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Editorial.....

It is heartening to note that our journal is able to sustain the enthusiasm and covering various facets of knowledge. It is our hope that IJMER would continue to live up to its fullest expectations savoring the thoughts of the intellectuals associated with its functioning .Our progress is steady and we are in a position now to receive evaluate and publish as many articles as we can. The response from the academicians and scholars is excellent and we are proud to acknowledge this stimulating aspect.

The writers with their rich research experience in the academic fields are contributing excellently and making IJMER march to progress as envisaged. The interdisciplinary topics bring in a spirit of immense participation enabling us to understand the relations in the growing competitive world. Our endeavour will be to keep IJMER as a perfect tool in making all its participants to work to unity with their thoughts and action.

The Editor thanks one and all for their input towards the growth of the **Knowledge Based Society**. All of us together are making continues efforts to make our predictions true in making IJMER, a Journal of Repute

Dr.K.Victor Babu
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B-CONVEXITY - NON LINEAR DUAL PROGRAMMING

G.V.Sarada Devi

Principal

A.J. Kalasala, Machilipatnam

Abstract: We introduce various duality theormes for non-linear programming problems under B-convexity

Keywords: Non-Linear Programming Problem, Formulation, Duality Theorems, Convex Duality

Introduction: Recently Bector and Singh [2] have introduced B - vex function which areweaker than convex functions and more recently Bector, Suneja and Lalitha [79] have introduced Pseudo b - vex and quasi b - vex functions which are weaker than pseudo convex and quasi convex functions respectively. P. Kanniappan& P. Pandian [62]introduced b-vexity is non-linear programming duality. R.B. Patel introduced duality for non-linear fractional programming involving generalized semilocally B-vex functions. VasilePreda and Anton Bata to rescu [82] introduced duality for minimax generalized B-vex programming involving n-set functions. But they have notconsidered the recent developed concepts like B-convex duality. Hence in this chapteran attempt is made to fill the gap in the aim of research. This chapter consists various duality theorems for non-linear programming problem under B-convexityassumptions.

ThefunctionfissaidtobeB-convexatu $\in x$. w.r.t.b(λ ,u)and(x-u)if $\forall x \in X$.

$$b(x,u)[f(x)-f(u)](x-u)t \nabla f(u)$$

The function f is said to be quasi b-convex at u $\in x$ with respect to b (x, u) and (x - u) if $\forall x \in X$.

$$f(x) \leq f(u) \implies b(x, u) \eta_+(x, u) \nabla f(u) \leq 0$$

The function f is said to be strictly quasi b - convex at u $\in X$ with respect to b (x, u) and (x - u) if $\forall x \in X$, and x = u.

$$f(x) \leq f(u) \implies b(x, u) (x - u) t \nabla f(u) < 0$$

: The function f is said to be semi strictly quasi b-convex at u $\in X$ With respect to

b (x, u) and (x - u) if $\forall x \in X$.



$$f(x) < f(u) \Rightarrow b(x, u) (x - u) \nabla f(u) < 0$$

The connection b/u b-convex and quasi b-convex function is that every b-convex function is quasi b-convex but the converse is not true. We can easily see that every b-convex function with respect to b(x, u), with b(x, u) > 0 is semi strictly quasi b-convex with respect to the same b(x, u). However the converse is not true.

Example: Let $x = \{-1, 1\}$ define $f : x \rightarrow R$ by

$$f(x) = x + x^3 \text{ and } b : x \times x \rightarrow R_+ \text{ by}$$

$$(x - u) = 0$$

$$b(x, u) = -1 \text{ x u } \geq 0$$

$$=-xu, xu < 0$$

Then f is semi strictly quasi b-convex with respect to b(x, u) but not b-convex with respect to b(x, u)

Because for

$$x = \frac{-1}{7}, u = \frac{-1}{2}, \text{ we can see that}$$

$$b(x, u) [f(x) - f(u)] < (x - u) \nabla f(u)$$

Every semi strictly quasi b-convex with respect to b(x, u) is quasi b convex with respect to same b(x, u) but the converse is not true.

Primal Formulation

Let us assume that the function f, g & h are differentiable on X.
Consider the nonlinear programming problem

$$(P) \text{ minimize } f(x)$$

$$x \in X$$

$$\text{Subject to } g(x) \leq 0$$



Feasibility

The following feasible terminology is used in duality theorems.

(i) A point $x_0 \in X$ is said to be (P) - feasible optimal if x_0 is a feasible (optimal) solution of the primal problem (P).

(ii) The value of the objective function for the problem (P) at a point x^0 is called as (P) – objective value at x^0 .

Duality Theorems

Weak duality theorem: Let x be (P) - feasible and (u, y) be D - feasible. If f is semi strictly quasi b-convex at u with respect to (x, u) and $y^t g$ is strictly quasi b-convex at u with respect to $b(x, u) \nabla$ feasible (x, u, y) then $f(x) \geq f(u)$.

Proof: If $x = u$, the result is trivial

suppose $x \neq u$

Since x is (P) - feasible and (u, y) is D - feasible, we have

$$y^t g(x) - y^t g(u) \leq 0$$

By strictly quasi b-convexity of $y^t g$ at u

We have

$$b(x, u) (x - u)^t \nabla y^t g(u) < 0$$

$$b(x, u) (x - u)^t \nabla f(u) > 0$$

By semi strict quasi b - convexity of f at u , we have

$$f(x) \geq f(u)$$

Hence the theorem

Strong Duality Theorem

Let x^0 be (P) - optimal and let g satisfy a constraint qualification at x^0 . Then $\exists y_0 \in R^m$ such that (x^0, y_0) is D - feasible and the p - objective value at x^0 is equal to the D - objective value at (x^0, y_0) . If forever feasible (x, u, y) , the function f is semi strictly quasi



b - convex at u w.r.t. b(x, u) and ytg is strictly quasi b-convex at u with respect to b (x, u) then (x₀, y₀) is is (D) - optimal.

Proof

Since x₀ is (P) optimal and g satisfies a constraint qualification at x₀ by Kuhn Tucker condition, $\exists y_0 \in R_m$ such that

$$\nabla f(x_0) + \nabla y_0^t (g(x_0)) = 0$$

$$y_0^t g(x_0) = 0$$

$$y_0 \geq 0$$

(x₀, y₀) is D - feasible and P - objective value at x₀ is equal to D - objective value at (x₀, y₀).

Suppose (x₀, y₀) is not D - optimal then \exists a D - feasible (u, y) such that f(u, y) > f(x, u)
 \rightarrow feasibility

Then \exists a (D) - feasible and (u, y) is D - feasible by weak duality

$$f(x_0) \geq f(u)$$

Which is a contradiction to feasibility

Then (x₀, y₀) is D - optimal

Hence the theorem

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CUSTOMER PERCEPTION TOWARDS INVESTMENT IN POST OFFICE SCHEMES

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ABSTRACT

Indian Post Office acts as a traditional saving approach for numerous sections of society, especially to rural households. It plays a vital role in mobilizing the savings of the people and also gives a regular return on savings made. It offers different types of savings schemes, especially for small savings. The paper titled “Customers perception towards investment in post office schemes” focuses on the problems faced and the preference of people investing in post office savings schemes in Udupi Taluk of Udupi District (Karnataka State). This study will benefit the post office to improve the level of customer satisfaction and know the potential issues or services that should be introduced to facilitate the customer in a better way. It also highlights the Strength, Weakness, Opportunity, and Threat analysis of the post office. The data collected for the study is from primary as well as secondary sources. Data is collected from 53 respondents.

Keywords: Customers' Perception, Investment, Satisfaction, Saving Schemes, Post office.

Introduction:

The department of posts in India, with its network of 1,56,600 post offices, is the largest postal network in the world of which 1,41,001 (90.04 percent), 15,599(9.96 percent), are in the rural areas, and urban post offices respectively. Indian postal services are mainly concerned with the collection, sorting, and distribution of letters, parcels, packets, etc. Besides, several other services are also provided to the general public as well as business enterprises. It provides some of the facilities like mail service, remittance service, banking service, insurance service, and other services. (*Annual Report 2019-20, 2020*). The post offices are providing the opportunity to open a wide variety of savings such as Savings Accounts, Recurring Deposit (RD), Time Deposit (TD), Monthly Income Scheme (MIS), Public Provident Fund (PPF), National Savings Certificates (NSC), Kisan Vikas Patra (KVP), Senior Citizen Savings Scheme (SCSS), and Sukanya Samrudhi Yojana. Through its vast network in rural areas, the department is also facilitating opening and premium collection For Rural Postal Life Insurance Scheme. As the growth of the postal system has advanced electronically it will create and attract a number of investors to the postal saving systems in the coming years.

India post has upgraded its services and is competent to face the challenges thrown by other financial organisations. India Post is catering to the financial needs and serving its customers to a large extent. Yet, research on the perception of investors, satisfaction level of customers in the post office saving schemes, and the problems faced by its



customers is inadequate. A good study on these aspects will help in understanding the perception of investors, their satisfaction level as well as in identifying the problems of the investors. Hence, an attempt has been made by the researchers to understand the perception of investors, to study their satisfaction level as well as to identify the problems of the investors in post office schemes in Udupaluk of Udipi district of Karnataka in particular.

Objectives of the Study

1. To understand the perception of investors in the post office saving schemes.
2. To study the satisfaction level of customers in post office schemes.
3. To analyse the problems faced by the customers of post office saving schemes.

Hypothesis of the study

The hypothesis has been developed to identify the relationship between gender, age, and awareness about post office schemes.

H₁: Awareness about post office schemes is not independent of the gender of the respondents.

H₂: Awareness about post office schemes is not independent of the age of the respondents.

Methodology

Both quantitative and qualitative methods were used for data collection. However, the questionnaire containing both close-ended and open-ended questions was dispensed to the customers of the post office in the Udupaluk and 53 completed questionnaires were used for the analysis. To collect primary data from the customers of the post office, a structured questionnaire is designed and administered on sample respondents of the post office customers. The study is based mainly on primary data generated from the responses from post office customers from the questions relating to customer satisfaction, awareness, and perceptions towards its service performance. For measuring service quality, Likert type five-point scale with the rating-strongly disagree, disagree, neutral, agree, and strongly agree was used. The data collected was analysed through percentage, frequencies, and chi-square tests are applied for the analysis of the data. For the quantitative approach, Jamovi (version 1.2) is used.

Limitations of the Study

The study is restricted to Udipi Taluk of Udipi district only. The perception of customers towards investment in post office savings schemes may vary over a period of time.

Review of Literature

M. Rajeswari Mannu, 2017 the purpose of the study is to understand the recurring deposit scheme of the post office and the allied services along with the customer satisfaction level towards recurring deposits. The researcher suggested that the post office can develop a mobile app for easy payment transactions for all the recurring deposit account holders so that the post offices to get more youth customers.



Vadivel & Kavitha, 2018 the study shows the actual present scenario of the India Post offices and how it is perceived by its customers. With the growing competition in its traditional services due to the emergence of fast courier services and electronic communication, the only option for India post office is to diversify its functions by introducing financial services. The Indian post office has to concentrate on providing fast services by implementing advanced technology, increasing customer-friendly schemes, improving customer awareness, and educating their staff as per the recent development to attain better customer satisfaction and boost their performance.

Milijanka Ratkovic et al., 2017 the research aims to measure the perception of postal and banking services, in order to assess the quality of services and the impact of expectations on the level of perceived quality. When displaying the results Servqual model was used, it shows that about the quality of postal services respondents expect much higher tangibles and reliability, and in the case of banking services, respondents expect higher service reliability. The paper discovers the possibilities to improve services in the postal and banking sector in Serbia.

Khanooja & Prathabhan, 2019 the study provides an overview of recent developments in the postal market and research on technology trends which will impact postal consumers. It assesses how the technologies will change the postal market and the strategic location of the postal sector. The paper concludes that the private courier service provider uses more technology as compared to Indian Postal Services.

Analysis and Findings:

Reliability analysis:

To examine the reliability of data we carried out Cronbach's Alpha Reliability test. Table No: 1.1 shows that the test scored as 0.960, with a positive relationship among all items considered for this study. This analysis suggests that the data is highly reliable.

Table No: 1.1 Scale Reliability Statistics

	No of Items	Cronbach's α
Awareness about Post office	8	0.898
Level of satisfaction related questions	15	0.967
Problems related questions	5	0.928
SWOT analysis (Strength)	9	0.912
SWOT analysis (Weakness)	5	0.867
SWOT analysis (Opportunities)	6	0.856
SWOT analysis (Threats)	5	0.792
Total	53	0.960

Source: Computed Data

Table No: 1.2 depicts that the sample respondents comprise 66.04 percent female and 33.96 percent, males. Out of the respondents surveyed 66.04 percent are of 20-30 years of age and 67.92 percent of the respondents are single. The majority of the respondents



are graduates (24.53 percent) and postgraduates (73.58 percent). This implies that the respondents have a high literacy level. The majority of respondents having an annual income of up to Rs. 50000 (52.83 percent) and more than one lakh (33.96 percent). Regarding employment status, the majority of the respondents are students (35.85 percent), employees in the private sector (24.53 percent), and Govt. employees (22.64 percent).

Table No: 1.2 Demographic Profile of the Customer

	Demographic	Frequency	Percentage
Age	Below 20 years	2	3.77%
	20-30 years	35	66.04%
	30-40 years	6	11.32%
	40-50 years	6	11.32%
	Above 50 years	4	7.55%
	Total	53	100.00 %
Gender	Male	18	33.96%
	Female	35	66.04%
	Total	53	100.00%
Marital Status	Married	17	32.08%
	Single	36	67.92%
	Total	53	100.00%
Education Qualification	SSLC	1	1.89%
	PUC	0	0.00%
	Graduation	13	24.53%
	Post-Graduation	39	73.58%
	Total	53	100.00%
Annual Income	Up to Rs. 50000	28	52.83%
	50000- 1 Lakh	7	13.21%
	More than 1 Lakh	18	33.96%
	Total	53	100.00%
Occupation	Student	19	35.85%



	Govt. employee	12	22.64%
	Private employee	13	24.53%
	Self Employed	1	1.89%
	Others	8	15.09%
	Total	53	100.00%

Source: Primary data

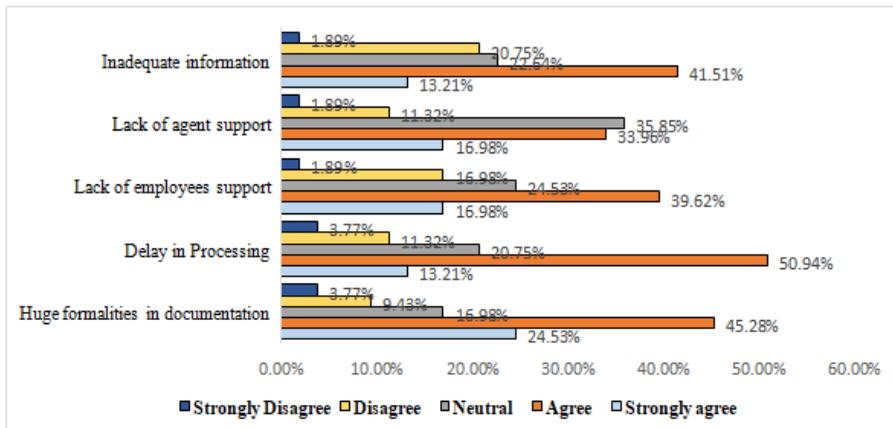
Table No: 1.3 Evaluation of Postal Service quality

Sl. No	Service Quality of the Post office	% of Respondents
1	Excellent	26.42%
2	Good	69.81%
3	Poor	3.77%

Source:Primary data

Respondent’s evaluation regarding the post office service quality has been presented through Table No: 1.3. The table shows that a significant proportion of respondents i.e., 69.81 percent mentioned that quality of service provided by the post office is good and 26.42 percent mentioned excellently. Results also indicate that 3.77 percent mentioned that service quality is poor.

