying habits and products plus its features. There are several external as well as social and demographic factors like recommendations, store employees, visual merchandising etc.

The buying decisions of Post millennials Consumers are impacted by several sources such as advertisements, product display and presentation, recommendations of friends and family, discounts and promotional offers, store employees, social media and celebrity endorsements/recommendations and the desire to keep up with the trends in the market. The study also showed the level of satisfaction of consumers after making such purchases. Wherein, most customers were either neutral i.e. neither too satisfied nor too dissatisfied & a few among them were somewhat satisfied after making such purchases. Most of the products bought through such impulsive buying decisions consist of food & beverages, apparel and beauty/personal care products.

In order to conduct future studies regarding this topic, the extent of influence of the various factors can be studied along with various ways of managing the same. Through better understanding of the impulsive buying behaviour of post millennials consumers, more informed and responsible buying can take place leading to a better satisfaction level of consumers.

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EFFICIENT BRAIN TUMOR SEGMENTATION USING LIGHTWEIGHT PSEUDO-3D UNET++ MODEL

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ABSTRACT

Accurate Brain tumor segmentation from magnetic resonance images (MRIs) is of paramount importance for clinical treatment decisions and surgical planning. Recent advancements have shown promising results in deep convolutional networks for this task. Often rely state-of-the-art models on computationally expensive 3D convolutions and complex ensemble strategies, which pose challenges in terms of computational overhead and system complexity. Additionally, resource constraints necessitate the pursuit of high accuracy within limited computational budgets. In this research, we propose a novel methodology to address the challenges in brain tumor segmentation using the 3D UNet++. This model is a lightweight and efficient pseudo-3D model designed to segment 3D volumetric images in a single pass. 3D UNet++ model builds upon the popular U-Net architecture by incorporating 3D convolutional layers to capture spatial information. It achieves efficient segmentation by performing computations in a single pass, making it suitable for real-time applications. Based on the U-Net architecture, 3D UNet++ enhances the representation capabilities by utilizing dense skip connections and nested U-Net architectures. It efficiently captures spatial information in a hierarchical manner, improving the segmentation accuracy of volumetric images. To evaluate the efficacy of our methodology, we shown extensive experiments on the BraTS 2018 dataset, a widely recognized benchmark for brain tumor segmentation. Performance metrics, such as Dice similarity coefficient (DSC) and sensitivity, were employed to assess the robustness and accuracy of our proposed method.

KEYWORDS: Brain tumor segmentation, BraTS, 3D UNet++, Deep convolutional network.

1. INTRODUCTION

Accurate segmentation of brain tumors from magnetic resonance images (MRIs) plays a crucial role in clinical treatment decisions and surgical planning [1]. The ability to precisely identify and delineate tumor regions assists medical professionals in determining appropriate treatment strategies and monitoring disease progression [2,3]. In current years, particularly the use of deep convolutional networks advancements in deep learning techniques have shown great promise in achieving accurate segmentation results for this task.

However, state-of-the-art models often employ computationally expensive 3D convolutions and complex ensemble strategies, which bring about challenges in terms of computational overhead and system complexity [4]. These resource-intensive approaches require substantial computational resources and may not be feasible within limited computational budgets or in resource-constrained clinical settings [5]. Therefore, there is a growing need to develop accurate brain tumor segmentation models that can achieve high performance while operating within practical computational constraints.

The architecture of 3D UNet++ model for Brain tumor segmentation makes several significant contributions:

- Proposing a lightweight and efficient pseudo-3D UNet++ model capable of segmenting 3D volumetric brain tumor images in a single pass. This addresses the computational overhead and complexity challenges associated.
- Enabling real-time segmentation of brain tumor due to the model's computational efficiency, making it suitable for practical clinical applications.

The paper consists of five sections. Section 2 reviews existing brain tumor segmentation methods, highlighting their strengths and limitations, and justifying the need for the proposed efficient lightweight pseudo-3D UNet++ model. Section 3 describes the architecture of the model, incorporating 3D convolutions, dense skip connections, and nested U-Net structures for efficient brain tumor segmentation. Section 4 presents a comparative analysis, evaluating the proposed model's performance against existing methods using metrics like DSC, sensitivity, and specificity. Section 5 summarizes key findings, emphasizes the importance of accurate brain tumor segmentation, discusses how the model addresses computational challenges, and suggests potential future work for further improvements.



2. RELATED WORKS

Some of the papers based on the brain tumor segmentation are reviewed below,

In their work, Isensee *et al.* [6] utilized the nnU-Net architecture for BraTS 2020 segmentation, making BraTS-specific modifications, including postprocessing, region-based training, and more aggressive techniques, to notably improve segmentation performance beyond the baseline configuration.

Wang *et al.* [7] explored TransBTS, a novel network applying Transformer in 3D CNN for MRI brain tumor segmentation. The encoder-decoder structure combined 3D CNN and Transformer for global feature modeling, utilizing data augmentation and minor adjustments to the nnU-Net pipeline.

Huang *et al.* [8] combined Dempster-Shafer theory and deep learning, proposing a semi-supervised algorithm that utilized image transformation and probabilistic/evidential neural networks in parallel to enhance brain tumor segmentation by fusing multiple sources of evidence and addressing limited labeled data challenges.

Vijay *et al.* [9] proposed the SPP-U-Net was introduced, replacing residual connections with a combination of Spatial Pyramid Pooling (SPP) and Attention blocks, expanding reconstruction scope and incorporating local and global context for brain tumor segmentation, without heavy approaches like nested and dense skip connections and transformers used in existing literature.

Fang and Wang [10] proposed an integrated block and aggregation connection for efficient and accurate tumor structure segmentation by incorporating mask images to enhance spatial relationships and using a multi-scale convolution kernel to extract local tumor information, preserving geometric spatial relationships and implicitly integrating context information.

Mei *et al.* [11] demonstrated the significant improvement in discriminative power of image segmentation models through the identification of partial common information. Specifically, they introduced a novel concept called the partial common information mask (PCI-mask), which provided a detailed characterization of the shared partial common information among subsets of modalities. This module selectively weighted different feature representations in multi-modal data, leveraging the identified partial common information to enhance segmentation performance.

Balamurugan and Gnanamanoharan [12] proposed a hybrid DCNN classifier, enhancing the LuNet algorithm, to identify tumor areas and classify brain tumors as benign or malignant, utilizing GLCM, VGG16, and LOG for feature extraction and pretreatment to improve non-deep learning classifiers' performance.

Ramasamy *et al.* [13] developed an efficient deep learning model for semantic segmentation, utilizing a multi-modal modifier Link-Net architecture with a squeeze and Excitation ResNet152 backbone, was developed, evaluated, and compared with traditional state-of-the-art models, and its performance was verified by neurosurgeons at Manipal Hospital in Bangalore.

Poonguzhaliet *al.* [14] introduced the ADRU-SCM is an Automated Deep Residual U-Net Segmentation with Classification model for Brain Tumor Diagnosis, incorporating Wiener filtering (WF) based preprocessing to remove noise, a deep residual U-Net for segmentation, and VGG-19 as a feature extractor for brain tumor segmentation and classification.

Sharma *et al.* [15] proposed the DOBES algorithm, integrating Dynamic Opposition Learning (DOL), resolved issues in the original BES algorithm, and a hybrid multilevel thresholding image segmentation approach was developed for MRI images, utilizing DOBES for thresholding and morphological operations to eliminate unwanted areas.

Reddy and Dhuli [16] comprised the three phases: pre-processing (skull-stripping and image data augmentation), classification (using a lightweight CNN to identify normal or abnormal brain MR images), and segmentation.



Table 1: Comparative analysis of the existing methods on brain tumour segmentation

Authors	Methods Used	Advantages	Disadvantages
Isenseet <i>et al.</i> [6]	nnU-Net	-Improved segmentation performance with BraTS-specific modifications.	- Potential increase in Complexity and computational requirements.
Wang <i>et al.</i> [7]	TransBTS	-Enhanced Segmentation by leveraging the power of Transformer for global feature modeling.	- Increased complexity and potential computational requirements due to the combination of 3D CNN and Transformer in the TransBTS network.
Huang <i>et al.</i> [8]	SEFNet	-It combines multiple sources of evidence and leverages semi-supervised learning to enhance segmentation performance.	-The integration of Dempster-Shafer theory and deep learning introduces complexity and potentially reduces interpretability of the segmentation model.
Vijay <i>et al.</i> [9]	SPP-U-Net	-It replaces residual connections with SPP and Attention blocks, enhancing the scope of reconstruction and incorporating local and global context.	-Limitations compared to mheavy approaches like nested skip connections and transformers in terms of capturing intricate relationships and complexities within the data.
Fang and Wang [10]	Unet	-improves Segmentation accuracy by leveraging spatial relationship information and extracting.	-may limit the applicability of the proposed approach to other orientations or may overlook relevant information.
Mei <i>et al.</i> [11]	U-net	-Self attention module enhances the Discriminative power of image segmentation models by selectively weighting feature representations.	-Identification and characterization of partial common information, which may pose challenges in scenarios where the shared information is ambiguous or difficult to discern
Balamurugan and Gnanamurugan [12]	DCNN	-to improve the performance of non-deep learning classifiers for brain tumor classification and localization.	-Limitations in scenarios with complex tumor variations or when dealing with large-scale datasets, which may require more advanced deep learning architectures or additional preprocessing techniques.
Ramasamy <i>et al.</i> [13]	LinkNet	-Squeeze and Excitation ResNet152 Backbone enhances theefferency and accuracyof semantic segmentation.	-The applicability and generalizability of the developed model may be limited to the specific dataset and setting used in the evaluation.
Poonguzhaliet <i>al.</i> [14]	ADRU-SCM	-It combines wiener filtering, deep residualU-Net segmentation,and VGG-19 feature extraction to provide an automated and accurate approach for brain tumor segmentation.	-VGG-19 may limit the model's generalizability to different datasets or require additional adaptation and validation for diverse clinical scenarios.

Sharma <i>et al.</i> [15]	DOBES	-It improves the efficiency and effectiveness of multilevel thresholding for MRI image segmentation.	-Performance and generalizability may be dependent on the specific benchmark images used for evaluation.
Reddy and Dhuli [16]	CNN	-The proposed work's inclusion of pre-processing, data augmentation, and it improves the accuracy and efficiency of brain MR image.	-Dependent on the accuracy of the skull-stripping process and the generalizability of the method used to different datasets and pathological conditions.

3. PROPOSED LIGHTWEIGHT PSEUDO-3D UNET++ MODEL

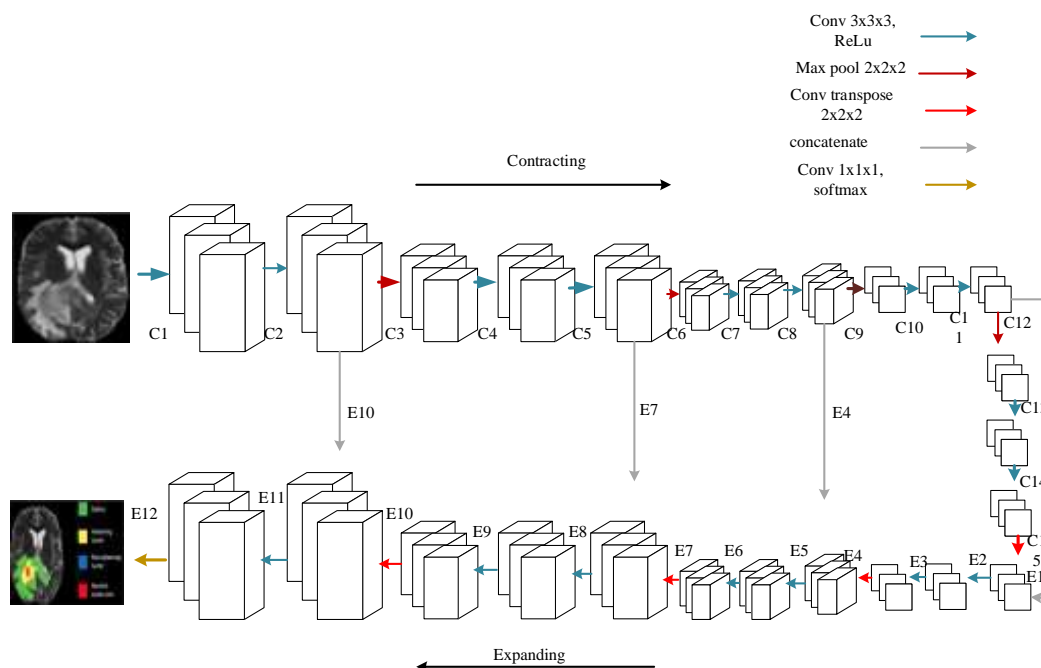


Figure 1: Architecture of the proposed lightweight pseudo-3D UNet++ model

We propose a novel methodology to address the challenges of brain tumor segmentation using the lightweight pseudo-3D UNet++ model. Our approach aims to achieve accurate segmentation while operating within limited computational budgets and reducing system complexity. The foundation of our methodology is the 3D UNet++ model, which is an extension of the widely used U-Net architecture. The U-Net architecture has demonstrated excellent performance in medical image segmentation tasks. The 3D UNet++ further enhances the representation capabilities by incorporating dense skip connections and nested U-Net architectures. These additions enable the model to capture spatial information in a hierarchical manner, improving the accuracy of tumor segmentation in volumetric images. To address the computational overhead associated with traditional 3D convolutions, we employ a lightweight pseudo-3D approach. Unlike computationally expensive 3D convolutions that process the entire 3D volume, our model operates in a pseudo-3D manner by processing 2D slices sequentially. This enables us to achieve efficient segmentation while reducing the computational burden. Our proposed methodology performs computations in a single pass, enabling real-time applications and reducing inference time. By leveraging the pseudo-3D approach and the efficient design of the 3D UNet++ model, we achieve accurate segmentation results without sacrificing computational efficiency.

3.1 Data Preprocessing

The MRI scans are preprocessed to ensure consistency and enhance the quality of the input data. Preprocessing steps may include intensity normalization, skull stripping, and spatial resampling to achieve a standardized format. Intensity normalization addresses variations in intensity scales across different scanners and sites. Skull stripping removes non-brain tissues for brain region isolation. Spatial resampling adjusts spatial resolution to match desired coordinates or resolutions for further analysis or visualization in various fields like remote sensing and image processing.



$$\text{Normalized_value} = (\text{Original_value} - \text{Mean}) / \text{Standard_Deviation}$$

3.2 Patch Extraction

To efficiently train the pseudo-3D UNet++ model and handle memory constraints, 3D patches are extracted from preprocessed MRI volumes, representing local and spatially contiguous portions of the image. This approach allows for focused analysis of smaller regions and enables independent processing or training for tasks like classification, segmentation, or feature extraction, contributing to a coherent understanding of the entire image or dataset.

3.3 Lightweight Pseudo-3D UNet++ Architecture

The architecture is designed for efficient segmentation of brain tumor from 3D volumetric MRI images. It is an extension of the popular U-Net architecture, incorporating 3D convolutional layers to capture spatial information effectively. An encoder-decoder structure follows the model with dense skip connections and nested U-Net architectures. These connections enable the efficient capture of spatial features in a hierarchical manner, leading to improved segmentation accuracy. By performing computations in a single pass, the model achieves efficiency, making it suitable for real-time applications and overcoming the challenges posed by resource constraints.

3.3.1 Training the Lightweight Pseudo-3D UNet++ Model

The extracted 3D patches, along with corresponding ground truth segmentation masks, are used to train the lightweight pseudo-3D UNet++ model. During training, the model learns to capture relevant spatial features and accurately segment brain tumors. As Data Preparation, The training data is prepared by selecting a set of input 3D volumes and their corresponding ground truth segmentation masks from the BraTS 2018. As Network Architecture, The architecture of the Pseudo-3D UNet++ model, based on the U-Net with 3D convolutional layers and dense skip connections. This encoder-decoder structure enhances spatial feature capture. Use stochastic gradient descent (SGD) or its variants as the optimization algorithm. SGD updates the model parameters iteratively using mini-batches of training samples, making it computationally efficient and scalable. Feed the preprocessed data into the Pseudo-3D UNet++ model. During training, the model learns to accurately segment brain tumors by capturing relevant spatial features. Fine-tune hyperparameters like learning rate, batch size, and the number of epochs through experimentation to optimize the training process. Implement techniques like dropout or batch normalization to prevent overfitting and improve generalization. Assess the model's accuracy and robustness using performance metrics such as DSC and sensitivity on the BraTS 2018 dataset. The Pseudo-3D UNet++ model efficiently captures spatial information in a hierarchical manner, making it suitable for real-time applications and addressing the challenges of brain tumor segmentation within limited computational budgets.

Dense skip connections

Dense skip connections link corresponding layers in the encoder and decoder, facilitating seamless information flow and spatial feature propagation. They preserve fine-grained details during upsampling, enhancing segmentation accuracy.

Nested Architecture

The 3D UNet++ uses nested U-Net structures, stacking multiple U-Net architectures, capturing spatial information hierarchically. Each nested U-Net captures features at different abstraction levels, improving the model's ability to segment brain tumors accurately.

4. EXPERIMENTAL RESULTS

Performance evaluation involves assessing the accuracy and robustness of the pseudo 3D UNet++ model for segmentation of brain tumor. Using metrics such as DSC and sensitivity, the model's segmentation results are compared from the BraTS 2018 dataset with ground truth segmentations. The evaluation process validates the model's effectiveness and its potential for clinical applications.

Dice Similarity Coefficient

$$(2 * |B \cap A|) / (|B| + |A|)$$

It is a statistical measure commonly used to evaluate the similarity or overlap between two sets or regions in a binary segmentation task. It is calculated as twice the intersection of the sets divided by the sum of the sizes of the two sets, providing a value between 0 (no overlap) and 1 (perfect overlap) to assess the accuracy of segmentation results.

Sensitivity

$$\text{Sensitivity} = TP / (FN + TP)$$

It is also known as recall or true positive rate, is a statistical metric used to evaluate the performance of a binary classification or segmentation model. It measures the proportion of positive cases correctly identified by the model out of all the actual positive cases

Comparative Analysis

Table 2 indicates the performance of proposed Lightweight pseudo 3D-Unet++ model with existing methods such as U-Net [11] and MM-LinkNet [13]. The proposed Lightweight pseudo 3D-Unet++ model achieved the better segmentation performance than

other methods for Brain Tumor Segmentation. Our method achieves Dice coefficient value of 0.912% and Sensitivity value of 0.925%

Table: 2 Dice coefficient and Sensitivity for proposed and existing methods

Methods	Dice coefficient (%)	Sensitivity (%)
U-net [11]	0.829	0.887
MM-LinkNet [13]	0.777	0.766
Proposed 3D-Unet++	0.912	0.925

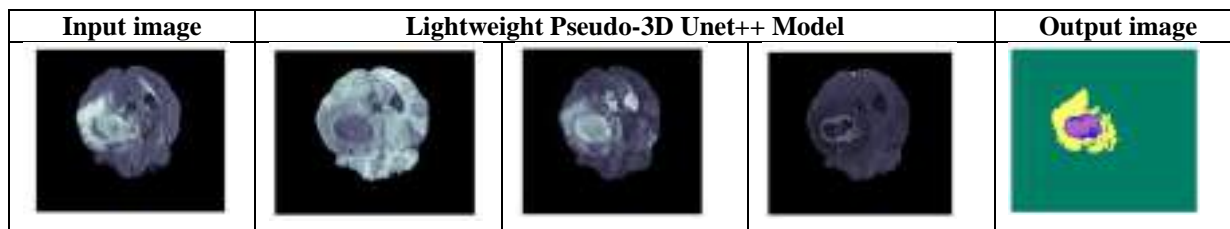
**Figure: 2 Segmentation Results**

Figure 2 presents the segmentation results obtained from the Lightweight Pseudo-3D Unet++ model in the context of brain tumor segmentation. The figure showcases the model's performance in accurately delineating tumor regions within the magnetic resonance images (MRIs) of the brain. Each subfigure in Figure 2 displays a pair of images side by side: the original MRI slice from the dataset on the left and the corresponding segmentation mask generated by the Lightweight Pseudo-3D Unet++ model on the right.

5. CONCLUSION

In this paper, lightweight pseudo-3D UNet++ model demonstrates significant advancements in accurate brain tumor segmentation, outperforming state-of-the-art models. By efficiently capturing spatial features in a hierarchical manner, our approach addresses computational challenges and offers potential for real-time clinical applications with improved segmentation accuracy on the BraTS 2018 dataset.

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THE USE OF IMPLICATURES IN UZBEK NOVELS AND APPROACHES OF TRANSLATING THEM INTO ENGLISH

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ABSTRACT

This article explores the challenges of understanding linguistic meaning, particularly the study of conversational implicatures in pragmatics. It emphasizes Paul Herbert Grice's theory of Conversational Implicatures, which involves the Cooperative Principle and the Maxims of Conversation, and how it relates to translation procedures. Moreover, analysis was based on Uzbek novels involving cultural references.

KEYWORDS: *implicature, conversational implicature, four maxims, translations*

INTRODUCTION

Meaning appears to be both the most obvious part of language and the most challenging to master. These characteristics appear evident given that language is used by people to efficiently and effectively convey “what they mean” to one another. However, because a word may indicate more than one meaning, the procedures in developing understanding can occasionally be unclear. When a word or phrase is used in the context of a sentence or text, its intended meaning can be clearly understood because communication involves more than just the use of words or idioms that express views, events, or feelings; it also involves how those words or idioms are used in a given scenario.

Leech distinguishes seven categories of linguistic meaning based on the purpose of language use: conceptual, connotative, collocative, social, emotive, reflective, and thematic (Leech 1974:15-23). However, the study of linguistic meaning is the focus of the subject of semantics. According to Crystal it is – the study of the meaning of the words and sentences (p.102) that is the uttered meaning. However, the way that humans link words to one another within a context is currently the main area of interest which is studied within the field of pragmatics. Specifically, there are two main categories of meaning:

- (1) word/phrase/sentence meaning,
- (2) what a speaker intends to convey. (Grice 1975:44).

What we are going to focus is implied meaning which is a study object of pragmatics, namely implicatures. Contrary to entailments and presuppositions, implicatures are pragmatic inferences that are not based on the specific words or phrases used in an utterance but rather on the context and the knowledge that conventions are followed in discourse. Paul Herbert Grice is acknowledged for developing the notion of conversational implicatures. He noted that in conversations, what is meant frequently extends beyond what is uttered and that this additional meaning is inferred and predictable. Different from the various other topics in pragmatics, implicature does not have an extension in the history of Western culture (Mustafa 35). Thus, it is necessary to precisely define the term implicature. Etymologically, the word – “implicature” is derived from the verb – to imply, as is its cognate – implication. To imply means – to fold; hence that which is implied is folded in to the meaning and thus must be unfolded in order to be understood (M.Ahmad 2015: 28)

GRICE'S THEORY OF CONVERSATIONAL IMPLICATURES

Grice proposed that participants in a communicative exchange are guided by a principle that determines the way in which language is used with maximum efficiency and effect to achieve rational communication. He called it the ‘Cooperative Principle’ which makes your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged. This cooperative principle is an umbrella term for nine components that guide how we communicate. These nine components are grouped together into four categories, called the Maxims of Conversation: the maxim of quality (truthfulness), the maxim of quantity (informativeness), the maxim of relation (relevance), and the maxim of manner (perspicuity).

Following the cooperative principle and its maxims ensures that in an exchange, the right amount of information is provided and that the exchange is conducted in a truthful, relevant, perspicuous fashion.



Thus, Grice's Theory of Conversational Implicatures involve

- i. The Cooperative Principle
- ii. The Maxims of Conversation
 1. *Quality*: Try to make your contribution one that is true
 2. *Quantity*: Make your contribution as informative and no more so than is required.
 3. *Relation*: Be relevant
 4. *Manner*: Be perspicuous

THE LINK BETWEEN IMPLICATURES AND TRANSLATION PROCEDURES

Competent readers can interpret texts differently regardless of the passage of time or cultural context, as well as from diverse eras, perspectives, and reading objectives (including gender, ethnicity, belief, values, and worldview). The meaning is unavoidably influenced by culture and circumstance while the text is, on the one hand, a historical document and a material truth. It is a challenging and hard topic to determine whether the text truly means what it means to a particular reader, a group, or traditionally. The question that comes to mind while considering the translation of implicature, as was indicated above, is: Which should be translated more accurately, the sentence's implicature or its meaning?

The fundamental issue is whether to translate the sentence's implicature or its meaning. This would imply that meaning and implicature are two separate notions that are not the same. There is no guarantee that an implicature intended in the source language would have an equivalent in the target language, even if someone is pleased with a literal translation. Additionally, if the implicature is translated, it signifies that the implicature is no longer applicable because it needs a sentence from which to be formed, as shown below.

RESULTS

One of the issues stemming from cross-culture communications as a specific language may reflect the culture shared by a particular social group of people and influence their interpretations of the meaning of other people's behaviors. No one might deny that the differences between English and Uzbek linguistically and culturally affect the accuracy of the translation. Therefore, the translation of the conversational implicature needs a competent and qualified translator who has wide knowledge of both the culture and related matters of the target language (Guessabi2013:226). Followings are some of the extracts taken from the book "Scorpion from the Altar" by A.Kadiri and its translation in English.

Example: (1)

In Uzbek (SL)	In English (TL)
<i>Nigor oyim "Ra'noni egasiga topshirmag'uningizcha..." deb garchi bir muncha qo'polroq ta'bir bilan bo'lsa ham "Ra'noning egasi" borlig'ini so'zlar, Ra'no esa "egasi"ning kim ekanligini yaxshi bilgani va uni qanot qoqib qarshi olg'ani uchun jodu ko'zida rizosizliq emas surur ma'nolari o'ynatar edi.</i>	<i>Although her mother Nigoroyim had said the phrase "until she gets married" a little bit cruel Rano knew whom she was going to get married and she liked him very much so she was very happy to hear those words from her mother.</i>

This extract involves some cultural features of the Uzbek nation. In Uzbek, the expression "egasiga topshirmoq" has multiple meanings. The implicature here mentioned by the writer was interpreted as "get married" in English. In the second time usage "Ra'noning egasi" (literally "The owner of Ra'no") was implied to Anvar who loves Ra'no so much.

Example: (2)

In Uzbek (SL)	In English (TL)
<i>Balli Ra'no, ana jinnilik! – dedi Maxdum, – atlas ko'ylak senga hayf, senga bo'zdan boshqasi albatta hayf!</i>	<i>You are not worth the atlas dress!</i>

In this context, "atlas ko'ylak" is considered an ethnographism, and according to Uzbek traditions, it is a dress worn on holidays. That is, in this sentence, Rana's playing in the mud in a satin dress was condemned by her father Salih Maxhdum by saying "atlas ko'ylak senga hayf". In the process of translation, simply saying "bo'z" dress caused the loss of national color. In this case, it is necessary to ensure colourity through the word "such" or through another means. In this context, gray and "bo'z" are antonyms of simple and luxurious clothes.

DISCUSSIONS

Regarding the first example (1), there are some issues appeared in the English translation of the novel. Particularly, during the translation process, in both situations the same expression (get married) have been used and it causes the violation of one of the



maxims proposed by P. Grice, namely, the maxim of Quantity. The writer wanted to imply Anvar in this context as a person who is in love with Ra'no while in the translation there is too much information and implicature disappeared there. Besides, there is cultural gap between English and Uzbek nations which means translator needs to take it into account to deliver pragmatic meaning of the novel. To call "fiancée" or a loved one as "an owner" may seem weird for English readers so instead of giving those options we can use "beloved one" instead or the phrase "to be in love". Additionally, in the SL there is a point that using the word "owner" was a bit rude and Ra'no was supposed to get upset there. But, in the translated part, we can see that stylistic feature of using rude phrase has disappeared which means pragmatic meaning of the SL was not delivered to the reader. Considering all of them, we tried to provide our own translated version as follows:

Although her mother the phrase "until she finds her spouse" may seem a bit straightforward, Ra'no knew whom she was in love so she was very happy to hear those words from her mother.

When it comes to the example (2), it is quite difficult to comprehend why "atlas dress" is being used there. In order to get implicature used by the writer, translator should have prior knowledge about why "Uzbek atlas" is luxurious fabric and it is highly appreciated. In this context, as Ra'no was playing with her siblings, she was wearing atlas dress. Her father's anger seeing dirt on her dress represents how valuable the "atlas" is. Our version could be like:

What are you doing Ra'no with your atlas dress? – said Makhdam. You are not worth such atlas dress. You are worth only satin with such behaviour!

CONCLUSION

In conclusion, translation is unquestionably an essential tool for communication. By converting a message from an unknown language into a known one, translation's main purpose is to forge linguistic connections between speakers of other languages. Although selecting the most appropriate translation for the text to minimize meaning loss is the fundamental challenge in translating, there are other issues that call for further thought and study, such as idioms, proverbs, and metaphors used in the context of speech. In this study, we tried to focus on the procedures to be used when translating implicature in novels as well as linguistic and pragmatic issues linked to translating conversational implicature. The ambiguity in the circumstances was discussed by recognizing the contrasts between English and Uzbek cultures.

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TRANSLATION OF HISTORICAL REALITIES IN THE CHRONICLES OF THE KHANATE OF KHIVA

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ABSTRACT

The article discusses the importance of translation in the human communication and the reality units. Realias exemplified in this research, are taken from Munis and Ogahii's "Firdavs ul iqbal" by Y. Bregel's translation. These realias express daily life, culture and history in the Khanate of Khiva, as well as in Khanates of Turkistan. The methods and problems of translating realities most important aspect of historical-national color words, from source language into target language are also considered in this work.

KEYWORDS: *translation, literary translation, historical coloring, translation methods, transliteration, footnotes and explanations, analogue.*

1. INTRODUCTION

From time immemorial, translation has been free means of communication between cultures, and it has been considered the only tool for the realization of cultures from one nation to another in harmony of form and content. "It is difficult to imagine people building friendly relations with each other, learning and mastering each other's cultural wealth without translation." [6, 40] Over the centuries, there have always been social and economic factors that led to the emergence of translation activities. Translators are busy with their work due to these factors, and in most cases, regardless of the diversity of languages and cultures in the world, they succeed. During the history of mankind, the activity of translation has developed a lot. Therefore, translation has become the only tool in people's intercultural communication activities. At this point, it is permissible to quote the following opinion of G. Salomov, "Translation is undoubtedly based on linguistic activity, but the elimination of pure language differences is only one step in the translation process. Translation is a creative process that requires the comparison or clash of two grammars (grammatical systems), two historically formed methodological systems, two historical-literary traditions, two poetic systems, two individual writers - the author and the translator". [5, 40]

The American linguist E. A. Nida focused on cultural elements in expressing the great importance of translation and the translator, and expressed the following opinion: "the role of the translator is to help convert the message, content, and cultural elements from one language to another, creating an alternative response to the reader". [8, 13] He also suggests that in translation, the message in the source language should be appropriate to the cultural context. The lexical fund of a language has cultural referents and is unique to the people who speak this language. Understanding culturally charged words without specific cultural knowledge and translating them into another language creates translation problems. It is clear that the mentioned cultural elements are explained as follows: "The process of transferring cultural elements to another language environment through translation is a complex issue. Culture is a complex collection of everyday life experiences that includes history, social system, religion, daily customs and traditions". [4, 27] One of the main tasks of a literary work is to inform the reader about the thoughts and historical information of a society.

By the 50s of the 20th century, translation scholars of the world began to express their opinions on the expression of national and historical characteristics of realities.

2. METHODS

For the materials of our research, the historical realities of the work "Firdavs ul-Iqbal" written by Munis and Ogahii were selected and their translation features from Uzbek to English were analyzed.