Figure No: 1.1 Problems

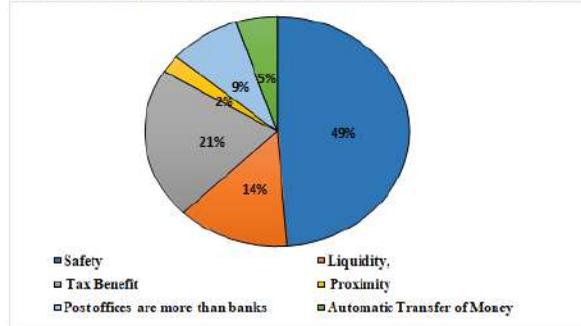


Source: Primary data

Figure No: 1.1 indicates that the 50.94 percent (27) respondents agreed about the problem of delay in processing, 45.28 percent (24) of respondents agreed that the post office services having huge formalities in the documentation. 35.85 percent (19) were

neutral and 33.96 percent (18) agreed about the lack of agent support in the post office. 41.51 percent (22) agreed and 22.64 percent (12) are neutral about inadequate information of post office schemes and services.

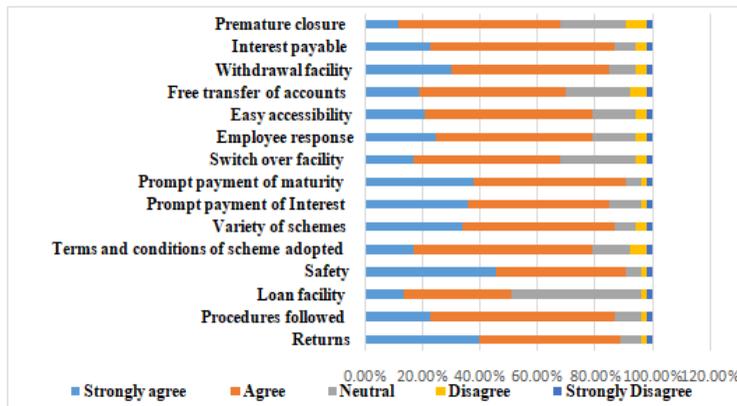
Figure No 1.2 Factors that compel respondents to invest in Post office



Source: Primary data

Figure No: 1.2 shows that maximum respondents i.e. 49 percent prefer to invest in post office schemes because of safety, followed by 21 percent for tax benefit purpose, 14 percent for liquidity, 9 percent opined that post office is more than banks, 5 percent prefer post office for the reason of the automatic transfer of money, and 2 percent for the proximity in the post office services.

Figure No: 1.3 Level of Satisfaction with post office service



Source: Primary data

Figure No: 1.3 depicts that the majority of the respondents i.e. 49.06 percent agree, and 39.62 percent strongly agree about the satisfaction level of post office investment returns. 64.15 percent of respondents agree and 22.64 percent strongly agree about post office procedure. In the case of the Loan facility, 45.28 percent were neutral, 37.74 percent agree. Regarding the satisfaction level of safety, 45.28 percent agree. The majority of the respondents i.e. 62.266 percent agree, and 16.98 percent strongly agree



about the terms and conditions of the scheme adopted by the post office. In the case of a variety of schemes offered by the post office, 52.83 percent agree and 33.96 percent strongly agree about the statement.

The figure (1.3) also shows that the majority of the respondents, i.e. 49.06 percent agreed and 35.85 percent strongly agree about the statement prompt payment of interest, and 52.83 percent agree, 37.74 percent strongly agree about the statement prompt payment of maturity by the post office. Around 50.94 percent of respondents agree about the statement switch over the facility and the majority of the respondents i.e., 58.49 percent agree about employees' responses are good at the post office. 50.94 percent of respondents agree with the statement easy accessibility and 50.94 percent of respondents agree that there is a provision of free transfer of account. 54.72 percent, 64.15 percent and 56.60 percent of respondents agree about the statements withdraw facility, interest payable, and premature closure facilities respectively which are available in the post office.

Hypothesis Analysis-Chi-Square Test

H1: Awareness about post office schemes is not independent of the gender of the respondents.

Table No: 1.4 Chi-square test for awareness about post office schemes and gender

Schemes	Gender			
	Value	Df	Asymptotic	Sig(2-sided)
Post Office Savings Deposit (POSD)	1.54	3	0.673	
Post Office Time Deposit (POTD)	3.55	3	0.315	
Post Office Recurring Deposit (PORD)	5.73	3	0.126	
Post Office Monthly Income (POMI)	3.81	3	0.283	
KisanVikasPatra (KVP)	0.991	4	0.911	
National Savings Certificate (NSC)	0.891	4	0.926	
Deposit Scheme for Senior Citizen (DSSC)	1.99	4	0.737	
Public Provident Fund (PPF)	2.14	3	0.544	

Source:Primary data, computed data, 0.05 significance level, N=53

Interpretation:

Table No: 1.4 shows the Chi-square test for awareness about post office schemes and gender of the respondents. If the significant level value is greater than 0.05, the null hypothesis is accepted, the alternative hypothesis is rejected. Hence the significant value in all schemes is greater than 0.05, hence the null hypothesis is accepted. It is found out that the awareness about the post office schemes independent of the gender of the respondents.



H2: Awareness about post office schemes is not independent of the age of the respondents.

Table No: 1.5 Chi-square test for awareness about post office schemes and age

Schemes	Age		
	Value	Df	Asymptotic Sig(2-sided)
Post Office Savings Deposit (POSD)	6.79	12	0.871
Post Office Time Deposit (POTD)	15.3	12	0.225
Post Office Recurring Deposit (PORD)	10.6	12	0.564
Post Office Monthly Income (POMI)	17.8	12	0.123
KisanVikasPatra (KVP)	9.87	16	0.873
National Savings Certificate (NSC)	19.9	16	0.224
Deposit Scheme for Senior Citizen (DSSC)	15.4	16	0.493
Public Provident Fund (PPF)	12.6	12	0.402

Source:Primary data, computed data, 0.05 significance level, N=53

Interpretation:

Table No: 1.5 depicts the Chi-square test for awareness about post office schemes and the age of the respondents. The significant value in all schemes is greater than 0.05, hence the null hypothesis is accepted. It is found out that the awareness about the post office schemes is independent of the age of the respondents.

Figure No: 1.4 Parties motivating respondents

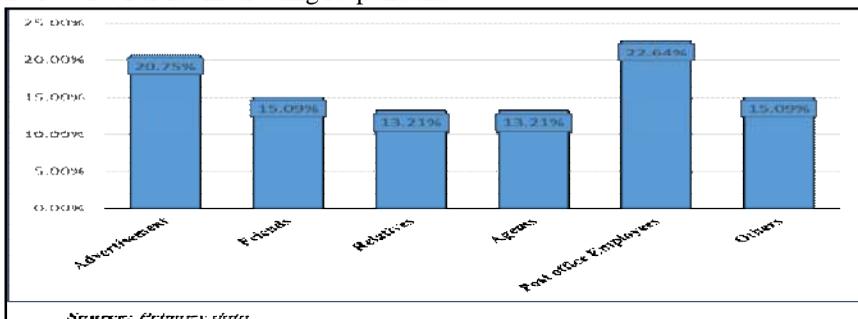
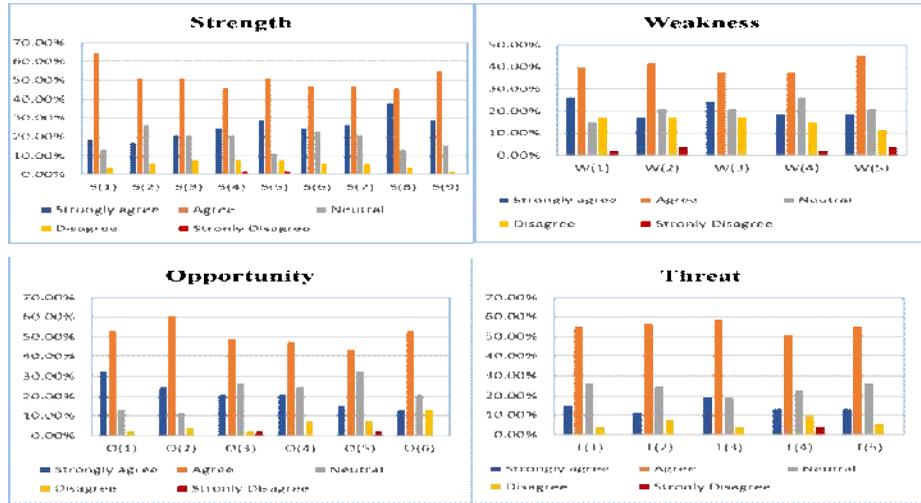


Figure No: 1.4 shows that the post office employees are the main motivators to attract the customer to invest in the post office. It occupies 22.64 percent and is followed by an advertisement for 20.75 percent. Motivation by Friends, Relatives, Agents, and others of customers are the least. So, Post office employees and advertisement are the major parties involved in motivating customers in the Post office of UdupiTaluk.

Figure No: 1.5 Strength, Weakness, Opportunity and Threats of Post office services



Source: Primary data

Table No: 1.6 Factors of Strength, Weakness, Opportunity, and Threats of Post office services

Strength	Weakness	Opportunity	Threats
S(1) More schemes	W(1)No Advertisements	O(1)Offering schemes to rural and urban areas	T(1)Mutual fund schemes
S(2)More branches to other schemes	W(2)No Awareness	O(2)Post office savings schemes develop Indian economy	T(2)Insurance schemes
S(3)More employees to help in facilitating schemes	W(3)Unchanged working culture with staff	O(3)Fostering other competitors	T(3)Banking schemes
S(4)Quick Services	W(4)Job stress among employees	O(4)More number of customers	T(4)Customer dissatisfaction
S(5)Good facilities to customers	W(5) Low rate of interest on deposits	O(5)Inflationary market	T(5) Increasing share of competitors
S(6)Strong Network		O(6)Technological advancement in reaching the benefits of schemes	
S(7)Cost-Effective			
S(8)Security / Safety with respect to deposits			
S(9)Efficient Returns			



The Figure No:1.5 (Strength) shows that the majority of respondents 64.5 percent (34 respondent's) percent agreed that the customers' perception about 'Major scheme' is a strength factor, 50.94 percent (27 respondents) agreed with the both statements 'more branches to the other schemes' and more employees to help in facilitating'. 45.28 percent (24 respondents) agreed that 'Quick service' is the strength of the post office and 50.94 percent (27 respondents) agreed post office provides 'Good facilities to customer'. 47.12 percent (25 respondents) agreed with both statements post office having a 'Strong network' and provide 'Cost-effective' service. The majority of the respondents i.e., 45.28 percent (24 respondents) and 54.72 percent (29 respondents) agreed that post office having 'security or safety with respect to deposits' and 'efficient return' to the investment.

Figure No:1.5 (Weakness) indicates that the majority of respondents 39.65 percent (21 respondents) agreed that 'No advertisement' is a weakness factor of the post office and 41.51 percent (22 respondents) agreed about the statement 'No awareness'. 37.74 percent (20 respondents) agreed both the statement Unchanged working culture with staff Job stress among employees. Meanwhile, 45.28 percent (24 respondents) agreed with the statement 'Low rate of interest on deposit' and 20.75 percent (11 respondents) were neutral.

Figure No:1.5 (Opportunity Factor) the majority of the respondents 52.83 percent (28 respondents), 60.38 percent (32 respondents), 49.06 percent (26 respondents), 47.17 percent (25 respondents), 43.40 percent (23 respondents), and 52.83 percent (28 respondents) agree with the statements 'Offering schemes to rural and urban areas', 'Post office saving schemes develop Indian economy', 'Fostering other competitors', 'More number of customers', 'Inflationary market', and 'Technological advancement in reaching the benefits of schemes' respectively are the opportunity factors in the post office.

Figure No:1.5 (Threat factors) shows that the majority of the respondents 54.72 percent (29 respondents), 5.60 percent (30 respondents), 58.49 percent 31 respondents), 50.94 percent (27 respondents), 54.72 percent (29 respondents) agree that the statements 'Mutual fund schemes', 'Insurance schemes', 'Banking schemes', 'Customer dissatisfaction', 'Increasing the share of competition' respectively are the threat factors in the post office.

Conclusion

This study was taken up with the main idea of studying the investors' awareness of post office savings schemes because of the lack of proper advertisements about the various schemes. Most of the investors are influenced to invest in post office deposits schemes for tax benefits purpose only. Nowadays people are interested to invest their money only in banks compared to post office deposits schemes which have to lead to a reduction of deposits in post offices. The major problems faced by respondents while depositing money in post office deposits schemes were low return. It is found out that the awareness about the Post office schemes is independent of the gender of the respondents. It is also found out that the awareness about the Post office schemes is



independent of the age of the respondents. One of the reasons for shifting investors towards banking and other financial institution is the variety of information, technology-enabled value-added services like mobile banking, internet banking, full automation, real-time information of their investment, Flexi account, etc. By providing better services India Post office can definitely face the challenges posed by other financial institutions.

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A STUDY ON WEAK FORM MARKET EFFICIENCY OF INDIAN SECTORAL INDICES

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Abstract

In this article, we have tried to test the weak form market efficiency of selected five sectoral indices of BSE Ltd (Bombay Stock Exchange). The five sectoral indices selected for this study are BSE Auto, BSE Bankex, BSE Capital Goods, BSE Metal and BSE Power. Five years daily data has been collected for the study period. The period of the study is 1st April 2015 to 31st March 2020. The statistical tools those are used in this study are ADF unit root test, Jarque-Bera test for normality, RUN test and BDS test. The ADF unit root test has used to test whether the data series is stationary or not, to test whether the data series is normally distributed or not we have used Jarque-Bera test, for testing the random walk, RUN test and for independent and identical distribution, BDS test has applied. The overall result of the study shows that all the selected indices are not moving randomly or independently, which means the indices are not efficient in weak form.

Keywords: BSE, Weak form Market Efficiency, Stock Market, Random Walk, Indices

Introduction

One of the most debated concepts in the area of financial economics is the 'Efficient Market Hypothesis' (EMH). The efficient market hypothesis (EMH) has dominated economics and finance in the past decades and is central to both theoretical and empirical finance. It has implications on the market structure, cost of capital, portfolio management etc.

The efficient market theory says, the price of the shares moves randomly and do not follow any regular pattern to change the price. A number of investors those are investing in stock market are not having adequate knowledge about the stock market price behavior. It is necessary for the investors to understand the concept of efficient market hypothesis for understanding the share valuation process. Due to the increasing popularity of efficient market theory, many researches are taking place in this area. However, the thing is that the result will vary for different period of study due to the changing rules and regulations in the market and other factors. There are three forms of efficient market hypothesis are found, the weak form of efficiency, the semi strong form of efficiency and the strong form of efficiency. The weak form of efficiency said the price has no memory that means the historical price has no impact on future price. The present price reflects all the historical information about the company. The semi strong form of market efficiency said that the share price reflects all the publicly available



information related to the company like financial statements, economic factors and other announcements. The strong form of market efficiency said that all the information related to the company including the private or insider information reflects on the current share price. No one can use the insider information to gain abnormal profit in the market. In this study, we will focus on the weak form of efficiency that means the study is based on the historical price of the indices. The main objecting of this study is to find out whether the selected indices are following a random walk and moving independently or not. In an efficient market the share prices moves randomly and independently.

Literature Review

In the year 2018 Adebajo Joseph Falaye, Awonusi Frank and Eseyin Oluwasegun was conducted a study to find the existence of weak form of market efficiency in Nigerian Stock Exchange. The statistical methods used in the study are Partial autocorrelation (PACF) test to test for independence of stock prices, the runs test and the distribution patterns to test for randomness of stock prices and the one-sample Kolmogorov Smirnov test to test for observable trend in the pattern of stock price movements. In the result they found that the share price movements are not random during the study period.