Linguistic research methods, mainly comparative analysis and descriptive method, were used in the research process. The comparative method is a technique for studying the development of languages by performing a feature-by-feature comparison of two or more languages with common descent from a shared ancestor and then extrapolating backwards to infer the properties of that ancestor. [13, 4987]



The main task of the descriptive method is that it analyzes the linguistic units and phenomena related to a certain synchronic aspect in the process of describing and describing them, determines their function, place, use, structure, peculiarities in the language, summarizes them, and draws conclusions. [9, 257]

3. RESULTS

According to many researchers, the translated works on historical facts requires a lot of attention and knowledge from the translator. In this regard, it is appropriate to make the following opinion: "The translator should carefully know and feel the national color and characteristics of the people from which language he is translating". [7, 33] Of course, the fact that the translator is well aware of the language and folk customs of the original work, as well as having deep knowledge of the art of words, creates the basis for the work to resonate brightly in a different form. When translating a work, it is necessary to pay attention to the time and place where the work was written. Because the period when the original was created took place long before this process, and at the same time, the events of the work are considered to have become history.

Linguists such as S. Vlahov and S. Florin noted that historical words can be found in the following "two cases" in the works expressing the spirit of the historical period:

- 1) in the translation of works of past writers;
- 2) in the translation of works written by modern writers referring to the past. [14, 352]

The work that we want to analyze includes issues related to the translation of the historical lexicon in the works of the first type. The purpose of our analysis dividing literal works into groups is that the content of the vocabulary in the above-mentioned works is very different from each other. For this reason, the translator should choose the words taking into account the issues of the period of creation of the work and the period being described. When we think about the re-creation of the historical color in another language, it is appropriate to highlight the work "Firdavs ul Iqbal" by Munis and Ogahiy, which represents the history of the Khanate of Khiva, the cultural life of the Khanate and the social environment of that period. In 1988, the American scientist Y. Bregel (1925-2016) published the scientific-critical text of Munis and Oghahi's work "Firdavs ul-Iqbal" with comments, and after a ten-year break, in 1999, he published the translation into English. Since the language of the work is rich in Arabic and Persian expressions and it was created in a unique oriental way, it was not easy to translate it into English. In this regard, Y. Bregel worked in consultation with many scientists, including the translator, Russian scientist Oleg Akimushkin (Institute of Sharkology of the Russian Academy of Sciences), Professor Robert Dankoff (University of Chicago), Dr. Irina Viktorovna Yerofeyeva (Institute of History and Ethnography, Almaty). , he recalls with pleasure that orientalist such as Professor Boris Litvinsky (Institute of Oriental Studies, Moscow), Alexander Naimark (Indiana University), Dr. Benno van Dalen (Institute of Geography, Moscow), Professor Devin Davis (Indiana University) helped him greatly. [1, 181]

Historical works should be translated from one language to another while preserving their originality as much as possible. In addition, the translation of historical works is a task that needs to be carried out without any changes or omissions. But not every translator can do it. "In the translation of a historical work, the reason why translators cannot translate all language tools through modern language is the "antiquity" of the original, and the reason for denying translation through ancient language is the need for it to serve the times. The translation of the historical work covers two periods. That is, it should be created in a modern language and it should reflect the spirit of the historical period". [7, 136]

It should be noted that culture items mentioned in historical works can be regularly transcribed or transliterated from the original into the translated language. Because the linguistic aspects of the translation should not be overlooked. Only then the goals of the author will be realized by the translator.

Below we give examples to consider the characteristics of historical realities in the meaning of translation:

1. "... *necha ming xum yog'kim, ulug'liqda falak xumi alarg'a sarxum bo'la olmas erdi.*" [FI, 401] – "... several thousand jars of oil were given ..." [FI, 409]
2. "a precious *woolen robe (chekmen)* with a gilded belt" [FI, 485] – "tillo kamarlik *chakmani*". [FI, 447]
3. "Berdibek Khan, after his father's death, appointed on amir called *Akhichuq* as his *deputy* in Tabriz and came to Saray". [FI, 25] – "Berdibekxon otasidin so'ng Axi Juq degan amirni Tabrizda *noyib qilib, Saroyg'a keldi*". [FI, 76]

In the first example, the realias of *xum* and *sarxum* are given, and the realia of *sarxum* is omitted in the translation. *Sarxum* is a linguistic unit of the Khorezm dialect (in fact, a substratum belonging to the Khorezm language), which is explained as follows: *Sarxum* is a copper vessel used to collect water from large *xums*. [2, 130] Through this lexical unit presented in the original, the author expressed his style through exaggeration. As a result, the meaning of reinforcement has become abstract compared to the amount of oil given to people in the original context. In a result, it turned out that in the translation of the sentence *ulug'liqda falak*



xumi alarg'a sarxum bo'la olmas erdi from one language to another lose its figurativeness and the author's intention and style became evasive.

In the second example, *chakmon* is a long winter coat for men, usually made of wool. [12, 448] This reality presented in the original is expressed in the translated language only in a figurative way, in parentheses, in transliteration. In the translation, he expressed the fabric of the original reality. However, it was not possible to express the function of the *chakmon* unit as a national dress and in what situation it is worn. It should be noted that most of the historical clothes - *chakmon*, *xil'at*, *xilo'* and *sarupo* are translated with the word *robe* in almost all places in the translation. For this reason, it would be appropriate if it were shown in the footnotes with a full explanation: 1. *Chekman* – was a form of clothes that could be put on in cold weather, especially as an outfit. It was men's cloth, which was made from wool of camel or sheep.

Noib/noyib – نائب vizier's assistant. [3, 280] When the khan left Khiva on for example, a military campaign, he left one of his relatives in charge as *na'ib*. [15, 133] In *A collection of tarkhan yarliqs* by William Wood, the *realia* is defined as following: *na'ib*(نائب), *deputy*, *representative*. In addition, in the 19th century the Uzbek clans of two specific districts of Khiva (Besh-ariq and Qiyat-Qongrat) were governed by *na'ibs*. It is unclear why this was the case or how these two positions differed from the *hakims* who governed in all other regions of Khorezm. [16, 33] in given examples of translation text the word *deputy* is chosen as a equivalent of the word *noib*. It is obvious that the lexical unit *noib* in Uzbek with the word *deputy* creates an adequate translation and considered as complete equivalent to each other.

1. DISCUSSION

Munis and Ogahi's work "Firdavs ul-Iqbal", which reveals the history of the Khanate of Khiva, contains many historical and national words, describing the events and phenomena related to the distant past not only of the Khorezm people, but also of the Uzbek people's national objects and traditions. In order to convey historical facts to the reader, Y. Bregel came to the right conclusion with his deep knowledge and philosophical views in the process of translation of the historical work, and translated historical and national words using complex of methods: *g'on-booty(ghan)*¹⁰²⁶. It seems that by the end of the reign of Muhammad Rahim Khan the the *yasavulbashis* acquired the role of military inspectors and commanders; *sarkarda* – 1) *the officers*, 2) *military commander(sarkarda)*; *pir-pir*⁴⁷⁹ – a spiritual guide of a *Sufi* (in this meaning a synonym of *shaykh* and *murshid*); *shotir* – *runners(shatir)*⁸⁰⁵ – The runner (*shatir*) in ceremonial processions usually had bells attached to thier belts; *chakman* – *woolen robe (chekmen)* and etc.

Using the results of the research, we can say that historical realities undoubtedly serve not only the culture of the nation, but also its historical color. In the process of translation of special words, the translator was able to effectively use dynamic methods as well as transcription, transliteration, calking, which are mechanical methods of translation.

Thus, modern translations of historical works created an opportunity to form knowledge and thinking about past times in the minds of today's readers.

2. CONCLUSION

In this historical work, the traditions, customs, way of life, historical events, and characters of the ancient Turkic peoples are covered, and a unique national-historical gloss of these artistic texts is created. Therefore, the translation of historical facts in the translations of the chronicles of the Khiva Khanate requires taking into account additional aspects:

- 1) the ineffectiveness of replacing the original realities with analogues of the translated language that cannot express the artistic aesthetic value of the original realities in order to create the possibility of translation;
- 2) replacing the vocabulary used at the time of the creation of the original version with modern vocabulary in the translated text is limited;
- 3) in the process of translation of a work of historical significance, it should match in terms of form and content and fully reflect the author's purpose.

The characteristics of composing text in two contrasting languages (the original Uzbek language and the translated English language) and in each of these languages may limit the capacity to fully preserve the original content in the translation. As a result, the essential prerequisites for transferring the original historical-national terms to the reader in the translation are as follows: having a thorough knowledge of the source language as well as a thorough comprehension of the source nation's traditions and history. Transliteration, transcription, functional analogue (translating reality with reality), as well as calque methods are used in the translation of the work "Firdavs ul-Iqbal" by Y. Bregel to not only express the author's intention but also to maintain the artistic-aesthetic fugirativeness of the work.



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THE IMPORTANCE OF TEACHING THE HISTORY OF UZBEKISTAN IN EDUCATING THE FUTURE MILITARY STAFF IN THE SPIRIT OF LOYALTY

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ANNOTATION

The article emphasizes the importance of teaching the history of Uzbekistan to cadets and students of higher military educational institutions, the importance of the history of the Motherland as a social science in educating a harmoniously developed generation. It has been shown that it can be solved by educating young people who feel it is their duty.

KEYWORDS: *History of Uzbekistan, historical memory, historical consciousness, Motherland, patriotism, harmoniously developed generation, democratic state, civil society.*

The fate of large-scale reforms in Uzbekistan today and the future of the country are directly related to the socio-political activity of young people, who make up more than half of the country's population, and their sense of duty to the Fatherland and patriotism. In particular, as stated in the five priorities of the action strategy for further development of the Republic of Uzbekistan in 2017-2021, "education of physically healthy, mentally and intellectually developed, independent-minded, strong-minded, Loyal to the Fatherland" was put forward as an important task [1]. Speaking about the role and importance of the history of Uzbekistan in the upbringing of the younger generation, Islam Karimov said, "Truth, the truth of history is as important for our children as water and air. It is the sacred duty of every human being to pass on the truth of history to the next generation." [2]

For us, patriotism means readiness to fight for the prestige of the country where one was born and raised. The achievements of many of our young people, including cadets and students of higher military educational institutions in the field of science and sports at the national and international levels, create a solid foundation for the great future of our country. That is why patriotism should have a deep meaning for everyone who considers this country as their homeland. The large-scale reforms being carried out in the education system of our country serve to form the spiritual worldview of young people, to bring them up as fully developed and harmoniously developed people.

One of the urgent tasks before us is to educate the cadets of the Academy of the Armed Forces of the Republic of Uzbekistan as fully developed and well-rounded people. Along with the social sciences and humanities taught at the Department of Humanities of the Academy of the Armed Forces of the Republic of Uzbekistan, the importance of the history of Uzbekistan is invaluable. contributes greatly to the formation of emotions.

The concept of homeland and patriotism is formed on the basis of historical memory, historical consciousness. The sense of patriotism develops from a young age, and this feeling is formed through the study of humanities education in secondary and higher education, first of all, the history of Uzbekistan. The ancient Greek writer Lucian, in his book In Honor of the Fatherland, thinks of patriotism: "My words are very old. But the truth is that a child who does not love his father cannot respect the father of another, and a person who does not love his homeland cannot appreciate the homeland of others." [3] Hungarian scholar Arminius Vamberi, in his History of Bukhara or Movaraunnahr, argues that ignorance of the past breaks the present and the present generation, leaving them spiritually poor and powerless, indifferent to their country, nation and future. - says [4].

When we talk about the concept of homeland and patriotism, we must remember Amir Temur and his "Regulations". Amir Temur writes in "Tuzuklar": "I asked the sages about the laws and customs of the sultans who have passed to the present day. I memorized the instructions of each of them, their behavior, their actions, what they said, I took an example from their positive qualities and followed it. I inquired about the reasons for the decline of the states and refrained from doing things that would lead to the collapse of the state and the kingdom." [5]



No other science, such as the history of the Motherland, fulfills such tasks as educating cadets in the spirit of national ideology and patriotism. In the lessons of the history of Uzbekistan, it is necessary to pay special attention to the heroic struggle of the peoples of our country for centuries for their freedom and independence, and the constant sacrifice of their sons and daughters to achieve independence at different times.

Each lesson on the history of Uzbekistan, depending on its content, has a different educational effect on cadets: encourages them to noble goals, creativity, hatred, courage, patriotism against invaders and traitors, ideological against various political and religious extremist currents that threaten the independence of our country. nurtures in the spirit of struggle. The successful implementation of the goals and objectives of teaching the history of Uzbekistan depends, first of all, on the ability of the teacher to clearly and accurately determine the educational tasks of each lesson in advance, which, in turn, depends on the level of theoretical knowledge and skills.

However, thorough preparation for the lesson, the correct and clear knowledge of its educational tasks, of course, can not fulfill the task set before us. The important thing is to be able to use the methods and tools that help to combine education and upbringing in lectures and seminars.

The educational impact of historical knowledge is due to the fact that this knowledge is emotionally revealed by the teacher based on historical facts based on written sources, historical documents, as well as film and photographic materials. They need to be credible so that trainees can understand the accuracy of historical facts throughout the lesson and draw conclusions based on the facts. Cadets should also make sure that the facts stated are scientifically accurate.

An important task of teaching the history of Uzbekistan is to reliably explain the scientific assessments of historical events and the conclusions drawn from the studied material. Conclusions memorized without a good understanding of their meaning will not be convincing to the young reader, and with thinking, the conclusions learned and understood as a result of emotional experiences will be convincing. The science of history shapes the attitude of cadets to historical facts, our national idea, the strengthening of independence, patriotism. Teaching cadets to analyze historical knowledge in lessons and extracurricular activities, to take an interest in history, to learn from it, to draw the right conclusions, gives good results. Thus, the live description of the topic in lectures and other classes, the use of various modern pedagogical technologies and technical means of teaching is one of the conditions for scientific and thorough knowledge.

To do this, the teacher should not be limited to the textbook, but use additional literature, multimedia materials, audio-video materials on the topic. It is advisable for the teacher to expand the texts given in the textbooks and fill the lesson with different written sources and documents. There are various methods of patriotic education of cadets in the lessons of history of Uzbekistan, in which the teacher can use oral, visual and other methods. These can be done at different stages of the lesson (monitoring and evaluating a given task, moving on to a new topic, reinforcing a topic, etc.).

In teaching the history of Uzbekistan can be used a variety of methodological tools aimed at combining education and upbringing. First, in the teaching of the history of Uzbekistan can be used a variety of methodological tools to make the lesson convincing, such as bright historical facts, documents, fiction and memoirs, visual aids and technical means (film, television, computer disks, multimedia, etc.).

Secondly, in teaching the history of Uzbekistan, it is necessary to pay attention to the connection between the causes and consequences of events, to reveal the basic laws of social development, to form the worldview of cadets based on the study of certain historical materials. Third, one of the important conditions for combining the educational aspect of the lesson is the independent analysis of the studied factors and historical events and the involvement of cadets in their correct assessment.

Fourth, the effective use of their existing knowledge, skills and life experiences plays an important role in the whole teaching process and in the cultural and educational work with cadets.

Fifth, it is important for the teacher to constantly improve his general and methodological skills, to make wider use of advanced pedagogical experience in teaching. The use of fiction in lectures and seminars on the history of Uzbekistan increases their effectiveness. The lessons show the importance of facts from the literature and some historical episodes to make the teacher's statement convincing and full of excitement in the process of combining education.

Using the above and other vivid historical facts, short episodes, the teacher can instill in the cadets the spirit of courage, selflessness, national pride, patriotism in the example of the heroic struggle of the peoples of Central Asia for their independence and freedom. Selected facts from historical and fiction literature, the inclusion of small episodes in the course content will help cadets to master



the material, make it reliable and effective, to cultivate a spirit of hatred against invaders, loyalty to the heroic traditions of our ancestors who fought for freedom and independence. In particular, the fact that Uzbekistan is an integral part of human civilization in the history of our country, the struggle of our people against the Achaemenid and Greco-Macedonian invasions, Arab oppression and Mongol invasion (Jaloliddin Manguberdi). The rise of Uzbek statehood during the reign of Amir Temur and the Temurids, the national liberation struggle and Jadid movement of the Turkestan peoples against tsarist oppression, the establishment and armed movement of the Soviet dictatorship in Turkestan, the spiritual and cultural dependence of Uzbekistan during the Soviet era, the repressive policy of the dictator in Uzbekistan and its consequences, The contribution of the Uzbek people to the victory over fascism during the Second World War, the achievement of state independence in Uzbekistan, the establishment of a democratic rule of law, the education of cadets in the spirit of patriotism serves to lick.

Every subject of the history of Uzbekistan teaches cadets to love and respect their homeland, to absorb the spirit of national ideology, in the spirit of love and devotion to our people and state, in the spirit of constant readiness to defend the Motherland, in the spirit of military patriotism, friendship and brotherhood. , aimed at educating young people in the spirit of humanity and hard work.

Also, each subject of this subject, depending on the content and essence, has a different educational effect on cadets, inspires them with good intentions, gives them pleasure, encourages them to noble goals, helps them to define their character and intentions, cultivates courage, patriotism, spiritual qualities.

As the teacher designs and plans each subsequent lesson, he or she should carefully consider what materials the students will be introduced to in the lesson or what additional learning material they will use, and come to a clear generalization about the events and happenings discussed with them. At the same time, of course, it is necessary to combine education with upbringing. We must instill a patriotic spirit in the cadets in every lesson. In particular, using the method of oral narration, it is possible to use additional sources on the topic (written sources, historical documents, archival materials, memoirs, scientific research, fiction) in the form of conversation, story. Using visual methods and techniques, we can show cadets many patriotic pictures, photos of historical figures and heroes, clips from movies and documentaries.

Using advanced pedagogical technologies, it is possible to develop together with the cadets materials dedicated to various events in the history of our country. In this case, students can express and analyze their attitudes to one or another aspect of the topic during the lesson. In determining these, the teacher will have to rely on his or her own experience and skills. The educational impact of historical knowledge depends on the extent to which that knowledge is based on historical facts and that they are revealed confidently and emotionally in the classroom. Cadets should understand the accuracy of historical facts and the conclusions drawn from the facts should be reliable for them. Cadets also need to make sure that the facts stated are scientifically accurate. The facts stated in the lessons, the activities of individuals should also be studied using clear images. Image, figurative statement, reliance on convincing evidence, the ability to express their ideas scientifically - one of The main conditions for achieving the objectives of the lesson. The teacher should not be limited to the syllabus and textbook in preparation for the lesson, but should use additional literature and instructional materials.

Formation of historical memory in cadets, knowledge and respect for the history of our homeland form a feeling of love for the Motherland. They study the heritage, which embodies the dreams, aspirations and traditions of our nation, and form a complete and accurate picture of the history and culture of our country. Then the great spiritual heritage left by our great ancestors in history, their exemplary life will have a great educational power. If a cadet or officer is a good specialist and does not have important qualities for everyone, such as historical memory, patriotism or national pride, we will not be able to achieve the goals we have set for ourselves with such employees. Because the development of the Motherland depends on how we educate our cadets.

Therefore, we bring them up in the spirit of love for the Motherland, the courage of our ancestors, the belief in the preservation of our homeland, not to be indifferent and indifferent to world events, to live in the spirit of the people and the Motherland, to protect the Motherland. This is the most urgent task facing the professors and teachers of the Academy of the Armed Forces of the Republic of Uzbekistan. Only then will we be able to train young professionals who are suitable for the defense system.

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THE FUNCTIONS OF GRATITUDE EMOJIS IN THE INTERNET COMMUNICATION

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Networking today, is a direct part of a person's social media life, forming a new information environment where relationships are developing. a direct part of human-media social life and forms a new information environment where different types of relationships are developing. This format of communication allows for the elimination of the link to people's location. This phenomenon is due to the introduction of information technology into society and its impact on it.

Internet speech communication is expressed both verbal and non-verbal way. The modern information environment is a world of visible images, where the picture, image sign represents in an easier, more convenient, understandable style. As we know verbal internet communication can be accompanied by emoji, gif-animation, emoticons, stickers, self-signatures and photos (selfies, the verbal web-based communication can be accompanied by emoticons, stickers, self-signatures (selfies, for example) and even memes to indicate the mood of the interlocutor at a given moment.

The material for this study was English- Uzbek language multicode texts of instant messages in various messengers and posts on the Internet, analyzed with the permission of the author's contacts, as well as publicly available publications in social networks and personal newsletters. The study was conducted using contextual, linguopragmatic and content analysis methods.

The Internet has flipped our world upside down. It has changed communications to the point where it is now our favorite medium of everyday communication. Today's Internet evolution is mostly determined by immediate, mobile communications. The mobile Internet represents a new revolution. Comprehensive Internet access via smartphones and tablets is resulting in a more mobile world in which we are not tethered to any single device and everything is stored in the cloud. Chat (from the English word 'chat') is a means of exchanging messages over a computer network and mobile phones in real time, as well as software that allows such communication through distances. The main feature of chat rooms is the communication in or close to real time which distinguishes them from forums and other means. While communicating in chat rooms people can express their emotions by sending stickers, emoticons, emoji, gifs and pictures that depict and convey the mood of the person they are chatting with.

It is evident that, non-verbal communication can be formal and informal in internet world. The first type is characteristic of a normative and a regulated communication situation. The absence of restrictions, emotional richness, structural complexity are features of the first type is characteristic of the normative and regulated communication situation, temperament, the mood of the interlocutors.

If we define the concept of emoji in communication it owes its origin from the Japanese language. Emoji means 'picture character', i.e. it is a picture word representing an image that visualises a variety of human emotions, non-verbal human actions, objects, artefacts, etc.

Marcel Danesi, a renowned Canadian specialist in semiotics, may be indicative of the evolution of the human communication system itself. If emoji or similar communication elements do not prove to be a transient trend, humanity may be approaching the second cognitive shift in its history. Within linguistic science, research has focused on the pragmatic functions of emoji.[2] The pragmatic functions of emoji and an analysis of the potential that these signs and symbols can become an independent universal language due to their semantic properties. The first cognitive shift took place, according to the researchers' version, approximately in 1000 BC during the transition from the pictographic type of writing to logographic, ideographic or alphabetic writing. Tracing the evolution and the functional features of writing, M. Danesi suggests that we may be standing on the way of the second cognitive paradigmatic shift characterised by a peculiar "return" of the pictographic and logographic type of writing united with alphabetic writing. [2] He calls it a hybrid - hybrid / blended writing system - which in turn may be a factor in a major shift in human consciousness, from a linear way of processing information to a more holistic, imaginative way of thinking. An attempt is made to distinguish different speech acts within interpersonal communication via messengers which tend to feature emoji, a predominantly anthropomorphic language with a strong connection to the internet. Emojis are predominantly anthropomorphic in their visual representation. The



main distinctive feature of the study we have undertaken is a generalized analysis of the role of emoji in digital communication and an attempt to identify the influencing mechanism of this phenomenon.

Emoji is a pictographic way of expressing the state of mind, helping to express the emotional state, empathy of the speaker more effectively in an electronic communication environment, which has a number of characteristics, such as the limitations associated with of being unable to see the interlocutor. Emoji add emotion to ordinary text messages and, unlike emoticons before them, can convey a range of emotions from a simple smile or frown to sarcasm, surprise, indignation, etc. The symbol has a rather powerful communicative potential, capable of effectively conveying incommensurably more content than any other sign. The emoji, due to its universal nature, is able to transcend cross-cultural boundaries and create a dialogue space among speakers of the same language and across national borders on the Internet.

Above all, emoji have a non-verbal communicative function. Informal written communication in the realm of digital communication presents certain challenges. Without additional information, without additional information conveyed by voice tone and body language in face-to-face interactions, users of social media and messengers are not always able to interpret information correctly, overlooking each other's sarcasm, humour, and misinterpreting the intended emotion or illocutionary intention. Like non-verbal cues in face-to-face communication, emoji help clarify intentions in ambiguous contexts, to express the appropriate situation and emotions, therefore, increase the efficiency of the communication act. As a result, emoji have been used in SMS communication on any mobile devices and social networks. The communicative functions of emoji, which are somewhat similar to those of emoticons, are defined according to the initial intention of the addressee.



Picture 1



Picture 2

The main feature of the emoji is the emotive function of augmentation and supplementation. Emoji demonstrate a specific emotion or state of mind of the author who sent it. The symbol helps to determine the subject's attitude towards the result of the process of speech internet communication process, the circumstance, the facts and the person himself. Usually this function is expressed through pictograms depicting the expression of emotions of love, fear, joy, surprise, misunderstanding, anger, doubt, signs of gratitude and so on. The folded hands emoji 🙏 shows a person with their hands pressed together in prayer where it gained its slang as the praying emoji. It is most commonly used to represent prayer, thanksgiving, or general gratitude. For example, *Thank you Peter*. In this example folded hands emoji expresses gratitude. Some people use emoticons as a demonstration of a certain emotion or state in their chat conversation.

In conclusion, emojis are most often used for a variety of purposes, primarily related to the demonstration of the emotional load conveyed by the addressee. Based on the conclusions of a sociological study, we can say that emojis are the most popular tool



among those who have more time to spend on everyday correspondence than on business. And the purpose related to responding to the message sent by the interlocutor is the least helpful respondents to the use of visualised emoticons.

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REPRESENTATION OF THE PERSONALITY OF JALOLIDDIN MANGUBERDI IN THE NATIONAL PRESS

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Before our country gained independence in the 1980's, historians in union-sponsored countries began publishing books about our national heroes who had grown up in our country. After Uzbekistan's independence, the emphasis on highlighting the true history of our country by historians, philosophers, and writers intensified. This was not allowed by the ideology of the colonial era. It was forbidden to write about the characters who fought for the freedom of our country. "Frankly, for 150 years our people have been unaware of true history, no matter how proud they are of Manguberdi's heroism, patriotism, and their struggle against the invaders. The writings of his life and the fragments have been forged in the many layers of the past, and the study has been investigated" [1].

In 1991, the pages of Oriental Star magazine published a poem entitled "The Sword of the Ancestors" about Manguberdi [2]. The author emphasized the importance of fully illuminating the character of the main character, Jaloliddin. "Jaloliddin was brave, courageous, at the same time, stubborn and single-minded. The poet tried to reveal these complex contradictions in his nature" [3]. In this work, Jaloliddin's patriotism is described with great skill. In the work, it was clearly shown that "even when Jaloliddin was in the most difficult situations, when his heart was tormented by dreams and sufferings, his greatest will is manifested only in people as strong as a mountain, did not leave him" [3]. This work, created on a historical theme, was able to powerfully interpret the images of our compatriots who bravely fought for the freedom of the country.

Before the independence of Uzbekistan, there is very little information about the life and activities of Khorezmshah Jaloliddin Manguberdi, and in them, negative opinions were expressed mainly about his relationship with his father. In fact, Jaloliddin's respect for his father is very high, and if we know this from the works created in the years of independence, we can show his attitude as an example to the growing youth.

In the epic "The Sword of the Ancestors", Jaloliddin's character can be seen in his relationship with his father.

Дилда умид дарахти яшар безавол,
Япроқлари унинг кўркам, ям-яшил эрур,
Илдизлари пайванд юрак томирларига,
Шохалари сарин елда турар шовуллаб.
Ундан униб чиқар минг-минг кўчатлар ҳали,
Пайдо бўлар ер юзида сонсиз ўрмонлар.
Қуридим деб нола чекманг, ўксиманг, ота [2].

In the 40s of the 20th century, the situation in the world political arena became more complicated. At such an important time, the historical drama "Jaloliddin Manguberdi" by our writer Maqsd Sheikhzade was born.

In the years of the Second World War, any force affecting the will of the defenders of the Motherland - the soldiers - is of great importance to the soldiers fighting the enemy in a war situation. Maqsd Sheikhzoda's historical drama "Jaloliddin Manguberdi" was able to revive the heroism of Jaloliddin Manguberdi, the pillar of the Motherland, who was able to resist a powerful force like Chingiz Khan in the past, and rendered a great service to the combat missions of the World War years. This work was staged in the theater. According to the sources, it is said that "this drama, which shows the heroism of Manguberdi, which can make a person feel an exciting sense of pride, was specially shown to the soldiers going to war and sent to the front. This aroused the fighting spirit and courage in the soldiers and increased hatred for the enemy. The bravery of our great ancestors, especially Jaloliddin Manguberdi, which is the reason for the strengthening of such a feeling of patriotism, will not lose its value and importance even if centuries pass [4]."

If we analyze the life path of Jaloliddin Manguberdi and evaluate those historical events with the eyes of today, they encourage us to draw such natural and exemplary lessons.

At the solemn ceremony dedicated to the 800th anniversary of the birth of our great ancestor Jaloliddin Manguberdi, who sacrificed his life for the freedom of the country, I. Karimov mentioned: "Another call left by Sultan Jaloliddin to us is that he made us all to



appreciate the immaculate sky and peaceful life of our motherland, the future and happiness of our children who are growing up, who will take our place tomorrow, who are no less than anyone else in the world. calls to protect, to live in pursuit of a bright future [5].”

The image of Sultan Jaloliddin is the pride of not only Khorezm, but also the whole of Uzbekistan. It is a confirmation and a symbol of our ability to stand up and fight against any evil force that wants to encroach on our freedom and independence.

Jaloliddin Manguberdi followed the creed of his great sheikh: “In the way of the Motherland, while protecting the Motherland, burning the cup of martyrdom is equal to attaining the blessing of God!” and remained faithful to him for a lifetime [6]. The life path of Sheikh Najmuddin Kubra became a school of example for Jaloliddin. His courage was based on such a great idea. Jaloliddin Manguberdi was inspired by the ideas of Kubroviya, he continued the heroic struggle against the Mongol invaders with the help of his teacher's spirit [5].

“He was an obstacle to the invasion of the western lands by the Mongols for eleven years. He did not bow in front of Chingiz Khan, he did not kneel down, he died for the sake of the Motherland [7].”

Jaloliddin Manguberdi's power, heroism, great general, mature state leader, military skills were recognized not only by his associates, like-minded people, emirs, sultans, khans, kings, but also by his bitter rivals and enemies. For example, Chingiz Khan, who was amazed by the bravery of Jaloliddin, who escaped from the fire of war after a fierce battle on the banks of the Sindh River, said to him, “This is how a real father and son should be! If he was able to get out of such a destructive battlefield and the whirlpool of the river of death to the defensive shore, then we can expect more heroic deeds and countless worries from him: his words expressed hatred towards the great commander and recognition of his bravery [8].

This is the price of his blessed name, his heroism gives future generations, first of all you and us, the full right to live proudly in front of historical memory.

The conclusion is that as long as there is life, as long as there is a state, as long as there is a nation, there will always be evil forces that do not see a free, peaceful life, live with envy and conspiracy, and try to establish their rule by violence and disturb the peace of the people.

The life path of Sultan Jaloliddin became a model school for our national history. It became one of the brightest pages in the history of our country. Jaloliddin's spirituality comes to the rescue in difficult times and turns into a liberating force of our spirituality. His heroism serves the task of educating today's youth in the spirit of patriotism.

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PEDAGOGICAL ESSENCE OF NOSIRIDDIN TUSI'S MORAL VIEWS

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ABSTRACT

This article clarifies the fact that the comprehensive and in-depth study of the creative heritage of Nosiriddin Tusi, his pedagogical ideas, allows to consider moral positions in the context of the pedagogical works he created and wrote. Nosiriddin Tusi's creative heritage and pedagogical ideas allow us to analyze the state of culture and enlightenment of the era of the great thinker.

KEY WORDS. *Creativity, heritage, position, research, upbringing, educator, justice, ideal, will, freedom, reason, man, morality, life, virtue, sin, religious, humanistic, immoral, philosophy, scholastic, theological, virtue, consciousness, demand, skill.*

A comprehensive and in-depth study of the creative heritage of Great Eastern thinkers, their pedagogical ideas, allows to take into account moral positions in the context of the pedagogical works they created and wrote, which in turn helps to positively influence the educational process and improve the quality of the educational field.

Nosiriddin Tusi's creative heritage and pedagogical ideas are of great interest for analyzing and considering the state of culture and enlightenment of the era of the great thinker. His way of life, pedagogical ideas reflect the main directions of the past situation and development, the views of the great master of artistic words and wise teacher on the formation and development of spiritual life and culture.

The use of Nosiriddin Tusi's teachings on education has an incomparable place in the practice of educational work of general educational institutions in Iran, because they originate from the moral postulates and views of a person - poet, writer, thinker. His creative heritage serves to educate the young generation in the spirit of nobility, mutual help and assistance, and to support them in the difficult moments of human life.

Socrates stated that the only object of study can be only a person and, first of all, his morals, the thought echoes in the short words of Socrates: "Know thyself." Studying the virtues, Socrates came to the conclusion that each of them is a certain knowledge. Wisdom is knowing how to obey laws" [1].

Courage is knowing how to face danger. Temperance or self-control is taking control of his own actions. Thus, he proves the interdependence of morality and knowledge: "Justice and every other virtue is wisdom" [2].

The basis of Plato's ethics is the doctrine of ideas, the doctrine of the soul. In the soul, Plato distinguished three parts and the virtue (moral values) associated with each of them: the rational part of the soul - wisdom, the strong-willed part - courage, with the emotional part - abstinence. The harmonious combination of these three basic moral qualities constitutes the fourth justice. The highest virtue, according to him, is wisdom [3].

According to Plato, the main task of moral education is voluntary obedience to laws. "...In order to spend life in the best way, it is necessary to consider what qualities it gives to a person. And it is no longer law, but praise and rebuke, that should train the people here, and make them gentle and obedient to the laws that have been issued.

According to Kh.Shoikhtierov, "Nosiriddin Tusi's social philosophy pays great attention to the analysis of the essence of society, interaction between society and man, forms of social life and state structure, social justice and social equality, etc. In particular, forms of society from monarchy and aristocracy to oligarchy and democracy - the problem of the state are analyzed in depth. In this regard, the implementation of the ideas expressed by Nosiriddin Tusi is important for the development of strategies and tactics of social harmony, elimination of social enmity and conflicts, national peace and sustainable development of society. The humanitarian ideas expressed by the author during the analysis of the main problems in our social philosophy are of particular importance in the context of globalization, modern dangers and threats, and the task of combating extremism and terrorism [4]".



Valuable words of the great philosopher and moral teacher:

- They eat food not for pleasure, but for health.
- Do not lead an impure life, and an impure death will be added to it.
- Humility is not to consider yourself superior to those in a lower position.
- Always be aware, there are no limits to the tricks of evil people.
- It is said that nothing should be spared where loyalty, help and assistance are needed.
- Always read and read again. First define the goal, then choose the subject.
- We studied all our lives, and in the end we found out that we don't know anything.
- We said that justice is the sum of all virtues and its place is "partnership".
- If you pay a little attention, you cannot find a more impure character than the character of ungrateful people.
- Among the best virtues, there can be no more beautiful face than gratitude.

The greatest theoretical depth is based on the Greek doctrine of education in Aristotle. For this reason, in the works "Nicomachean Ethics" and "Politics" Tusi realistically analyzes moral problems and shows that "people form the concepts of goodness and happiness according to the life they lead" [5]. Aristotle first creates a classification of virtues and vices. The main virtues of Aristotle: courage, moderation and pleasure, wisdom, generosity, gentleness, honesty, courtesy, justice, we associate it with moral values. It shows vices such as cowardice, miserliness, pettiness, timidity, ambition, anger, pride, rudeness, and injustice. "For the description of virtues, the doctrine of "Mean Golden" is important, which Aristotle develops in its most profound form: "Virtue is due to striving for the average level" [6].

The pinnacle of ancient ethics was the teaching of Epicurus. Epicurus begins his doctrine of the good by considering the problem of pleasure and pain. He distinguishes two types of pleasures: physical - food, housing, clothing, and spiritual - pleasures derived from knowledge and friendship. Epicurus said that the beginning of human needs is material, there is nothing to be ashamed of, because this is where natural necessity is revealed. Epicurus considers pleasure to be "the beginning and the end of a blessed life" and connects the concept of goodness with the concept of the means to achieve this goal. "Beauty, virtue, and the like are valued when they give pleasure; if they don't deliver, we have to say goodbye to them. Epicurus above all values friendship based on equality and harmony in human relations [7]".

The germs of humanistic views of morality opened their way in religious debates about freedom of will, the role of reason in the moral life of a person, "the ladder of virtues and vices", which paved the way for its liberation from immorality. The philosophy of Pierre Abelard, Bernard Kedrovsky, Siger of Brabant criticizes the scholastic teaching of Augustine. Thomas Aquinas on theological virtues. Virtue is a natural skill inherent in the demands of consciousness, which appears and disappears in a person in activity, remains unchanged.

Morality is widely interpreted as one of the main forms of social consciousness in philosophical, sociological, psychological and pedagogical literature. Although moral education is often used as the education of virtue and honor among the people, moral education is described as a set of moral qualities and behavioral standards belonging to a person in both ethno-pedagogical and scientific-pedagogical literature.

Morality - includes norms and rules of behavior that determine the moral, deep qualities of a person, his attitude to society and others. In pedagogical literature, moral education includes form, root, prerequisite, result. In many cases it is one of the components of education. Moral education is a comprehensive personality.

In scientific pedagogy, the expression "moral education" was first used by the great Czech pedagogue Jan Amos Comenius (1592-1670), who is considered the founder of scientific pedagogy. He also used the expressions "moral rules" and "moral education" [8]. About 400 years before Comenius, the great thinker of the East, Nosiriddin Tusi, gave a great system of moral education in "Akhlaqi Nasiri". In all the guidelines and program documents available in the territory of the former USSR, morality is given only as communist morality.

The theory of moral education, which is considered the main factor of Tusi's pedagogy, was created on the basis of connecting the ideas of theorists of his time about education with the effective seeds selected from 3 sources - his family upbringing, the educational traditions of the people of Uzbekistan, summarizing them through critical analysis, and passing them through a deep scientific filter. Nosiriddin Tusi had the opportunity to give reasonable guidance to the education of the future generations due to his correct understanding of the past experience and his era in matters of education. Following this path, Nosiriddin Tusi created a system of moral education that is unique to our nation and the nations of the world based on your national moral values and opinions of powerful speakers.



First of all, Nosiriddin Tusi tried to define “moral norms”. These moral standards serve to regulate children's behavior, communication, and all their relationships with people, nature, and society. According to Tusi, a person's spiritual needs, spiritual powers, perfection, virtues and honorable poor people are provided and controlled by reason, consciousness and will. The key to human happiness and unhappiness, perfection and imperfection is given to his mind and will.

If a person does correct, consistent, purposeful work, gradually acquires science, culture, knowledge and wisdom, his innate talent is powerful and transcends the limits of evolution and takes it to another level. It raises it to one level, from one level to another, and takes it directly to the desired goal, the highest level. But if he remains at the innate level created for him, if he gives the reins to his soul, his soul will reduce him to the level of an animal, and in a short time he will commit suicide like a stone rolling from top to bottom. It is placed in the deepest place of shame. Therefore they say, “Soul is such a thing”. Philosopher Aristotle in his works “Ethics” said that bad people can mature on the basis of education and training, but it is difficult to say that this is strictly and always the case. In any case, advice, counseling, training, education will not be ineffective if it is connected with consistent and fair punishment. There are those who are brought up very quickly, and the effect of goodness is immediately manifested without waiting for time. There are those whose speed towards goodness and learning is slow and slow [9].

Moral education is the process of formation of individuals who are wounded for society, who manage their actions and relationships at a conscious speed by forming the moral norms and rules of behavior set by the society in the adult generation under the guidance of the educator. Its purpose is to provide people and citizens who meet the moral and social requirements of society. Moral education fulfills the tasks of creating correct moral concepts, forming habits and attitudes corresponding to these concepts.

Observations and studies have shown that moral education gives more effective results when it begins with the formation of moral knowledge, information and moral consciousness related to this knowledge. Moral norms and rules understood at conscious speed force people to act at conscious speed at all times and everywhere. Consciously perceived morality becomes the regulator of human behavior. The formed correct moral orientations give a person the opportunity to objectively evaluate both himself and the actions and behavior of others. Correct moral attitudes allow people to make conscious choices in accordance with moral standards in various situations and situations.

The moral ideal appears as a special form of moral consciousness as an important component. Ideals are human figures with moral qualities to which everyone aspires. On the contrary, it is an example of a person who wants to be. That is, every person strives to create and form the positive moral qualities that he sees in his ideal. Inculcation of moral concepts starts from the first stage of education and is continued in various spheres of activity.

Thus, in systematic educational institutions, general moral standards in society, the need to observe them, are instilled and explained. Concepts of moral qualities and actions necessary for this activity are created in different fields of activity. For example, production ethics, ethical requirements for teachers (both secondary and higher school teachers), ethical requirements for students, diplomatic ethics, business ethics, cultural activity ethics, etc. These are implemented through supporting educational activities in relevant educational and activity institutions. For example, production ethics is conveyed through educational events (ethical dialogue, debate, literary and artistic evenings, etc.) held in cultural institutions in industrial enterprises [10].

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IMPACT OF ADVERTISEMENT AND SALES PROMOTION STRATEGIES ADOPTED BY DMart

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ABSTRACT

DMart was started by Mr. Radhakishan Damani to address the growing needs of the Indian family. From the launch of its first store in Powai in 2002, DMart today has a well-established presence in 110 locations across Maharashtra, Gujarat, Andhra Pradesh, Madhya Pradesh, Karnataka, Telangana and Chhattisgarh. With our mission to be the lowest priced retailer in the regions we operate, our business continues to grow with new locations planned in more cities: The supermarket chain of DMart stores is owned and operated by Avenue Supermarkets Ltd. (ASL). The company has its headquarters in Powai, Mumbai. Since last 3 years Avenue Super Mart Ltd owned DMart has announced opening up of its shopping mall in Jalgaon city on Shirsolli road near Shirsolli Naka. This would be city third shopping mall after Vishal and Big Bazaar and it has prepared for its extensive marketing in the region. This area has lot of potential in terms of customer. The middle income group mainly resides here and nearby area. It is easy to access from every place of Jalgaon by auto rickshaws and vehicles. Large frontage makes mall clearly visible from outside. ATMs are available near the mall for one to withdraw money, if required. DMart is provide parking space for the every customer to park their vehicle like two wheelers and four wheelers also. There are various sections for every type of product is available.

KEY WORDS; D Mart, Income, Market, low cost.

INTRODUCTION

DMart's vision is to make available products/categories for the customer's everyday use at the 'best' value than DMart is constantly expanding across departments to keep pace with our rapidly growing business. If you are looking for a career in an exciting environment, with lots of potential for professional and personal growth, then join us at DMart! DMart will believe in learning through opportunities. As an equal opportunity employer, it strongly believe that ANYBODY can be a part of DMart. it encourage candidates from every background to bring in their best in terms of new ideas, innovative thinking and positive outlook towards work. They judge their prospective and existing employees only on the basis of their professional mettle.

OBJECTIVES OF STUDY

- To find out the sales promotional activities carried by DMart
- To find out the tools and techniques of sales promotion that used in DMart
- To know about availability of varieties of product.
- To know about affordable price for everyone.
- To study of quality of products

SCOPE OF THE STUDY

The data was collected from the respondents across all the Income groups, occupation and gender. The total sample size for the study is 200. The study involves ascertaining the customer perception towards various areas such as price, promotion offer, billing system and parking facility etc. The study also tries to know why the customer visits and shop at DMart and get valuable suggestion from them. So, the study tried to get the response almost all kind of respondent. This research is based on primary data and secondary data. Due to time constraint, only limited numbers of persons contacted.



RESEARCH METHODOLOGY

Research Methodology is a set of various methods to be followed to find out various information's regarding market strata of different products. Research Methodology is required in every industry for acquiring knowledge of their products.

RESEARCH DESIGN

The study undertaken was descriptive in nature as it provides description of the state of affairs, as it exists at present "Impact of advertisement and sales promotion strategies adopted by DMart".

METHODS OF DATA COLLECTION

SOURCE OF DATA

The information relevant for the study was drawn from secondary data, which alone was not sufficient. Primary data was collected through survey method using questionnaire to conduct the study successfully. A questionnaire was designed for this purpose.

PRIMARY DATA

Data that has been collected from first-hand-experience is known as primary data. Primary data has not been published yet and is more reliable, authentic and objective. Primary data has not been changed or altered by human beings; therefore its validity is greater than secondary data. Primary data is information collected by the researcher directly through instruments such as surveys, interviews, focus groups or observation.

SECONDARY DATA

Secondary data is the data that have been already collected by and readily available from other sources. Such data are cheaper and more quickly obtainable than the primary data and also may be available when primary data can not be obtained at all.

TOOLS FOR ANALYSIS

- Simple percentage analysis
- Average Rank analysis
- Weighted Analysis analysis
- Chi- square test
- Correlation analysis

REVIEW OF LITERATURE

A literature review is survey of scholarly sources (such as books, journal articles, and theses) related to a specific topic or research question.

According to M.Guruprasad(2018), Director research, Universal Business School , Concluded there was 50-50 opinion from customers of Badalpur and Karjat about online offering DMart products and DMarts mainly faces the competition from small shop which deal in single variety of commodity.

ANALYSIS AND INTERPRETATION

SIMPLE PERCENTAGE ANALYSIS

GENDER

Table 4.2.1 describe the gender of the respondents. It is categorized as male and female

Table 4.2.1

Gender of the respondents

GENDER OF THE RESPONDENTS	NUMBER	PERCENTAGE
Male	117	58.5%
Female	83	41.5%
Total	200	100

Sources: primary data



Interpretation

Table 4.2.1 shows that out of total of the respondents taken for the study 117(58.5%) respondents were male and 83(41.5%) respondents were female..

Inference

It is concluded that majority 58.5% of the respondent were male.

OCCUPATION

Table 4.2.2 describe the occupation of the respondents .It is categorized as student, employee,business/professional and unemployed

Table 4.2.2 Occupation of the respondents

OCCUPATION	NUMBER	PERCENTAGE
Student	73	36.5%
Employee	74	37%
Business/professional	41	20.5%
Unemployed	12	6%
Total	200	100

Sources: primary data

Interpretation

Table 4.2.2 shows that out of total of the respondents taken for the study, 73(36.5%) respondents were student, 74(37%) respondents were employee,41(20.5%) respondents were business/professional,12(6%) respondent were unemployed

Inference

It is concluded that majority 37% of the respondent were employee.

HOW OFTEN SHOP AT DMart

Table 4.2.3 describe the how often shop at DMart of the respondents .It is categorized as once a week, once a month, two month once and rarely

Table 4.2.3 How often shop at DMart of the respondents

SHOP AT DMart	NUMBER	PERCENTAGE
Once a week	44	22%
Once a month	78	39%
Two month once	48	24%
Rarely	30	15%
Total	200	100

Sources: primary data

Interpretation

Table 4.2.3 shows that out of total of the respondents taken for the study, 44(22%) respondents visit once a week, 78(39%) respondents visit once a month, 48(24%) respondents visit two month once,30(15%) respondents visit rarely to the DMart.

Inference

It is concluded that majority 39% of the respondent visit once a month to the DMart.

AVERAGE BILLING RANGE

table 4.2.4 describe the average billing range of the respondents .It is categorized as below1,000,1,000-3,000,3,001-5,000 and above 5,000



Table 4.2.4 Average billing range of the respondents

AVERAGE BILLING RANGE	NUMBER	PERCENTAGE
Below 1,000	34	17%
1,000-3,000	79	39.5%
3,001-5,000	59	29.5%
Above 5,000	28	14%
Total	200	100

Sources: primary data

Interpretation

Table 4.2.4 shows that out of total of the respondents taken for the study, 34(17%) respondents billing range were below 1,000, 79(39.5%) respondents billing range were 1,000-3,000, 59(29.5%) respondents billing range were 3,001-5,000, 28(14%) respondents billing range were above 5,000 in DMart.

Inference

It is concluded that majority 39.5% of the respondent average billing of 1,000-3,000 at DMart.

RANK ANALYSIS

Factors of sales promotion by the respondents

FACTORS	1	2	3	4	5	TOTAL	RANK
Product availability	78 (390)	33 (132)	41 (123)	31 (62)	17 (17)	200 (724)	1
Billing speed at DMart	14 (70)	66 (264)	64 (192)	44 (88)	12 (12)	200 (626)	2
Staff service availability	25 (125)	35 (140)	79 (237)	50 (100)	11 (11)	200 (613)	4
Shopping experience during offer days	23 (115)	45 (180)	67 (201)	50 (100)	15 (15)	200 (611)	5
Payment modes	41 (205)	33 (132)	57 (171)	46 (92)	23 (23)	200 (623)	3

INTERPRETATION

It could be observed from the table 4.3.1. factors of sales promotion by the respondents has been calculated

- According to 200 respondents, sales promotion of product availability is placed as FIRST RANK
- According to 200 respondents, sales promotions of billing speed at DMart is placed as SECOND RANK
- According to 200 respondents, sales promotion of payment mode is placed as THIRD RANK
- According to 200 respondents, sales promotion of staff service availability is placed as FOURTH RANK
- According to 200 respondents, sales promotion of shopping experience during offer days placed as FIFTH RANK

INFERENCE

Majority of the respondents promote the product availability as first in ranking



WEIGHTED ANALYSIS

Sales promotion aware of the respondents

FACTORS	EXCELLENT	GOOD	AVERAGE	POOR	TOTAL	WEIGHTED
OVERALL SHOPPING EXPERIENCE	88 (352)	73 (219)	30 (60)	9 (9)	200 (640)	3.2
DISCOUNT AND OFFERS	35 (140)	111 (333)	48 (96)	6 (6)	200 (575)	2.875
AMBIENCE INSIDE THE STORE	45 (180)	74 (222)	64 (128)	17 (17)	200 (547)	2.735
MAINTENANCE OF PRODUCTS	42 (168)	80 (240)	59 (118)	19 (19)	200 (545)	2.725
SERVICE PROVIDED TO CUSTOMERS	33 (132)	82 (246)	65 (130)	20 (20)	200 (528)	2.64
QUALITY OF PRODUCTS	52 (208)	83 (249)	53 (106)	12 (12)	200 (575)	2.875

SOURCE: (As per primary data)

INTERPRETATION

The above table shows that 3.2 mean score for overall shopping experience at DMart, 2.875 mean scores for discounts and offers and quality of products purchased at DMart, 2.735 mean score for ambience inside the store, 2.725 mean score for maintenance of products at DMart, 2.64 mean score for service provided to customers by DMart.

INFERENCE

The table shows that overall shopping experience at DMart has highest mean score of 3.2

CHI-SQUARE TEST

RELATIONSHIP BETWEEN ANNUAL INCOME AND AVERAGE BILLING RANGE OF THE RESPONDENTS

Table 4.6.1 Relationship between annual income and average billing range of the respondents

ANNUAL INCOME	BILLING RANGE				TOTAL
	Below 1,000	1,000 – 3,000	3,001 –5,000	Above 5,000	
20,000 to 40,000	20	26	16	4	66
40,001 to 50,000	8	21	19	7	55
50,001 to 75,000	1	21	15	5	42
Above 75,000	5	11	9	12	37
TOTAL	34	79	59	28	200

To find out the association between annual income and average billing range of the respondents, Chi-square test is used and result its given below.

HYPOTHESIS

Ho: There is no significant relationship between annual income and average billing range of the respondents.

H₁: There is significant relationship between annual income and average billing speed of the respondents.



CHI-SQUARE TEST

FACTOR	CALCULATED VALUE	D.F	TABLE VALUE	REMARKS
AVERAGE BILLING	28.826 ^a	9	16.919	Accepted

INTERPRETATION

It is clear from the above table that the calculated value of chi-square is less than the table value. Hence the hypothesis is accepted stating that there is no significant relationship between annual income and billing range

CORELATION ANALYSIS

RELATIONSHIP BETWEEN GENDER AND SALES PROMOTION OF THE RESPONDENTS

H₀: There is no significant relationship between gender and sales promotion by the respondents.

H₁: There is significant relationship between gender and sales promotion by the respondents.

Table 4.5.1 Correlation

		GENDER	SALES PROMOTION
Gender	Pearson correlation	1	-.047
	Sig.(2-tailed)		.508
	N	200	200
Sales promotion	Pearson correlation	-.047	1
	Sig.(2-tailed)	.508	
	N	200	200

Correlation is significant at the 0.05 level (2-tailed).

INTERPRETATION

Table 4.5.1 shows that correlation of gender and sales promotion by the respondents was found to be negative correlation and statistically insignificant ($r = -.047, p < .001$). Hence H₁ was supported. There is significant relationship between gender and sales promotion sector by the respondents.

CONCLUSION

DMart strives to give its customers the best quality at a low price by leveraging its financial strength, valuable real estate assets located in various parts of the country as well as its extensive network of distribution facilities. This has helped it become one of the most successful retail companies in India.

However, in this rapidly digitizing world, with Covid-19 is here to stay for a while and the entry of different giants such as Reliance Retail, Amazon India, The Tata's and Walmart owned Flipkart, things are certainly going change in the coming decades and DMart should work on having it's all sides covered.

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ABANDONED BUT NOT FORSAKEN: FROM THE STORIES OF PUPILS WITH PARENTS WORKING ABROAD

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ABSTRACT

This study explores how children with parents working abroad cope with their situation while studying without their parents' guidance. The study aims to understand the lived experiences, challenges, difficulties, coping mechanisms, aspirations, and hopes for the future of these children. The study focuses on the outcomes of students with parents working abroad in the Philippines, specifically their academic and emotional well-being. The phenomenological approach to qualitative research was used, and eight participants underwent in-depth interviews to gather information. Four research questions were addressed to the participants, and the study concludes with the results, discussion, and conclusions of the researchers. The findings of the study provide insights into the challenges faced by these children and the coping mechanisms they use to overcome them. The study highlights the importance of family support, especially for children who have parents working abroad, to ensure their academic and emotional well-being.

KEYWORDS: *Parents working abroad, challenges of the left behind child, lived experiences, challenges/ difficulties coping mechanisms, aspirations and hopes phenomenological study.*

INTRODUCTION

Raising and educating children to become responsible individuals is a significant responsibility of parents. By shielding their children from harm, offering guidance and assistance without any strings attached, parents can instill essential values in their children. However, due to the financial challenges and limited job prospects in the Philippines, some parents are forced to work overseas. Children who are left behind by their parents may experience emotional and psychological problems due to their parents' absence. Studies have shown that children left behind due to parental migration may experience negative impacts on their education, feelings of loneliness and sadness, and potential neglect. It is crucial to address the emotional and psychological needs of left-behind children (Yap, Cuenca, & Reyes, 2009).

A study in Capiz, Roxas City, Philippines, found that OFW mothers tend to leave their children before they start elementary school, while fathers tend to leave before their children are born. Left-behind children in private high schools have average total emotional quotient, but lower interpersonal skills and stress. The findings of this study can inform the development of support systems and interventions that address the emotional and psychological needs of left-behind children, promote resilience and well-being, and contribute to a better understanding of the experiences of children left behind by parents working abroad (Santiago, 2011).

In Sinobong Central Elementary School, a recent study was conducted by a researcher to explore the academic performance and personal struggles of students with parents working abroad. The findings of the study revealed that these learners tend to have lower academic performance and face various problems in their lives. The students also struggle with psychological and emotional stress caused by missing their parents. Despite these difficulties, the students are aware of and accept the reasons why their parents had to be separated from their family to provide for their needs.

This study provides relevant concepts that may inspire future researchers to explore the struggles and issues faced by children left behind by parents working abroad. The study aims to understand how young people with OFW parents fulfill their parenting responsibilities despite being away. It highlights the importance of family support, open communication, and the role of the community in providing assistance to these students.



The findings of the study have significant implications for educators, parents, and policymakers. It emphasizes the need for schools to provide support and guidance to these students, such as counseling services and academic assistance. Parents, on the other hand, should maintain open communication with their children and provide emotional support despite being physically apart. Policymakers can also address the issue by implementing programs that promote the welfare of children left behind by OFWs.

Overall, this study sheds light on the struggles and issues faced by students with OFW parents. It provides a deeper understanding of their experiences and highlights the importance of addressing their needs to ensure their academic success and overall well-being.

Review of Related Literature and Studies

Parental Involvement in School. This refers to the actions that parents take to help their children develop social and emotional skills, both at home and at school. This can lead to better academic performance. The importance of parents in supporting their children's social and emotional learning involves helping them acquire and use knowledge, attitudes, and abilities that enable them to understand and manage their emotions, set goals, show empathy towards others, and make responsible decisions (Taylor et al. 2017).

However, in the study of Epstein and Sanders (2002), parental involvement is often seen as a crucial aspect of a child's education, which can have a significant impact on both academic and overall school experience. The collaboration between families and schools has been a long-standing tradition in formal education. Parental involvement refers to the extent to which a parent is involved in their child's education. Some schools encourage parents to be involved in a constructive way, but parents are sometimes unsure about how to participate. This concept has been supported by Western countries, but there is a growing body of literature that examines the impact of social and cultural factors, as well as parental participation and expectations, on children's growth and education. Schools need to recognize that parents have different cultural backgrounds and participate in different ways.

Lived Experiences. Lived experiences are subjective experiences of individuals based on their unique perspectives and interpretations of events, situations, and phenomena they have encountered. In the context of pupils having parents working abroad, lived experiences may refer to the unique experiences, challenges, and opportunities that these pupils face due to their parent's absence. Save the Children (2006) stated that the children left behind in real areas did better in school, but emotionally, they felt lonelier and sad owing to the departure of one or both parents.

Moreover, in the study of Aquino (2019), she explains that children of OFWs are frequently deprived of attention and guidance from their parents, who yearn to provide the care they are unable to due to working away from home to provide their basic needs. Therefore, as children start to study, parents must help guide, teach, and lead their children. It is the responsibility of parents to care for their children; it is challenging for students to have someone to guide them, particularly in their studies.

Challenges and Difficulties of Learners with Parents Working Abroad. The Challenges and difficulties faced by learners with parents working abroad may refer to various adverse effects or obstacles they encounter due to their parent's absence. These may include emotional, psychological, social, and academic difficulties such as loneliness, anxiety, depression, lack of parental guidance, poor academic performance, and behavioral problems. The departure of a family member for another country creates a problematic situation that affects the children, spouses, and elderly family members in the household. There is always a suggestion or hypothesis that being away has adverse effects, especially on the psychological well-being of children left behind. Most descriptions of Filipino children are derived indirectly through adults' accounts or behaviors toward children. Children are often overprotected and strictly disciplined (Osteria, 2011).

Overseas Filipino Workers are employed in various parts of the world, and working as an OFW is not always as perfect as expected. The reality is that they face different challenges aside from leaving their families in the Philippines to have a better future. Communication, finances, and the work and living environment are just some of the challenges they encounter. This research assessed the life challenges of selected overseas migrant workers. The comprehensiveness of this study contributes to a vast understanding of the challenges faced by OFWs. This information helps the respondents better understand themselves and other OFWs going through similar situations. By following the advice of experts, they can also minimize issues with money, homesickness, or job burnout. According to the researchers, "job burnout is an uncomfortable and unhealthy disorder that individuals and organizations would like to improve." (Santos, 2020).

Parental Migration. The migration of parents abroad has both positive and negative effects on children who are left behind. One positive effect is that parents often earn more money abroad, which can provide their children with more financial and educational



resources. However, missing their parents can negatively impact children's well-being. Some studies show adverse effects on children when they miss their parents, while others show positive effects of parental migration, particularly for school achievement. The results depend on the family environment, the country where the study is conducted, and the available data (Botezat & Pfeiffer, 2014).

The migration of Filipino parents abroad has led to long-term separations of parents from each other and their children. Western-based analysis may predict negative educational outcomes for children due to parental absence. However, it has been found that separations caused by overseas migration often have neutral or positive effects on educational outcomes, particularly among older children. In general, girls perform better than boys in terms of educational attainment. Boys are often more affected by environmental factors, such as their parents' international migration (Arguillas & Williams, 2010).

Coping Mechanism. This refers to behaviors that individuals use to manage, reduce, or tolerate the adverse effects of stress, trauma, or challenging situations. For students with parents working overseas, these mechanisms may include building emotional resilience, seeking support from friends and family, pursuing hobbies or extracurricular activities, practicing self-care, and seeking professional assistance if necessary. Childhood and adolescence are critical stages of life that involve significant changes for individuals. Children's development is influenced by various factors, including social and cultural environments and family circumstances.

Moreover, migration is a crucial factor that has an impact on children and families. It is a global phenomenon that has existed throughout human history. Relocating to a new country can affect children and teenagers in various ways, such as their family dynamics, social interactions, and academic performance (Watters, 2008; SuárezOrozco & Suárez-Orozco, 2001)

Aspirations and Hopes. This pertains to the positive goals, ambitions, and aspirations of these students for their future, despite facing challenges and difficulties. These aspirations include educational and career objectives, personal growth and development, and the desire to reunite with their parents. It is crucial to acknowledge and encourage the hopes and aspirations of these students, as they can provide motivation and a sense of purpose in the face of adversity. In Vu's study, titled "Struggling yet Hopeful in the Streets of Ho Chi Minh City: A Family Life Survey on Children of Poor Migrant Families," cited by Juliawan (2016), the children's concerns are always centered around the necessities of life and the needs of their family. Their desires for material and spiritual things are genuine and important. However, these dreams are always based on the notion that they do not want their parents to go back overseas. These children dream of having a happy and healthy family and aspire to establish a good family life. Moreover, their dream of helping the poor demonstrates that these children have a strong social connection, and they understand the predicament of impoverished individuals who are in the same situation as themselves.

Zhao, Wang, Zhou, Jiang and Hesketh (2018), the study discovered that children faced obstacles to their psychosocial health primarily due to prolonged separation from their parents. These children, who were left behind, experienced emotional turmoil, which was evident in their feelings of isolation and unhappiness. These same emotions are why the children of overseas parents do not want to leave their locality, as they do not want to miss their families and subject them to the loneliness and sadness of being alone.

Research Questions

The study explored the experiences, concerns and challenges encountered and insights of the Elementary Learners. The following research questions are raised:

1. What are the lived experiences of the informants whose parents work abroad?
2. What are the challenges or difficulties encountered by the informants whose parents work abroad?
3. How do the informants cope with challenges or difficulties they encountered?
4. What are the aspirations and hopes of the informants?

SCOPE AND DELIMITATION OF THE STUDY

This research study explored the lived experiences, challenges, coping mechanisms, aspirations, and hopes of pupils of Sinobong Central Elementary School, Sinobong, Veruela, Agusan del Sur. The study participants were selected from Grade 4 to 6, out of the 42 pupils enrolled in Kindergarten to Grade 6 whose parents work abroad in the School Year 2022-2023. There were 8 participant selected in the in-depth interview. The sample size was adequate to represent the population.

I acknowledge the limitations and weaknesses of this study. The findings provide valuable insights into the experiences of pupils at Sinobong Central Elementary School, it is important to recognize that the research may not have achieved the expected generalization. Some of the participants' answers may have been rejected because they were not relevant to the study's objectives. The veracity of the



students' responses cannot be guaranteed. There may have been some inaccuracies or misrepresentations due to factors such as the fallibility of human memory. However, the study's findings still provide valuable insights into the experiences of pupils at Sinobong Central Elementary School and can be used to inform future research and interventions.