In their paper testing random walk hypothesis for Indian stock market indices, Bhanu pant and Dr T.R. Bishnoi have analyzed the behavior of daily and weekly returns of five Indian stock market indices for random walk for the period April-1996 to June-2001. They tested the indices for normality, autocorrelation using Q-statistic & Dickey-Fuller test and analyzed variance ratio test. The results support that Indian stock market indices do not follow random walk.

A study was was conducted by Awad and Dara-ghma on Palestinian stock exchange in the year 2009 by using ADF test , Phillips – Perron test , unit root test , serial correlation and run test . In the result they found that there was an absence of weak form of efficiency in the Palestinian stock exchange. In the study of El-Erian and Kumar in the year 1995 by using the run test and serial correlations test on the stock markets of Turkey and Jordan found the absence of weak form efficiency

Basu and Gupta in the year 2007 was conducted a study on the weak form of efficiency of Bombay stock exchange and national stock exchange by taking the daily for a period of fifteen year (from 1991 to 2006). By using three unit root tests (ADF, PP and KPSS) in their study, they found both the stock exchanges are not following the weak form of efficiency.

Hesham I. Almujaed , Suzanne G. M. Fifield , David M. Power on their research article, an Investigation of the Weak Form of the Efficient Markets Hypothesis for the Kuwait Stock Exchange tried to find out the weak form of the efficient market hypothesis (EMH) for the Kuwait Stock Exchange (KSE). They used ten filter rules on



weekly data for 42 firms over the period 1998–2011. The results suggest that the KSE was not weak form efficient due to the presence of patterns and trends in security price.

In their paper titled “Stock Market Reaction and Liquidity Changes around Bonus Issue Announcement : Evidence from India” by (2007), Madhuri Malhotra, M. Thenmozhi, G Arun Kumar (2007), examines share price reaction to the announcement of bonus issue for a sample of Indian companies. Standard event study methodology has used for the purpose of study. The result of the study was there is a negative reaction after the bonus issue announcement conveying that the market under reacts after the announcement.

Using daily price quotation of 93 actively traded shares for the period January 1988 to April 1990 , S.K. Chaudhuri makes an attempt to examine the serial independence of the share price changes . He had applied the serial correlation and run test to daily log price changes .the result of their study did not support the hypothesis of weak form of market efficiency .

Methodology

In this study, the five years daily data has taken from 1st April 2015 to 31st March 2020 of five sectoral indices of BSE Ltd namely BSE Auto, BSE Bankex, BSE Capital Goods, BSE Metal and BSE Power. The daily data of the sectoral indices are collected using the secondary sources of data collection method. We have collected the five years daily data of the selected sectoral indices using the official website of BSE Ltd (www.bseindia.com). We have conducted various statistical tests in this study like ADF unit root test for stationarity, Jarque-Bera test of normality, RUN test and BDS test by using the SPSS20 and Eviews8 software. For the evaluation of the study, the following test will be applied.

Data Analysis

Unit Root test

We have used the Unit root test to measure whether the time series is stationary or not which is shown in the table 1 . In this study the ADF (Augmented Dicky Fuller) test with the null hypothesis that data has a unit root has applied to test the existence of the unit root. The existence of the unit root indicates that the data is not stationary. This means that the test statistics will yield different results for different period, which is not desirable.

The result shows that the p-value of the first test of the original data at level is greater than 0.05 for all the indices, so we accept the null hypothesis that the data has unit root, which concludes that the data is not stationary. As we know that, the non-stationary data will not provide a reliable result, therefore, the data was converted to its first difference and ADF test was done again. In the result of ADF test first difference data we found



the data series is stationary by rejecting the null hypothesis, as the p-value is 0.00 for both the indices that is less than 0.05.

Table – 1
ADF TEST

Index	Level		1 st difference	
	t- statistics	Prob.	t- statistics	Prob.
BSE AUTO	0.306113	0.9786	-33.53366	0.0000
BSE BANKEX	-1.201799	0.6757	-34.10253	0.0000
BSE CAPITAL GOODS	-1.087934	0.7225	-32.48652	0.0000
BSE METAL	-0.500191	0.8886	-35.41122	0.0000
BSE POWER	-0.823802	0.8116	-34.04411	0.0000

Source: calculation using EViews 8

Descriptive statistics

The result shows in the table 2 that all the series have high degree of standard deviation. The skewness of all the series is non-zero, which indicates that the series is not normally distributed. The Jarque-Bera test also gives the similar type of result with p value of 0.000 for all the data series, which rejects the null hypothesis that the data series for the selected sectoral indices are normally distributed. Therefore, we accept the alternate hypothesis, which shows the result of the data series for five sectoral indices are not normally distributed and that does not fulfill the pre condition of random walk.

Table -2

	AUTO	BANKEX	CAPITALGOOD	METAL	POWER
Mean	-7.060130	0.558356	-5.231393	-3.100802	-0.615296
Median	9.810000	10.06000	-9.160000	-0.740000	1.350000
Maximum	1531.940	2475.010	1327.640	649.3600	82.36000
Minimum	-1624.960	-3910.250	-1754.580	-731.9400	-157.5900
Std. Dev.	251.7884	362.9138	217.5311	175.2773	22.76922
Skewness	-0.390038	-1.401369	-0.262916	-0.249470	-0.907090
Kurtosis	7.039907	21.93347	10.97901	4.334465	7.103306
Jarque-Bera	871.1571	18850.81	3290.304	104.4469	1035.772



Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-8719.260	689.5700	-6460.770	-3829.490	-759.8900
Sum Sq. Dev.	78232365	1.63E+08	58392607	37911119	639751.6

Source: calculation using EViews 8

RUN Test

The Wald–Wolfowitz runs test is a non parametric test which is commonly known as Run test used to check whether the return series moves randomly or not. The run test only considers the movements regarding signs like positive sign and negative sign in a time series ignoring the value in the absolute form. In Run test, the number of observed runs is compared with the number of expected runs. The hypothesis for RUN test is that the data series follow a random walk. We have conducted the run test to test the weak form of efficiency of the selected sectoral indices. As the sample size of this data set is very large so we take the help of SPSS software for calculation purpose. The results of the test in table 3 reflect that the test statistics Z for all the sectoral indices is negative. The negative Z value indicates that in the data series the actual number of runs is smaller significantly than the expected number of runs. The study results reveals that the p-values of all the sectoral indices are less than 0.05, which leads to reject the null hypothesis that the data series follows random walk and accept the alternate hypothesis. Though the result of the run test accepts the alternative hypothesis we can say that the data series is not following a random walk which means they are not efficient in weak form.

Table 3

Runs Test

	VAR00001	VAR00002	VAR00003	VAR00004	VAR00005
Test Value ^a	19756.32	27379.28	17280.05	10600.20	2002.41
Cases < Test Value	618	618	618	618	618
Cases >= Test Value	618	618	618	618	618
Total Cases	1236	1236	1236	1236	1236
Number of Runs	29	27	44	27	56
Z	-33.578	-33.691	-32.724	-33.691	-32.041
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000

Source: calculation using SPSS20

BDS Test



The BDS test is a time based dependence test in a series. It is used to test against a variety of possible deviations from independence including linear dependence, non-linear dependence, or chaos. The test can be applied to a series of estimated residuals to check whether the residuals are independent and identically distributed (iid) or not. In this study, this test has used to check whether the sectoral indices are independent and identically distributed or not. The null hypothesis for the test is that the data series is independent and identically distributed. The result of the table 4 for BDS test shows that the p value for all the dimensions of all the sectoral indices is less than the critical value which is 0.05. Therefore, we reject the null hypothesis and accept the alternate hypothesis that the data series is not independent and identically distributed. which leads to conclusion that the indices are not efficient.

Table 4

BSE Auto				
<u>Dimension</u>	<u>BDS Statistic</u>	<u>Std. Error</u>	<u>z-Statistic</u>	<u>Prob.</u>
2	0.011478	0.002373	4.837685	0.0000
3	0.020400	0.003765	5.418939	0.0000
4	0.026547	0.004476	5.931223	0.0000
5	0.030722	0.004657	6.596382	0.0000
6	0.030062	0.004484	6.703937	0.0000
Null Hypothesis: BSE Bankex is independently and identically distributed				
<u>Dimension</u>	<u>BDS Statistic</u>	<u>Std. Error</u>	<u>z-Statistic</u>	<u>Prob.</u>
2	0.013895	0.002438	5.698656	0.0000
3	0.028374	0.003863	7.345177	0.0000
4	0.038134	0.004586	8.315621	0.0000
5	0.041347	0.004765	8.677441	0.0000
6	0.041405	0.004581	9.038485	0.0000
Null Hypothesis: BSE Capital Goods is independently and identically distributed				
<u>Dimension</u>	<u>BDS Statistic</u>	<u>Std. Error</u>	<u>z-Statistic</u>	<u>Prob.</u>
2	0.012989	0.002398	5.415894	0.0000
3	0.023858	0.003799	6.279747	0.0000
4	0.028782	0.004510	6.382172	0.0000
5	0.029588	0.004685	6.314908	0.0000
6	0.027778	0.004504	6.167223	0.0000
Null Hypothesis: BSE Metal is independently and identically distributed				
<u>Dimension</u>	<u>BDS Statistic</u>	<u>Std. Error</u>	<u>z-Statistic</u>	<u>Prob.</u>
2	0.005877	0.002216	2.652373	0.0080
3	0.011437	0.003519	3.249598	0.0012
4	0.016297	0.004188	3.891105	0.0001
5	0.020894	0.004362	4.789820	0.0000
6	0.022326	0.004204	5.311095	0.0000
Null Hypothesis: BSE Power is independently and identically distributed				



<u>Dimension</u>	<u>BDS Statistic</u>	<u>Std. Error</u>	<u>z-Statistic</u>	<u>Prob.</u>
2	0.013655	0.002849	2.425549	0.0040
3	0.011533	0.003573	3.227976	0.0012
4	0.016444	0.004254	3.865751	0.0001
5	0.018483	0.004432	4.169928	0.0000
6	0.019942	0.004273	4.666669	0.0000

Source: calculation using EViews

Conclusions

From the above discussion we can concluded that the data series for sectoral indices are stationary in first difference, are not normally distributed and do not follow the random walk and also are not independently and identically distributed. For testing whether the data series is stationary or non stationary in unitroot test we had applied the ADF test and found that all the five sectoral indices are non stationary at level but are stationary in first difference. In the test for normality the Jarque-Bera test result of p- value is less than 0.05 so it rejects the null hypothesis and accepts the alternative hypothesis that the data series is not normally distributed. The result of Run test the rejects the null hypothesis and accepted the alternative hypothesis that the indices are not following a random walk. In BDS test the sectoral indices also rejects the null hypothesis by accepting the alternate hypothesis. From the overall result of the tests, we can conclude that the sectoral indices price movements are not following a random walk and not independently distributed, which leads to the conclusion that the market is not efficient for the given period of study.

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f"K{k ds tskeniM] Lo: i vjg uhfr; k; Hkjr dseuhf"K; ka us fu/kkZjr dh Fkh os vkt ds ikp gtkj o'iz igys Hkh ikl Æd Fkh vjg vkt Hkh ikl Æd gA f"K{k dk mnas; dÿy vjg dÿy Kkuktu vjg pfj= fueZk k gS l drk gA bl dkj.k orÆku f"K{k izkkyh ea vkepy ifjorü dh vko"; drk gA ubZjkVh; f"K{k uhfr 2020 dk mnas; Hkjr dls os"od Kku egk"KDr cukuk gA 21oha l nh ea ,d u; k l ekt mhkj jgk gA tga i jth vjg. Je dh viÆkk Kku iÆkfed mRikn l d k/ku gA Kku ea l ekt ea ifjorü ykus dh ijh {kerk gA dkyt ka ea dksky fodkl ,oa rdudh f"K{k ij fo"sk /; ku nus dh vko"; drk gA ; g 21oha l nh dh igyh f"K{k uhfr gS tsk l ds fy, vkl ku igpp] l ekurk] xqkoYkk] oguh; rk vjg tokng dh vk/kkj Hkr LrEHka ij fufeZ gA ; g lrr-fodkl ds fy, , tMs 2030 ds vuqpy gA gea f"K{k dk izdku djs ds fy, u, rjcds [kktus gkæA i kB; Oe ea yphyi u ds l kFk gh Lukrd dh l exz f"K{k vof/k 3&4 o'iz dh gS l drh gA bl graq dbZ fodYi ka dks /; ku ea j[k x; k gA cgjo'k; d f"K{k vjg vuq dku ds os"od ekudka ds vuq i cuk; k tk, xA mPp f"K{k eafpdr l k vjg dkunh f"K{k dls NkMlej "sk ea, dy l a Dr fudk; ds : i ea Hkjr; mPprj f"K{k vk; l x dls LFkfir fd; k tk, xA ljdkjh vjg futh mPp f"K{k l ÆFkuka ds fofu; euj ekj; rk vjg "kqf.kd ekudka ds fy, l eku ekun.M gkæA bl uhfr dk yf; f"K{k ea ljdkjh fuosk dy thMhi h dk 6 ifr"kr djs dk gS tsk orÆku ea 4-6 ifr"kr gh gA ; fn bl f"K{k uhfr dls vius ey Lo: i ea ykxw fd; k tkrk gS rks ; g fuf"pr gh Hkjr dls fo"o ds vxzkh ns'kka ds l ed{k ykus ea l gk; d gkxhA

ef; &"K{h% ubZjkVh; f"K{k uhfr 2020] dksky ,oa rdudh f"K{k cgjo'k; d f"K{k Hkjr; mPprj f"K{k vk; l x

mPp f"K{k og gStsgeadÿy Kku gh ughansh cfdv geljsthou eavflrto dsl fKk l ejl rk yrkh g& jomulFk vjg

ilrkuok&

Hkjr; l Ædr eavukfn dky l sgh Kku vftZ djs ij fo"sk tlg fn; k x; k gA f"K{k , d , d k ekuoh; xqk gStsfd l h Hkh 0; fDr ds l kFk ftaxh Hkj jgrk gA l q"Kf(kr ekuo gh , d fodfl r vjg l H; l ekt dk fueZk djrk gA bl hdkj.k f"K{k 0; fDr] l keftd l emka vjg jkVha dh ey/Hkr vko"; drk jgh gA Hkjr; f"K{k izkkyh usvud l jpuRed ifjorü gq gA f"K{k uhfr l s; g viÆkk dh tkrh gSfd dksky fodkl dls Ldjh f"K{k eacMæ i ækus ij "kfeY djs dk iko/kku fd; k tkuk pfg, A fodfl r vjg fodkl "khy ns'kka ea; g 0; olFk rls dkOh l e; l s gS jgh gA ydu Hkjr tS fodkl "khy ns'k ea bl dh xfr dkOh de , oa /kha gA dBrh; ctV 2021&21 f"K{k ea xqkoRrk vjg ekudka dls etar djs ds fy, ljdkj dh ifrc)rk dls crkrh gA bl ctV ea f"K{k ds fy, 99]311 djM+: i ; s dk vkoh/ u fd; k x; k gS ft l ea l s mPp f"K{k ds fy, 39]466 djM+: i ; s vkoh/ r fd, gA ns'k ea l exz f"K{k vflk; ku vjg f"K{k l ÆFkuka dls etar djs dk izkl fd; k tk jgk gA

"Kk ds mnas; %

- 1- ubZjkVh; f"K{k uhfr 2020 dls tkuukA
- 2- ubZjkVh; f"K{k uhfr 2020 eamPp f"K{k ds l qk j dls tkuukA
- 3- mPp f"K{k ds u, Lo: i dls tkuukA

"Kk fof/R&

; g y[k f}rh; d l k rka l sfy [kk x; k gA

"Kk& l ehf"K{k



ubz jk'Vh; f''k{kk uhfr 2020 dk mnns; Hkjr dks of'od Kku egk''kDr cukuk gA bl uhfr ds fuekz k ds fy, tu 2017 MKW d'.kk Lokeh dLrjh jxu dh v/; {krk ea l febr dk xBu fd;k x; k ftl us ebz 2019 ea bl uhfr dk el ksk iLrj fd; kA vktknh dscn l s; g f''k{kk {s= ea rhl jk cMk l dkk gkus tk jgk gA

dyle vny , -ihts 2006 us vius yq'k ea crk; k gsf d 21oha l nh ea, d u; k l ekt mtkj jgk gA tglp i pth vsj Je dh vs'kk Kku ik'fkd mRi kn l d k'ku gA Kku ea l ekt ea ifjor'U ykus dh ijh {kerk gA ekstnk Kku ds l gh iz'ks ; k mi ; ks l s jk'V' dh i pth cgr gh et'c' fLFkr ea igp l drh gA fo j k'f'kz ka dsfy, n'jLFk f''k{kk iz'klyh , d cgr jhu l k'ku fl) g'p'z gA bl l s gekjh m'p'p f''k{kk iz'klyh ea Bld of) g'p'z g' s vsj gj l ky gekj; g'p'z 30 yk [k l s v'f'kd Lukrd r' s kj g'rs gA y'fdu gekjh jst xj l tu 0; oLFk , d h ugha gsf d l Hk i k= m'el m'okj ka dsfy, jst xj t'p'k; k tk l dA v'k'f'ud v'f'k; oLFk dsfy, vs {kr d'k'ky vsj Nk=ka dks nh tkus okyh f''k{kk ea cgr cMk v'urj gA f''k{kk dh f=l w-h; uhfr cukus dh vlo"; drk gA l d l sigys f''k{k.k iz'klyh ea m'le'khyr dsegko vsj m'p'p f''k{kk ds Lrj l s gh Nk=ka dks m'le'ka dh LFki uk ds ifr m'le'k'k fd, tkus ij t'g' fn; k tkuk p'f'g, A n'j l s c'k'ka dks ; p'k m'f'e; ka dks i k'k l'g'u nsuk p'f'g, r'k'fd os uohu m'ri kn ka dk m'ri knu d'j ds vk; v'f't' d'jus dh {kerk g'f' l y dj l dA rhl jsekuo l d k'ku ka ds {s= ea v'k'f'kz et'c'rh Hk g'k'uh p'f'g, A xq'ko'Ykk ; p' fo'k; oLr'q dk iz'aku d'jus ds fy, 0; k [; ku] iz'ks'k'ky vsj i'p'rdky; ij fo'ksk /; ku nsuk p'f'g, A bu r'hu ka ea rdudh dk ; F'k'f'p' iz'ks iz'ky cy nsuk p'f'g, A b'z'ju'k/ dsek/; e l s f''k{kk dks l o' d'g'k'k cukus ij t'g' nsuk p'f'g, A

d'ej foey 2014 us vius yq'k ea fy [k gsf d ft l j'f'rkj l s ns'k dh v'k'c'nh c<< jgh g' Ldny'ka , oa d'k'k'yst ka ea ft l x'f' l s n'f'k'kyk c<< jgk g' m' l fgl kc l s f''k{kk dk ctV vc Hk de gh gA l j d'k' v'ud ? ksk.kk, j d'jrh g' s i'ur'q Ldny' f''k{kk ij i'gk /; ku ugha fn; k x; k gA l j d'k'j h Ldny'ka ds r= d'k' et'c'r cukus , oa m' l ds foLr'k'j dsfy, fo'ksk ; kst'uk ugh cuk'bz gA Kku vk; ks us m'p'p f''k{kk ds foLr'k'j dsfy, , d g't'k'j fo'fo'fo'ky; ka , oa rhl g't'k'j d'k'k'yst [k'k'ys us dh fl Q'k'f'j'k dh F'hA H'k'fo'; ea f''k{kk dk fut'hd'j.k vsj v'f'kd g'ks'kA H'k'fo'; ea i'hi'ih ek'k'ly l s gh v'f'kd f''k{k.k l d'F'ku [k'k'ys'kA d'k'k'yst ka ea d'k'k'yst fo'k'k' l , oa rdudh f''k{kk ij fo'ksk /; ku nsus dh vlo"; drk gA

"k'ej jfo 2016 us yq'k ea fy [k gsf d f''k{kk d'k'bz l e; ds l k'f'k cnyus okyh p'ht ugha gA i f''k{k.k vo"; l e; ds l k'f'k cnyrk gA ubz rdudh ka ds l k'f'k i f''k{k.k Hk cnyrk jgrk g' s i'ur'q f''k{kk ges'kk fLFk'j jgrh gA ; fn l p' d'k'ky p'f'g, r'is ; g rF; ges'kk gh y'x'w'j'g'x'kA , d s gh b'ekun'k'j h g' l e; vs {kr jgrh gA l ekt vsj ns'k'f'gr ea dk; l d'juk g'j d'ky [k.M ea v'ko"; d g'rk gA bl fy, f''k{kk ds t'k' e'ki n'm] Lo; i vsj uhfr; k' Hk'j' d' e'uf'f'k; ka us fu'k'k'z'j' dh F'h os v'kt ds i'k'p' g't'k'j o'k'z' igys Hk i'k' l'x' d' F'h vsj v'kt Hk i'k' l'x' d' gA vlo"; drk g' s m'lg' e l e > d j] i e'lj l e'f'p' iz'ks d'jus dhA f''k{kk dk mnns; d'oy vsj d'oy Klukt'U vsj p'f'j= fuekz k g's l drk gA bl d'k'j.k or'z'ku f''k{kk iz'klyh ea v'k'w'p'w' i'f'jor'U dh vlo"; drk gA

ik.Ms /Mjt 2020 us vius yq'k ea crk; k gsf d 19 t'g'k'bz 2020 dks jk'Vh; f''k{kk uhfr 2020 dks ea'ijh nh gA ft l l s Ldny' vsj m'p'p f''k{kk n'k'ka {s=ka ea cMk i'ekus ea l d'kk g'ks'kA ; g 21oha l nh dh igyh f''k{kk uhfr g' s t'k' l c' dsfy, v'k' l ku ig'p' l ekur'k' xq'ko'Ykk] oguh; rk vsj tok'ng' ds v'k'k'j'hor Lr'EHka ij fufe'r gA ; g l r' r-fod'k' dsfy, , t'k'k' 2030 ds v'up'ny gA Ldny' vsj d'k'k'yst f''k{kk d'k' v'f'kd l exz vsj y'p'hyk cuk'rs g'q' Hk'j' d'k' , d Kku v'k'k'f'j'r th'or l ekt vsj Kku dh of'od egk''kDr ea cnyuk vsj i'R; d Nk= ea fuf'gr v'f'f'r; {kerk'v'ka d'k' l keus y'kuk gA

MKW d'.kk Lokeh dLrjh jxu t'k'f'd jk'Vh; f''k{kk uhfr 2020 dk el ksk r' s kj d'jus okyh l febr ds v/; {k , oa i'w'z'p' s'j'eu bl j'k'us d'g'k' gsf d ubz f''k{kk uhfr 2020 ea d'k'k'yst dh Lok; Y'rk dh c'ir dh x'bz gA bl dk mnns; f''k{kk l d'f'ir ea cny'ko d'juk gA gea f''k{kk dk i'z'aku d'jus dsfy, u, r'j'h'cs [k'k'yst us g'k'k'kA f''k{kk ds l gh fod'k' dsfy, F'h'k'k' Lok; Y'rk ns'uh Hk t: jh gA i'ur'q bl dk eryc ; g i'gha gsf d d'k'bz fu; e ugha g'k'k'kA d'k'k'yst ea i; k'ir f''k{kk d'g' s; k ugh'j' mud'k' i'f'j.k'ke d' s k j'g'ka bu l c dh tkud'k'j h l ko'z'f'ud v'd'k'k' d'sek/; e l s nh tk, x'hA

m'p'p f''k{kk ea 3-5 d'j'k'w' l h'v'ka dh of) dh tk, x'hA i'k'z; Oe ea y'p'hy' u ds l k'f'k gh Lukrd dh l exz f''k{kk vof'k' 3&4 o'k'z' dh g's l drh gA bl g'rq' d'bz fod'Yi ka d'k' s; ku ea j [k x; k gA v'f'k'z ; fn i'f'ke o'k'z' ea d'k'bz Nk= i'k'z; Oe N'k'w' r'ns'k g' s r'k' s m' l s f'V'OC'v vsj ; fn f'r'h; o'k'z' ea N'k'w' r'ns'k g' s r'k' s m' l s f'm'ly'k'ek vsj r'r'h; o'k'z' ea N'k'w' r'ns'k g' s r'k' s m' l s f'm'x' i' n'ku dh tk, x'h ; k , d k gh d'k'bz v'k' ; fod'Yi i' n'ku fd; k tk, x'hA bl uhfr ea , e- f'Qy ds i'k'z; Oe ka d'k' c'n d'jus dk fu.k'z' fy; k x; k gA Lukrd] Lukrd'k'k'j vsj i'h, p- Mh Lrj ds l Hk i'k'z; Oe vc v'ur'fo'k'; h dj fn, tk, x'hA vc , d LF'ku l s n'j' js LF'ku ij v'k' ; ek/; e l s f''k{kk x'g.k



- 4- ik.Ms /khjt] 21ota lnh dh igyh f"kk{kk uhfr-% jk'Vh; f"kk{kk uhfr 2020] ifr; kfxrk nizk] fl rEej] 2020] i"V l 4; k 56&60
- 5- d'ekj foey] ubz l jdkj eaf"kk{kk dh ubz mlMku] ; kstuk] vxLr 2014] i"V l 4; k 46&47
- 6- , -i-h-ts vCny dyke] Kku l ekt dsekinM] ; kstuk] Qjogh 2006] i"V l 4; k 5&6
- 7- 'keiz 'ksynz , oa >k 'kf'kjat u] f"kk{kk dh xqkoUkk vlgj mRN"Vrk ea l dkkj] ; kstuk ekpZ 2020] i"V l 4; k 60&62
- 8- HkkLdj >k urk"kk] mPp f"kk{kk ea of"od rkyey] ; kstuk Qjogh 2020] i"V l 4; k 29&31
- 9- jko , l - Jhfuokl , oa l njs'kk Mh- , l -] mPp f"kk{kk l sl keft'd cnyko] ; kstuk vxLr 2018] i"V l 4; k 23&25
- 10- mi kl us txnr"k , oa fl g ykclln] l cdlk f"kk{kk&vPNh f"kk{kk] ; kstuk tgykbZ 2018] i"V l 4; k 27&31
- 11- d'ekj vk"kh'k] l ekosh f"kk{kk dh vlgj c<rsdne] dq {ks= ekpZ 2018] i"V l 4; k 35&37
- 12- /kks= l at ;] jk'Vh; f"kk{kk uhfr] ; kstuk fl rEej 2020] i"V l 4; k 6&10



EFFECT OF AGE COMPOSITION AMONG NORTH EAST STATES IN INDIA - CENSUS DATA ANALYSIS

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Abstract: This anticipated change in the demographic composition will result in a pronounced reduction of workers compared to elderly persons. Dependency ratios are used as indicators as the share of elderly increases. The needs of children are mainly covered through transfers from the parents and the needs of elderly persons mainly through public transfers from the population which is active in the labour market. The relative sizes of these groups are surly extent of burden. An increase in economic dependency will require more reallocation from workers to the dependent population. In the light of this, dependency ratio and age-specific dependency or support ratio has been compared for north east states in India for last 3 census years. The north east states have also been compared.

Keywords : Dependency Ratio, Age Specific Dependency Ratio, Support Ratio, Age Group, Ranking

INTRODUCTION

In the European Union, about 70 million persons will reach age 60 between 2020 and 2029, while only about 55 million will turn 20, about the average age at which young people enter the labour force (Loichinger *et al* 2015). This anticipated change in the demographic composition will result in a pronounced reduction of workers compared to elderly persons. Dependency ratios are used as indicators as the share of elderly increases.

A large part of any population is usually economically dependent. The dependent population consists most notably of children and retired elderly persons. In Europe, the needs of children are mainly covered through transfers from the parents and the needs of elderly persons mainly through public transfers from the population which is active in the labour market. The relative sizes of these groups are surly extent of burden. An increase in economic dependency will require more reallocation from workers to the dependent population.

It has been argued by many others before that dependency measures based on chronological age alone are not a good way to capture populations actual dependency situation. Age-specific economic characteristics, e.g. length of schooling, retirement age, employment and unemployment rates, the share of persons focusing on household tasks, consumption and saving vary greatly. In this context, age-specific dependency ratio (ASDR) may be one of the indicators which a particular case of support Ratio (Ghara 2020). Economic dependency ratios are a set of indicators which provide



aggregate information on the degree of economic dependency. Demographic dependency ratios which are based on fixed threshold ages, economic dependency is derived by making use of the fact that the type and intensity of economic activity varies between individuals. The concept of the economic dependency ratio is closely related to the concept of the economic support ratio. While dependency ratios measure the number of persons relying on others, or the extent to which they rely on others, support ratios measure the capacity of the active population to provide for the dependent.

A refined approach for the specification of the dependent population has been taken in Cutler et al. (1990). In one of their suggested support ratios, they set the working age population weighted by their age-specific labour income in relation to the total population weighted by its age-specific consumption levels. This is clearly a refinement compared to the demographic dependency ratio that makes no distinction between different groups in the dependent population (e.g. between children and retirees) and within the working age population. The dependency ratio is an age-population ratio of those typically not in the labor force (the dependent part ages 0 to 14 and 65+) and those typically in the labor force (the productive part ages 15 to 64). It is used to measure the pressure on the productive population.

The dependency ratio is essential for governments, economists, bankers, business, industry, universities and all other major economic segments which can benefit from understanding the impacts of changes in population structure. A low dependency ratio means that there are sufficient people working who can support the dependent population. A lower ratio could allow for better pensions and better health care for citizens. A higher ratio indicates more financial stress on working people, social security and possible political instability. While the strategies of increasing fertility and of allowing immigration especially of younger working age people have been formulas for lowering dependency ratios, future job reductions through automation may impact the effectiveness of those strategies. The inverse of the dependency ratio, the inverse dependency ratio can be interpreted as how many independent workers have to provide for one dependent person (pension & expenditure on children). A high dependency ratio can cause serious problems for a country if a large proportion of a government's expenditure is on health, social security & education, which are most used by the youngest and the oldest in a population. The fewer people of working age, the fewer the people who can support schools, retirement pensions, disability pensions and other assistances to the youngest and oldest members of a population, often considered the most vulnerable members of society. The dependency ratio ignores the fact that the 65+ are not necessarily dependent (an increasing proportion of them are working) and that many of those of 'working age' are actually not working. High dependency ratios can also lead to long-term economic changes within the population such as saving rates, investment rates, the housing markets, and the consumption patterns. There is a correlation between labor force and housing markets. The investments in housing markets will decrease since the labor force is decreasing due to a high dependency population. Low dependency ratios promote economic growth while high dependency ratios decrease economic growth. A solution to decreasing the dependency ratio within a



country is to promote immigration for younger people. Encouraging women to work will help decrease the dependency ratio. Because more women are getting higher education, it is less likely for them to have children, causing the fertility rates to decrease as well.

The dependency ratio is high due to significantly high crude birth rates putting pressure onto the smaller working-age population to take care of all of them. The dependency ratio starts to decrease because fertility and mortality rates start to decrease which shows that the proportion of adults to the young and elderly are much larger. Dependency ratios are a measure of the age structure of the population. They relate the number of individuals that are likely to be “dependent” on the support of others for their daily living – youths and the elderly – to the number of those individuals who are capable of providing such support.

High dependency ratios may have the following consequences:

- Saving rates - recent demographic changes could affect saving rates and long-term interest rates.
- Investment rates - as savings decrease, there could be fewer funds to finance investment projects.
- Housing markets - labor force contributes strongly to the trend in house prices, fewer young people, together with a large increase in the elderly population, would likely result in less investment in the housing market.
- Consumption patterns - An increase in the elderly population could shift consumption from certain goods toward healthcare services and leisure.