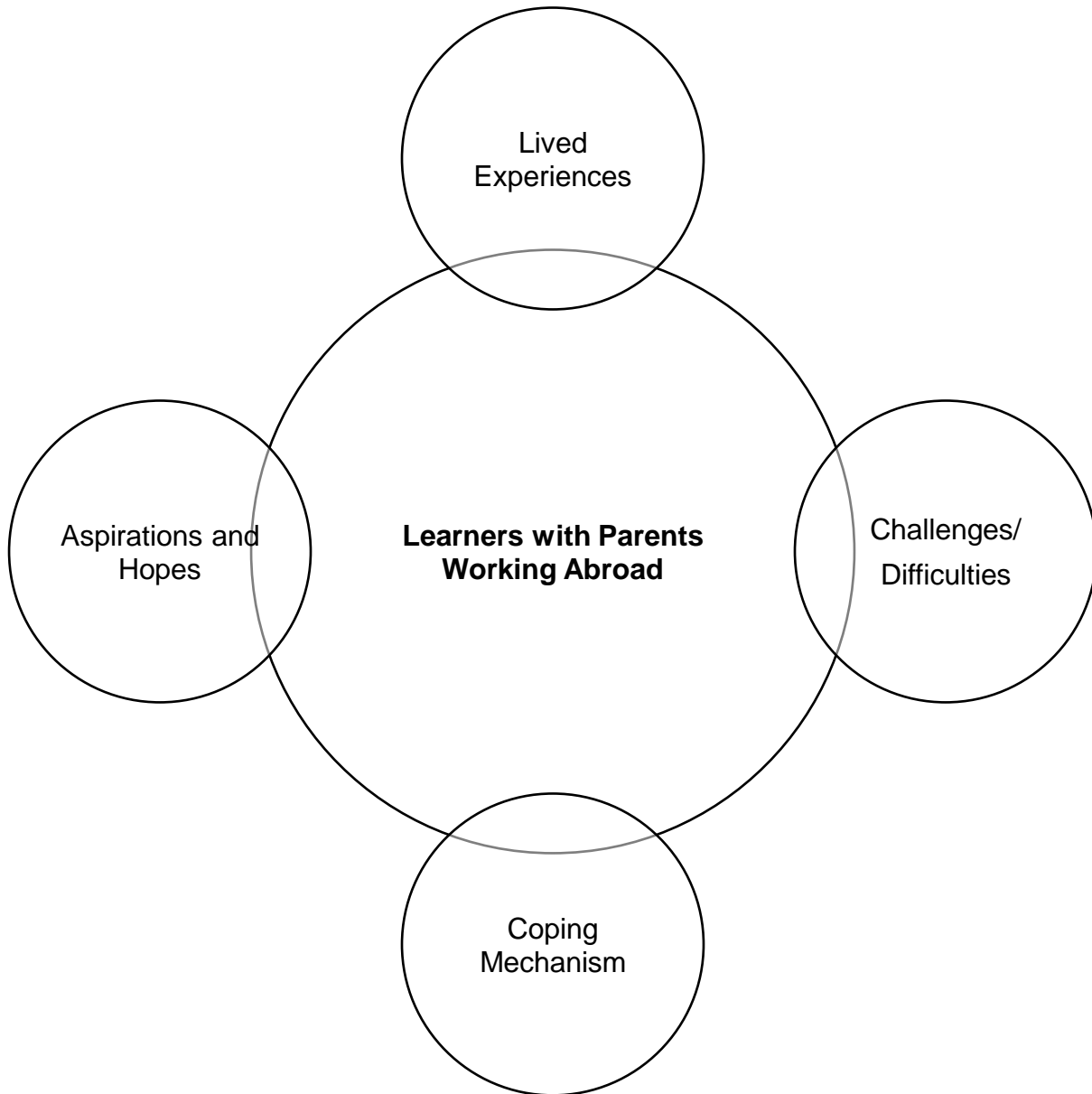


Figure 1: Conceptual Framework

Learners with parents working abroad may face unique challenges that can impact their academic performance, mental health, and social support

The coping mechanisms used by learners with parents working abroad may vary depending on their individual circumstances

Aspirations and hopes may serve as a source of resilience and motivation for learners with parents working abroad



Overall, this conceptual framework aims to provide a structure for understanding the experiences of learners with parents working abroad, as well as the factors that may influence their academic and personal well-being. By identifying key variables and relationships, the study can help to shed light on the challenges faced by these learners and the coping mechanisms that can help them to thrive.

METHODS

The study conducted at Sinobong Central Elementary School, Sinobong Veruela, Agusan del Sur. The Study used a phenomenological approach to qualitative research, which aimed to understand the lived experiences of participants. Eight participants were chosen, all of whom had parents working abroad. In-depth interviews were conducted to gather information about their experiences, challenges, coping mechanisms, aspirations, and hopes for the future. Four research questions were addressed to the participants, and the interviews were recorded and transcribed for analysis.

The study utilized a phenomenological approach to qualitative research to understand the lived experiences of participants who had parents working abroad. The research aimed to explore the challenges, coping mechanisms, aspirations, and hopes for the future of these students. Eight participants were chosen for the study, and in-depth interviews were conducted to gather information about their experiences. The interviews were recorded and transcribed for analysis.

The study addressed four research questions to the participants, which were designed to elicit rich and detailed responses. These questions focused on the impact of parental absence on academic performance, the challenges faced by students with OFW parents, their coping mechanisms, and their aspirations for the future. The interviews were conducted in a safe and supportive environment to encourage participants to share their experiences honestly and openly.

The phenomenological approach used in this study provided a rich and detailed understanding of the experiences of students with OFW parents. The study highlights the importance of providing support and guidance to these students and their families to ensure their academic success and overall well-being. The findings of the study can inform the development of programs and policies that promote the welfare of children left behind by OFWs.

Overall, this study provides valuable insights into the lived experiences of students with OFW parents. It underscores the importance of understanding their unique challenges and aspirations and the need for support and guidance to ensure their academic success and overall well-being.

The researcher ensured that the study was conducted ethically and that the participants' rights were respected by following the basic ethical principles outlined in the Belmont Report. The researcher obtained informed consent from participants, informed them of the risks and benefits of participation, and stressed that participation was voluntary and could be withdrawn at any time. The researcher also assured participants that they would receive benefits from participating in the study. Ethical considerations are essential in all human studies, and researchers must ensure that participants' rights are respected.

RESULTS AND DISCUSSION

This study aimed to explore the challenges that children with parents working abroad face and how they cope with them. The study found that the children reported experiencing negative emotions such as loneliness, sadness, and anxiety due to their parents' absence. Despite these challenges, the children also showed resilience and bravery in dealing with their situation. The study identified various coping mechanisms used by the participants, including seeking support from friends and relatives, participating in extracurricular activities, and prioritizing their academic goals.

The study revealed that the participants faced several challenges in their academic and emotional well-being. These challenges included problems with time management, lack of parental guidance and supervision, and financial constraints. The participants also reported feeling disconnected and isolated from their parents due to the distance and lack of communication.

The participants used various coping mechanisms to deal with these challenges. For instance, they relied on friends and relatives for emotional support and guidance. They also engaged in extracurricular activities such as sports, music, and dance to keep themselves occupied and distracted. Additionally, they focused on their academic goals and used their parents' absence as motivation to succeed.



The study also identified the participants' aspirations and hopes for the future. These included reuniting with their parents, pursuing higher education, and achieving their dreams. The participants expressed their desire to be reunited with their parents and to have a normal family life. They also hoped to use their experiences to inspire and help others who are in similar situations.

The study found that the participants experienced various emotional and psychological challenges, such as loneliness, sadness, and anxiety due to their parents' absence. However, they also displayed resilience and courage in the face of their situation, which suggests that they possess the necessary skills to overcome adversity. The study identified several coping mechanisms used by the participants, such as relying on friends and relatives for support, engaging in extracurricular activities, and focusing on their academic goals. The study also found that schools and communities can play a crucial role in supporting these children by providing them with a safe and nurturing environment.

The study highlights the importance of understanding the challenges faced by children with parents working abroad and the coping mechanisms they use to overcome their situation. The participants showed resilience and courage in facing their situation, which suggests that they possess the necessary skills to overcome adversity. However, it is essential to provide them with the necessary support and assistance to ensure their emotional security and family unity. The study also suggests that schools and communities can play a crucial role in supporting these children by providing them with a safe and nurturing environment. Overall, this study emphasizes the need for a comprehensive approach to address the emotional and psychological needs of left-behind children, promote resilience and well-being, and ensure family unity.

IMPLICATIONS FOR PRACTICE

Based on the findings, the following implications for practice are offered.

On Experiences in School Encountered without Parents. The research participants had different experiences in school they encountered without their parents. The experiences mentioned were sad, need care, and missing. Meanwhile, these encounters were based on their experiences in school without their parents.

On Some Instances in School that Need Parents Most. As noted in the findings of this study, the instances where participants needed their parents most were during academic activities and classroom meetings. These instances imply that the students needed their parents on days when they accomplished a milestone or received awards.

On Feelings Have When Classmates Have Parents During School Activities Done. Based on the feelings expressed by the participants, it could be inferred that they felt sad, hurt, and jealous, and some felt that it was fine when it was not.

On Challenges/Difficulties Encountered in Life that are Faced and Embraced Alone. The challenges and difficulties that the participants encountered in their lives were school-related activities like making assignments and during Math challenge competitions. It is implied that in these school activities, students had decided to face their challenges alone as they had no choice but to do it alone.

On Ways of Guardian to Help in Studies. As pointed out by the participants, their fathers and sisters helped them with their assignments. This clearly shows that even in the absence of one parent, the other parent or siblings can still help with schooling tasks. With this, it is encouraged that the remaining family members should check and monitor the child's needs and progress, not just in areas of learning but in their personal lives as well.

On Reasons of Disliking Some Aspects of Having Parents Working Abroad. The participants preferred to avoid having their parents work abroad because their parents would not be with them, no one could accompany them in school activities, and their parents must not have another partner.

On Ways of Managing to Overcome All Difficulties in School. In order to overcome all the difficulties of the participants in their school, they prayed, reached out to their father for support, defended themselves, talking to their teacher, found ways to seek help from a parent abroad, and just by being humble.

On Learning Gained from all the Problems Encountered. Based on their experiences and problems encountered, the participants learned to defend themselves, know household chores, and know the limit of asking and the need of their parents in times of sickness.



On Expectations from Parents in the Near Future. All the participants hope that their parents will not leave the country again in the near future.

On Reasons Why or Why Not Want to Go Abroad When Having His Own Family in the Right Time. Based on the findings, as they were asked if they want or not want to go abroad when they have their own family, reasons revealed that they do not like to as they do not want to miss their family, and they do not want to make his family feel the sadness they felt.

On Reasons Why or Why Not Go Abroad if Asked by Parents to Live There for Good. When the participants were asked their reasons why or why not to go abroad, even if their parents asked them to live there for good, few responses said that they did not want to go as they would miss their family here in the Philippines.

On Learning Gained from the Experiences of Having No Parents that You Will Apply in the Near Future. The learning gained by the participants in their experiences of having no parents that they will apply in the near future was not to leave their family, not to go abroad, to want to go abroad to provide for the family, to work for their grandparents, and to work to provide their basic needs.

On Biggest Dream in the Near Future. All the participants have dreams in life: to become a soldier, a policeman, an engineer, and a pilot. As revealed, the participants have no dream of going abroad, just like their parents did.

The study revealed several implications for future research. One suggestion is to conduct a similar study among high school and college students to explore their experiences, challenges, coping mechanisms, and aspirations when their parents work abroad. Another possible research area is to investigate the impact of having both parents working abroad on the child's academic performance and social-emotional development. Additionally, future research could explore the experiences of Filipino migrant workers and their families, including the children left behind in the Philippines.

CONCLUSION

This study focuses on the experiences of students who are left behind by parents working abroad, highlighting their challenges, coping mechanisms, and aspirations. The study found that these students have mixed feelings about their situation and their parents' absence. They feel sad and lonely but also encouraged, knowing that their parents are working for their future. The study also found that students feel envious of their classmates who have their parents around. However, both students and parents abroad use various communication methods to stay connected. The study also revealed that some students are willing to work abroad, while others prefer to stay in the country to be with their families. Additionally, some students would consider living abroad for good, while others would not. Lastly, the study found that the participants have different dreams for their future, but they all share the same desire to help their families and their country.

In summary, the findings highlight the importance of schools and communities in supporting these children by providing them with a safe and nurturing environment. The results can inform the development of programs and interventions that address the emotional and psychological needs of left-behind children, promote resilience and well-being, and contribute to a better understanding of their experiences. Ultimately, this study underscores the importance of family unity and emotional security in the lives of children with parents working abroad. Policymakers, educators, and parents can use these findings to design programs that support these children's emotional and psychological needs, promote their well-being, and ensure that they have the necessary resources to succeed in life. By doing so, we can help ensure that children with parents working abroad can thrive and reach their full potential.

SUGGESTION FOR FUTURE STUDIES

The study conducted on pupils with parents working abroad was limited to the responses of students from Sinobong Central Elementary School in Sinobong, Veruela Agusan del Sur. However, the implications for future research are numerous. One suggestion is to conduct another study with a different group of students from the same school. Additionally, another research study with a similar focus could be conducted in another location within the same municipality to further explore the experiences, challenges, coping mechanisms, and aspirations of pupils with parents working abroad. A re-interview of the same research participants and informants could be conducted to determine whether their experiences, challenges, coping mechanisms, and aspirations have changed over a period of time. Furthermore, the study was conducted in a public elementary school, and further research could be done to investigate the same phenomenon among private elementary schools. Finally, while the study was conducted on elementary learners, further research could explore the experiences, challenges, coping mechanisms, and aspirations of high school students and college students with parents working abroad.



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A STUDY ON FINANCIAL PERFORMANCE OF BAJAJ FINSERV LIMITED

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ABSTRACT

The project titled "A Study on Financial Performance of Bajaj Finserv Limited" is a comprehensive analysis aimed at evaluating the financial performance of Bajaj Finserv Limited, a prominent financial services company. Through in-depth research and meticulous data analysis, the study focuses on key financial indicators, profitability ratios, and growth patterns to assess the company's overall financial health. By examining financial statements and performance trends over a specific period, this study provides valuable insights for investors, stakeholders, and management. The findings will aid in making informed decisions, enhancing transparency, and fostering a deeper understanding of Bajaj Finserv Limited's financial standing in the market.

KEYWORDS: Financial Performance, Ratio Analysis, Financial Positions, Current Ratio, Quick Ratio, Net Profit.

INTRODUCTION

Financial performance analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items of balance sheet and profit and loss account. The study of financial statement is prepared for the purpose of presenting a periodical review or report by the management of and deal with the state of investment in business and result achieved during the period under review. Financial statement analysis can be undertaken either by the management of the firm or by the outside parties. The team financial statement includes at least two statements which the accountant prepares at the end of an accounting period. The two statements are: The Balance Sheet It helps a firm to identify short term and long-term growth forecasting. This analysis can be undertaken by management of the firm or by parties outside the namely, owner, creditors, investors.

STATEMENT OF THE PROBLEM

The New generation banks are highly competitive, customer centric and Profit oriented. Therefore, these NBFCS are prone to more risks. The RBI has issued risk management guidelines for nbfc's for effective management of various risks such as credit risk, market risk, operational risk and integrated risk in 2014 with the view to enhance and strengthen their financial performance. Bajaj Finserv has achieved a steady growth within a short period of time. The nbfc's aims to build counter cyclical strategies and proactive risk management practices. The financial performance management framework at bajaj finserv is driven by well informed and knowledgeable board, largely comprised of independent directors and senior management. The board supervises the risk profile of the nbfc's, monitor the business and the existing control mechanisms, ensure expert management and maximize the interests of all the stakeholders. Thus, a study is done to understand the financial performance and risk management practices followed by Bajaj Finserv.

OBJECTIVES OF THE STUDY

- To find the profitability, liquidity and solvency of the company.
- To find the financial position and its annual growth in order to make investment decisions.
- To measure the financial performance of the company.

SCOPE OF THE STUDY

The study entitled "A study on the financial Performance of Bajaj Finserv limited" is to analyse the financial performance of Bajaj Finserv limited for the last 5 years (2017-2022). The study is based on the financial position of the firm by using Ratio analysis, financial statements help the Management to analyse profit, solvency, liquidity and Efficiency.



RESEARCH METHODOLOGY

RESEARCH DESIGN

Research Design is detailed blueprint used to guide the research study towards its objectives. The research design is for the study of descriptive and analytical in nature.

SOURCE OF STUDY

The study is based on secondary data which includes the Annual reports of the Nonbanking financial institution.

PERIOD OF STUDY

The present study covers the period of five years from 2017-2018, 2018-19, 2019-20, 2020-21 and 2021-2022.

STATISTICAL TOOLS

- ✓ Current ratio
- ✓ Quick ratio
- ✓ Net profit ratio

REVIEW OF LITERATURE

Dr. K. Prince Paul Antony and D. Bharath, (2022), Their study focused on financial performance of Bajaj Finserv. The main objective of this study is to measure the financial performance and to know the profit ability of the company. The study is based on the financial position of the firm by using ratio analysis, financial statements help the management to analyse profit, solvency, liquidity and efficiency. The study concluded that the company is in a good trend.

P. Bhaskar Yadav and Dr. K. Haritha, (2022), Their study focused on a Study on Ratio analysis of Bajaj Finserv with Reference to Sriram Bajaj. The main objective of the study is to study the Liquidity position of the company and profitability position of the company. Secondary source of data were used. The study concluded that the current ratio is in standard position, debtors turnover ratio is efficient and the financial performance of the company is in standard position.

K. Sai Dakshayani and Dr. P. Viswanath, (2022), Their study focused on a Study on Profitability analysis at Bajaj Finserv Ltd. The main objective of the study is to analyse the profitability in terms of sales and to examine the relationship of net profit and total assets efficiency. Secondary source of data were used for study. The study concluded that the growth of profitability of the company can be considered stable.

BAJAJ FINSERV LIMITED

Bajaj Finance was initially incepted as Bajaj Auto Finance in 1987. Later diversified into business and property financing. Bajaj Allianz Life Insurance is a joint venture between Bajaj Finserv and Allianz SE. Being one of the private insurance companies in India, it offers insurance products for financial planning and security. The company received the Insurance Regulatory and Development Authority (IRDA) certificate of Registration on 3 August 2001 to conduct Life insurance Bajaj Allianz General Insurance is a private general insurance company in India. It is another joint venture between Bajaj Finserv Limited and Allianz SE. It is headquartered in Pune with offices in over 200 cities in India and more than 3,500 employees as of 2018.

VISION

Its vision is to provide financial solutions for retail and SME customers through their life cycle - asset acquisition and lifestyle enhancement through financing, asset protection through insurance, family protection through life and health insurance, healthcare needs for the family, savings products, retirement planning and annuities. BFS, through its various businesses serves crores of customers by providing these solutions. In furtherance of this vision, BFS participates in various businesses through controlling stakes including.

MISSION

We seek to play a pivotal role in addressing the unmet investment needs by delivering innovative products and solutions to our investors and help them meet their financial goals.



**CURRENT RATIO
TABLE SHOWING CURRENT RATIO**

(Rs.in crores)

YEAR	CURRENT ASSETS	CURRENT LIABILITIES	RATIO
2017-2018	154079.52	62627.61	2.43
2018-2019	200741.76	107349.20	1.86
2019-2020	241440.17	125628.90	1.92
2020-2021	269460.60	137855.44	1.95
2021-2022	321358.14	157480.25	2.04

(SOURCES: SECONDARY DATA)

INTERPRETATION

The above table shows that the current ratio in the year 2017-2018 as 2.43 and then a decreased to 1.86 in the year 2018-2019, and increased to 1.92 in the year 2019-2020 and increased to 1.95 in the year 2020-2021 and increased to 2.04 in the year 2021-2022.

Current ratio of the company was highest 2.43 in the year 2017-2018 and lowest 1.86 in the year 2018-2019.

**QUICK RATIO
TABLE SHOWING QUICK RATIO**

(Rs.in crores)

YEAR	CURRENT ASSETS- INVENTORY	CURRENT LIABILITIES	RATIO
2017-2018	154079.52	62627.61	2.43
2018-2019	200741.76	107349.20	1.86
2019-2020	241440.17	125628.90	1.92
2020-2021	269460.60	137855.44	1.95
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Quick ratio of the company was highest 2.43 in the year 2017-2018 and lowest 1.86 in the year 2018-2019.

**NET PROFIT
TABLE SHOWING NET PROFIT RATIO**

(Rs.in crores)

YEAR	NET PROFIT	NET SALES	RATIO (%)
2017-2018	4175.06	32862.37	12.7
2018-2019	5372.49	42604.00	12.6
2019-2020	5992.94	54346.69	11.0
2020-2021	7367.56	60591.20	12.1
2021-2022	8313.89	68406.08	12.1

(SOURCES: SECONDARY DATA)

INTERPRETATION

During the period of 2017-2018, 2018-2019 and 2019-2020, increase in their profits arises as ratio 7.911, 9.17 and 11.47 respectively. But in 2020-2021 and 2021-2022, their net profit has been decreased to 8.669 and 8.467 respectively.

Net Profit ratio of the company was highest 11.47 in the year 2019-2020 and lowest 8.467 in the year 2021-2022.



FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

1. The Current Ratio of Bajaj Finserv Limited has been consistently increasing from 2017- 2018 to 2021-2022, indicating the company's ability to pay its short-term obligations.
2. The Quick Ratio has also shown a similar trend, indicating that the company has enough liquid assets to cover its immediate financial obligations.
3. The Net Profit Ratio has been relatively stable from 2017-2018 to 2021-2022, indicating that the company has been able to maintain its profitability.

SUGGESTIONS

1. The decreasing trend in the Proprietary Ratio should be addressed by the company by increasing its equity capital to reduce its reliance on borrowed funds.
2. The company should focus on maintaining its profitability, optimizing its asset utilization, and effectively managing its inventory to ensure financial stability and growth.
3. Prioritize your tasks: Make a to-do list and prioritize your tasks based on their importance and urgency. This will help you stay focused and avoid feeling overwhelmed.
4. Take breaks: Taking regular breaks throughout the day can help you stay fresh and focused. Try taking a short walk, doing some stretching exercises, or simply taking a few minutes to relax and clear your mind.
5. Use productivity tools: There are many productivity tools and apps available that can help you stay organized and focused. Experiment with different tools to find the ones that work best for you.
6. Eliminate distractions: Try to eliminate as many distractions as possible when you're working. Turn off your phone, close unnecessary tabs on your computer, and let your colleagues or family members know that you need some uninterrupted time to work.

CONCLUSION

In conclusion, being productive and effective is essential for achieving success and reaching your goals. By implementing the suggestions I have provided, such as setting clear goals, prioritizing tasks, and taking breaks, you can increase your productivity and achieve more in less time. Remember to also be kind to yourself and adjust your strategies as needed. With consistency and dedication, you can cultivate a productive mindset and accomplish great things.

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A STUDY ON FINANCIAL PERFORMANCE OF HATSUN AGRO BASED PRODUCTS LIMITED

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ABSTRACT

The project titled "A Study on Financial Performance of Hatsun Agro Based Products Limited" aims to conduct a comprehensive analysis of the financial performance of Hatsun Agro Based Products Limited, a leading agro-based company. Through extensive research and meticulous data examination, the study focuses on key financial metrics, profitability ratios, and growth patterns to evaluate the company's overall financial health. By scrutinizing financial statements and performance trends over a specific timeframe, this study provides valuable insights for investors, stakeholders, and management. It assesses the company's efficiency, liquidity, and solvency, enabling a deeper understanding of its financial position in the market. The findings will assist in making informed investment decisions, enhancing transparency, and supporting strategic planning for sustainable growth and success in the agro-based industry.

KEYWORDS: Financial Performance, Ratio Analysis, Financial Positions, Current Ratio, Quick Ratio, Net Profit.

INTRODUCTION

Financial statement analysis is structural and logical way to present overall financial performance of a Firm; it's also help to evaluate for financial decision making of the business operation. In financial analysis is the most dominant and logical structure to help business related stakeholder. The analysis of financial statements is a process to obtain a better understanding of the firm's position and performance, a careful examination of its financial position and operation of firm.

Financial Statement provides some useful information to firm Stakeholders, the extent the Income and balance sheet mirror of financial position of a particular period in terms of the structure of asset, liabilities, owners' equity, and so on. Financial analysis is the approach to judge the effectiveness of the finance function of a firm.

Financial analysis is the process of determining significant financial operating and financial characteristics of a firm. The financial statement is indicators of two significant factors-profitability and financial soundness.

STATEMENT OF THE PROBLEM

Lameness often leads to additional welfare problems such as mastitis and metabolic diseases. Mastitis, inflammation of the udder, is the painful result of bacterial infection that is prevalent among dairy cows. Additionally, providing dairy cattle with the feed of inadequate quality limits the system for animal production. The small and marginal farmers, as well as the agricultural labourer working on the growth of the dairy sector, have limited financial resources, which leads to inadequate nutrition.

OBJECTIVES OF THE STUDY

1. To analyse the financial performance of the partnership firm.
2. To find the profitability, liquidity and solvency of the company.
3. To find the financial position and its annual growth in order to make investment decisions.

SCOPE OF THE STUDY

One of the country's major agri-businesses and also a leading contributor to the nation's GDP is dairy farming in India. It is a significant contributor to farmers income as approximately 70 million farmers are directly involved in dairying. A study is on the investment made by Hatsun agro product Ltd, on its working capital & its adequacy, and the factors determining that investment. It concentrates on the liquidity position of the firm and it is made on the techniques used by a firm for the management of its current assets and the sources through which the working capital is available for the firm.



RESEARCH METHODOLOGY

RESEARCH DESIGN

Research Design is detailed blueprint used to guide the research study towards its objectives. The research design is for the study of descriptive and analytical in nature.

SOURCE OF STUDY

The study is based on secondary data which includes the Annual reports of the Hatsune Agro products limited.

PERIOD OF STUDY

The present study covers the period of five years from 2018-19, 2019-20, 2020-21 and 2021-2022.

STATISTICAL TOOLS

- ✓ Current ratio
- ✓ Quick ratio
- ✓ Net profit ratio

REVIEW OF LITERATURE

Idhayajothi, Latastri, Manjula and Banu (2014) the study throws light on overall financial performance of the company. It reveals that the financial performance is fair. It has been maintaining good financial performance and further it can improve if the company concentrate on its operating, administrative and selling expenses and by reducing expenses. The company should increase sales volume as well as gross profit. Despite price drops in various products, the company has been able to maintain and grow its market share to make strong margins in market, contributing to the strong financial position of the company. The company was able to meet its entire requirements for capital expenditures and higher level of working capital commitment with higher volume of operations and from its operating cash flows.

Warrad and Rania (2015) stated the impact of total asset turnover ratio and fixed asset turnover ratio on return on assets among Jordanian industrial sectors. Simple linear regression used to test a period 2008 - 2011 in order to conclude the extent of the impact of activity turnover ratios on company's performance among Jordanian industrial sectors. The study showed there is significant impact of total asset turnover ratio on Jordanian industrial sectors return on asset, thus changes in return on asset have described by total asset turnover ratio. Also, there is significant impact of fixed asset turnover ratio on Jordanian industrial sectors return on asset, thus changes in return on asset have described by fixed assets turnover ratio, finally, there is significant impact of activity turnover ratios on Jordanian industrial sectors performance. The study also concluded that the textiles, letters and clothing sector has the lowest total asset turnover ratio and the tobacco and cigarettes sector has the highest and paper and cardboard Industries sector at the lowest fixed assets turnover tobacco and cigarettes has the highest, on the other hand that the glass and ceramic industries sector has the lowest return on assets and the mining extraction sector has the highest.

HATSUN AGRO PRODUCTS LIMITED

Hatsun Agro Products (HAP) is primarily engaged in the business of manufacture and marketing of ice cream and milk and dairy based products. The company sells its products under the brands viz. Arun Icecreams Arokya Milk Hatsun Curd Hatsun Paneer Hatsun Ghee Hatsun Dairy Whitener and IBACO. The company exports dairy ingredients to 38 countries around the world - primarily in America the Middle East and South Asian markets. Hatsun Foods was incorporated as a private limited company in March 1986 by R G Chandramohan.

In April 1986 the company was admitted as a partner in Chandramohan & Co a partnership firm promoted by the same promoter. During the same month Chandrmohan & Co was dissolved and all the assets and liabilities of the firm vested with the company except the Arun brand name which was vested with R G Chandramohan. In 1987 the company acquired the Arun brand name subject to a payment of 1% royalty on the company's gross ice cream sales turnover. The company became a public limited company in August 1995.

VISION

We Endeavour to offer our Customers products to bring a positive change in their lives by empowering the local rural produce and using technology to transform it into finest quality products with a strong commitment to Nation building.

MISSION

- To provide quality products and excellent services that differentiates us from others.
- To be the preferred partner and promote win-win business relationships.
- To achieve sustainable growth and returns for our shareholders over the long term.



**CURRENT RATIO
TABLE SHOWING CURRENT RATIO**

(Rs.in crores)

YEAR	CURRENT ASSETS	CURRENT LIABILITIES	RATIO
2017-2018	484.97	1095.18	0.44
2018-2019	540.73	898.46	0.60
2019-2020	498.28	957.31	0.52
2020-2021	717.97	1337.42	0.53
2021-2022	799.55	1420.10	0.56

(SOURCES: SECONDARY DATA)

INTERPRETATION

The above table shows that the current ratio in the year 2017-2018 is 0.44 and increased to 0.60 in the year 2018-2019 and decreased to 0.52 in the year 2019-2020 and decreased to 0.53 in the year 2020-2021 and increased to 0.56 in the year 2021-2022.

Current ratio of the company was highest 0.60 in the year 2018-2019 and lowest 0.44 in the year 2017-2018.

**QUICK RATIO
TABLE SHOWING QUICK RATIO**

(Rs.in crores)

YEAR	CURRENT ASSETS	INVENTORY	CURRENT LIABILITIES	RATIO
2017-2018	484.97	383.73	1095.18	0.09
2018-2019	540.73	403.41	898.46	0.15
2019-2020	498.28	373.96	957.31	0.13
2020-2021	717.97	569.77	1337.42	0.11
2021-2022	799.55	609.17	1420.10	0.13

(SOURCES: SECONDARY DATA)

INTERPRETATION

The above table shows that the quick ratio the year 2017-2018 is 0.09 and increased to 0.15 in the year 2018-2019 and decreased to 0.13 in the year 2019-2020 and decreased to 0.11 in the year 2020-2021 and increased to 0.13 in the year 2021-2022.

Quick ratio of the company was highest 0.15 in the year 2018-2019 and lowest 0.09 in the year 2017-2018.

**NET PROFIT
TABLE SHOWING NET PROFIT RATIO**

(Rs.in crores)

YEAR	NET PROFIT	NET SALES	RATIO
2017-2018	90.84	4278.69	2.12
2018-2019	114.85	4751.76	2.42
2019-2020	112.27	5300.25	2.12
2020-2021	246.35	5562.27	4.43
2021-2022	217.91	6353.51	3.43

(SOURCES: SECONDARY DATA)

INTERPRETATION

The above table shows that the net profit ratio in the year 2017-2018 is 2.12 and increased to 2.42 in the year 2018-2019 and decreased to 2.12 in the year 2019-2020 and increased to 4.43 in the year 2020-2021 and decreased to 3.43 in the year 2021-2022.

Net profit of the company was highest 4.43 in the year 2018-2019 and lowest 2.12 in the year 2017-2018 and 2019-2020.



FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

1. **Current Ratio:** The company's current ratio has remained fairly consistent over the years, ranging between 0.44 and 0.60. This indicates that the company has enough current assets to cover its current liabilities, but the ratio has not improved significantly over the years.
2. **Quick Ratio:** The quick ratio has also remained consistent, ranging between 0.09 and 0.15. This suggests that the company may have some difficulty in meeting its short-term obligations as its quick assets (excluding inventory) are relatively low.
3. **Net Profit Ratio:** The net profit ratio has shown an increasing trend over the years, from 2.12 in 2017-2018 to 3.43 in 2021-2022. This indicates that the company is generating more profit per unit of sales, which is a positive sign.

SUGGESTIONS

1. **Improve the quick ratio:** The quick ratio is an important indicator of a company's liquidity and ability to pay its short-term liabilities. The quick ratio has decreased over the years, which suggests that the company may have difficulty meeting its short-term obligations. To improve the quick ratio, the company can focus on reducing inventory levels, accelerating the collection of receivables, and managing its current liabilities effectively.
2. **Increase the net profit ratio:** The net profit ratio indicates the profitability of a company. The company has seen an increase in net profit over the years, but the ratio has fluctuated. To improve the net profit ratio, the company can focus on reducing expenses, increasing revenue, and improving efficiency in its operations.
3. **Boost return on capital employed:** The return on capital employed is a measure of the efficiency with which a company uses its capital to generate profits. The company has seen a significant increase in this ratio in the past year, but it remains lower than the industry average. To improve this ratio, the company can focus on improving its operational efficiency and optimizing its use of capital.
4. **Increase the return on assets ratio:** The return on assets ratio indicates how efficiently a company is using its assets to generate profits. The company's ratio has been declining over the years, indicating that the company needs to better utilize its assets to generate more profit. The company can focus on increasing sales and improving operational efficiency to increase the return on assets ratio.
5. **Reduce the debt ratio:** The debt ratio measures the proportion of a company's assets that are financed by debt. The company's debt ratio has fluctuated over the years, and it is currently higher than the industry average. To reduce the debt ratio, the company can focus on paying off debt, reducing expenses, and increasing profits.

CONCLUSION

The company is currently facing challenges in maintaining profitability and liquidity. The decreasing net profit margin and low current ratio indicate that the company needs to take immediate actions to address these issues. However, there are opportunities for improvement in the company's financial performance. The potential for revenue growth in the untapped markets, the optimization of production costs, and the implementation of cost-saving measures can help the company to improve profitability and liquidity. Therefore, it is recommended that the company adopts the suggested measures to address the challenges and capitalize on the opportunities for growth. By implementing these measures, the company can enhance its financial performance and achieve sustainable long-term growth.

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GROWING IMPORTANCE OF ACADEMIC RESEARCH IN EDUCATION

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ABSTRACT

This paper builds a case to draw attention to the growing importance of academic research in education. While research in the West has received its due and is well funded and integrated into the curriculum, in India, high quality of academic research is limited to and produced by only the top 10-15 institutes in each field. But the growing importance of Academic research cannot be denied. Research adds value to the knowledge base not only of the learner but the field of knowledge itself. Whether it is about personal development or career development, well conducted, thorough research always brings crucial changes in the way we perceive something and contributes towards problem solving, trouble shooting and decision making. The exploratory study conducted showed that Academic Research is important for many reasons but primarily because-

- 1) *It facilitates learning and deeper understanding of the learner.*
- 2) *It highlights several questions that may arise in the mind while analyzing the situation and subject area.*
- 3) *It helps in the growth of business by addressing key issues.*
- 4) *It encourages the personal growth of students, learners and academicians.*
- 5) *It adds to the subject area in which research is conducted and contributes towards greater understanding in that area.*

It is imperative that educational institutions and centers for research in India upgrade the level of research being conducted and focus upon producing high quality of that is valid, reliable and can be verified.

KEYWORDS: *Academic Research, Knowledge, learning, inter-disciplinary, Education Sector*

INTRODUCTION

Academic organizations should work towards building 'academic value'. Academic value refers to A person's desire, preference, or "wanting" for certain academic goals and outcomes. It is imperative that all the constituents of the academic community, that is all categories of staff along with the external stakeholders from areas such as regulatory, commercial, professional and community contribute towards creating academic value.

A holistic academic effort, often called a 360-degree endeavor calls for the focus to be on:

- 1) *Academic developers*- Those who work on improving teaching and learning at individual and institutional levels
- 2) *Academic development* - The field of study and practice in order to create an environment that supports teaching and learning
- 3) *Active academic development* This refers to what goes beyond learning and teaching and includes: -
 - a) *The Role of Academics* that includes aspects of academic careers like research, service, administration, leadership, etc.
 - b) *The Institution as a Whole*- That builds liaison between disciplines, departments, leaders and managers on the development of, and strategic imperatives around, learning and teaching. It focus' upon not only the academicians but also professional and support staff, and the students, who support the development of teaching, learning, and research. For example, academic developers are now required to serve as activist-advocates within universities, to be models of leadership, to advocate for sustainable innovations, to be strategic, to be politically aware, aware of values, of power and positioning within the organization.
 - c) *The Academician as a person*- Academicians often feel torn between teaching and research identities and expectations, as well as between disciplinary affiliations and commitments. In developing teaching identities often, a divide between teaching and research emerges. It therefore becomes important to take all aspects of the academician into consideration.



Thus, the imperative lies in creating a collaborative effort between academic developers and several diverse members of the university communities. The idea is not to prioritize researcher development, or leadership or organizational development, over teaching development but to encourage the various research fields and the practitioners providing the professional development to interact and connect with each other.

Due to the availability of internet, there is so much information available and some of it is not accurate or even correct leading to difficulty in identifying information as reliable or correct. This heightens the need for scientific inquiry so that accurate, verifiable, measureable and reliable information on various subjects is available. A culture of serious research as part of the academic environment is thus very important.

The importance of research is often the subject of discussion in colleges and universities but in the current scenario its importance is unprecedented in the current scenario. In this exploratory research paper we shall try to highlight the importance of academic research and the value it adds to the subject area.

WHY ACADEMIC RESEARCH IS IMPORTANT

Every decision we take is a result of the informal research gathered over time but usually the first exposure to academic research is as college students. So while writing academic papers students learn the necessity to cite documented academic research. Managers and professionals refer to academic research to make decisions in practical life because the information derived from scientific academic research is impartial, reliable and valid. In fact, every field of study and every facet of life requires research.

Reasons why academic research is important

1) Objectivity of the Scientific Method- While we get a lot of our information from the media, one cannot be always sure about the reliability or impartiality of the information. The scientific methodology of academic research ensures objectivity and minimum personal bias.

2) Academic research follows the Scientific Method- The scientific method encourages the researcher to ask questions and then conduct research to answer those questions. This is done by formulating hypothesis, and then testing the hypothesis. The data collected leads to the hypothesis being either accepted or rejected.

3) Academic research is peer-reviewed and this ensures accuracy -Most academic research is *peer-reviewed* and the research methods and conclusions are examined by other professionals who also follow the scientific method and its principles. This strict adherence to truth is what makes academic research important.

4) Research results in technological innovation -Research in areas like physics, biology, economics, and culture result in an understanding of the world around us, and contributes to the development of new technology. Academic research is greatly beneficial to everyone.

5) Academic Research speeds up changes in society- In fact the benefits of academic research extend to all fields. For example, research in microbiology found a vaccine against Covid 19 or social science research identifies the changes taking place in human behavior post the pandemic. In fact, from the ergonomic design of your workspace, to the electric vehicle you drive to work or the medicine you are prescribed to tackle acid reflux, academic research steadily works towards improving the quality of our life.

6) Academic Research Facilitates Learning-Academic research is important not just for students, but for the entire academic community. Research helps to understand issues through various perspectives. While conducting the research, a scholar goes beyond the personal experience and collects the evidence on the basis of facts and rationality. That is how academic research papers open the gates for further discourse and discussions. It is the best tool to develop or enhance knowledge and to facilitate learning

7)Research highlights important issues-Academic research often highlights issues prevalent in society. These issues could be related to cultural norms, health, education, etc. For example, research in the field of mental health may lead to new findings and treatment of clinical depression among the youth.

8) Research helps in the growth of a business

Research plays an important role in the field of business. Market research can help study market trends and prepare accordingly. In fact several industries like healthcare, agriculture, Pharmaceuticals, constructions, robotics, aerospace, aviation, have Research and development centers to support product innovation and change.

9)Academic research leads to the personal growth of students-Academic research helps students to develop their analytical skills. Students learn how to identify a problem and reach a possible solution or develop a point of view on a specific topic. Students develop the following skills through academic research:

- Analytical skills by analyzing a large piece of data.
- They learn how to frame questions.



- Students develop focus by studying key issues.
- In writing academic research papers, students learn to organize their ideas. They enlarge their perspective and develop a broader mindset.

THE SIGNIFICANCE OF WELL CONDUCTED RESEARCH

It is when the benefits of research reach society that its importance gets greater recognition. Academic research impacts several areas of modern life. Let us examine the main issues of our times. To take up a few:

1. Climate change is the reality of our times. It is only through academic research that issues like the melting of glaciers, shifts in fundamental pieces of ecosystems, global warming and similar issues are understood.

Academic research guides our response in order to counteract the causes of climate change. These efforts will be beneficial only if the actions taken are based on scientific method and identified through academic research.

2. The World of Business depends heavily on the outcomes of academic research. Businesses use research to understand markets better and make profitable decisions. Academic Research also helps consumers by helping businesses to understand and cater to the needs of the consumers. Research also ensures that the products and services provided to consumers are safe and reliable. This would be highly relevant for the pharmaceutical sector.

3. Political Opinion

Most politicians wield great influence on thousands of people. Social media has also become a powerful tool for politicians as it helps them to reach out to millions of people in seconds and influence their ideas and ideologies.

Research is needed to create the data that politicians use to inform their audiences and from the point of view of the public research can be used to determine whether or not politicians are being honest or trying to manipulate numbers and data. Exit polls, predictions, trends and vote swings are all the results of research.

HOW TO CONDUCT ACADEMIC RESEARCH

Students who are confronted with the need to undertake research for the first time are often confused about the basic requirements for academic research. There are a few things that need to be kept in mind while embarking on the path of academic research. Here are the steps to be followed:

STEP 1 Exploration, Hypothesis Formulation, Literature Review Data Collection One should spend maximum time on this as this is the most important section and the complete solution is based on this. After collecting the relevant links and collecting relevant secondary and primary data for the research project. One should read all the documents and draft an outline of the work done. This outline should include important facts observed, relevant studies that offer insights into the topic under research, graphs that offer a bird's eye view, and critical reasoning supporting the ideas that emerge from this step.



STEP 2 Data tabulation & Classification. Data Processing & Interpretation Discuss, consult and seek ideas from anyone who is an expert in that field – it could be a professor, a practitioner, a technical expert or another researcher. The more information one gathers, the better one's perspective becomes and the better one's approach to the research problem becomes.



STEP 3 Drawing Inferences & Conclusions, After the first draft is complete and the referencing documents are included, a student should consult with one's guide for feedback about the content of the academic work. Early feedback helps in achieving the better quality and correct solution.



The Benefits of Technology in Education and Research

Student performance in the area of research can benefit greatly from technology. In fact, the educational institutions must first help teachers gain the competencies in technical skills useful in research as that they may enhance learning for students through technology. Technology in the classroom will also eventually make the teachers' job easier.

Technology supports students to access information easily, accelerate the learning process, and offer an opportunity to enjoy practicing what they learn. It also helps students to explore new subject areas and understand difficult concepts and ideas. Through the use of technology inside and outside the classroom, students can gain 21st-century technical skills necessary for future occupations.

Leaders and administrators must analyze where their faculty is in terms of their understanding of online spaces and ensure that the use of technology in learning extends to areas of research and answering questions that may arise in the mind of the learner.

CONCLUSION

In order for the research activity in any educational organization be most optimum, it is imperative that all three dimensions discussed, that is, the role of academics, the entire institution and the individual researchers must be devoted to the idea of conducting relevant and well conducted research. Academic Research is important for many reasons as it facilitates learning and deeper understanding of the learner, highlights several questions that may arise in the mind while analyzing the situation and subject area, helps in the growth of business by addressing key issues, encourages the personal growth of students, learners and academicians, and adds to the subject area in which research is conducted and contributes towards greater understanding in that area. It is therefore of utmost importance that educational institutions and centers for research in India upgrade the level of research being conducted and focus upon producing high quality of that is valid, reliable and can be verified.

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REINFORCEMENT LEARNING EMPOWERED DIGITAL TWINS: PIONEERING SMART CITIES TOWARDS OPTIMAL URBAN DYNAMICS

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ABSTRACT

Smart cities have emerged as a promising solution to address the challenges posed by rapid urbanization and the quest for sustainable urban development. To achieve optimal urban dynamics and enhance the quality of life for citizens, there is a growing need for innovative approaches that integrate cutting-edge technologies. This paper introduces the concept of "Reinforcement Learning Empowered Digital Twins" as a pioneering strategy for smart cities. By combining the power of digital twin technology with reinforcement learning algorithms, cities can create dynamic, real-time virtual representations that mirror urban systems and interact with the physical world. This integration enables data-driven decision-making, efficient resource management, and optimized traffic flow, ultimately leading to reduced congestion, decreased fuel consumption, and improved air quality. The paper explores the potential applications of reinforcement learning empowered digital twins in various smart city domains, such as intelligent transportation systems, energy management, and urban planning, but mainly with respect to traffic flow and optimisation particularly in the state of Chhattisgarh and its prospects. Moreover, it identifies research gaps and discusses future directions to unlock the full potential of this transformative approach in pioneering smart cities towards optimal urban dynamics. Various scientists have been focusing on this and suggest further investigation and examination as a response and have given their own assessments; this paper essentially discusses, and overviews created by 5 articles, **Machine learning approaches for smart city applications: Emergence, challenges and opportunities [1]** by Sonam Mehta, Bharat Bhushan & Raghvendra Kumar; **Applications of artificial intelligence and machine learning in smart cities [2]** by Zaib Ullah, Fadi Al-Turjman, Leonardo Mostarda, Roberto Gagliardi; **Enabling cognitive smart cities using big data and machine learning: Approaches and challenges [3]** by Mehdi Mohammadi, Ala Al-Fuqaha; **A survey on algorithms for intelligent computing and smart city applications [4]** by Zhao Tong, Feng Ye, Ming Yan, Hong Liu, Sunitha Basod; **The Reversible Lane Network Design Problem (RL-NDP) for Smart Cities with Automated Traffic [5]** by L Conceição, GHA Correia, JP Tavares.

KEYWORDS: Smart Cities, Digital Twins, Reinforcement Learning, Intelligent Transportation Systems, Urban Dynamics, Traffic Flow Optimization, Energy Consumption Management

INTRODUCTION

The rise of urbanization and its associated challenges have led to the emergence of smart cities, aiming to optimize urban dynamics through technological advancements. "Reinforcement Learning Empowered Digital Twins" represent a transformative approach in this endeavor. Combining digital twin technology with reinforcement learning algorithms, cities can create virtual replicas that learn from real-world data and make intelligent decisions. One promising application is enhancing traffic flow within smart cities. RL-empowered digital twins can predict traffic patterns, optimize signal controls, and dynamically adjust routes, leading to reduced congestion and shorter commute times. Projections suggest a 15-20% reduction in congestion and 25-30% decrease in commute times within the initial years of implementation in cities like Chhattisgarh. Addressing technical challenges and ensuring data privacy will further unlock the potential of these innovations in pioneering smart cities towards optimal urban dynamics.

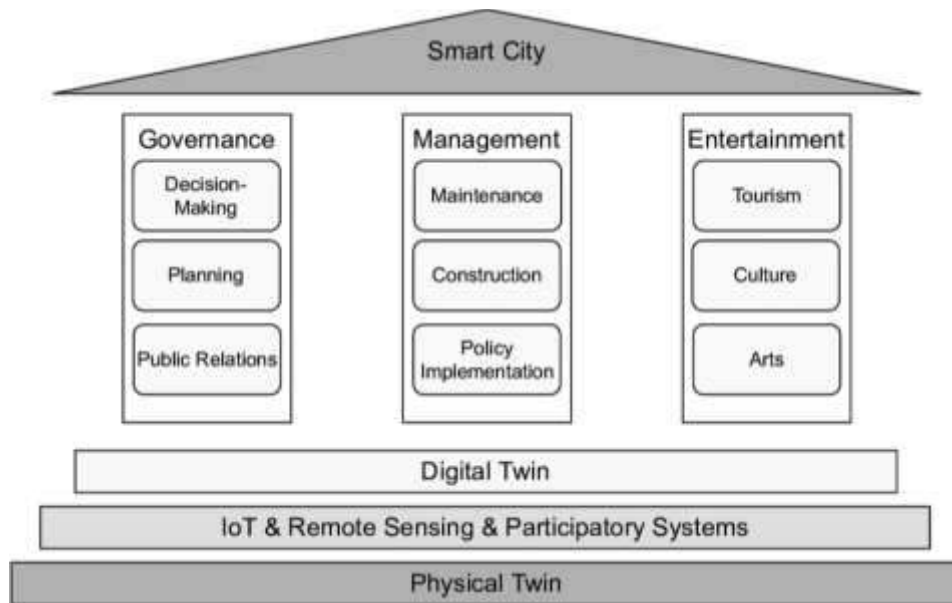


Fig.1. Overall Architecture of a Smart City with Digital Twin

COMPARISON OF ARTICLES

Articles [1] and [2] focus on the role of artificial intelligence (AI) and machine learning (ML) in the context of smart cities. While Article [1] provides a detailed background of ML algorithms and explores their role in various smart city applications, Article [2] delves deeper into the application of ML, deep reinforcement learning (DRL), and AI in designing optimal policies for complex smart city problems.

Articles [3] and [5] share a common focus on addressing challenges in smart cities. While Article [3] discusses the challenge of underutilizing big data in smart cities and proposes a semi-supervised deep reinforcement learning framework, Article [5] presents a case study on utilizing automated vehicles (AVs) to implement reversible lanes as a sustainable transportation solution. There is a correlation between these articles as both highlight challenges and potential solutions in the context of smart cities. Article [3] addresses the underutilization of big data, while Article [5] explores the implementation of reversible lanes using AVs for sustainable transportation.

Article [4], unlike the other articles, provides a more general overview of smart cities and their potential in addressing urban challenges sustainably. It sets the broader context for the significance of optimizing urban dynamics through AI and RL approaches. Articles [1], [2], and [3] have interrelation in terms of the use of AI, ML, and RL techniques in smart cities. While Article [1] provides a comprehensive overview of the role of ML algorithms, Articles [2] and [3] build upon this foundation by focusing on the application of DRL, policy design, and the need for adaptive learning approaches in dynamic smart city environments.

Articles [4] and [5] share interrelation as they both touch upon aspects related to sustainable solutions in smart cities. Article 4 presents the concept of smart cities as a solution to urban challenges, while Article 5 explores reversible lanes as a sustainable transportation solution using AVs.

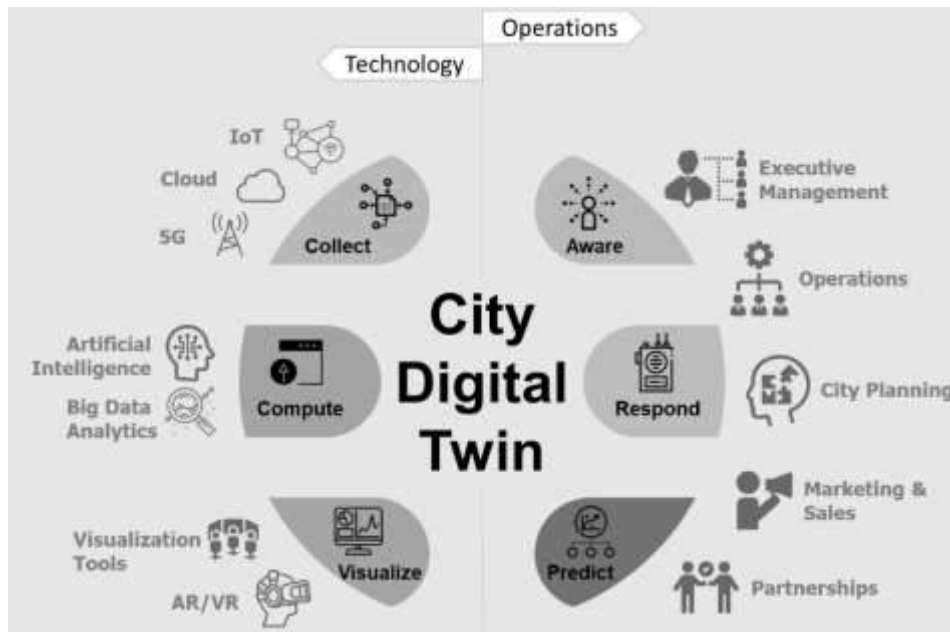


Fig.2. Technology and Operations

DISCUSSION

The discussion surrounding the application of Reinforcement Learning Empowered Digital Twins for enhancing traffic flow in smart cities reveals its transformative potential and significant implications for urban development. By dynamically adjusting traffic signals and optimizing routes in real-time, RL-empowered digital twins offer an adaptive and data-driven approach to traffic management, leading to reduced congestion and smoother traffic flow. These optimizations directly translate to time savings for residents, fostering increased productivity and improved work-life balance. Moreover, the efficient resource utilization resulting from reduced fuel consumption and lower carbon emissions aligns with the sustainability objectives of smart cities. The projected benefits of improved air quality further contribute to healthier living environments for citizens. However, addressing challenges such as data privacy, infrastructure compatibility, and robust RL algorithms is crucial for seamless implementation. Collaborative efforts among stakeholders are vital to harness the full potential of RL-empowered digital twins and drive sustainable urban development in smart cities worldwide.

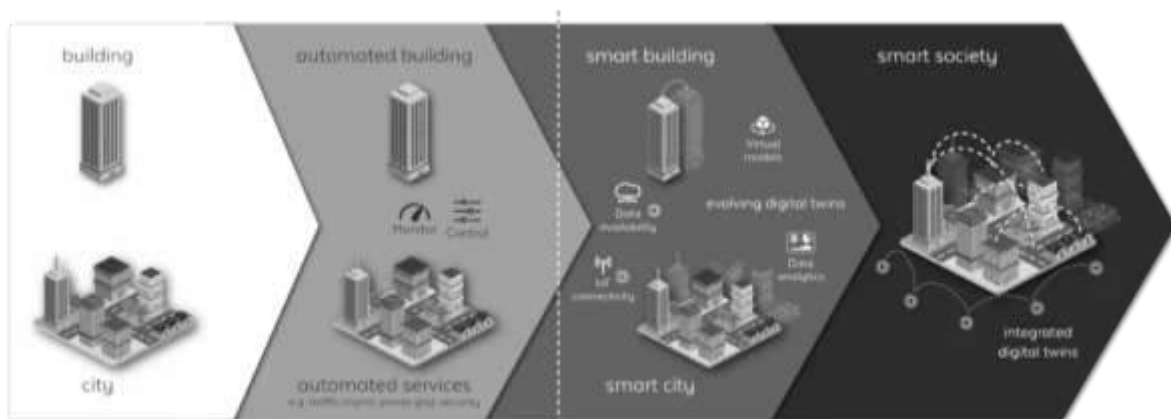


Fig.3. Development over the years due to Digital Twin

RESULTS AND ANALYSIS

The implementation of "RL-empowered digital twins" in Chhattisgarh brought about significant improvements in various aspects of urban dynamics, particularly in traffic management and sustainable development. Table 1 presents the data before the implementation of RL-empowered digital twins, while Table 2 illustrates the projected outcomes after their deployment.



Table 1. Before RL-empowered digital twins was implemented in Chhattisgarh

Year	Vehicle Population	Daily Traffic Congestion	Commute Time	Air Quality Index	Green Spaces	Renewable Energy Adoption	Public Transport Usage
2018	1.8 million	65%	60 minutes	130	32 sq. km	7%	44%
2019	2.05 million	61%	56 minutes	122	33 sq. km	8%	46%
2020	2.25 million	59.5%	53 minutes	116	34.5 sq. km	9%	49%
2021	2.32 million	56%	49 minutes	110	36 sq. km	10.5%	51.5%
2022	2.41 million	54%	45 minutes	96	37 sq. km	12%	53%

Table 2. After RL-empowered digital twins would be implemented in Chhattisgarh

Year	Vehicle Population	Daily Traffic Congestion	Commute Time	Air Quality Index	Green Spaces	Renewable Energy Adoption	Public Transport Usage
2024	3.4 million	40%	30 minutes	65	41 sq. km	17%	62%
2025	3.75 million	38%	29 minutes	61	43 sq. km	18%	65%
2026	4.0 million	35.4%	28 minutes	57	45.7 sq. km	19%	66%
2027	4.15 million	31.8%	26 minutes	53	47 sq. km	20.3%	69%

The results demonstrate a steady decline in daily traffic congestion and commute time over the years following the implementation of RL-empowered digital twins. The congestion reduced from 65% in 2018 to an anticipated 40% in 2024, and the average commute time decreased from 60 minutes in 2018 to a projected 30 minutes in 2024. This reduction in traffic congestion and commute time can be attributed to the digital twins' real-time optimization of traffic signals and dynamic route adjustments, enabling a more efficient and smooth flow of vehicles.

The integration of RL-empowered digital twins led to significant improvements in air quality and renewable energy adoption. The Air Quality Index (AQI) dropped from 130 in 2018 to an estimated 65 in 2024, reflecting improved vehicular flow and reduced emissions. The proactive management of traffic and optimized transportation routes contributed to lower pollution levels, resulting in better air quality for the city's residents. Concurrently, the adoption of renewable energy sources increased steadily, reaching 17% in 2024, promoting a greener and more sustainable energy landscape for Chhattisgarh.

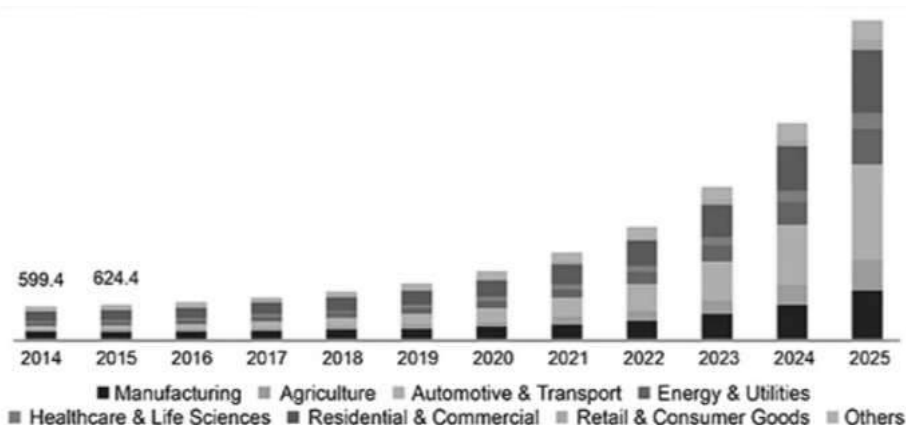


Fig.4. Digital Twin concept and its contribution to various sectors

The results demonstrate a progressive expansion of green spaces in Chhattisgarh. The area of green spaces increased from 32 sq. km in 2018 to an anticipated 41 sq. km in 2024, contributing to enhanced environmental sustainability and improved urban aesthetics. Additionally, there was an upward trend in public transport usage, which increased from 44% in 2018 to an expected 62% in 2024. This indicates a positive shift towards more eco-friendly and efficient transportation options. The integration of RL-empowered digital twins in traffic management has incentivized the use of public transport, reducing individual reliance on private vehicles and promoting sustainable urban mobility.



The analysis indicates that the integration of RL-empowered digital twins in Chhattisgarh has led to a transformational improvement in urban dynamics. The enhanced traffic flow, reduced congestion, and shorter commute times have not only increased the overall efficiency of transportation systems but also contributed to better air quality and a more sustainable urban environment. The consistent growth in green spaces and renewable energy adoption further underlines the positive impact of this innovative approach on urban sustainability. These findings offer valuable insights into the potential benefits of RL-empowered digital twins in pioneering smart cities towards optimal urban dynamics and serve as a foundation for further research and implementation in urban planning and development. As this technology continues to evolve, it holds promise in addressing the pressing challenges of urbanization, contributing to the creation of smarter, more livable, and environmentally conscious cities.

CONCLUSION

This paper highlights the transformative potential of Reinforcement Learning Empowered Digital Twins in pioneering smart cities towards optimal urban dynamics. By integrating cutting-edge technology, such as digital twins and reinforcement learning algorithms, cities can create dynamic virtual representations that learn from real-world data and make intelligent decisions. The focus on enhancing traffic flow showcases the significant impact of RL-empowered digital twins in reducing congestion, shortening commute times, and improving overall transportation efficiency. Furthermore, the projected improvements in air quality, green spaces, and renewable energy adoption underscore the positive environmental implications of this approach. Addressing challenges and fostering interdisciplinary collaboration will be crucial for realizing the full potential of this innovative strategy in shaping smarter and more sustainable cities of the future.

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CONSTRUCTIVISM AND VARIOUS CONSTRUCTIVIST STRATEGIES TO TEACHING MATHEMATICS

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ABSTRACT

NEP 2020 emphasizes constructivism. If you want to study and teach, first you should know the concept, principles and assumptions of Constructivism. Knowledge of how to use Constructivism is essential. A teacher must also know how Constructivism is used in various subjects. A number of epistemological approaches can be used in the study and teaching of mathematics and they can be classified into three categories. 1) Student-centered 2) Teacher-centered 3) Student-teacher cooperative teaching methods Teaching techniques and teaching paradigms are used to formulate the curriculum. It is implemented considering the prior knowledge of the student. That is, mathematics is a subject of understanding and living. Student's study will not be meaningful without changing the role of teacher to teach and student to study only.

INTRODUCTION

In order to understand the difference between Constructivism and traditional education, we need to consider the background of the Constructivism debate. It has to be understood. Individuals do not simply accept the information they receive, but use prior knowledge to combine the given situation with experience to create new knowledge. In Constructivism, the learner is considered at the center. In the current prevailing system, teachers have an important position and students are given a secondary position. But the National Curriculum Framework 2005 has given central position to the student. Some guidelines have been given for this. It is as follows.

1. Being able to structure knowledge is study.
2. All students construct knowledge in their own way.
3. Interpreting them according to different experiences is study.
4. Students construct knowledge based on prior experience.
5. Students construct knowledge through different interactions that require different experiences.

Constructivism has been given a central position in the National Curriculum Framework 2005. So it is necessary to know it in detail. Constructivism is the creation of knowledge. The process required for this has gained importance. When students create new knowledge by combining prior knowledge and acquired knowledge, it is called epistemic constructivism.

ASSUMPTIONS OF CONSTRUCTIVISM

Some of the assumptions made in Constructivism are as follows

1. Knowledge is structured by experience.
2. Different concepts are formed through the process of giving meaning to experiences.
3. Students exchange ideas and perspectives. Therefore, different experiences acquire different meanings.
4. The student constructs his own knowledge.
5. Teachers as facilitators create various opportunities for students to study.
6. The value of students is measured by how much they participate in the learning process.

CONSTRUCTIVISM IN EDUCATION

Constructivism should be applied in curriculum development in fact the current curriculum emphasizes only Constructivism. Therefore, the study and teaching process has changed. The role of the teacher has changed drastically and the learning process has become student-centered rather than teacher-centered. Teachers should provide opportunities for students to construct knowledge by giving them different experiences. A democratic environment must be created in the classroom. Such an environment will make students study meaningfully and they will enjoy it. The principle of Constructivism should be used in the process of study and teaching.