Dependency ratios affect the global environment where social policy operates and the types of needs that it will be called to meet. Their evolution is a function of mortality, fertility rates and migration. Education has become one of the indicators of life outcomes such as employment, income and social status and is a hard predictor of attitudes, employability and wellbeing. In this paper it has been tried the way how dependency is defined and played a crucial role to measure and think about dependency. It also determines where people switch from being dependent to independent and then again from independent to dependent, directly influencing the choice of policy responses. The north east states have been compared based on dependency.

DATA

Census data for the years 1991, 2001 and 2011 has been considered. Table C-series and Table No- 13 has been downloaded from Census digital library. All seven states of north-east in India – Arunachal Pradesh(ARP), Assam(AS), Manipur(MAN), Meghalaya(MEG), Mizoram(MIZ), Nagaland(NAG) and Tripura(TRI) have been considered. Data for Male, Female and Total for the ages 0 to 100+ (101 rows) have been considered for all 7 states. These seven states is being called as North-East states(NE). For ASDR, the ages have been segregated into different age groups – 0-5, 6-9, 10-15, 16-17, 18-23, 24-44, 45-64, 65-79, 80+.



RESULTS

Define Dep(Xi) assigns a value of one to individuals below a certain age (usually 15) and above a certain age (usually 60), and zero otherwise.

Sup(Xi) takes on the value of one if the age of individual i falls between those age boundaries and zero otherwise.

$$Dependency\ Ratio\ (DR) = \sum Dep(Xi) / \sum Sup(Xi)$$

Likewise, support ratios are calculated by relating the ability to support others to total dependency:

$$Inverse\ Dependency\ Ratio\ (IDR) = \sum Sup(Xi) / \sum Dep(Xi)$$

$$Age\ Specific\ Dependent\ Ratio\ (ASDR) = \sum_2 Sup(Xi) / \sum_1 Sup(Xi)$$

where \sum_1 and \sum_2 are the present age-group and the previous age-group respectively.

A low dependency ratio means that there are sufficient people working who can support the dependent population. A lower ratio could allow for better pensions and better health care for citizens. A higher ratio indicates more financial stress on working people and possible political instability.

Table - 1 showing the population distribution of north east states in different age groups of Census 1991

1991		State							
Category	Age Group	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
Female	0-14	169005	4435633	319986	372493	131907	222021	518358	6169403
Female	15-44	176554	4882153	432550	382540	151188	264352	605487	6894824
Female	45-64	42060	1090843	105633	82203	33984	57642	149055	1561420
Female	15-64	218614	5972996	538183	464743	185172	321994	754542	8456244
Female	65 -	9640	309974	31489	20991	9859	16834	63502	462289
Male	0-14	176928	4579246	327451	377027	133428	229023	537220	6360323
Male	15-44	213434	5274492	446647	394136	171212	301239	641005	7442165
Male	45-64	60770	1358439	117962	101962	40024	78156	172338	1929651
Male	15-64	274204	6632931	564609	496098	211236	379395	813343	9371816
Male	65 -	11130	399652	35907	25097	10014	24168	63987	569955
Total	0-14	345933	9014879	647437	749520	265335	451044	1055578	12529726
Total	15-44	389988	10156645	879197	776676	322400	565591	1246492	14336989
Total	45-64	102830	2449282	223595	184165	74008	135798	321393	3491071
Total	15-64	492818	12605927	1102792	960841	396408	701389	1567885	17828060
Total	65 -	20770	709626	67396	46088	19873	41002	127489	1032244



Table - 2 showing the population distribution of north east states in different age groups of Census 2001

2001		State							
Category	Age Group	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
Female	0-14	217027	4874847	345838	484180	154196	352251	526754	6955093
Female	15-44	233106	6066292	538546	513810	210030	467143	756131	8785058
Female	45-64	53287	1453912	136210	110554	48736	95450	188837	2086986
Female	15-64	286393	7520204	674756	624364	258766	562593	944968	10872044
Female	65 -	14206	471674	48447	32832	16169	25907	83246	692481
Male	0-14	225798	5095495	360867	496697	159540	376158	548798	7263353
Male	15-44	265374	6444457	538738	517640	227591	512448	796228	9302476
Male	45-64	72350	1708269	144719	126381	55242	123266	217949	2448176
Male	15-64	337724	8152726	683457	644021	282833	635714	1014177	11750652
Male	65 -	15710	511608	48890	33568	16293	32669	76455	735193
Total	0-14	442825	9970342	706705	980877	313736	728409	1075552	14218446
Total	15-44	498480	12510749	1077284	1031450	437621	979591	1552359	18087534
Total	45-64	125637	3162181	280929	236935	103978	218716	406786	4535162
Total	15-64	624117	15672930	1358213	1268385	541599	1198307	1959145	22622696
Total	65 -	29916	983282	97337	66400	32462	58576	159701	1427674

Table - 3 showing the population distribution of north east states in different age groups of Census 2011

2011		State							
Category	Age Group	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
Female	0-14	243759	5018250	417616	581038	175047	327857	497944	7261511
Female	15-44	333937	7517372	718940	687279	269398	488055	923888	10938869
Female	45-64	72972	2078989	212212	157609	75008	106208	276854	2979852
Female	15-64	406909	9596361	931152	844888	344406	594263	1200742	13918721
Female	65 -	18497	642592	64895	46676	22160	31111	100106	926037
Male	0-14	249602	5230649	444072	596904	180955	351175	520047	7573404
Male	15-44	351606	7697500	710563	685015	273937	510214	956349	11185184
Male	45-64	92148	2341146	216491	165066	78080	127315	304804	3325050
Male	15-64	443754	10038646	927054	850081	352017	637529	1261153	14510234
Male	65 -	19697	660254	63228	41518	21988	35096	92309	934090
Total	0-14	493361	10248899	861688	1177942	356002	679032	1017991	14834915
Total	15-44	685543	15214872	1429503	1372294	543335	998269	1880237	22124053
Total	45-64	165120	4420135	428703	322675	153088	233523	581658	6304902
Total	15-64	850663	19635007	1858206	1694969	696423	1231792	2461895	28428955
Total	65 -	38194	1302846	128123	88194	44148	66207	192415	1860127



Table -4 showing Dependency Ratio of 7 North east states for 1991, 2001 & 2011

	Female			Male			Total		
State\Year	1991	2001	2011	1991	2001	2011	1991	2001	2011
ARP	0.82	0.81	0.64	0.69	0.72	0.61	0.74	0.76	0.62
AS	0.79	0.71	0.59	0.75	0.69	0.59	0.77	0.70	0.59
MAN	0.65	0.58	0.52	0.64	0.60	0.55	0.65	0.59	0.53
MEG	0.85	0.83	0.74	0.81	0.82	0.75	0.83	0.83	0.75
MIZ	0.77	0.66	0.57	0.68	0.62	0.58	0.72	0.64	0.57
NAG	0.74	0.67	0.60	0.67	0.64	0.61	0.70	0.66	0.61
TRI	0.77	0.65	0.50	0.74	0.62	0.49	0.75	0.63	0.49

It is interesting to note that maximum and minimum DR in the state of Megalaya and Manipur for the years 1991 and 2001, but for 2011 those are Megalaya and Tripura in case of female, male and total. The maximums are decreasing and minimums are also decreasing. Therefore, social dependency are declining and it atmost around 75 and atleast 49 per 100 employed/working. Megalaya is most sustainable state and Manipur was previously least sustainable and presently Tripura is least sustainable towards social stability and well-being, healthcare, etc.. Arunachal Pradesh, Assam and Mizoram are more stable state as compared to other states in north east India. The correlation are highly significant and more than 0.69.

Table - 5 showing age-specific dependency ratios (ASDR) for all NE states in census 1991

Age Group\State	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
6-9	0.61	0.71	0.69	0.59	0.62	0.74	0.73	0.70
10-15	1.22	1.23	1.53	1.29	1.55	1.50	1.30	1.27
16-17	0.23	0.26	0.26	0.26	0.27	0.28	0.25	0.26
18-23	3.64	3.23	3.30	2.96	3.00	3.04	3.20	3.21
24-44	2.64	2.34	2.29	2.45	2.32	2.06	2.50	2.35
45-59	0.34	0.32	0.34	0.32	0.31	0.35	0.33	0.32
60-79	0.39	0.53	0.55	0.47	0.49	0.47	0.62	0.53
80-	0.12	0.14	0.12	0.11	0.13	0.20	0.21	0.15

ASDR figures are interesting in 1991. For the age group 6-9, it may be noted that there are drop-out or not all children are admitted in the north east states and it is about 70% support in north east states, minimum ASDR in Megalaya and maximum ASDR in Nagaland. For the age group 10-15, it may be noted that all primary enrolled students entered into secondary education; it is better in Mizoram and lesser in Arunachal Pradesh. For the age group 16-17, it is better to state that all secondary passed students are not enrolled in higher secondary level; it is not a perfect support. It is maximum in Nagaland and minimum in Arunachal Pradesh. For the age-group 18-23, the support is



perfect and maximum in Arunachal Pradesh & minimum in Megalaya. For the age group 24-44, the support is very good or persons with higher education get employed in all the states of north east India. It is maximum in Arunachal Pradesh and minimum in Nagaland. For the age group 45-59, it may be stated that not all persons are remained employed, about 30% are leaving jobs within the age group. It is maximum in Nagaland and minimum in Mizoram. For the age group 60-79, about 50% are enjoying retire-mental benefits/ social security privileges. It is maximum in Tripura and minimum in Megalaya. For the age group 80 + , only about 12% are the support or only about 12% persons are further dependent in terms of full social protections with maximum in Tripura and minimum in Megalaya.

Table - 6 showing age-specific dependency ratios (ASDR) for all NE states in census 2001

Age Group\State	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
6-9	0.75	0.77	0.75	0.69	0.68	0.91	0.80	0.77
10-15	1.31	1.36	1.63	1.39	1.56	1.60	1.69	1.41
16-17	0.24	0.25	0.27	0.26	0.29	0.29	0.26	0.25
18-23	2.86	3.12	3.34	2.67	3.11	2.92	2.77	3.05
24-44	2.74	2.64	2.31	2.38	2.23	1.88	2.75	2.56
45-59	0.33	0.33	0.36	0.32	0.33	0.35	0.34	0.33
60-79	0.42	0.54	0.55	0.48	0.50	0.41	0.59	0.53
80-	0.13	0.12	0.13	0.12	0.12	0.18	0.18	0.13

ASDR figures are interesting in 2001. For the age group 6-9, it may be noted that there are drop-out or not all children are admitted in the north east states and it is more than 70% support in north east states, minimum in Megalaya and maximum ASDR in Nagaland. For the age group 10-15, it may be noted that all primary enrolled students entered into secondary education; it is better in Tripura and lesser in Arunachal Pradesh. For the age group 16-17, it is better to state that all secondary passed students are not enrolled in higher secondary level, it is not a perfect support. It is maximum in Nagaland & Mizoram and minimum in Arunachal Pradesh. For the age-group 18-23, the support is perfect and maximum in Manipur & minimum in Tripura. For the age group 24-44, the support is very good or persons with higher education get employed in all the states of north east India. It is maximum in Arunachal Pradesh and minimum in Nagaland. For the age group 45-59, it may be stated that not all persons are remained employed; more than 32% are leaving jobs within the age group. It is maximum in Manipur and minimum in Megalaya. For the age group 60-79, about 41% are enjoying retire-mental benefits/ social security privileges. It is maximum in Tripura and minimum in Nagaland. For the age group 80 + , only about 12% are the support or only about 12% persons are further dependent in terms of full social protections with maximum in Tripura and minimum in Megalaya& Mizoram.



Table - 7 showing age-specific dependency ratios (ASDR) for all NE states in census 2011

Age Group\State	ARP	AS	MAN	MEG	MIZ	NAG	TRI	NE
6-9	0.77	0.72	0.74	0.63	0.65	0.77	0.69	0.71
10-15	1.57	1.48	1.62	1.47	1.48	1.59	1.60	1.50
16-17	0.28	0.28	0.29	0.29	0.32	0.31	0.32	0.28
18-23	2.75	3.14	3.14	2.68	3.05	2.79	3.24	3.08
24-44	2.55	2.69	2.67	2.31	2.56	2.38	2.71	2.64
45-59	0.33	0.37	0.39	0.33	0.37	0.33	0.40	0.37
60-79	0.40	0.51	0.49	0.45	0.47	0.45	0.52	0.50
80-	0.13	0.12	0.15	0.13	0.14	0.16	0.16	0.13

ASDR figures are interesting in 2011. For the age group 6-9, it may be noted that there are drop-out or not all children are admitted in the north east states and it is more than 63% support in north east states, minimum in Nagaland and maximum ASDR in Arunachal Pradesh & Tripura. For the age group 10-15, it may be noted that all primary enrolled students entered into secondary education; it is better in Manipur and lesser in Nagaland. For the age group 16-17, it is better to state that all secondary passed students are not enrolled in higher secondary level, it is not a perfect support. It is maximum in Megalaya & Mizoram and minimum in Arunachal Pradesh & Assam. For the age-group 18-23, the support is perfect and maximum in Mizoram & minimum in Nagaland. For the age group 24-44, the support is very good or persons with higher education get employed in all the states of north east India. It is maximum in Arunachal Pradesh and minimum in Nagaland. For the age group 45-59, it may be stated that not all persons are remained employed, more than 33% are leaving jobs within the age group. It is maximum in Mizoram and minimum in Arunachal Pradesh. For the age group 60-79, about 40% are enjoying retire-mental benefits/ social security privileges. It is maximum in Mizoram and minimum in Arunachal Pradesh. For the age group 80 + , only about 12% are the support or only about 12% persons are further dependent in terms of full social protections with maximum in Tripura and minimum in Assam.

REMARKS

The north east states have been compared based on dependency ratio and age specific dependency ratio or support ratio. Megalaya and Manipur are the better and worst states among 7 north east states in India with respect to dependency ratio for all 3 census years. With respect to age specific dependency ratio, the state ranks are Tripura, Manipur, Nagaland, Mizoram, Assam, Arunachal Pradesh and Megalaya taking all 3 years ranks. It is to note that social security are more in the state of Megalaya and least in Manipur. Further determinants may be looked into for more better comparison of the north east states.



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DYNAMICAL BEHAVIOR OF SEIR E-EPIDEMIC MODEL FOR COMPUTER WORMS IN NETWORK

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Abstract

This paper has an aim to dynamically formulate an e-epidemic compartmental model of computer worms in network with optimal shelter. We first find the basic reproduction number and study the malicious code free equilibrium which concludes that whether the malicious objects invade the network or dies out. By using MATLAB and numerical methods, we give some numerical simulations in the support of our mathematical conclusions which show the stability of the system of differential equations developed.

Keywords: Stability, Basic Reproduction Number, Equilibrium, Malicious Codes

Introduction

Today in the modern age of science and technology, Electronic mail and use of secondary devices are the major responsible sources for the transmission of malicious objects in computer network [1]. Worm is a code that infects computer systems. Worms behave like infectious diseases and are epidemic in nature. A computer worm is a self contained program that is able to spread functional copies of itself or its segment to other computer system without a dependency on another program to host its code. Model's ability to predict worm's behavior depends greatly on the assumptions made in the modeling process. The mathematical models will be generalized to represent the behavior of numerous other worms. The generalized model will be incorporated into a cyber defense system to proactively safeguard the information and information interchange. E-mail is one of the core media to exchange e-messages for better communication and connectivity but it is also a good media to send worms to the interconnected networks. By clicking incidentally or wrongly an attachment of malicious executable file the system may be infected, here the user's awareness is necessary to avoid such type of attacks.

Historically, an arsenal of such agents consisted of viruses, worms, and trojanized programs and by combining key features of these agents, attackers are now able to create software that poses a serious threat even to organizations that fortify their network perimeter which is protected with firewalls and other defensive materials. In a certain sense, the propagation of virtual worms in a system of interacting and integrated computers could be compared with a disease transmitted by vectors when dealing with public health. Concerned diseases transmitted by vectors, one has to take into account that the parasites spent part of its lifetime inhabiting the vector, so that the infection switches back and forth between host and vector

Based on epidemiological models proposed by Kermack and Mckendrics [2 – 4], the attacking and spreading behavior of worms in a computer network can be studied by using the different e - epidemic models given by Mishra et al [5, 6]. Richard and Mark [7] propose an improved model to simulate virus propagation.

Formulation of the Model

A population size, that is, the total nodes at any time t in the computer network, is divided into classes of nodes which are susceptible, exposed (infected but not yet infectious), infectious and recovered with sizes denoted by S(t), E(t), I(t) and R(t) respectively. Our assumption on the dynamical transfer of the nodes is depicted in figure 1.

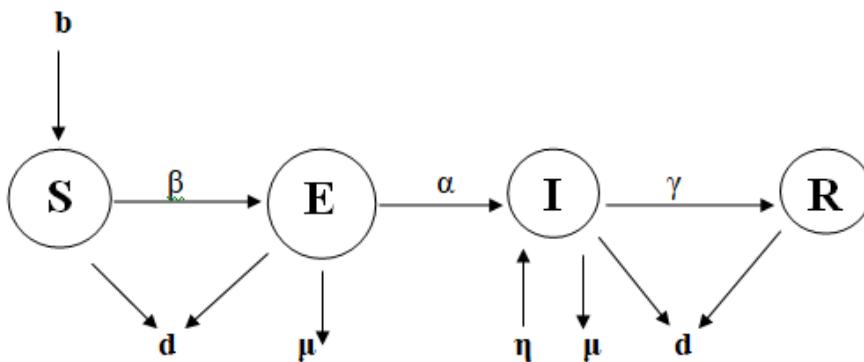


Figure 1:Schematic diagram for the flow of worms in computer network.

The transmission between model classes can be expressed by the following system of differential equations:

$$\begin{aligned}
 \frac{dS}{dt} &= b - \beta SI - dS \\
 \frac{dE}{dt} &= \beta SI - (d + \mu + \alpha)E \\
 \frac{dI}{dt} &= \alpha E - (d + \mu + \gamma - \eta)I \\
 \frac{dR}{dt} &= \gamma I - dR
 \end{aligned}
 \tag{1}$$

Where, *b* is the birth rate (new nodes attached to the network), *d* is the natural death rate (that is, crashing of the nodes other than the attack of malicious codes), βSI is the incidence of code infection and β is the rate of contact (that is, from class *S* to class *E*), α is the rate of transmission from class *E* to class *I*, γ is the rate of recovery from class *I*

to class R, μ is the death-rate (crashing of the nodes) due to the attack of worms. The model also assumes that the flow of codes between the classes can be spread through vertical transmission. In this case, the attack of worms through vertical transmission increases at the rate η and is introduced at the class I. In this model, the flow of worms is from class S to class E, class E to class I, class I to class R.

We now assume that our anti – virus software with latest signature is fully effective for optimal shelter. So, we introduce another parameter δ which is the shelter coverage rate of the susceptible computers. Then the system (1) becomes,

$$\begin{aligned} \frac{dS}{dt} &= b - \beta SI - dS - \delta S \\ \frac{dE}{dt} &= \beta SI - (d + \mu + \alpha)E \\ \frac{dI}{dt} &= \alpha E - (d + \mu + \gamma - \eta)I \\ \frac{dR}{dt} &= \gamma I - dR + \delta S \end{aligned} \tag{2}$$

Next, we also assume that δ is directly proportional to the incidence of malicious code infection, that is, the higher the infection is, the higher the shelter is. Then, δ can be expressed as,

$$\delta = \rho M \tag{3}$$

where, ρ is any positive constant and M is information variable [8, 9] and summarizes information about both the current and past state of the virus infection, i.e. M depends on current and past values of state variables. Then,

$$M = \int_{-\infty}^t g(S(t), I(t))K(t - \tau)d\tau$$

where, K is the delaying kernel [10] and τ is the distributed delay, which means susceptible individuals S and infective individuals I are affected at time t by the state variables S and I at possibly all previous time τ . Other variables are given by:

(1) According to the assumptions that the shelter coverage depends on both past and present incidence of infection, then it is easy to take, $g(S, I) = \beta SI$.

$$(2) \text{ We also take, } K(t - \tau) = \frac{\exp\left(\frac{-(t - \tau)}{T}\right)}{T} \tag{11}, \text{ where, T is positive}$$

constant and representing the average delay of collected information of infection.

From these two assumptions, the model (2) can be re – written as,

$$\frac{dS}{dt} = b - \beta SI - dS - \rho MS$$

$$\begin{aligned} \frac{dE}{dt} &= \beta SI - (d + \mu + \alpha)E \\ \frac{dI}{dt} &= \alpha E - (d + \mu + \gamma - \eta)I \\ \frac{dR}{dt} &= \gamma I - dR + \rho MS \\ \frac{dM}{dt} &= \frac{1}{T}(\beta SI - M) \end{aligned} \tag{4}$$

Solution and Stability

In this section, we analyze the worms-free equilibrium and get the basic reproduction number for the malicious codes control or eradication. Since the class R is not present in the rest of the equations in system (4), that is, the analysis will be restricted the dynamics of the four equations of the system (4).

$$\begin{aligned} \frac{dS}{dt} &= b - \beta SI - dS - \rho MS \\ \frac{dE}{dt} &= \beta SI - (d + \mu + \alpha)E \\ \frac{dI}{dt} &= \alpha E - (d + \mu + \gamma - \eta)I \\ \frac{dM}{dt} &= \frac{1}{T}(\beta SI - M) \end{aligned} \tag{5}$$

Thus, $N \rightarrow \frac{b}{d}$ as $t \rightarrow \infty$. This shows that the feasible region

$U = \{ (S, E, I, M) : S, E, I, M \geq 0, S + E + I + M \leq \frac{b}{d} \}$ is a positive invariant set for the model. In the absence of infection, the model has a unique worms - free equilibrium, $P_0(\frac{b}{d}, 0, 0, 0)$ and an endemic equilibrium $P^*(S^*, E^*, I^*, M^*)$, where, the points can be

obtained by taking, $\dot{S} = 0 = \dot{E} = \dot{I} = \dot{M}$ (from system (5)), as,

$$S^* = \frac{1}{R_0}, \quad E^* = \frac{R_0(d + \mu + \gamma - \eta)(bR_0 - d)}{\alpha\beta(R_0 + \rho)}, \quad I^* = \frac{R_0(bR_0 - d)}{\beta(R_0 + \rho)},$$

$$M^* = \frac{bR_0 - d}{R_0 + \rho}$$



Where, R_0 is basic reproduction number can be obtained by taking 2nd and 3rd equations of system (5) and after linearization, we get,

$$\begin{bmatrix} \dot{E} \\ \dot{I} \end{bmatrix} = (F - V) \begin{bmatrix} E \\ I \end{bmatrix}, \text{ where, } F \text{ and } V \text{ can be defined as,}$$

$$F = \begin{bmatrix} 0 & \beta \\ 0 & 0 \end{bmatrix} \quad \text{and} \quad V = \begin{bmatrix} d + \mu + \alpha & 0 \\ -\alpha & d + \mu + \gamma - \eta \end{bmatrix}$$

Then R_0 is the dominant eigenvalue of $F V^{-1}$. That is,

$$R_0 = \frac{\alpha\beta}{(d + \mu + \alpha)(d + \mu + \gamma - \eta)}.$$

Now, for locally asymptotically stable, we define the Jacobian of the system (5), as,

$$J = \begin{bmatrix} -d & 0 & 0 & 0 \\ 0 & -(d + \mu + \alpha) & 0 & 0 \\ 0 & \alpha & -(d + \mu + \gamma - \eta) & 0 \\ 0 & 0 & 0 & -\frac{1}{T} \end{bmatrix}$$

(6)

The eigenvalues of this matrix are, - d, - (d + μ + α), - (d + μ + γ - η), - 1/T. Since all the eigenvalues are negative, then the worms free equilibrium is locally asymptotically stable. Thus we can get the following results:

Lemma 1: If $R_0 < 1$, the worms free equilibrium P_0 is locally asymptotically stable, whereas, if $R_0 > 1$, P_0 is unstable.

Lemma 2: If $R_0 > 1$, the endemic equilibrium P^* is locally asymptotically stable.

Proof: Lemma 1 is quite obvious from above discussion. For lemma 2, by using the system (5) and equation (6), the characteristic equation will be,

$$\lambda^4 + a_1\lambda^3 + a_2\lambda^2 + a_3\lambda + a_4 = 0$$

If λ_i (i = 1, 2, 3, 4) are the roots of this equation, then, $a_1 = \sum \lambda_i$, $a_2 = \sum \lambda_1\lambda_2$, $a_3 = \sum \lambda_1\lambda_2\lambda_3$, $a_4 = \lambda_1\lambda_2\lambda_3\lambda_4$ satisfying Hurwitz's condition which tells that, $a_1 > 0$, $a_2 > 0$, $a_3 > 0$, $a_4 > 0$ and $a_1a_2a_3 - a_3^2 - a_1^2a_4 > 0$. So, the endemic equilibrium P^* is locally asymptotically stable.

Numerical Discussion and Conclusion

In this paper, we have developed a compartmental model with optimal shelter for worms in computer network. It is shown that if basic reproduction number is less than one, the worms - free equilibrium is locally asymptotically stable which leads to worm eradication. The impact of vertical transmission is also analyzed. By the help of MATLAB, Runge-KuttaFehlberg fourth-fifth order method is employed to solve and simulate the systems developed. The dynamical analysis of the model led to the determination of basic reproduction number in the presence of optimal shelter in computer network with vertical transmission.

Analysis and simulation results show some managerial insights that are helpful for the practice of antivirus in information sharing networks. Figure - 2 shows the behavior of different classes of nodes without optimal shelter while figure – 3 represents the same with optimal shelter using information variable which leads the stability of the system. A comparison between with and/or without optimal shelter is analyzed among the different classes of nodes and information variable which shows that it is necessary to set optimal shelter coverage to keep malicious – codes away from propagation.

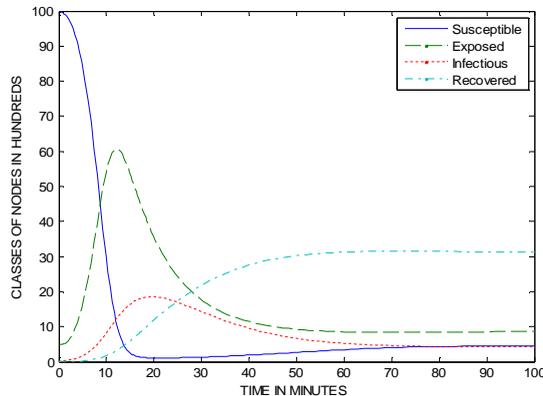


Figure 2: Dynamical behavior of the system (1) without information variable with real parametric values, $b = 1$, $\beta = 0.05$, $\mu = 0.05$, $\gamma = 0.07$, $\alpha = 0.05$, $d = 0.01$, $\eta = 0.03$.

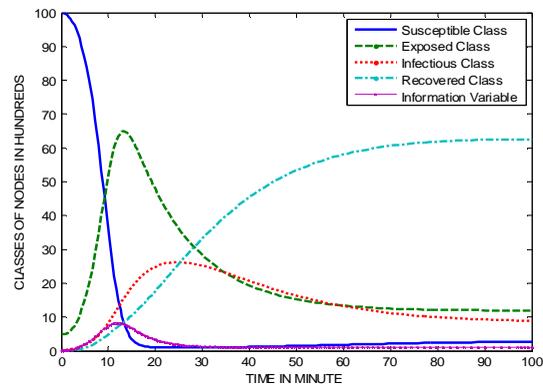


Figure 3: Dynamical behavior of the system (4) with information variable and real parametric values, $b = 1$, $\beta = 0.04$, $\mu = 0.02$, $\gamma = 0.07$, $\alpha = 0.05$, $d = 0.01$, $\eta = 0.03$, $\rho = 0.002$, $T = 5$.

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HUMANITIES AND THE DEBATES OF COGNIZANCE IN HIGHER EDUCATION IN INDIA: A STUDY TOWARDS AN INNOVATIVE APPROACH

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ABSTRACT:

A successful society with its scientific and technological growth also depends upon the humanities for a holistic progress. Higher education in India is encountering an unprecedented growth marked by the rising number of students, the expansion of institutions and more importantly a remarkable leap in public funding. Even with the motto to provide equal opportunities to each and every sector of society with an ever-growing number of students, the higher education system in India encounters a challenge to renovate the whole system for excellence. The prevailing paradigms of humanities in the higher education in India that study the aspects of human culture and society with the disciplines like philosophy, literature, arts, music, religion, language and history are facing impediments in terms of pedagogical innovations. These subjects of humanities help in understanding the human existence and at the same time encourage us to ask questions about our relation with the world. In this advanced age of science and technology, humanities and social sciences are not getting much attention which these streams require. Thus, this paper tries to draw the attention towards the current degraded state of humanities in the higher education in India as well as aiming to provide a workable way out from the depressing state of humanities in universities. Moreover, a committed and concerned discussion will be effective to have a proper work agenda in improving the situational backdrop of humanities in the current educational system.

Key words: Higher Education, Humanities, Innovation, Academics.

Introduction

Humanities is as old a discipline as is philosophy, religion and medicine. The term 'humanities' come into existence in nineteenth century as the German scholars employ it to mention the Renaissance importance of classical studies. The educators of the late fifteenth century are known as 'umanisti' which came from 'studiahumanitatis' meaning 'study of humanities'. This name 'umanisti' was derived from Marcus Tullius Cicero's notion of humanitas, it "meant the development of human virtue, in all its forms, to its fullest extent" (Grudin, 2019). Thus, the word 'humanities' designate the scholarly disciplines such as philosophy, art, history, language, rhetoric, literature and so forth. In ancient time, the value of society and group of people into the framework of moral teaching has undeniably acknowledged the study of arts, sculpture and literature. The practical notion of such subject has an issue of aesthetics that can never be left aside in those beauteous forms of knowledge. Fourteenth and fifteenth century Europe saw a huge interest in 'humanism' that eventually made an entry into the centre of 'the chain



of being' what earlier was God and religion. People, thereafter, has sought for a craving of human mind and soul that centuries later paved way to the scientific discovery. This broadens the human mind into more resources whereas the disciplines under humanities entertains a prime position. However, the twentieth century saw a burst of scientific knowledge as well as technology and the thrust area of popular knowledge took a turn into that. The journey of both the discipline of science and humanities has thus taken a turn towards a differentiative approach and often a dichotomous stance in appropriating the knowledge gain. Humanities saw a huge deportation into various other subjects where it has to survive even in the cost of engaging into the notion of science. Single unitary value of humanities then plunges into more of a need-based educatory pattern for people to reflect in society. This study is an enquiry into the present condition of humanities and tries to locate some of the problems there. Thus, this paper attempts to draw attention towards the causes of the current demeaning state of humanities in the higher education in India as well as aiming to provide a workable way out there. Moreover, a committed and concerned discussion will be effective to have a proper work agenda in improving the situational backdrop of humanities in the current educational system.