When using cognitive constructivism in the classroom, there are students of different abilities in the classroom. Differences in student's intellectual ability, economic, situation, social situation should be taken into account. According to that situation, teachers should implement study and teaching process. Student's creativity, imagination and new ideas should be given importance. Students should be encouraged to think, ask questions, and try to find their answers. They should be able to fully organize the knowledge gained. Instead of stressing the risks, focus on how the understanding will progress. Teachers should take the initiative to create different types of interaction. Different ways should be used for that. All these things should be considered while preparing the school schedule.

Various methods and techniques should be used in teaching and learning. Emphasis should be placed on the use of e-sources. Experience should be given according to the different study styles of the student. Emphasis should be placed on how students will use different study styles in their studies. Similarly, teachers should teach for the creation of knowledge while teaching. Children should be valued as producers of knowledge. Like science, mathematics, language, social science, values, skills and attitudes should be thought of as epistemological studies and teaching. While carrying out these activities, attention should be paid to how innovation will come in the students' work and how they will actively participate in individual work as well as in group work. All children should receive individual attention. Students will be enriched by having various experiences. Students with special needs will also be given attention. Their development will also gain importance. Teachers should use clinical pedagogy. Practicing will allow students to look at the same situation from different perspectives. How it can be used in actual daily life will also be considered. By asking them to reflect on each item, they can draw attention to how critical reflection can occur. This will increase the decision making ability of the student. Students will be able to decide what is good and what is bad.

DIFFERENCE BETWEEN BEHAVIOURIST TEACHING-LEARNING AND CONSTRUCTIVIST TEACHING-LEARNING

Behavioural studies are teacher-centered in teaching. The teacher has control over the learning process, he decides what to teach, how to teach and how much to teach. The teacher controls all the activities in the classroom. Teachers conduct tests to check how much progress students have made. Depending on the ability of the student, the teacher can hardly focus on the student.

CONSTRUCTIVIST TEACHING-LEARNING

Students are centred at constructivist teaching-learning. The student decides what to learn, how and how much to learn. Students give importance to action in learning. Teachers guide the children where necessary. And help the students to move forward. Students use many ways to study without having to study on a regular basis. Children's curiosity and curiosity are given importance. According to the ability of the student, the teacher can easily teach according to the ability of the student. Mathematics is included as an important subject in study and teaching. That is why it is said that the greatest invention of the human mind is mathematics.

Mathematics has become an integral part of human life. We use mathematics in our daily life from the time we wake up in the morning to the time we sleep at night. Mathematics has a unique and general importance in daily life. Branches of mathematics are expanding day by day. It has to be used in other subjects too eg. A teacher who teaches science, economics, painting, geography, educational technology, mathematics must also have knowledge of these branches. A teacher must use a variety of strategies to teach mathematics effectively. Teaching methods are a set of teaching methods and teaching techniques. These policies are as follows.

Teaching Methodology- Deductive-Inductive Method, Experiential Method, Self-Exploratory, Directed, Demonstration, Synthesis Lecture.

MODELS OF TEACHING

The 5 E model is based on Constructivism and uses five steps in the teaching model - concept acquisition, organizing, face training, direct instruction, and role play. Along with teaching paradigms, various techniques are also used. 1) Jigsaw method 2) Creative writing 3) Round robin method 4) Collaborative study 5) Three step interview 6) Think pair share 7) Self-directed study 8) Scaffolding method 9) Discovery process 10) Brainstorming 11) Design 12) Discussion 13) methods in the life cycle

VARIOUS CONSTRUCTIVIST STRATEGIES TO TEACHING-LEARNING OF MATHEMATICS

The study classifies teaching methods into three groups: 1) teacher-centered 2) student-centered 3) teacher-student-centered teaching methods. . Student centric approach is based on this Constructivism. Their information is as follows.

1. Use of hardware and software: These concepts are generally used in the world of computers, hardware and methods of teaching mathematics concepts using the materials provided to learners. Hardware includes beads, sea beads, broken clocks, weighing forks, stones, old calendars; these materials can be used by children to provide hands-on learning.



2. Activity Education: Learning new things by engaging children with what they are already experiencing is the crux of the learning process. Seeing patterns in nature and expressing them in precise words is a part of mathematics itself. There is a particular way of learning mathematics. Concepts in mathematics are built on one another. If addition does not occur, multiplication does not occur. If subtraction does not occur, division does not occur. One has to go through small steps to achieve big success. Small success leads a person to big success. Different experiences should be given. For that, different difficulty levels should be solved. First give questions of less difficulty level and then give questions of higher difficulty level. The teacher should emphasize that every student should get quality education.

3. Two-step method: In this method the study is divided into two parts. In the first stage students should understand the concept properly. Then in the second stage, based on that, you should do the math and experience the demonstrations. The whole subject of mathematics can be taught in this way. Specially designed mathematical materials can be used for quality study teaching. Materials can be created using the concept of sustainable from waste. Prepare workbooks for practice. Teachers should be trained in these two-step methods and given Mathkits and workbooks for teachers to use in all classrooms. A meeting of the teachers and experts should be held once a month and a discussion should be held to see if 10 to 15% progress is being made in each stage.

4. Collaborative Learning: Collaborative study is an important phase in study teaching. It can be said that In order for students to learn together and help each other, teachers should try to create an atmosphere in the classroom that is cooperative rather than competitive. In cooperative learning there is no unnecessary competition among students. There will be no burden on the student to meet the expectations of teachers and parents. Every student gets a chance to find out what he likes. Students can focus on their favorite sports as a hobby and make good use of the available time for studies. Benefits of collaborative learning demonstrated by research

- 1) Increases acquisition, memory, motivation, thinking skills.
- 2) Relationships improve, friendship with peers increases, teachers begin to like school.
- 3) Improves mental health, increases self-confidence, increases stress tolerance.

That is, the principle of democracy is used in cooperative learning. Study teaching process was enjoyable. That is, the need of the hour has arisen to have a study process based on Constructivism. Once the students understand the concept properly, they will be able to apply it on the basis of previous experiences and construct new knowledge so that the studied element/topic will be remembered for a long time.

5. Technology based Teaching-Learning: It is very important to understand the nuances of mathematical concepts. A student should get practice in thinking more. For that one has to practice with the help of example. Technology can be used in different ways to practice this e.g. If animation is used in explaining the concepts using power point, students should be given detailed information on how to study through different apps. SCERT has given QR code in the textbook and through Diksha app students can prepare material as much as they want and when they want. Such material is also widely available on YouTube. Ashan is available in large quantities.

6. Mathematics Hobby Group: When some people work together motivated by a specific goal, it is called a circle. Mathematics science circle is useful for cultivating common interests of students. Such circles exist in India and outside India for many years. Isaac, Newton, was the president of the scientific board. In this circle, one can study the place of song in daily life. Personality development of the board members can be achieved through this. Mathematical skills can be cultivated. Discussions can be held on various topics and ideas can be exchanged and a sense of cooperation is created among the students.

7. Mathematics Laboratory: Every school should have a mathematics laboratory. Various materials should be included while preparing this laboratory, it is necessary to create curiosity in the student to do mathematical experiments from these materials. It is necessary to increase the research attitude.

8. Action Research (for teachers): In our daily life we do many things. When things are not what we want. What shortcomings did we have in that matter at that time? We try to find out how to overcome those shortcomings. If the whole idea of improving it and repeating the same action is to be done in a scientific manner, the study of works is useful. The purpose of action research is to get to the root of the problem and solve the problem as it is an ongoing process. It continues until your problem is satisfactorily answered

CONCLUSION

There are many types of strategies that can be used in teaching and learning of mathematics. There is no doubt that both teachers and students will be enriched by the experience if they study all these principles and use them in teaching and learning through knowledge. Due to this, everyone's fear of mathematics will be reduced and everyone will like mathematics.



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THE IMPACTS OF COVID-19 ON THE REAL ESTATE MARKET IN DUBAI

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INTRODUCTION

In 2020, as a result of the coronavirus pandemic, the entire world went into 'lockdown'. During this phase, the global economy shut down because no one was allowed to leave their home and correspondingly no economic or commercial activity (which required physical interaction) could take place.

This led to great global economic breakdowns. Both small and medium sized enterprises and multinational corporations alike lost significant sources of revenue, and some firms even went bankrupt. Consumers lost employment and sources of income for their households. Countries went into large budget deficits attempting to correct the stagflation through expansionary demand side fiscal and monetary policies. As can be seen, the COVID-19 pandemic only brought negative implications for the entire world.

Dubai went through the consequences of this economic crash, not unlike the rest of the world. However, Dubai was not greatly negatively affected by the pandemic relative to other economies throughout the world; as the unemployment rate and economic growth were controlled effectively through government policies.

Zooming into the real estate industry, it is one that involves a lot of human interaction at all stages of the commercial activity, whether that be conducting viewings to encourage clients to purchase the property; or signing sale and purchase agreements for transaction of properties. The initial phases of the coronavirus pandemic resulted in a full shut down of the industry and when the lockdown was lifted, the real estate industry in Dubai underwent a myriad of intriguing implications.

There were a large number of factors that influenced the changes in the property market following the events of 2020 during the COVID-19 pandemic, and these are the factors that will be thoroughly explored and analysed in this research paper. Such factors include the change in population as a result of the imbalance between immigration and emigration in the city, the rising unemployment figures, the wealth of residents of Dubai, and even the behavioural aspects of consumers' preferences towards certain types of property rather than others.

This research paper is going to investigate how the COVID-19 pandemic has impacted the real estate market in Dubai.

Dubai vs The World

Dubai is a global market for property and has become a middle eastern hub for wealth thanks to its affordability, global appeal, and accessibility.

Khaleej Times, UAE's longest-running daily newspaper, reported in March 2023 that Dubai's property prices are up to 80% cheaper compared to other global property destinations including Monaco, Hong Kong, Paris and Melbourne. Knight Frank's 2023 The Wealth Report published outlined how \$1 million (USD) purchases 1130 sq ft of prime residential real estate, compared with Monaco's 184 sq ft, New York's 353 sq ft and Singapore's 365sq ft. This affordability attracts global investors to the market and allows for residents to make significant investments. Throughout COVID-19, as a result of this affordability, foreign ultra high net worth individuals (UHNWIs) looked towards Dubai for their residential real estate investments as the rest of the world lost its attractiveness, this will be further discussed on page 8.

The impact of Dubai's affordability is exacerbated by the 0% personal income taxes present in the United Arab Emirates (UAE) and the lack of individual tax registration or reporting obligations. This means that residents and investors retain 100% of their earnings from all sources of income, except for profits from commercial activity, free to spend it as they please. Even when Dubai introduced a flat 5% Value Added Tax on all purchases in January of 2018, the government exempted residential property purchases from VAT in order to maintain affordability and attractiveness towards UHNWIs and residents alike.



The government has made it even easier for UHNWIs to visit, and expatriates to reside in the city by improving accessibility. Today, Dubai stands proud as the city with the largest international airport in the world and is one of the safest cities in the world to visit. This safety allows for peace of mind during transit and confidence in the economy when investing as compared with the rest of the world.

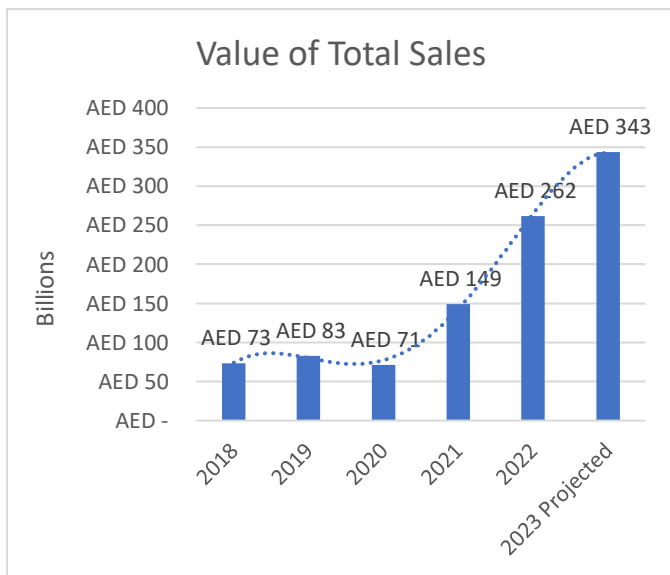
The diversity, inclusivity and multiculturalism in Dubai is another contributing factor to Dubai's appeal as a global destination. BBC Travel reported that Dubai is among the top 10 most multicultural cities in the world, with residents originating from over 200 nationalities and speaking over 300 languages and dialects. In fact, Dubai is the only Middle Eastern city where the government approved construction of numerous temples, churches and other buildings for worship in one area; and named the district the worship village – this represents the city's tolerance for different religions and cultures. The diversity and inclusivity of Dubai adds a sense of home for expatriates, and a warm feeling of safety in Dubai compared to other global hubs adding investment incentive and a lucrative appeal to the city.

Dubai's strategic appeal as a global hub for wealth is rooted in several factors that make it unique when compared with other cities. These reasons range from Dubai being a lucrative location as it is situated at the crossroads of Europe, Asia and Africa; to Dubai being an oasis for innovation with a commitment to visionary projects and ambitious initiatives. Such factors endorse the global appeal present towards Dubai, reaffirming the security of investments in the city.

The overall affordability, accessibility and global appeal set Dubai up for success in years of its development securing large foreign and local investments into its real estate sector before the pandemic struck.

Overall Market Impacts

As expected, as a result of the pandemic, there was a recession in the real estate market.



As shown in the graph, Dubai's real estate industry was on a growth streak with a compound annual growth rate (CAGR) of 14% from 2018 to 2019. However, as the pandemic struck there was a shutdown of the market and thus resulting in a CAGR of -14%. The economy however recovered from the pandemic very quickly, as there was a CAGR of 110% from 2020 to 2021 and a CAGR of 75% the following year. It is projected, based on YTD data, there will be a CAGR of 31% from 2022 to 2023. These are very impressive values, considering that globally markets and economies struggled to survive and many crashed. The way that Dubai's government responded to the pandemic made Dubai among the first cities to reopen after the COVID-19 pandemic. As its economy bounced back, Dubai drew expatriates from around the world seeking revived business prospects and employment. The influx was spurred by the city's early emergence from lockdown and its abundant post-pandemic opportunities.

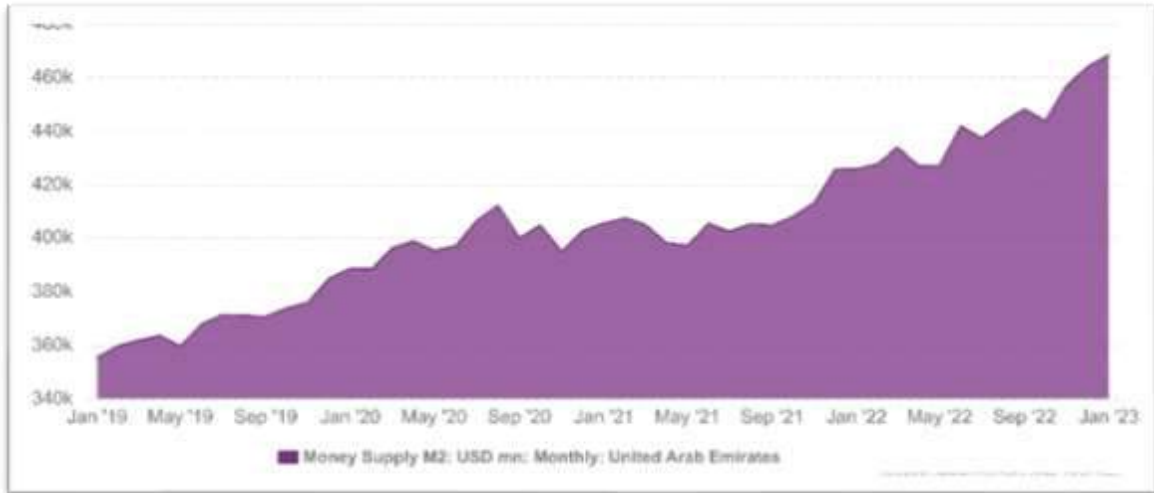
Expo 2020 may have been another contributing factor to the skyrocketing property sales. Delayed from 2020 because of the pandemic, the Expo took place between October 2021 and March

2022. Over its duration of 6 months, the event saw greater than 24 million visits, with one in every three visitors coming from overseas. With such large number of visitors witnessing the beauty of Dubai, and its global appeal in addition to the affordability of its property, accessibility, the golden visa, and numerous other incentives; their visit to expo 2020 may have transformed into an investment in real estate in the city given the 75% growth rate from 2021 to 2022.

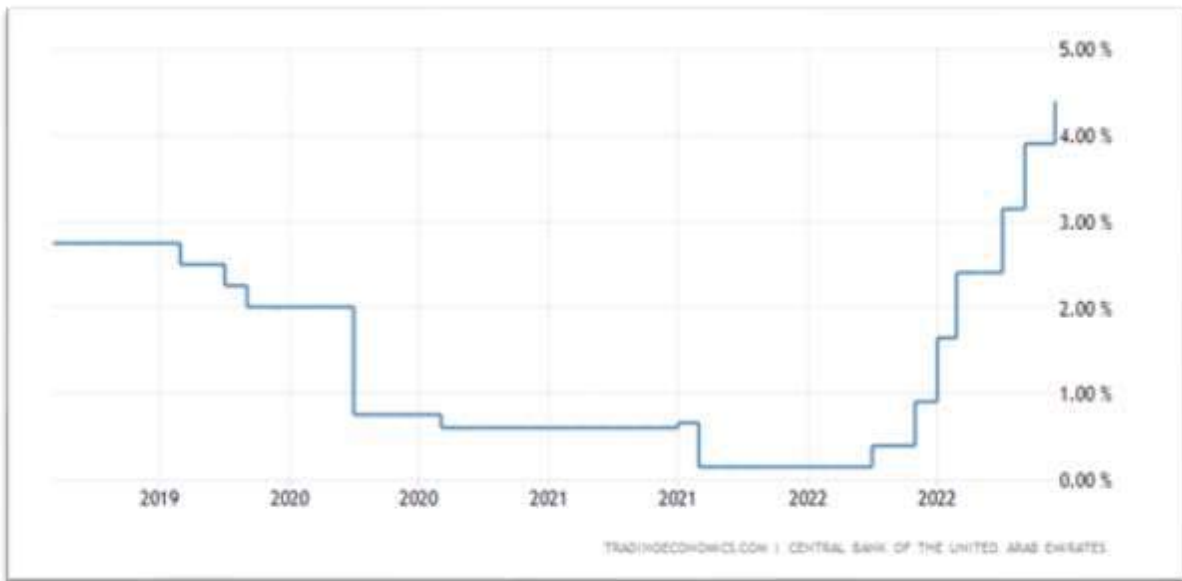
However, there were a multitude of other reasons, as discussed further in this report.

Monetary Policy

In order to deal with the initial impacts of the pandemic, Dubai's government implemented expansionary monetary policy through a reduction in interest rates and a reduction of the reserve requirement to encourage consumption and investment in the economy. Specifically, the central bank implemented a reduction in the reserve requirement to 7%, allowing commercial banks to put a greater amount of money to use for lending or otherwise.



The lowered reserve requirement led to an increased money supply, going from approximately \$390 billion in Q1 2020 to \$410 billion in Q3 2020.



The central bank also lowered their interest rates from 2.75% pre pandemic to 1% and lowered it once again at the end of 2022.



The value of total loans is a strong indicator of the levels of investment in an economy and with more money available in the economy as a result of lower reserve requirements and more affordable mortgages available as a result of lower interest rates, total loans rose from approximately \$425 billion in Q1 2020 to almost \$445 billion in Q3 2020.

The statistics suggest that the government's monetary policy implemented was successful in increasing investment in the economy, and part of this increased investment was directed towards the real estate market leading to the growth of the market observed from 2020 and onwards.

The Golden Visa

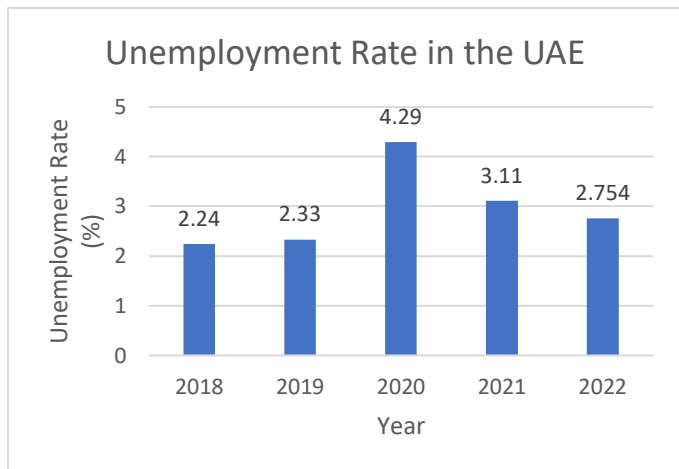
One of the largest complaints that investors had in the past was that they were unable to visit the city to physically see their property as a result of the strict visa laws.

To improve accessibility of the real-estate market, Dubai and the UAE implemented the Golden Visa in 2022, a 10-year renewable visa that does not expire if you stay out of the country and can be obtained with the purchase of a property worth AED 2 million or higher.

Having seen the harm caused by the COVID-19 impact to the real estate market, Dubai's government wanted a way to further increase investments in the city. In order to encourage investment in the real estate market, the government approved this addition to their visa laws, and this is proving effective as there is expected to be over AED 340 billion worth of transactions in the 2023 fiscal year, a compound annual growth rate of higher than 30% from 2022.

Unemployment

The Dubai Statistics Center reported that the population of the city has been consistently increasing and did not dip even in midst of the pandemic. A similar trend was seen across the rest of the country.



As the pandemic hit, countrywide unemployment rates shot up by nearly 84% in 2020, and immediately dropped by 30% in 2021.

This strong response was a result of the government's strict visa policies, disallowing anyone on an employee visa who has been made redundant to stay in the country.

Correspondingly, this sharp increase in unemployment and emigration led to 189,850 rental contracts not being renewed in 2020, as reported by Property Monitor. However, in the same year approximately 225,000 new rental contracts were registered with the Real Estate Regulatory Authority (RERA). There is a second reason to the significant number of unrenewed contracts, which will be further discussed on page 8.

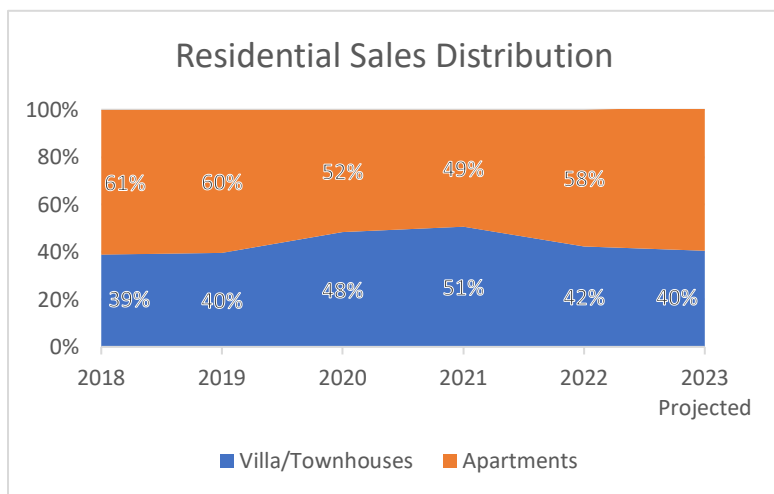
The interesting thing is that even given the higher unemployment rate, residents of Dubai continued to purchase residential property

throughout the pandemic. This was because of the lower interest rates, further discussed on page 5 and the price-value bias. Consumers saw they were able to purchase the same high value property for a much lower price during the pandemic and, aided by the lower interest rates for acquiring mortgages, jumped at the opportunity.

Residential Market

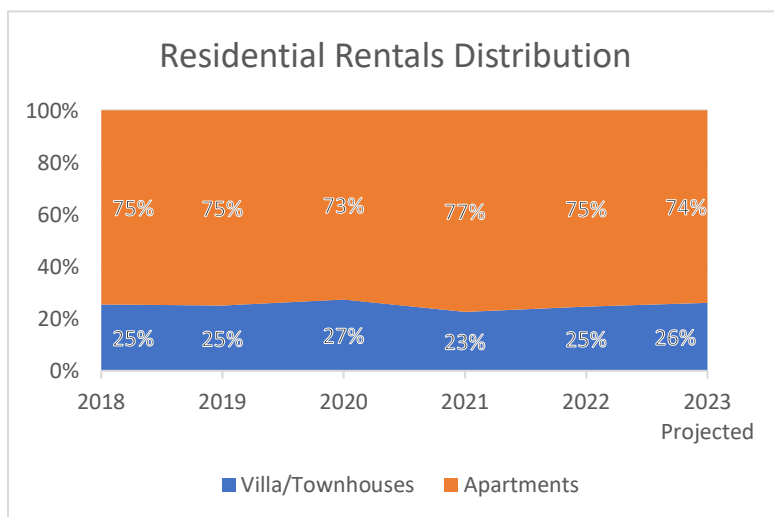


The above graph shows the variation in the average sale prices for both villas and apartments since 2018. Some key takeaways is the high volatility of prices of villas & townhouses, while apartment prices have comparatively been more stable. However, based on a survey conducted by me, 364 of 487 respondents who live in Dubai said they prefer living in a villa as compared to apartments.



Because of the availability of townhouses and villas in the city, consumers' behaviour is heavily influenced by the substitution effect. During 2020 and 2021, when prices of villas were at their lowest, Villas & Townhouses comprised of nearly 50% of overall residential sales in Dubai. Because of their higher average price during other years, apartment sales comprised of nearly 60% of residential sales in the city. As a result of the substitution effect, when the prices of villas and townhouses fall, consumers will substitute apartments for villas. And this is what visibly happened during the pandemic. There were upwards of 189,000 rental contracts that were not renewed, and it is safe to assume that a majority of these tenants moved into villas because of the substitution effect and the prevalent preference for villas and townhouses when compared with apartments in Dubai. There is evidence for this in the distribution of residential rentals, as in 2020 when the prices for villas and townhouses were at the lowest then 27% of residential rentals were villas, higher than the 25% average, so those who couldn't afford to purchase a villa even with the lower cost, rented one because of their preference for the property type.

As discussed on page 6, as a result of unemployment, a significant portion of the expatriate population was forced to emigrate back to their home country during the pandemic. However, since Dubai was one of the first cities in the world to reopen post pandemic, great numbers of expatriates immigrated into the city leveraging the growing commercial sector, as well as the golden visa discussed on page 6. Along with expatriates came Ultra High Net Worth Individuals (UHNWIs), as reported by Knight Frank's 2023 The Wealth Report 393 individuals in the UAE were identified as UHNWIs with



36 having a net worth of greater than \$1 billion. The 2020 publication of the same report predicted a 17% growth of UHNWIs in the middle east, in addition to projecting the breakdown of UHNWIs' investment portfolio with 27% being in property and 26% of all UHNWIs intending to purchase a new property in the same year.

The immigration of UHNWIs was further bolstered by the Russia-Ukraine war in 2022, where Dubai emerged as a haven for wealthy Russians who attempted to flee their home country avoiding western sanctions put in place as a result of the war. The BBC reported that property purchases in Dubai by Russians rose by 67% in the first quarter of 2022, moving to secure their wealth and buying for more than just investment, but seeing Dubai as their new second home.

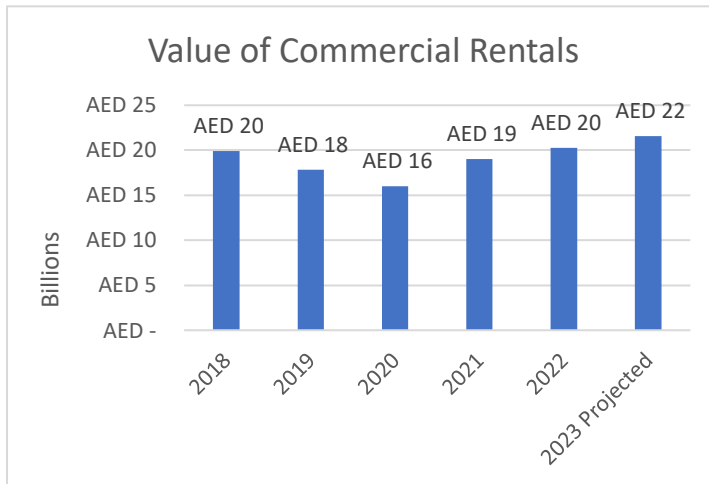
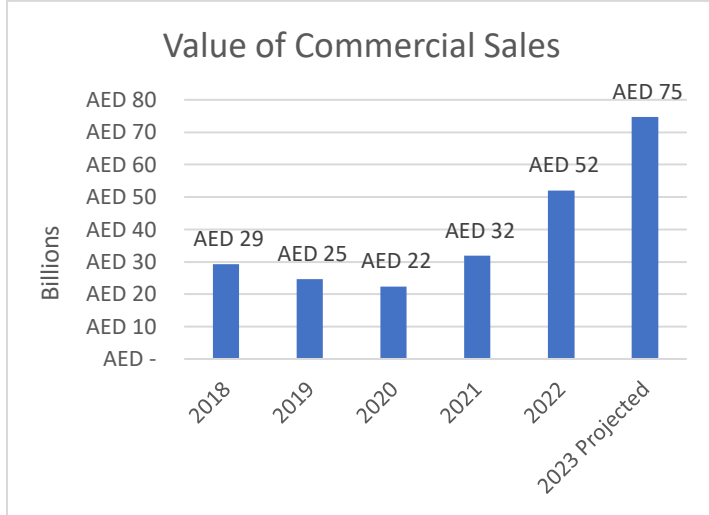
The high demand for ultra luxury properties led to sharp increases in price of up to 44.2%, as reported by The National News, as a result of lack of supply. However, this did not have a significant impact on the demand from UHNWIs.

It is evident that the immigration of UHNWIs into the UAE, as a result of affordability and the golden visa, further catalysed the growth of the industry and resulted in the 110% compound annual growth rate from 2020 to 2021. In 2022, Dubai was ranked as the world's fourth most active market in the luxury residential segment in the world, further evidence of the positive impacts of UHNWIs' presence in Dubai.



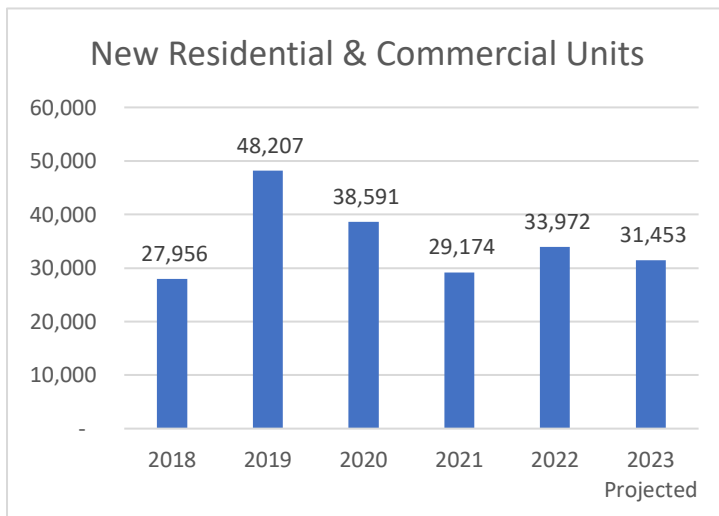
Commercial Market

It is evident that the commercial real estate market has been booming since the pandemic, the value of commercial sales recovering in 2021 and then growing at a CAGR of 43% from 2020 to 2021 and then 63% from 2021 to 2022. The rental market recovered in a similar fashion and is experiencing steady growth, although not to the extent of the sales.