Humanities can be entitled as a study of human engagement with the documentation of human experience. Moreover, we use philosophy, art, music, religion, literature, language and history to record and understand the world around us. Thus, these approaches have become the subjects that conventionally come under the umbrella term of the humanities. The knowledge of these recorded experiences provides us the opportunity to know the past as well as to have a present-day significance. A society with its scientific and technological growth also depends upon humanities for a holistic progress. The importance of humanities in the educational system is that it has been a reticent in discussing ethics. Dalbert insinuates the importance of such study-

The humanities provide an insightful understanding into moral, ethical, political and ideological forces. A successful society depends upon altruism, charity, civility, compassion and generosity, and the humanities evaluate and emphasize the importance of these characteristics. The liberal arts introduce aesthetic values to the student. (Dalbert, 2011)

Therefore, moral education is needed for the betterment of society, for example studying history engages an individual with the tradition and provokes the past consciousness, likewise the different branches of philosophy engage with the fundamental nature of knowledge where literature offers a criticism of contemporary society. Law and politics interpret the social structure, justice and authority. Thus, different branches of humanities offer a wholistic idea of society. Even when we look at a thing in different patterns and the necessity of asking questions that are appropriating intellectuality and the open-mindedness, we certainly mandate it here in humanities to be humane also. In many a branch, humanities henceforth uphold the position of teacher in co-ordinating and synthesizing as well as integrating the ideals of teaching learning outcomes in which he accumulates a pivotal role. Edgar Duncan writes



through native endowment, through education, through vital social living, and through professional growth has achieved for himself the goals of humanistic education and who is able to bring this achievement to pass in his students. He is a practicing humanist with a passion and the power to humanize others. (Hoole, 1945)

Humanities in Higher Education Scenario: Notions and Advancements

The humanities unlike social and natural sciences primarily focus on critical and speculative form of asking into the domain of knowledge befitting the philosophical position of humanism whose apartheid position is the subject of query. Humanism is classical Greco-Roman essence that signals the study of divinity which underscores a paradigm shift in the 15th century Europe. Rather than of practicing it turned into way of studying the faculties of human mind, human capital and also look for refinement and education. The very core of humanities lies in the process of elementary education where the complacency of human value is made to understand through different subjects covering languages, literature, history, geography, religion and arts. Moreover, Alvin B. Kernan mentions that “historically, the humanities are the old subjects, which in many forms and under a variety of names- the nine muses; the liberal arts; quadrivium and trivium; rhetoric, dialectic, and logic; humane letters-were the major part of education... In modern college and university they have mutated into a number of specialized subjects, such as art, history, religious studies, classics, national literatures, and musicology” (Kernan, 2014). As the humanities proceeds through higher education scenario, it is more of an engagement that understood creativity and intellect, whereas it has in its centre man. The subject of history thus, actually the presence of humans in whatever primitive engagements and developments from therein.

Higher education is an understanding of a different realm of knowledge where we enter from a broader perspective to core perspective or may say from an external framework to internal knowledge. Thus, it helps to understand the nature of the knowledge. In this regard, University, is an institution, act like a think-tank of a society. Higher education is defined as the optional learning which comes after the completion of secondary learning. It aims at to benefit students as well as the community as a whole. Accordingly, it can be said that “it develops adaptable occupational skills by the application of cognition and effect” (Thomas et al. 7). Moreover, the objectives of higher education are:

- i. to develop attitudes and emotional integrity
- ii. to cultivate the intellect
- iii. to have employment opportunities
- iv. to develop culture and standards of citizenship
- v. knowledge and research
- vi. to provide an adaptable workforce with a broad range of skills. (Thomas, Bligh & McNay, 1999)



The professed motto of higher education- that of career building, policy making and innovation and research stands in the humanities with the pure questioning and understanding of art, culture, society, authenticity and aesthetics. These elements not only help in looking out to the moral behaviour, societal ethics of people but also looking into individuals' own refinement and rejuvenation for better living material in society. Thus, humanities is held responsible for this procreating ideas into the general concurrence of thought.

Humanities is one of the ancient branches of study that now-a-days appears anticipated in its way to the higher education scenario and attracts a focused enquiry. In 2014, the British Council Report on higher education in India mentions that-

International collaboration in arts, humanities and social sciences are generally lacking and there is an anxiety about the recent neglect of these disciplines in India. A fewer students have been taking up research carers in these areas, departments have declined, meaning a vicious circle of lack of employment opportunities for researchers. (Everitt, 2014)

In higher education scenario, the funding is a major concern where humanities departments are way behind in both academics and quality research than others. Despite the fact that in these disciplines India has a notable past recognition, but the area suffers a loss of expertise and talent. There is some funding available from the government for the researchers in social-sciences and humanities but it is not that much of utilise because of lack of good research proposal. Thus, there is a serious gap in policy implementation. Though these areas are vital for growth of living materials, upliftment of lifestyle of the citizens, incurring of values and moralities of people as particular and society and nation at large, there are many challenges to consider. In a recent report published by UGC regarding the educational growth and funding in India it shows that in various sections of funding the humanities is getting lesser fund as compared to the discipline of science. As the below mentioned graph indicates in various research projects during 2017-2018, there is a disparity of funding, where the department of sciences in various institution are getting 16.15 crores for research projects and the humanities is behind with 7.43 crores. However, the average share of fund in humanities to the beneficiary in percentage is high compared to the allocation in science. Not only the funding in research projects but the fellowship of the research scholars suffers the same destiny, as the resent fellowship hike for JRF and SRF is only for science and technology.



Details of grants released for Major Research Projects during 2017-18(in crores)

Name of scheme	Total Beneficiaries	Grant – in- aid General (31)			Capital Assets -35			NER General-31			Total
		GEN	SC	ST	GEN	SC	ST	GEN	SC	ST	
MRP											
HUMANITIES	388	6.47	0.23	0.02	0.05	0.01	0	0.49	0.05	0.11	7.43
Science	1034	14.77	0.36	0.15	0.32	0	0	0.47	0	0.08	16.15
Total	1422	21.24	0.59	0.17	0.37	0.01	0	0.96	0.05	0.19	23.58

(University Grants Commission, 2018)

Higher education is held concerned for the value and attitude which includes the commitment towards the moral implication of practices. Thus, education and its engagement with society fulfils the motto of higher education which seeks better employment opportunities for the students. To carry the higher education forward time to time some innovation are needed which make the teaching- learning much more effective.

Inovativitive Approaches towards Humanities

Today innovation in teaching and learning means an advanced and unique application of traditional practices as well as new methods to improve the existing system in various areas, organisational originality and more importantly public sector incentives to improve the services in education. The National Innovation Council of Government of India (NICGI) mentions that “innovation is being seen as a means of creating sustainable and cost-effective solutions for people at the bottom of the pyramid, and is being viewed as an important strategy for inclusive growth in developing economies” (“Introduction”, 2019). The council was set up to analyse, discuss and implement a road map to innovation for 2010-2020 and in order to do so it mentions five parameters. These include “i. platform for innovation, ii. a focus point for innovation, iii. an ecosystem for guiding innovation, iv. focus on drives for innovation and v. expand space for discourse on innovation in this country” (National Innovation Council, 2014). Thus, this council suggests a look beyond traditional practices and emphasises on minorities and economically backward classes in higher education as it points out the expansion of space of disciplines with multidisciplinary collaborations according to the need and demand of the global relevance. The report also mentions the expansion of discourses according to the contemporary relevance and gives emphasis on debates, seminars and conference which will provide new ideas to the innovation portal. These steps are necessary for the higher education in India as it encounters an unprecedented growth marked by the rising number of students, the expansion of institutions and more importantly a remarkable leap in public funding. Even with the motto to provide equal opportunities to each and every sector of society with an ever-growing number of



students, the higher education system in India encounters a challenge to renovate the whole system for excellence.

The descending situation of humanities can be thus revived by supporting the multi and inter-disciplinary research. The new discipline will open the gates of research opportunities. Along with this, it will provide a wide job market to the students. With this new avenue, the age-old branches of humanities will be able to cope up with the changing and dynamic nature of teaching learning in higher education. This will also provide the developing paradigms in research and innovation as with the multidisciplinary approach towards the study of two or more disciplines interacting with each other held responsible for the emergence of newer currents and dimensions into academia and research for the benefit of the society and for the national and global changes in educational system. This modernised and international approach towards humanities enhance the present curriculum and works towards employability and improvement of teaching and learning outcomes. This method also provides learning opportunities, skills and network to the next generation of Indian researchers. Some of the universities and the premier institutions in India has already started the expansion of courses and adapting non-traditional studies to have a good student attraction. Several institutions are already exercising an inclination to the professional skill development programme/courses in specific areas where the subjects like gender studies, diaspora studies, disability discourses are getting priority. Even in some universities, a renewed interest is made to enquire into the languages, not just the international languages but also the regional languages of India.

Interdisciplinary study means interaction and interchange between two or more disciplines. Though the words interdisciplinary and multidisciplinary are used synonymous there is a difference between them. Multidisciplinary means a simple juxtaposition of two or more disciplines, there is no integrity or interchanging relation there between the disciplines. On the other hand, interdisciplinary is always transformative in nature, which forms a new of knowledge by engaging with discrete disciplines. Therefore, Moran rightly points out that

Interdisciplinary approaches often draw attention, either implicitly or explicitly, to the fact that what is studied and taught within universities is always a political question. As the composite nature of the term itself suggests, 'interdisciplinarity' assumes the existence and relative resilience of disciplines as modes of thought and institutional practices. (Moran, 2002)

Thus, these approaches establish a kind of undisciplined space between disciplines and also attempts to transcend the disciplinary boundary altogether. Through this interdisciplinary approach in higher education an advancement of critical thinking and skills has become possible.



Conclusion

Thus, to conclude that, with the rise of interdisciplinary and multidisciplinary studies a new way toward international collaboration with other foreign universities in the area of humanities begins. Apart from the current dismal state of humanities in higher education in India there is an optimism that this situation will change soon with renewed interest from the Central Government in the branches of humanities. The 12th Five-Year Plan, 2012-17, Higher Education in India: Vision 2013 and many other funding agencies are focusing on new research opportunities, interest of students and innovative approaches towards teaching- learning in humanities. The governmental plans are aimed at strengthening the capacity of existing institutions as well as introduces courses on humanities and social sciences for science students. Therefore, in an institutional level as well as from the government an innovative approach should be built up to carry the research in the areas of humanities and enhance the teaching learning in higher education. However, many scholars argue that in interdisciplinary and multidisciplinary studies the unique nature of a particular subject gets affected but this approach provides a global platform to the students. Moreover, it can be said that the interaction between two or more disciplines are lucrative in terms of workability.

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AN ASSESSMENT OF SOLAR ENERGY POTENTIAL IN JODHPUR DISTRICT OF WESTERN RAJASTHAN

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Abstract : Looking into increased power demand efforts are diverted for development of renewable energy sector. The western Rajasthan has good potential of both solar and wind energy and can fulfil the need of even whole country. Jodhpur district located in western Rajasthan has good potential for both solar and wind energy. In this paper the solar energy potential of solar energy in Jodhpur district will be evaluated.

Keywords: Renewable Energy, Solar Energy, Climate.

Introduction

Rapid increase in population put pressure on conventional sources of energy and today all efforts are directed to use more and more renewable energy potential to reduce the pressure. The change in lifestyle also increased the per capita energy requirement even in rural areas also. The non-conventional reserves came into existence after thousands of year geological activities and are limited. These non-conventional sources are also causing harm to our environment in different ways. In recent years the contribution of renewable energy in total energy production is increased all over the world. Sometimes ago India was also facing energy availability crisis but in recent years constant efforts were made for development of renewable power sector and as a result today India is able to meet its energy requirement.

The solar and wind energy are important sources of renewable energy. For solar energy high temperature and high number of sunny days are required and on the hand high wind velocity yields high wind energy generation. Fortunately, Rajasthan is blessed with both high solar and wind energy potential because of its special geographical location. Rajasthan is today emerged as hotspot for renewable energy producers.

The western most part of Rajasthan is characterized by high temperature and wind velocity. The average temperature in western most districts of western Rajasthan ranges between 28 °C to 45 °C and the average velocity is above minimum required for wind energy generation. The contribution of renewable energy in recent few years is constantly increasing in total energy generation of Rajasthan. In Rajasthan due to low average rainfall a vast land is not under cultivation and available for setting up of wind or solar plants.

Jodhpur district lies in the western part of Rajasthan and has good potential for both solar and energy generation. Jodhpur is famous as 'Suncity' all over the world because it receives good sunshine for about 325 days in a year. In recent few years solar energy



generation in Jodhpur is gaining boom and government is focusing on development of transmission line and Grid Sub Stations (GSS) to facilitate the solar energy generation in this area.

Objectives

- To evaluate the climatic conditions of Jodhpur district favourable for solar energy generation.
- To assess the solar energy potential in Jodhpur district of Rajasthan.

Methodology

The study is based on secondary data available regarding climatic conditions and energy data as published by Energy Department, Government of Rajasthan.

Climatic Conditions of Jodhpur

The climate of Jodhpur is hot and characterized by high temperature and low rainfall. The temperature in Jodhpur district recorded highest as 49 °C in summer and lowered 1 °C in winter. The temperature in Jodhpur district remains high from month of March to month of end of October, except the monsoon days when temperature lowers down due to rainfall. The Jodhpur district also receives sandstorm locally known as 'Andhi' in summer season.

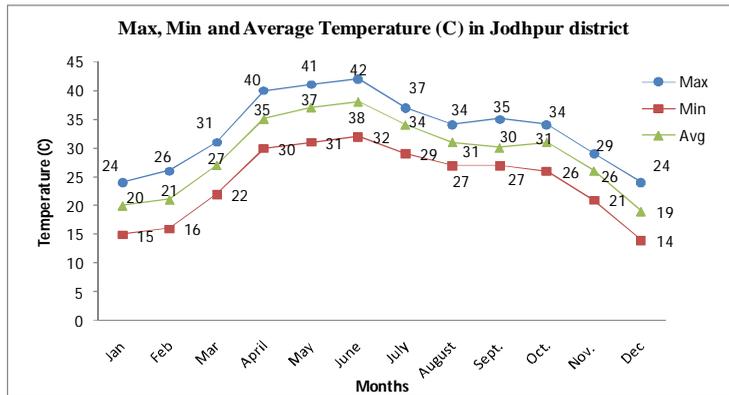
Temperature

The average temperature in Jodhpur district ranges from 16.9 °C in winter to 34.4 °C in summer. Although, the temperature remains high in summer in day hours but due to presence of sandy soil, the temperature lowered down steeply in nights and thus the nights in north-western part of district are comparatively cool.⁶ The month-wise maximum, minimum and average temperature in Jodhpur (°C) district in 2019 is shown in following table :

Table 1
Maximum, Minimum and Average temperature in Jodhpur (°C)
(January-December 2019)

Months	Max. temp (°C)	Min. Temp. (°C)	Average Temp. (°C)
Jan	24	15	20
Feb	26	16	21
Mar	31	22	27
April	40	30	35
May	41	31	37
June	42	32	38
July	37	29	34
August	34	27	31
Sept.	35	27	30
Oct.	34	26	31
Nov.	29	21	26
Dec	24	14	19

<https://en.climate-data.org/asia/india/rajasthan/jodhpur>



The above table and graph shows that the temperature in Jodhpur district start rising from month of January to June and then temperature starts decreasing and reached to minimum in December. The temperature remains high in month of April to June. It is also clear from table that the mean average temperature of Jodhpur district is measures around 30 °C thus the climatic conditions of Jodhpur district are suitable for solar energy generation.