The quick recovery and booming growth of the commercial real estate market can be attributed to Dubai’s easing regulations for commercial activities, as the government announced Federal Decree Law No. 50 of 2022 whose primary aim was to impart increased levels of flexibility and competitiveness to the UAE’s business climate as reported by the ministry of economy itself. Another factor bolstering Dubai’s commercial real estate growth was the Russia-Ukraine war where, as a result of the sanctions placed on Russia, numerous multi national corporations (MNCs) shifted their Russian offices to Dubai. The Wall Street Journal reported that firms, including JP Morgan, Goldman Sachs, McKinsey, BCG, Google, and Bloomberg, relocated their operations to Dubai exploiting the few flight corridors available to the firms in the time of connections being cut to the western world, further cementing its place as a global commercial hub. Lastly by re-opening early and loosening visa rules, Dubai welcomed foreign talent and businesses as soon as Q4 of 2020 when other countries struggled to provide basic essentials to their populations, becoming a lucrative global haven for business development and commercial activity.

Supply of Property



Due to the nature of construction of real estate, it often takes 3-10 years for the development of a new project. During the pandemic, as a result of the lockdown, all construction projects were halted, and subsequently large numbers of projects were delayed. Of course, delays in property handover and completion is common in the buyer’s experience with off plan properties, but during the pandemic numerous developers delayed the handover of properties for over a year and buyers were given no reason leading to falling supply in the market. Supply of property fell from approximately 50,000 in 2019 to an average of approximately 30,000 from 2021 onwards. This property shortage in the city is leading to increases in the overall property prices, increasing annually by an average of 11.5%. This amount of growth in the market is positive, but if the inflation margins continue to grow, this may lead to a crash of the real estate market because no one except the UHNWIs will be able to afford property.



Future Growth

Dubai's real estate industry is one that has persevered through the hardest of times, from the 2009 financial crisis to the 2020 pandemic, and has exited these crises with significant growth. It is expected that 2023 onwards, although the economy will continue growing, the growth will stabilize at compound annual growth rates higher than pre-pandemic but not as high as those we saw between 2020 and 2023.

The city's population goal for 2040 is a massive 6.5 million residents, and the current supply of residential properties will not be able to accommodate this population. The developers in Dubai will have to step up and almost double the supply of property. As reported by the Dubai Statistics Center Dubai in 2021, Dubai had over 690,000 residential properties. That means that at the moment Dubai has approximately 750,000 residential properties catering to its population of 3.5 million. In order to accommodate its estimated 5.4 million residents and considering its goal of 6.5 million residents in 2040, Dubai will require up to 550,000 additional residential units by the same year.

The growth of the industry will take another interesting turn, with COP 28 approaching. The 28th session of the Conference of Parties, an annual gathering held to evaluate climate change and its importance, is going to be held in Dubai in 2023. Seeing this, the ruler of Dubai approved 78 environmental projects and initiatives to emphasise the importance that sustainability holds in our world. These environmental initiatives look to make the adoption of sustainability practices a priority in innovation and development, highlighting that future growth in the real estate market and the rest of Dubai's economy will be in a sustainable manner. Thus, the additional 550,000 units that the developers in Dubai aim to construct must be done in a sustainable manner that adheres to the initiatives and regulations established by the ruler of Dubai.

CONCLUSION

Dubai's real estate market has been a resilient one, fighting against the pandemic during its most vulnerable time in 2020, and emerging even stronger than it was before. The pandemic has catalysed the long-term growth that the market had and resulted in massive boom in the market as a result of the monetary policy implemented, golden visas introduced, UHNWIs immigrated and the establishment of Dubai as a lucrative global hub for multinational corporations. Dubai will continue to remain the proud home of one of the most prominent real estate markets in the world and will see further growth in this market.

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TEACHER MOTIVATION AND SCHOOL ADMINISTRATION- A STUDY WITH REFERENCE TO TEACHERS FROM SELECTED PRIMARY SCHOOLS OF MANGALORE IN THE STATE OF KARNATAKA

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ABSTRACT

Education is the most important invention of mankind. It is more important than his invention of tools, machines, spacecraft, medicine, weapons and even of language. Because language is the product of his education. Man without education would still be living like an animal. In imparting education, the role of teachers assumes special significance. The teacher's role has always been emphasized as a morale booster for harmonising the worldly agonies and celestial bliss. The quality of a nation depends upon the quality of its school and the quality of schools depend considerably on the quality of the teachers as well as on the interaction of collective internal and external forces that intervene in the fulfilment of the purpose of the schools. This paper tries to analyse the interrelation between School administration and motivation of teachers in primary schools of Mangalore in Karnataka State. A semi-structured questionnaire was prepared for the teachers. Depending on the type of information to be collected, open-ended, multiple-choice type questions, and Likert scale (1932) were included in the questionnaire. The data collected from the teacher are evaluated and analysed with appropriate statistical tools to arrive at the conclusion. It was found that favourable support and guidance from head of the school and education officer along with periodic inspection plays a vital role in motivating teachers in primary schools.

KEY WORDS: School support, School administration, Teacher motivation, Education, Primary School.

INTRODUCTION

The essence of human resource development is that education must play a significant and interventionist role in remedying imbalances in the socio-economic fabric of the country "Mission of education" according to Dr. Kalam, Former president of India "is the foundation to ensure the creation of enlightened citizens who will make a prosperous, happy and a strong nation". Education is a total process of developing human ability and behaviour. Elementary education constitutes a very important part of the entire structure of the education system. It is the backbone of the educational pattern of a country. No pattern of education can ever be successful if it does not have a sound primary education system.

The teacher must be at the centre of the fundamental reforms in the education system. The new education policy must help re-establish teachers, at all levels, as the most respected and essential members of our society, because they truly shape our next generation of citizens. It must do everything to empower teachers and help them to do their job as effectively as possible. The new education policy must help recruit the very best and brightest to enter the teaching profession at all levels, by ensuring livelihood, respect, dignity, and autonomy, while also instilling in the system basic methods of quality control and accountability (NEP 2020)

TEACHER MOTIVATION

Motivation refers to all phenomena, which are involved in the stimulation of action towards objectives. Motivation is necessary for performance. Motivation occupies a central position in the execution of any human task or endeavour, the teaching-learning process is no exemption. Teacher motivation is related to what makes the teachers happy, satisfied, dedicated, and committed so that they show their best performance in teaching their students. Teacher who inspires and motivate the students are included in the category of effective teachers

The principal and the school board are primarily responsible for the administration of a school. The main responsibilities for motivating teachers fall to the school administration (Kocabas and Karakose, 2009). Lack of motivation may cause teachers to be



less successful in teaching. Unreasonable demands of administration discourage team spirit, while neglecting rewards and financial problems are the factors related to demotivation. Every teacher is not motivated entirely by the same demands and needs. If there are no factors motivating the teachers, the productivity will decrease dramatically. Unfortunately, teachers are unwilling to make major changes, unless they are adequately motivated.

SCHOOL SUPPORT AND ADMINISTRATION

If systems and structures set up to manage and support teachers are dysfunctional, the teachers are likely to lose their sense of professional responsibility and commitment. The importance of the teachers' works and their competence in performing it are crucially influenced by the quality of both internal and external supervision (Bennell P. and Akyeamong K., 2007). In order to evaluate the effect of school support and administration on teacher motivation, data was collected from the teacher respondents to evaluate the effect of components such as Head master's guidance to teacher, impartial behaviour of Head master, Head Master's, managements, and higher authorities' response to the teachers work in the school, regular or periodic inspection and guidance of education officer.

NEED FOR THE STUDY

Literature review points out the research gap in the study of interrelation between school support and administration and teacher motivation in Indian context. A teacher needs the support of the school and the department to be effective in teaching which in turn makes the teacher satisfied. This has led to the present study.

OBJECTIVES OF THE STUDY

1. To analyse inter relation between school support and administration and motivation of teachers in primary schools.
2. To study the difference in the impact of School support and administration on the motivation of teachers of primary school.

RESEARCH METHODOLOGY

The article is developed mainly on data collected through the questionnaire administered to the teachers of primary schools. Secondary sources such as books, journals, annual reports of Education Departments, and earlier research work in the related field were also referred for the study. A semi-structured questionnaire was prepared for the teachers. Depending on the type of information to be collected, multiple-choice type questions, and Likert scale were included in the questionnaire. A five-point Likert scale was used in the questionnaire to ensure higher statistical variability among the responses. Government, Aided and Unaided primary schools were selected at random. Stratified sampling technique was used to choose 214 teachers from the selected schools. The data collected from the teacher respondents were evaluated and analysed with appropriate statistical tools to get to the conclusion. Data summarization and data association techniques such as mean, percentage, standard deviation, and percentage mean were used. The ANOVA test, t-test, Regression analysis were used to draw inferences from the data.

SCOPE OF THE STUDY

The study has been undertaken in primary schools in Mangalore. For the present study, primary schools affiliated to the Karnataka State Board were selected. Teachers teaching in these primary schools are the teacher target population. Basically, there are three types of schools, namely, (i) the Government schools, managed completely by the Government, (ii) Aided schools, managed by private individuals or trust but a part of the funding is done by the Government, and (iii) Un-aided schools, managed by private individuals or trusts without any financial assistance from the Government.

LIMITATION OF THE STUDY

1. Teachers are engaged with teaching and administrative work in school, the information given due to the time constraint may be partially accurate or biased.
2. The study was conducted in the primary schools in Mangalore, generalisation cannot be arrived at based on this study.
3. The sample size of 214 teachers may be small to come to any conclusions and there is a possibility of the results being partial due to the size of the sample.

REVIEW OF LITERATURE

Mehmet D. Karsh and Hale Iskender (2009) made a study "To examine the effect of the motivation provided by the administration on the job satisfaction of teachers and their institutional commitment" It is also found out that the level of motivation affects the institutional commitment and the level of institutional commitment changes according to motivation given by the administration. The level of motivation also affects the job satisfaction and high motivation causes high job satisfaction whereas low motivation leads to low job satisfaction.

Elizabeth Gloria Anindo Wanyama and Enose M.W. Simatwa (2018) studied Contribution of school administrators to teacher motivation in enhancement of students' academic performance in secondary schools in Kenya: a study of secondary school administrators in Emuhaya and Vihiga sub counties found that Administrators' contribution to Teacher Motivation was positive and



significant. School Administrators' contribution to Teacher Motivation in the enhancement of students' academic performance was significant and enhanced students' academic performance

Nazim Serkan Burgul, Osman Emiroğlu and Ahmet Güneyli (2019) conducted a study “School administrators and teacher motivation understanding: Cyprus Case” found that the opinions of school administrators related to how they perceive the motivational levels of teachers are the following: working discipline, participation, and body language. On the other hand, most of the school administrators' opinions regarding the low motivation of teachers are related to “teacher unwillingness”. The teacher motivation understanding indicators of school administrators are generally extrinsically motivation oriented. In this case, there is an increased necessity for intrinsic motivation, observation, and evaluation of teachers.

Amy Portey (2021) The literature confirms that an administrator should have a vested interest in motivating a faculty to strive to perform to the best of their ability in order to improve student achievement. Leaders need to guide staff in an effective conscious goal setting process while being aware of environmental cues that could be affecting motivation subconsciously. Administrators must support staff by providing professional development when appropriate, and creating boundaries and processes for useful professional feedback. Finally, it is necessary for leaders to establish a culture of trust and collaboration essential for collective teacher efficacy and support teachers' efforts to achieve mastery experiences. Relationships cultivated in these actions will fuel the cyclical nature of seeing results, generating efficacy, and increasing motivation.

Trenton M Watson (2021) conducted a study to investigate school administration and its influence on the morale and motivation of charter school teachers in K-12 charter schools in the Southwest Tennessee region of the United States concluded that charter school administrators create and facilitate a conducive environment in which teachers maximize their morale and motivation using different strategies.

ANALYSIS OF DATA AND INTERPRETATION

Analysis of the data so collected on the parameters of school support and administration are evaluated and presented in the following tables:

Table No.1.1
Teacher motivation due to Head Master's guidance to improve teaching skill

Type of Schools	Head Master's guidance is useful to improve my teaching skill									
	Strongly disagree	Dis-agree	Uncertain	Agree	Strongly agree	Mean	S.D.	Percentage mean	ANOVA F value	p value
Govt. taluk	0 .0%	0 .0%	0 .0%	30 83.3%	6 16.7%	4.17	.378	83.33	2.430	.036
Govt. city	3 10.0%	0 .0%	0 .0%	24 80.0%	3 10.0%	3.80	.997	76.00		SIG
Aided taluk	2 13.3%	0 .0%	0 .0%	11 73.3%	2 13.3%	3.73	1.163	74.67		
Aided City	2 4.9%	1 2.4%	1 2.4%	23 56.1%	14 34.1%	4.12	.954	82.44		
Un-aided taluk	1 2.5%	1 2.5%	1 2.5%	18 45.0%	19 47.5%	4.33	.859	86.50		
Un-aided city	1 1.9%	1 1.9%	2 3.8%	25 48.1%	23 44.2%	4.31	.805	86.15		
Total	9 4.2%	3 1.4%	4 1.9%	131 61.2%	67 31.3%	4.14	.866	82.80		

Source: Survey Data

As seen in Table No. 1.1, the teachers are highly motivated due to Head Masters guidance to improve teaching skills (mean ± SD 4.14±0.866 with percentage mean 82.80). The ANOVA test results show significant differences in teacher motivation between teachers of various schools in relation to the above factor (F=2.430 and p=0.036). High motivation was observed among teachers of Un-aided taluk and Un-aided city schools (percentage mean 86.5 and 86.15 respectively). And comparatively low motivation was observed among Aided taluk school teachers (percentage mean 74.67). It was also observed that motivation is higher among teachers of Un-aided taluk school (percentage mean 86.5) and Un-aided city school (percentage mean 86.15) when compared to teachers of Government taluk school (percentage mean 83.33), Government city school (percentage mean 76), Aided taluk school (percentage mean 74.67) and Aided city school (percentage mean 82.44). It signifies that Head Masters guidance motivates Un-aided school teachers more than Aided and Government school teachers.



Table No. 1.2
Teacher Motivation due to Head Master's impartial distribution of work

Type of schools	Head Master's impartial distribution of work									
	Strongly disagree	Dis-agree	Un-certain	Agree	Strongly agree	Mean	S.D.	Percentage mean	ANOVA F value	p value
Govt. taluk	0 .0%	0 .0%	0 .0%	28 77.8%	8 22.2%	4.22	.422	84.44	.998	.420
Govt. city	2 6.7%	1 3.3%	0 .0%	21 70.0%	6 20.0%	3.93	.980	78.67		NS
Aided taluk	0 .0%	0 .0%	1 6.7%	13 86.7%	1 6.7%	4.00	.378	80.00		
Aided City	6 14.6%	0 .0%	3 7.3%	15 36.6%	17 41.5%	3.90	1.35 7	78.05		
Un-aided taluk	6 15.0%	2 5.0%	1 2.5%	17 42.5%	14 35.0%	3.78	1.38 7	75.50		
Un-aided city	2 3.8%	1 1.9%	5 9.6%	23 44.2%	21 40.4%	4.15	.958	83.08		
Total	16 7.5%	4 1.9%	10 4.7%	117 54.7%	67 31.3%	4.00	1.05 5	80.09		

Source: Survey Data

As seen in Table No. 1.2, the teachers are highly motivated in relation to the Head Master's impartial distribution of work to the teachers (mean ± SD 4±1.055 with percentage mean 80.09). The ANOVA test results show no significant difference in teacher motivation between the teachers of various schools in relation to the above factor (F=0.998 and p=0.420). It is also observed that impartial distribution of work by the HeadMaster motivates the teachers.

Table No. 1.3

Teacher motivation due to appreciation for the good work by HeadMaster, management and higher authorities.

Type of schools	Head Master, management and other higher authorities are happy with my good work									
	Strongly disagree	Dis-agree	Un-certain	Agree	Strongly agree	Mean	S.D.	Percentage mean	ANOVA F value	p value
Govt. taluk	0 .0%	0 .0%	4 11.1%	23 63.9%	9 25.0%	4.14	.593	82.78	3.151	.009
Govt. city	1 3.3%	0 .0%	1 3.3%	25 83.3%	3 10.0%	3.97	.669	79.33		HS
Aided taluk	0 .0%	0 .0%	1 6.7%	12 80.0%	2 13.3%	4.07	.458	81.33		
Aided City	0 .0%	0 .0%	4 9.8%	20 48.8%	17 41.5%	4.32	.650	86.34		
Un-aided taluk	0 .0%	0 .0%	2 5.0%	17 42.5%	21 52.5%	4.48	.599	89.50		
Un-aided city	0 .0%	0 .0%	9 17.3%	29 55.8%	14 26.9%	4.10	.664	81.92		
Total	1 .5%	0 .0%	21 9.8%	126 58.9%	66 30.8%	4.20	.642	83.93		

Source: Survey Data

As seen in Table No. 1.3, the teachers are highly motivated in relation to Head Master, management, and other higher authorities' happiness over the good work of the teacher (mean ± SD 4.20±0.642 with percentage mean 83.93). The ANOVA test results show a highly significant difference in teacher motivation between the teachers of various schools in relation to the above factor (F=3.151 and p=0.009). Higher motivation was observed among Un-aided taluk school teachers (percentage mean 89.5) while lower motivation was observed among Government city school teachers (percentage mean 79.33). This shows that evaluation of teachers by the HeadMaster, management and higher authorities play a significant role in the motivation of Un-aided taluk school teachers when compared to the teachers in other schools.



Table No.1.4
Teacher motivation due to regular inspection and guidance of education officers

Type of schools	Regular/periodic inspection and guidance of education officers, which helps me to improve teaching									
	Strongly disagree	Dis-agree	Un-certain	Agree	Strongly agree	Mean	S.D.	Percentage mean	ANOVA F value	p value
Govt. taluk	0 .0%	0 .0%	0 .0%	29 80.6%	7 19.4%	4.19	.401	83.89	4.082	.001
Govt. city	2 6.7%	0 .0%	1 3.3%	23 76.7%	4 13.3%	3.90	.885	78.00		HS
Aided taluk	1 6.7%	0 .0%	0 .0%	13 86.7%	1 6.7%	3.87	.834	77.33		
Aided city	1 2.4%	0 .0%	1 2.4%	27 65.9%	12 29.3%	4.20	.715	83.90		
Un-aided taluk	1 2.5%	0 .0%	2 5.0%	29 72.5%	8 20.0%	4.08	.694	81.50		
Un-aided city	9 17.3%	1 1.9%	5 9.6%	29 55.8%	8 15.4%	3.50	1.291	70.00		
Total	14 6.5%	1 .5%	9 4.2%	150 70.1%	40 18.7%	3.94	.915	78.79		

Source: Survey Data

As seen in Table No. 1.4, the teachers are highly motivated in relation to inspection and guidance of education officers which helps to improve teaching (mean ± SD 3.94 ± 0.915 with percentage mean 78.79). The ANOVA test results show a highly significant difference in teacher motivation between the teachers of various schools in relation to the above factor (F=4.082 and p=0.001). High motivation was observed among the teachers of Aided city school (percentage mean of 83.9) and Government taluk school (percentage mean 83.89). Low motivation was observed among Un-aided city school teachers (percentage mean 70). It indicates that Un-aided city school teachers need the guidance of education officers to improve their teaching skills.

Table No. 1.5

Regression analysis to study significant components of school support and administration on teacher motivation. Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients	t	p
		B	Std. Error	Beta		
3	(Constant)	.655	.063		10.428	p<0.001
	Head Master's guidance is useful to improve my teaching skill	.298	.013	.444	22.637	p<0.001
	The Head Master is impartial in distributing work.	.278	.011	.503	26.411	p<0.001
	Regular/periodic inspection and guidance of education officers, which help me to improve teaching.	.271	.011	.427	23.888	p<0.001

a. Dependent Variable: Motivation due to school support and administration

Model	R	R Square	ANOVA F value	p value
3	.968	.937	1041.124	p<0.001

Backward Regression analysis was performed to study the significant components of school support and administration which leads to motivation among the teachers (as seen in table 1.5). All the components of school support and administration has a significant impact on teacher motivation with R square 93.7%. Among the components, Head Masters impartial distribution of work (β=.503) has a greater impact on teacher motivation followed by the factors of Head Masters guidance to improve teaching skill (β=.444), and regular or periodic inspection and guidance of education officers (β=0.427).



FINDINGS

Teachers are highly motivated in relation to Head Master's guidance in improving teaching skills, Head Master's impartial distribution of work, Head Master, management, and other higher authorities' appreciation for teachers work, and regular inspection and guidance of education officers. In relation to Head Master's guidance in teaching, Un-aided school teachers are highly motivated (percentage mean 86.33 avg) comparatively lower motivation was observed among Aided school teachers (percentage mean 78.56 avg). In relation to Head Master's management, and other higher authorities' appreciation for teachers, Un-aided school teachers are highly motivated (percentage mean 85.71 avg) comparatively lower motivation was observed among Government school teachers (percentage mean 81.05 avg). In relation to inspection and guidance of education officer's teachers of Government schools are highly motivated (percentage mean 80.94) comparatively lower motivation was observed among teachers of Un-aided schools (percentage mean 75.75 avg).

CONCLUSION

In order to play a pivotal role in reforming education at all levels, teachers should be inspired by creative idealism and take pride in their profession. Dr. Abdul Kalam has spoken of igniting the young minds, but we must remember that we cannot do that unless we ignite the mind of the teacher in the first place. So, there is a need for teacher motivation to motivate students. School administration in terms of head of the school, education officers and other authorities must play a significant role to keep the teacher motivated in the process.

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ROLE OF AGILE EMPLOYEES IN BUILDING HOSPITAL RESILIENCE: AN INVESTIGATIVE STUDY

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ABSTRACT

The Covid-19 pandemic has huge impact on business environment throughout the globe, particularly it posed many challenges for healthcare sector. There are about 219 known viruses which can cause diseases to the human beings and researchers estimate that this number is like one drop of ocean. In the past twenty years, there are many virus outbreaks like SARS, Swine Flu, MERS, Ebola and Zika. These pandemics registered billions of cases and lakhs of deaths, fortunately the mortality is less due to less spread. But the recent outbreak of Corona virus registered around 61.8Cr cases and 65.5L deaths worldwide and the mortality rate is above one percent. Till now these seven viruses caused around 1Cr deaths and there are 200 plus known and thousands of unknown viruses in the world which may affect mankind in the future. Therefore, the health system in each country should prepare them to face the pandemic situations. WHO also provided policy recommendations to build resilience in the health system. Health system can be resilient when every healthcare organisation becomes resilient. There are four stages in pandemic shocks and each stage requires different resilient characteristics like adaptative, responsive, collaborative, informative, accountable etc. In this context the current research is conducted to study the role of agile employees in building hospital resilience.

KEYWORDS: Resilience, Agility, Health System, Pandemics, Adaptative, Responsive, Collaborative, Informative, Accountable.

INTRODUCTION

The health sector is a crucial component of any society, responsible for safeguarding the well-being of its population. In the face of various challenges and crises, the ability of the health sector to adapt, respond, and recover is vital to maintaining the overall health and stability of a nation. Health sector resilience refers to its capacity to effectively manage and bounce back from shocks, disasters, and long-term stresses while ensuring the continued provision of essential healthcare services. In this essay, we will explore the concept of health sector resilience, its significance, and the key factors that contribute to building a resilient health system.

THE SIGNIFICANCE OF HEALTH SECTOR RESILIENCE

Health sector resilience plays a pivotal role in addressing the diverse threats that can disrupt healthcare systems. Such threats encompass natural disasters, pandemics, economic crises, armed conflicts, and emerging diseases. When a health sector is resilient, it can minimize the impact of these challenges on its services, infrastructure, and workforce, thereby reducing the loss of lives and ensuring the continuity of medical care. Moreover, a resilient health sector is better equipped to adapt to changing circumstances, innovate, and improve its overall performance, leading to better health outcomes for the population.

FACTORS CONTRIBUTING TO HEALTH SECTOR RESILIENCE

1. Strong Governance and Leadership: Effective governance and strong leadership are fundamental in building resilience within the health sector. Clear policies, efficient decision-making processes, and a unified approach to disaster preparedness and response are essential to ensure the sector's ability to withstand and recover from shocks.

2. Robust Health Infrastructure: A resilient health sector requires robust infrastructure, including hospitals, clinics, laboratories, and supply chains. Regular maintenance and investment in upgrading facilities are crucial to ensuring their capacity to cope with increased demands during crises.



3. **Skilled and Adaptable Workforce:** A well-trained and adaptable healthcare workforce is the backbone of a resilient health sector. Adequate training, ongoing professional development, and support are vital to enable healthcare workers to respond effectively to emergencies and rapidly changing situations.

4. **Effective Emergency Preparedness and Response:** A health sector's ability to anticipate and respond to emergencies is central to its resilience. Preparedness plans, stockpiling essential medical supplies, and establishing efficient communication networks between different health institutions and authorities are all critical components.

5. **Community Engagement and Participation:** Resilience is not only about the health sector alone but also involves the engagement and cooperation of communities. Involving communities in healthcare planning, risk assessments, and emergency response efforts can enhance the overall effectiveness of resilience strategies.

6. **Innovative Technologies and Data Management:** Incorporating innovative technologies and data management systems can significantly improve the health sector's ability to collect, analyse, and share information during crises. This data-driven approach enables more informed decision-making and resource allocation.

7. **International Collaboration:** Global health security heavily relies on international collaboration and cooperation. Building strong partnerships and sharing knowledge, expertise, and resources among countries can enhance the collective resilience of health sectors worldwide.

The aforesaid factors can be broadly classified as human beings' contribution and infrastructure development (infrastructure development also needs people's effort). Infrastructure development is bit easier while comparing with developing human skills and behaviour; therefore, the current study tried to build a path in the form of agility to create resilient hospital which leads to health system resilience.

REVIEW OF LITERATURE

Hoon Sung Son et. al., (2022), Lower levels of worried responses to the virus epidemic, absence of current mental symptoms, higher levels of resilience, and higher levels of organisational commitment were said to predict a better QoL among health care professionals in the current study. As a result, regulating anxiety or depression in reaction to the viral outbreak is critical for improving the quality of life of healthcare professionals throughout this epidemic time. Furthermore, the findings of this study imply that resilience may influence the effect of resilience on healthcare professionals' QoL. The ability to adapt to stress and adversity in order to work hard and succeed while retaining mental and physical well-being is known as resilience.

Jamebozorgi MH et. al., (2022), The findings revealed that burnouts are highly common among caretakers during COVID-19. Nurses should not be emotionally exhausted, but rather should improve their own ratings, given the necessity of recognising and reducing burnout. Resilience, on the other hand, is a protective measure of the symptoms listed, thus it would be recommended, as other authors have stated, to include the promotion of resilience in the design of interventions to minimise burnout. They also recommend that pleasant working circumstances be established and that healthy lifestyles be promoted.

Pooja V et. al., (2021), The study discovered that stress is very common among doctors. Burnout has three characteristics, each of which is linked to elements including hyperactivity and emotional discomfort. The stigma associated with doctors admitting to mental health concerns, as well as the importance of promoting mental health in general, must be publicly discussed. Regular input from doctors, as well as assistance with relaxation or other stress reduction strategies, can help to reduce stress levels. To address pervasive burnout, strategies such as raising workload, lowering some therapies, such as mindfulness, and counselling those at risk of burnout have been advocated.

Moheimani, A et. al., (2021), this study aimed to introduce new measure to estimate agility of the healthcare sector during disasters. For the research they adopted four phases of disasters and created an agility framework to measure hospitals efficiency during disasters and found that 40% of the hospitals lied in the category of worst to best. Finally, this framework proved to be handy in measuring hospitals agility during disasters.

Prashar, A. (2023), the purpose of the study is to identify the factors influencing in developing agility in the healthcare organisations in developing countries and from the research it is found that there are two factors namely policy making and regulating the implementation process of that policy. For the research purpose four factors are considered, they include driving factors, autonomous factors, dependence factors, and linkage groups. After the data analysis it is found that in developing countries policy making is done effectively but regulating the implementation is not given significant importance.



RESEARCH GAP

1. There is less literature available for health system resilience.
2. There are nominal researches which have studied employee agility impact on resilience of hospitals.

OBJECTIVES OF THE STUDY

- To study the factors influencing resilience and factors influencing agility among the nurses working in Guntur and Vijayawada of Andhra Pradesh, India.
- To examine the agile employees' impact on hospital resilience.
- To put forth certain suggestions based on the findings of the study.

SAMPLE & DATA COLLECTION

A quantitative approach was followed in this exploratory study. The participants selected for this study consisted of nurses of select hospitals in Guntur and Vijayawada of Andhra Pradesh, India. 650 questionnaires were distributed among the select hospitals. Convenience sampling technique was deployed in sample selection. The respondents were solicited to complete the questionnaire. The resultant response rate of useable questionnaires was 97% (630).

DATA ANALYSIS

Model Fit of the Resilience Model

Values of different fit indices; GFI, IFI, CFI, NFI greater than 0.9 considered as good fit and RMSEA values 0.05 or less indicates close to fit, between 0.05 to 0.08 indicates reasonable fit and values between 0.08 to 0.10 show marginal fit (Kline, 2001).

Structural Equation Modelling (SEM) is conducted with all 18 variables and data shows that in corporate hospitals $df= 4.055$, $GFI= .909$, $NFI= .917$, $IFI= .918$, $TLI= .914$, $CFI= .912$, $RMSEA= .074$ the model is improvised after allowing modification indices.

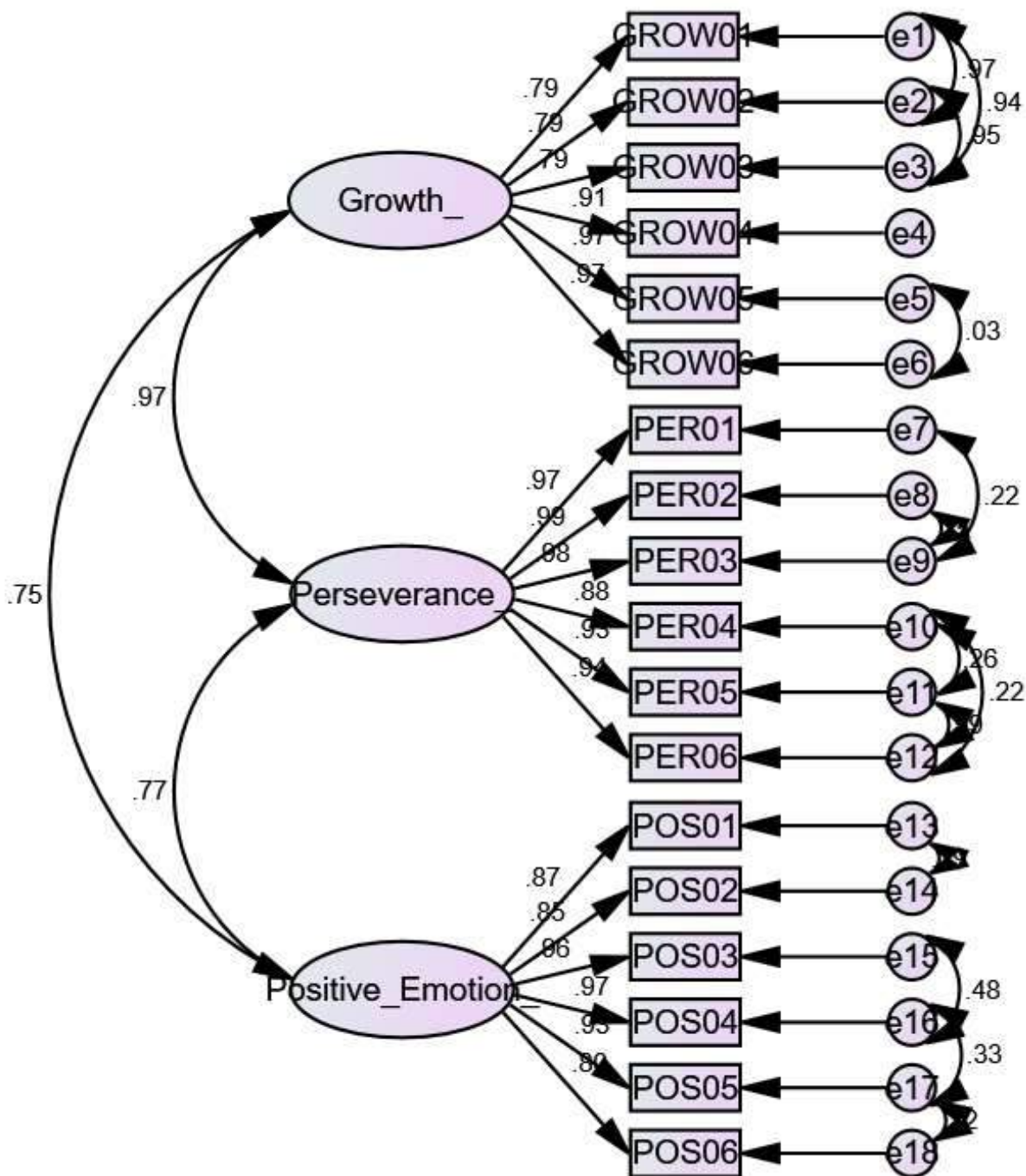


Figure- 1: Resilience Model
Convergent Validity, Reliability, & Divergent Validity of Resilience Model

Table- 1: Convergent Validity & Divergent Validity of Resilience Model in Study area

	CR	AVE	Growth	Perseverance	Positive Emotion
Growth	0.95106	0.76569	0.875		
Perseverance	0.98195	0.90082	0.873	0.949	
Positive Emotion	0.96089	0.80447	0.753	0.774	0.897

(Source: Primary Data)



The convergent validity is verified by measuring composite reliability (CR) and average variance explained (AVE) values of the data. Hair et al., 2010 emphasised on significance of CR and AVE values in determining convergent validity; according to him the CR value should be equal or more than 0.6; whereas AVE value should be equal or more than 0.5 to approve the convergent validity of the data. Data should be not only valid but also should be reliable. According to Chin, 1998 recommendations the CR value of the data should be 0.6 or more and as per directions of Awang, 2015 AVE value should be 0.5 or more. From the above table it is observed that for the current resilience model the minimum CR value in the data is 0.95 and minimum AVE value is 0.76. Therefore, it is concluded that the current data has convergent validity and data is also reliable.

The recommended approach for establishing divergent Validity is to compare the squared correlation between two constructs with either of their individual AVE estimates (Hair et al., 1998). The AVE estimates should be greater than the squared correlation estimate. In addition to distinctiveness of constructs, divergent Validity also means that individual measured items should represent only one latent construct. Form the above table it is observed that the AVE estimates are greater than the squared correlation estimates, hence supporting divergent validity (Hair et al., 1998).

Model Fit of the Agility Model

Values of different fit indices; GFI, IFI, CFI, NFI greater than 0.9 considered as good fit and RMSEA values 0.05 or less indicates close to fit, between 0.05 to 0.08 indicates reasonable fit and values between 0.08 to 0.10 show marginal fit (Kline, 2001).

Structural Equation Modelling (SEM) is conducted with all 33 variables and data shows that in corporate hospitals $df= 4.041$, GFI= .904, NFI= .911, IFI= .913, TLI= .913, CFI= .915, RMSEA= .069 the model is improvised after allowing modification indices.

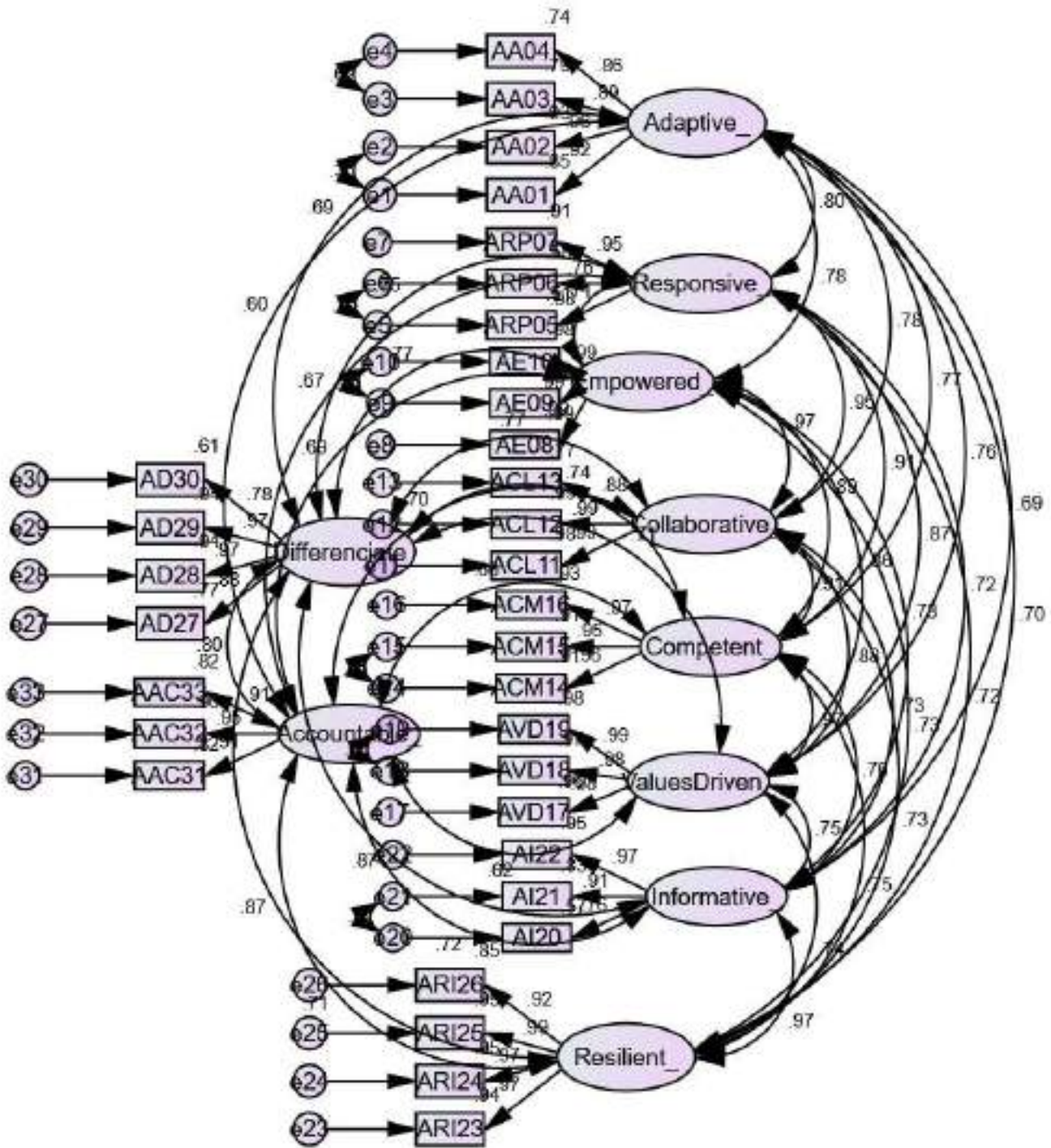


Figure- 2: Agility Model
Convergent Validity, Reliability, & Divergent Validity of Agility Model



Table- 2:
Convergent Validity & Divergent Validity of Agility Model in Study area

	CR	AVE	Adaptive	Responsive	Empowered	Collaborative	Competent	Values Driven	Informative	Resilient	Differentiate	Accountable
Adaptive	0.94943	0.82463	0.908									
Responsive	0.85313	0.86311	0.803	0.929								
Empowered	0.99418	0.98275	0.775	0.917	0.991							
Collaborative	0.96868	0.91184	0.779	0.909	0.941	0.955						
Competent	0.97101	0.91779	0.775	0.906	0.888	0.912	0.958					
Values Driven	0.98965	0.96959	0.764	0.873	0.857	0.879	0.947	0.985				
Informative	0.91586	0.88575	0.692	0.723	0.731	0.731	0.76	0.746	0.941			
Resilient	0.98099	0.9281	0.696	0.717	0.729	0.728	0.753	0.737	0.931	0.963		
Differentiate	0.9466	0.81703	0.689	0.748	0.772	0.77	0.741	0.707	0.869	0.873	0.904	
Accountable	0.94385	0.84861	0.602	0.671	0.693	0.701	0.659	0.624	0.723	0.713	0.798	0.921

(Source: Primary Data)

The convergent validity is verified by measuring composite reliability (CR) and average variance explained (AVE) values of the data. Hair et al., 2010 emphasised on significance of CR and AVE values in determining convergent validity; according to him the CR value should be equal or more than 0.6; whereas AVE value should be equal or more than 0.5 to approve the convergent validity of the data. Data should be not only valid but also should be reliable. According to Chin, 1998 recommendations the CR value of the data should be 0.6 or more and as per directions of Awang, 2015 AVE value should be 0.5 or more. From the above table it is observed that for the current agility model the minimum CR value in the data is 0.85 and minimum AVE value is 0.81. Therefore, it is concluded that the current data has convergent validity and data is also reliable.

The recommended approach for establishing divergent Validity is to compare the squared correlation between two constructs with either of their individual AVE estimates (Hair et al., 1998). The AVE estimates should be greater than the squared correlation estimate. In addition to distinctiveness of constructs, divergent Validity also means that individual measured items should represent only one latent construct. Form the above table it is observed that the AVE estimates are greater than the squared correlation estimates, hence supporting divergent validity (Hair et al., 1998).

AGILITY IMPACT ON RESILIENCE

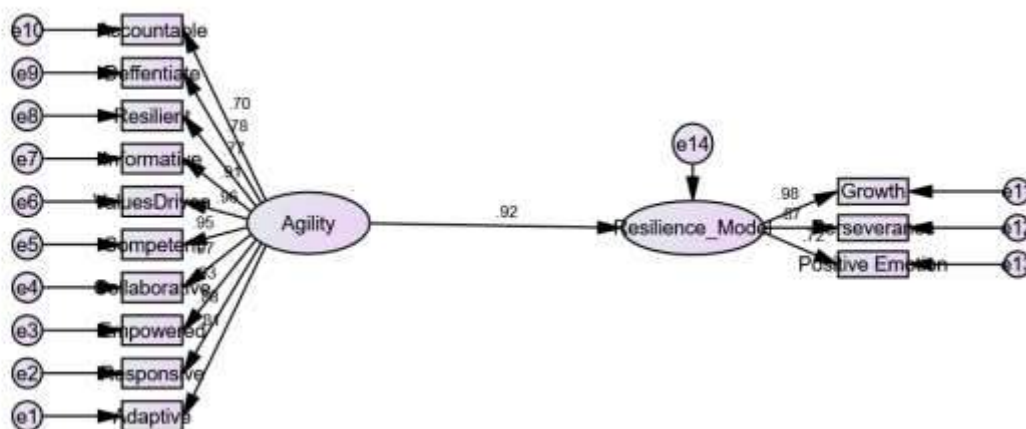


Figure- 3: Agility Impact on Resilience

From the above figure it is understood that agility has significant impact on resilience in the study area.

FINDINGS

- All 18 items and three factors are contributing for resilience in the study area.
- All 33 items and ten factors are contributing for agility in the study area.
- According to employee perception employee agility has significant impact on resilience.



SUGGESTIONS

- ✓ If management is expecting resilient organisation, then it should understand growth, perseverance, and positive emotion of all the employees is very important. The management should keep resilience in mind while making policy decisions.
- ✓ Agility of the employees become very significant factor in the current days' dynamic environment. Increased pollution causing new diseases among the human beings and these diseases posing challenges for healthcare professionals. In this context the management should create agile employees who are ready to accept any type of challenge posed by environment.
- ✓ According to employee perception employee agility has significant impact on hospital resilience. Pandemic has shown the loop holes in the healthcare sector preparedness. Healthcare sector witnessed scarcity of certain resources like number of beds for patients, availability of oxygen cylinders etc. Therefore, along with the other precautions the organisations should develop agility among the employees to deal with these situations.

CONCLUSION

The research is conducted to study the factors contributing for both resilience and agility and research is also conducted to examine the employee agility impact on organisations resilience. From the research it is found that all the 18 items considered for the study are significantly contributing for the resilience and the 33 items considered for the agility also found to be significant. According to employee perception employee agility has significant impact on resilience of the hospitals.

India is a vast country and each geographical area has different cultures and norms. Accordingly, each geographical area patient expectations also varies. The role of the nurse is dynamic in nature because the clients come there are patients and every patient thinks that they are only the suffers in the world and they need at most care and attention. The nurses should make sure that they meet the expectations of the patients; doing that is a challenging task for the nurses they can able to it when they are agile. Therefore, organisations should develop the quality of agility among the healthcare professional to build resilient hospital which can cope with the challenges posed by both business environment as well as nature.

SCOPE FOR FUTURE RESEARCH

In the current research human dimension of health system resilience is considered for the study, in the future researchers may consider infrastructure factors of health system impact on health system resilience and summative influence of human and infrastructure influence on health system resilience can be studied for creation of health system resilience which can safe-guard the humans during the challenges posed by the nature like pandemics.

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AFFECTIVE COMMITMENT AND ORGANIZATIONAL CITIZENSHIP BEHAVIOR AMONG HEALTHCARE EMPLOYEES: AN EMPIRICAL INVESTIGATION

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ABSTRACT

The current study aims to assess the impact of affective commitment on the exhibition of organizational citizenship behavior (OCB) among the healthcare employees based upon the tenets of Social Exchange Theory. Using stratified random sampling technique, data were collected from 379 employees working in different hospitals across Jammu and Kashmir. The findings revealed significant positive impact of affective commitment on employees' engagement in citizenship behaviors targeted at both individuals and organization. However, affective commitment emerged as the strongest predictor of OCB towards organization (OCBO) than towards the specific individuals (OCBI). The results of this study have contributed to the literature in the domain of organizational commitment and OCB by testing these linkages in Indian healthcare context, where there is dearth of studies confirming the said relationships. Moreover, this study has also contributed to Social Exchange Theory by validating its assumptions in a new context. This study also provides some valuable insights to healthcare sector which can have detrimental impact on the effective working of this sector.

KEYWORDS: Affective commitment, extra-role behaviors, OCBI, OCBO, hospitals, SEM

1. INTRODUCTION

One of the critical set of behaviors that has been considerably researched in organizational sciences is organizational citizenship behavior (Bourdage et al., 2018). "OCB pertains to discretionary behavioral contributions that members render to their organizations" (Organ, 2015, p. 317). These behaviors play a key role in the accomplishment of organizational goals and are pivotal to the understanding of individual workplace behaviors (Majeed et al., 2018a; Rotundo & Sackett, 2002). OCBs are anticipated to positively impact employee productivity and organizational performance (Bolino et al., 2002; Podsakoff et al., 2009).

Given the importance of OCB, research has focussed on understanding the factors that can lead to higher exhibition of such citizenship behaviors. In line with this, a specific realm of research (see for example, Bateman & Organ, 1983; Cetin et al., 2015; Lambert et al., 2008; Organ & Ryan, 1995; Smith et al., 1983; William & Anderson, 1991) has focussed on comprehending the attitudinal correlates of these behaviors. Amongst the affective constructs, organizational commitment has emerged as a valuable predictor of OCBs (Podsakoff et al., 2000, Spitzmuller et al., 2008), more specifically affective form of organizational commitment has been consistently found as a significant correlate of all forms of OCBs (Grego-Planer, 2019; Meyer et al., 2002; Organ & Ryan, 1995). A plausible explanation as to how higher levels of affective commitment is associated with higher exhibition of OCBs can be best understood through the lens of Social Exchange Theory (Blau, 1964). When employees experience positive exchanges with the organization, they are more likely to reciprocate with positive behaviors that will benefit the organization in the long run. OCB seems to be one likely outcome of this exchange process (Liu & Cohen, 2010).

The extant literature clearly indicates that empirical investigations to ascertain the impact of affective commitment on OCB has been abundant. However, taking into account the context of health care, limited number of studies have examined the linkages between these two. Moreover, very few of such studies have included all the classes of healthcare employees, mostly focussing on either nurses or doctors and ignoring the paramedical staff. Therefore, in an attempt to address these gaps in the literature, the current study aims to test the influence of affective commitment on these citizenship behaviors targeted to benefit a specific individual as well as the organization.

2. THEORETICAL BACKGROUND

Affective commitment

When an employee's identity becomes intertwined with the organization, leading to an alignment between his individual goals and that of the organization, organizational commitment is said to have developed (Meyer & Allen, 1997). Past research has shown that employees with low levels of commitment to their organizations tend to make more errors, experience higher job-stress,



face increased family-related conflicts and exhibit higher absenteeism compared to those with strong organizational commitment (Meyer et al., 2002). Numerous studies have identified three components of organizational commitment: normative, continuance and affective (Allen & Meyer, 1990; Ko et al., 1997).

Affective commitment involves an employee's emotional attachment and identification with their organization (Allen & Meyer, 1990). Ko et al. (1997) define affective commitment as the desire to remain employed in the organization due to the sense of recognition, emotional connection and active engagement with the organization. Hence, affective commitment is characterized by a positive emotional bond between the individual and the organization they are working for. Higher levels of affective commitment can lead to a strong sense of belonging, loyalty, and pride in the organization. Such employees genuinely care about the organization's well-being and success. In comparison to other commitment components, i.e., normative and continuance, affective commitment has been associated with more positive organizational outcomes such as job performance, OCB and employee engagement (Alshaabani et al., 2021).

Organizational Citizenship Behavior (OCB)

Organizational citizenship behavior (OCB) encompasses voluntary and positive actions that exceed an employee's official job requirements. These behaviors are not explicitly stipulated or rewarded by the organization, yet they play a vital role in enhancing its overall effectiveness and functioning (Organ et al., 2006). In fact, citizenship behaviors are amongst the most desirable behaviors in contemporary organizations (Majeed et al., 2018b). OCB entails engaging in actions that benefit co-workers, the organization or its stakeholders. It demonstrates an individual's readiness to assist and support others, foster a positive workplace atmosphere, and actively contribute to the organization's achievements beyond the scope of their designated job duties.

Employees can display these discretionary behaviors either to benefit a specific individual or the organization (Lee & Allen, 2002; Williams & Anderson, 1991). When employees engage in such actions such as supporting and assisting their colleagues at the workplace without being asked to do so, these actions come under the category of organizational citizenship behaviors towards individuals (OCBI). Likewise, when employees engage in such actions that aim to benefit the organization directly like willingly attending non-mandatory but important organizational meetings or showing support for organizational policies in front of outsiders, it is referred to as organizational citizenship behaviors towards organization (OCBO).

Affective commitment and OCB

Extant literature has vouched for positive associations between affective commitment and OCB (Meyer et al., 2002; Organ & Ryan, 1995). In fact, Social Exchange Theory (Blau, 1964) has often been utilized to elucidate the fundamental reasons behind employees' voluntary participation in OCB. This theory proposes that human interactions are founded on the exchange of social and material resources, emphasizing the importance of achieving equilibrium in these exchange relationships. A key aspect of this theory is the norm of reciprocity, which suggests that individuals tend to reciprocate to those who have offered assistance or treated them fairly. Similarly, in the context of organizations, if employees perceive supportive and fair treatment from their organization, supervisors or their co-workers, they are inclined to respond with positive actions in return (Lambert et al., 2013). These positive actions may stem from employees' expertise, knowledge, or personal devotion such as organizational commitment (Lai et al., 2015). Hence employees who have a strong emotional attachment to their organization are more inclined to engage in behaviors that positively impact the organization's success and overall welfare (Lambert et al., 2021). These employees develop a family-like bond with the organization which can motivate them to exert additional effort and remain loyal to the organization even during difficult times. When employees genuinely care about their organization, they are inclined to go above and beyond their prescribed duties and demonstrate citizenship behaviors that benefit both the organization and its members (Alshaabani et al., 2021; Cetin et al., 2015; Liu & Cohen, 2010). Both of these aspects play a crucial role in cultivating a constructive work environment and enhancing the organization's performance and achievements. In line with these claims, the present study aims to examine the influence of affective commitment on OCB aimed at benefiting specific individuals (OCBI) and organization (OCBO) in the context of healthcare. Hence, it is hypothesized that:

(H1) Affective commitment has a significant positive effect on OCBI among healthcare employees

(H2) Affective commitment has a significant positive effect on OCBO among healthcare employees

3. METHODOLOGY

Sample and Data collection

The study was conducted in tertiary care hospitals across the union territory of Jammu & Kashmir, India. Employees working in these hospitals on various designations formed the population of the study. Further, using Yamane's (1967) model, the adequate sample size for the study was determined which came out to be 379. Afterwards, stratified random sampling technique was utilized to divide the study population into three strata- Doctors, Nurses and Paramedics. Finally, a specific number of respondents were selected from each stratum on proportionate basis and questionnaires were distributed accordingly. The sample respondents were asked to return the questionnaire when filled out. They were assured that neither their identity nor their responses will be revealed to anyone.



Measures

Affective commitment

The TCM instrument developed by Meyer et al. (1993) was adopted to measure the level of affective commitment among the respondents. The sample items include “*This organization has a great deal of personal meaning for me*”, “*I do not feel a strong sense of belonging to my organization (R)*”.

OCB

Lee and Allen’s (2002) scale was adopted to measure the display of OCB among the sample respondents. The sample items include: “*Go out of the way to make newer employees feel welcome in the work group*”, “*Give up time to help others who have work or non-work problems*” and “*show pride when representing the organization in public*”.

Demographic profile

The sample consisted of 42% males and 58% females. A significant portion of the respondents (66.2%) fell within the age range of 25-39 years. The majority of participants had attained Ms/MD/DNB/M.Sc. degrees (49.1%). Most of the respondents belonged to the age group of 25-39 years and had been working in their respective hospitals for less than ten years.

4. RESULTS

The present study utilized PLS-SEM technique to analyse the data. Under this technique, measurement model assessment has to be performed as the first step, followed by structural model assessment. The present study has performed these two assessments respectively to arrive at valid results.

Measurement Model Assessment

Since the constructs in the present study are reflective in nature (Dhiman & Sharma, 2021; Farrukh, et al., 2017), therefore the techniques of reflective measurement model (see table 1) were checked for assessing the reliability and validity of these constructs. As reflected in table 1, the indicator loadings for all the items were above 0.5 threshold (Hair et al., 2019), therefore all the items were included for further analysis. Further, the Cronbach alpha scores and composite reliability for all the constructs were above 0.7 threshold (Hair et al., 2018), therefore reliability of constructs was proven. In addition, the AVE scores were above 0.5 threshold (Hair et al., 2018), thereby substantiating the convergent validity of these constructs.

Table 1. Reliability and Convergent validity of the constructs

Construct	Indicators	Loadings	Cronbach alpha	CR	AVE
Affective Commitment	AC1	0.83	0.87	0.90	0.61
	AC2	0.79			
	AC3	0.75			
	AC4	0.72			
	AC5	0.80			
	AC6	0.80			
OCB towards Individuals (OCBI)	OCBI1	0.64	0.89	0.91	0.58
	OCBI2	0.80			
	OCBI3	0.77			
	OCBI4	0.81			
	OCBI5	0.80			
	OCBI6	0.84			
	OCBI7	0.79			
	OCBI8	0.58			
OCB towards Organization (OCBO)	OCBO1	0.60	0.91	0.93	0.63
	OCBO2	0.78			
	OCBO3	0.79			
	OCBO4	0.81			
	OCBO5	0.83			
	OCBO6	0.85			
	OCBO7	0.84			
	OCBO8	0.81			



Moreover, in order to determine the discriminant validity of the constructs, Fornell and Larcker (1981) criterion was used. According to this method, the square root of the AVE should be greater than the correlation value of the latent constructs. As reflected in table 2, the square rooted AVE values are greater than the latent variables' correlation values (see values in bold and italic), hence providing evidence for the discriminant validity of the study constructs.

Table 2. Discriminant Validity of Constructs

Constructs	Affective commitment	OCBI	OCBO
Affective commitment	<i>0.78</i>		
OCBI	0.41	<i>0.76</i>	
OCBO	0.54	0.65	<i>0.79</i>

Structural Model Assessment

Once the reliability and validity of constructs is established, the next step is to proceed for hypotheses testing. The results of hypotheses testing, as displayed in table 3, clearly reveals that affective commitment has a significant positive impact on the display of OCB towards the individual (beta coefficient = 0.18, p value <0.01) as well as organization (beta coefficient = 0.30, p value <0.01). Hence, the results provided support to both hypotheses (H1 & H2). Further, the results also found that the effect of affective commitment on OCB towards organization (OCBO) was higher than that of the impact on OCB towards individuals (OCBI) among the health care employees.

Table 3 Hypotheses testing

Hypothesis	Coefficient	SD	t-statistic	p- value	LLCI	ULCI	Decision
H1: AC -> OCBI	0.18	0.05	3.43	0.00	0.08	0.27	Supported
H2: AC -> OCBO	0.30	0.06	4.85	0.00	0.19	0.39	Supported

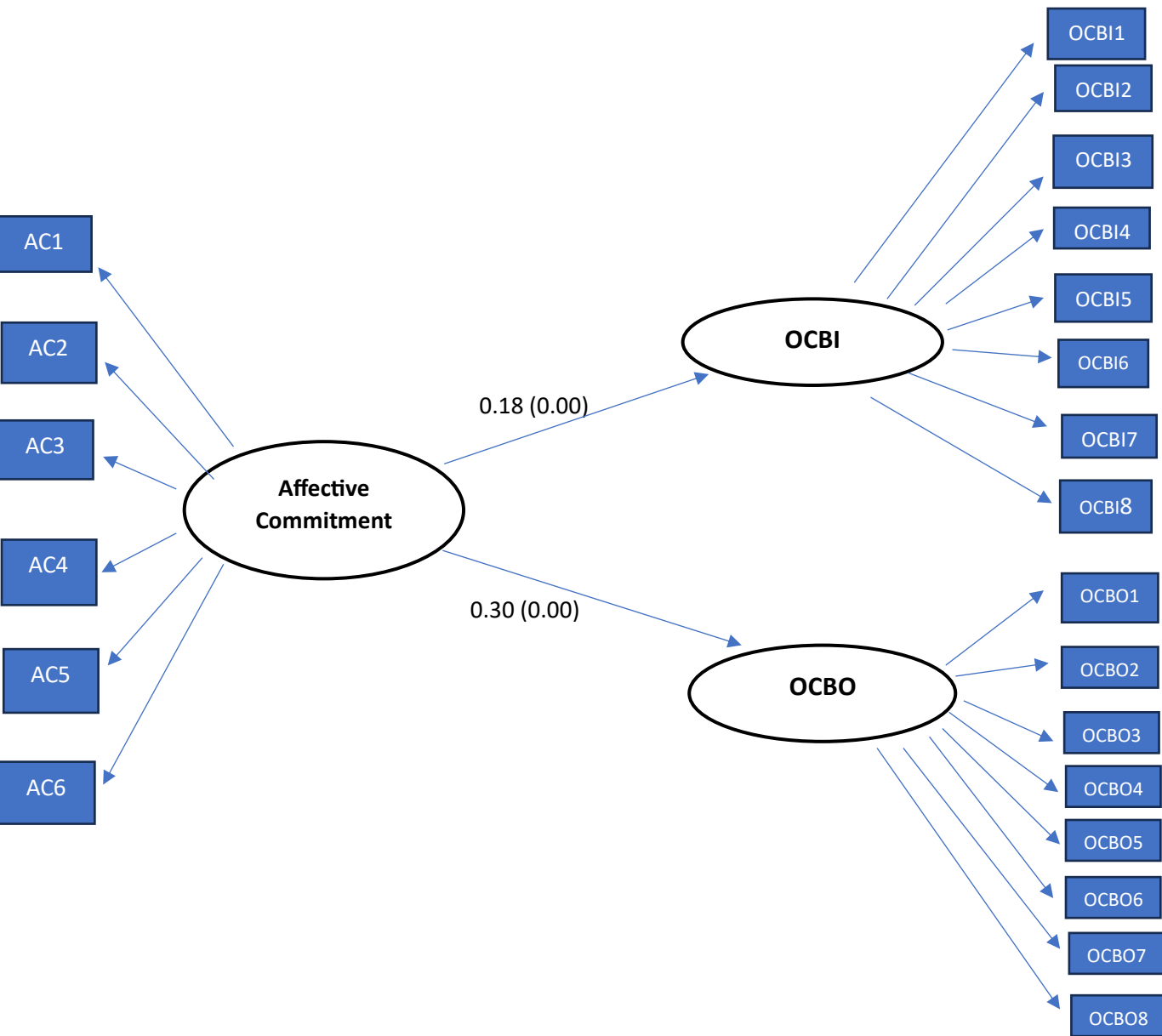


Figure 1. Path model

5. DISCUSSION AND CONCLUSIONS

The findings of the study found a significant positive influence of the level of affective commitment on the display of OCB among the healthcare employees. Hence, when these employees feel high level of emotional attachment to their hospitals, they are likely to reciprocate with higher display of citizenship behaviors. Affective commitment leads these employees to feel a sense of responsibility and care for their colleagues' welfare. Consequently, they are more willing to help and support their co-workers when needed, even if falls beyond their formal requirements. Similarly, these employees are also more likely to support and defend their organizational policies whenever needed. Because of affective commitment, they have a strong belief in the decisions of the organization and are more likely to trust its leadership. This trust and support contribute to create a more positive organizational climate which eventually lead to betterment of the organizational performance. Moreover, these findings are in line with the prior studies (for instance, Alshaabani et al., 2021; Cetin, 2015; Meyer et al., 2002; Vazquez-Rodriguez et al., 2021; Zayas-Ortiz et al., 2015) which have also revealed significant positive linkages between affective commitment and OCB towards individuals and organization.

6. IMPLICATIONS

The study has offered a few theoretical and practical implications. First, the study found significant positive effect of affective commitment on OCB among healthcare employees in J&K. Therefore, this study has added to the extant pool of studies on affective



commitment and OCB relationship by revealing significant associations between the two in healthcare context where the studies are limited. Our findings have also added to the Social Exchange Theory by testing the theory principles in a different context. Moreover, this study has included doctors, paramedics and nurses as sample respondents, hence have contributed in generalizing the results to all types of health care employees.

On the basis of findings, the select sector authorities can be suggested to give due consideration to increase the level of affective commitment among the employees because committed employees are critical to the exhibition of positive extra-role behaviors, which in turn, are essential for the enhancement of organizational performance and well-being. Hence, devising strategies such as nurturing a positive environment, acknowledging and appreciating employee contributions can enhance affective commitment levels among the employees and subsequently, this can result in increasing the display of OCBs.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The current study has employed a cross-sectional design, therefore future researchers may adopt a longitudinal design to gain better understanding of the linkages. Additionally, relying solely on self-reported responses introduces the possibility of common method bias. To mitigate this, future researchers may consider gathering responses from alternative sources. Moreover, to obtain a more comprehensive understanding of the connection between affective commitment and OCB, future studies can incorporate mediating or moderating variables into the study model. These suggestions may contribute to a more robust and nuanced investigation of the linkages between affective commitment and OCB.

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