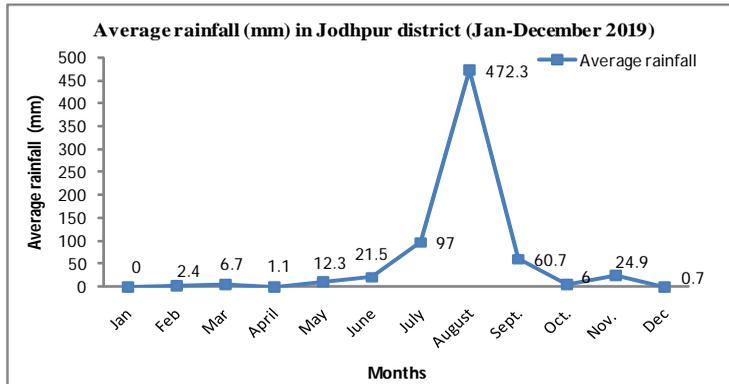
Rainfall

The Jodhpur district receives average rainfall of 360 mm but on basis of rainfall receives the district is divided into two zones – first North-west part of Jodhpur district receives 200-300 mm rainfall and the South-east part of district receives 300-400 mm rainfall. The rainy days in Jodhpur district are limited to maximum 15 days only. The rainy season starts in late June and ends in last of September. The month-wise average rainfall (mm) and rainy days in Jodhpur district is shown in following table:

Table 2
Average rainfall (mm) and rainy days in Jaisalmer
(January-December 2019)

Months	Average rainfall (mm)	Rainy Days
Jan	0	0
Feb	2.4	2
Mar	6.7	2
April	1.1	3
May	12.3	4
June	21.5	13
July	97	16
August	472.3	21
Sept.	60.7	14
Oct.	6	5
Nov.	24.9	9
Dec	0.7	2

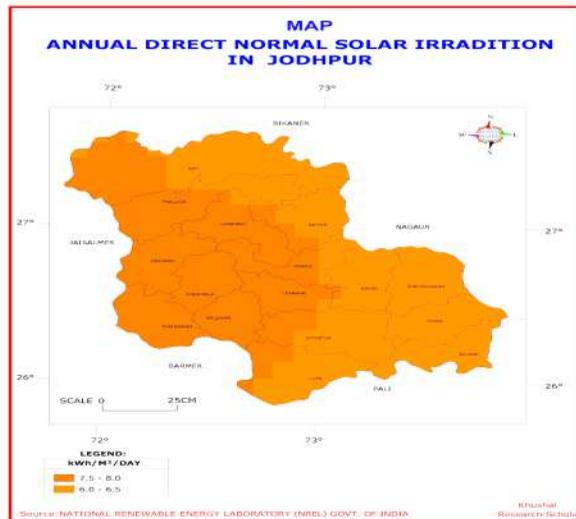
Source: <https://en.climate-data.org/asia/india/rajasthan/jodhpur>



The above table and graph shows that rainy season in Jodhpur district spreads from July to September month and receives highest rainfall in month of August.

Solar irradiation

The Annual Direct Normal Solar Irradiation map of Jodhpur district shows that Dechoo, Shekhala, Shergarh, Balesar, Tinwari, Lohawat tehsils, western part of Phalodi and Bap tehsils and small north-west part of Jodhpur and Osian tehsil receives 7.5-8.0 kWh/m²/day direct solar irradiation which is highest solar irradiation received in India. The rest Pipar, Bilara, Bhopalgarh, Luni, Baori, Bapini receives solar irradiation between 6.0-6.5 kWh/m²/day which is also second highest solar irradiation received in India. (Map)



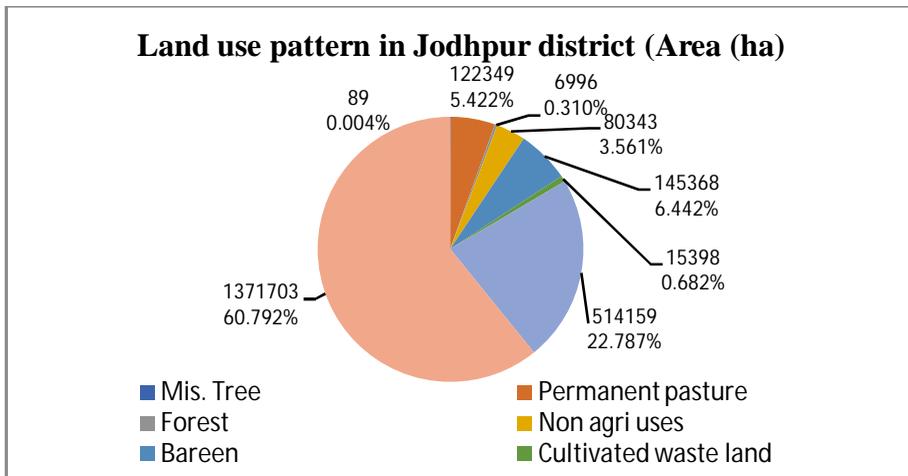
Land Use pattern

The land use pattern of Jodhpur district is shown in following table:

Table 3
Land use pattern in Jodhpur district (2015)

Type of land	area in ha
Mis. Tree	89
Permanent pasture	122349
Forest	6996
Non agri uses	80343
Barren	145368
Cultivated waste land	15398
Fallow land	514159
Net sown	1371703
Total	2256405

Source: Statistical Abstract 2016-17, Directorate of Statistics, Govt. of Rajasthan



The above table and graph shows that in Jodhpur district there is vast permanent pasture, barren, cultivated waste and fallow land which makes the area suitable for renewable energy generation.



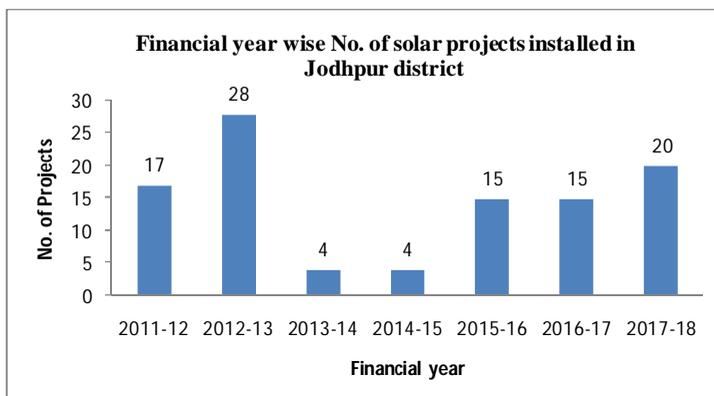
SOLAR ENERGY POTENTIAL IN JODHPUR DISTRICT

The details of financial year were installed Solar Power Projects connected to Grid in Jodhpur district are given in following table:

Table 4
Financial Year Wise Solar Power Projects
Connected to Grid in Jodhpur district

Financial year	No. of projects	Installed cap (MW)
2011-12	17	71
2012-13	28	261.9
2013-14	4	28
2014-15	4	39
2015-16	15	275
2016-17	15	398
2017-18	20	465
Total	103	1537.9

Source: Annual Report, RRECL, Government of Rajasthan, 2019.



It is clear from above table and graph that total 103 solar power plants were installed from 2011-12 to 2017-18 out of which highest 28 plants were installed in year 2012-13 and in year 2013-14 and 2014-15 only 4 solar plants in each year were installed. The above table and graph also shows that total 1537.9 MW capacity was installed from 2011-12 to 2017-18 and in last three financial years from 2015-16 to 2017-18 the solar energy capacity installed in a year increased significantly. Earlier from 2011-12 to

2014-15 very low power generation capacity was installed except the year 2012-13 in which 261.9 MW capacity was installed.

Tehsil wise Distribution of Solar Projects in Jodhpur District

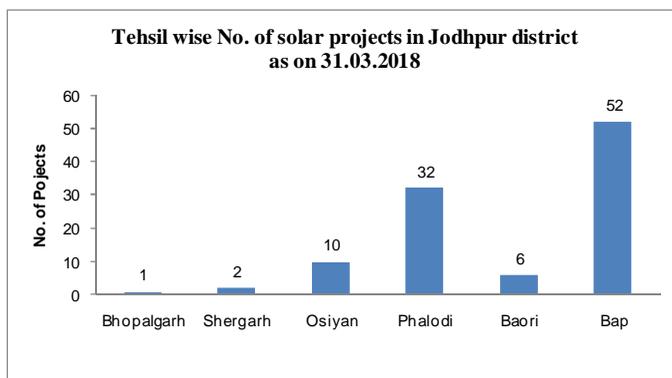
The tehsil wise distribution of solar projects installed and capacity of plants in Jodhpur district is given following table:

Table 5

Tehsil wise distribution of solar projects installed and capacity of plants in Jodhpur district

Tehsil	No. of projects	Installed cap (MW)
Bhopalgarh	1	5
Shergarh	2	2
Osiyan	10	30
Phalodi	32	275
Baori	6	131
Bap	52	1094.9
	103	1537.9

Source: Annual Report, RRECL, Government of Rajasthan, 2019.



The above table and graph shows that the Bap tehsil of Jodhpur district in having highest 52 solar plants installed as on 31.04.2017 having capacity of 1094.9 followed by Phalodi tehsil having 32 solar plants of installed capacity 275 MW and Osiyan tehsil having installed capacity of 30 MW.

Conclusion

The ever increasing need put high pressure on non-conventional energy sources and thus non-conventional sources of energy are exhausting at high speed. To meet the energy needs today alternative sources of energy may be best way to reduce pressure on non-



conventional sources of energy. The climatic conditions of western Rajasthan makes the area difficult to live but the area is bestowed with good potential of renewable energy sources. In Jodhpur district of western Rajasthan the installed capacity of solar energy is increasing year by year and government is making constant efforts for development of solar energy sector in the state.

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ETHNOBOTANICAL STUDY OF SOME MEDICINAL PLANTS USED BY RURAL PEOPLE OF NALANDA DISTRICT, BIHAR

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Abstract

The present paper deals with ethno botanical study of some medicinal plants used by rural people. Rural people living in village who traditionally being settled in agriculture, people and vast array of knowledge on the uses of plants. They inherit the knowledge of using plants for the treatment of common diseases prevailed in this area. Local medicine men in their community called ojha or Mahan are expert in this form of treatment. However, present generation of rural people are reluctant to their inherited knowledge and local resources of plants for therapeutic purposes. This warrants urgent documentation of their ethno medicinal knowledge and conservation of the fast depleting plant resources. In this study of survey was carried out to record ethno medicinal knowledge of rural people of Nalanda District in Bihar. This paper reports the uses of twenty medicinal plants commonly used by them.

Keywords: Ethnobotany, Medicinal Plants, Rural, People

Introduction

Ancient India was a treasure house for various alternative medicine systems like ayurveda, unani, siddha all of which were based on preparations and formulations made from various plants. India is so rich in biodiversity that it has been recognized as one of the twelve mega-biodiversity countries of the world. Terai and Brahmaputra valley of the Eastern Himalaya comes under the fringes of biodiversity hotspot. Rural people are traditionally settled agriculturists. They cleared the vast forest area of Brahmaputra basin to make it habitable and ploughable. At the same time their curiosity and love for nature made them aware about the importance of plants. Rural people medicine men, called ojha or mahan, know the use a number of plant species for the preparation of herbal medicines which they use for the treatment of various diseases effectively. However, with the passage of time and development of modern allopathic medicines new generation of rural people are reluctant of their vast natural resources and inherited knowledge. This has resulted in fast disappearance of their rich traditional knowledge system. So there is an urgent need to make an inventory and documentation of their ethno botanical knowledge for the treatment of common diseases.



Methodology

Study area: Nalanda and its adjoining area viz, Shilaw, Pawapuri, Griyak, Nalanda and Biharsharif town.

Collection of data

Household surveys were conducted using questionnaire and interviews with locals to study the ethnobotanical knowledge of this community during 2017-2019. During this process it was found that they possess a vast knowledge on the use of plants for therapeutic uses. Interviewees were grouped into four classes on the basis of their ages (10-20, 20-40, 40-60 and >60 years of age). Local medicine men called ojha or mahan were interviewed to document their expertise. The medicinal uses of the plants for the treatment of common ailments were documented by group discussion also. Information on the seasonal availability of the medicinal plants in the locality and their vernacular names was gathered to collect specimens for the preparation of herbarium sheets.

Result and Discussion

In my survey it was found that both elderly men and women above 60 years of age had more traditional knowledge about the therapeutic uses of local plants than any other age group. This may be attributed by the fact that during their childhood days plants have been used to treat diseases at home in the absence of modern medical facilities.

Table 1: Medicinal plants used by the rural people for common diseases

Sr.No	Scientific name (Family)	Local name	Habit	Parts used	Medicinal Uses
Dicotyledons					
1	<i>Bombaxceiba</i> L. (Bombacaceae)	Shimuli	Tree	Spine,	Spin used like sandal to cure pimples
2	<i>Calotropisprocera</i> (Willd.) DryandxAit. (Asclepiadaceae)	Akanda	Shrub	leaves	Leaf warmed under slow heat and applied to relievearthritic pain and swelling
3	<i>Centellaasiatica</i> L. (Apiaceae)	Bara mani-muni	Herb	Whole plants	Plant Extract is used to cure amoebic dysentery
4	<i>Chorchorusolitorius</i> L. (Tiliaceae)	Pata	Herb	Leaves	Decoction from dried leaves used as blood purifier
5	<i>Clerodendrumindicum</i> (L.) Kuntze (Verbenaceae)	Bhauti	Under-shrub	Leaves	Leaf paste used in diabetes
6	<i>Croton banpladianum</i> Baill. (Euphorbiaceae)	Ban-dakait	Herb	Leaves	Paste used to stop bleeding
7	<i>Jatrophagossypifolia</i> L. (Euphorbiaceae)	Bherenda	Shrub	Latex	Younger stem used as natural toothbrush to cure toothache
8	<i>Leucasaspera</i> (Willd.) Spreng.(Lamiaceae)	Dhulpi	Herb	Young plants, Leaves	Extract of leaves in Gynaecological problem
9	<i>Moringaolifera</i> Lam. (Moringaceae)	Sajina	Tree	Leaves	Whole leaves cooked and eaten in diabetes and



					high blood pressure
10	<i>Psidiumguajava</i> L. (Myrtaceae)	Tam	Tree	Leaves	Paste used to cure toothache
11	<i>Phyllanodiflora</i> (L.) Grene (Verbenaceae)	Ban-okhra	Herb	Leaves	Extract used to cure common cold
12	<i>Phyllanthusniruri</i> L. (Euphorbiaceae)	Ban amlaki	Herb	Leaves	Used in lever diseases
13	<i>Solanumnigrum</i> L. (Solanaceae)	AdhBathua	Herb	Leaves	Leaf paste applied on the forehead to relieve headache
14	<i>Syzigiumcumini</i> L. (Myrtaceae)	Jamun	Tree	Dried seeds	Decoction from ground seeds used to treat diabetes
15	<i>Tabernaemontanadivaricata</i> R.Br. ex	Sadaphul	Shrub	Flower	Extract used to cure ear-ache
16	<i>Tagetespatula</i> L. (Asteraceae)	Gendaphul	Shrub	leaves	Paste used to stop bleeding
17	<i>Vitexnegundo</i> L. (Verbenaceae)	Nishinda	Tree	Leaves	Leaf used as pesticide
18	<i>Colocasialfallax</i> Schott.(Araceae)	Kala kachu	Herb	Leaf with long Petiole	Cooked and eaten in anaemia
19	<i>Costusspeciosus</i> (Koenig) Smith (Zingiberaceae)	Kewa	Herb	Rhizome	Extract used to cure intestinal worms, asthma, bronchitis
20	<i>Curcuma amada</i> Roxb. (Zingiberaceae)	Kachulote	Herb	Rhizome	Used in amoebic dysentery

Of these twenty medicinal plants, all except one were phanerogams. The majority of the phanerogams were dicotyledonous plants while only three were monocotyledons

Plant parts used as medicine by rural people included whole plant, spine, young root, leaves, stem, latex, dried seeds, flowers, rhizome and ripened fruits. Leaves were the most preferable plant parts used to treat various ailments whose mode of application also varied from drinking extract of leaves, applying leaf extract on affected area, applying leaf paste, dry heating with leaves to simply cooking as vegetables. It has been found that they use the rhizome or the whole plant of only six plants. As the process kills the whole plant, this mode of application is detrimental for biodiversity. On the other hand use of aerial plant parts like leaves, flowers, fruits or seed which may not affect the plant body lethally may be regarded as the conservationist nature of this community. Rajbanshis collect some of these plants as weeds from wild habitats as well as from agricultural fields. But it has been found that culturally they cultivate most of the plants in their outskirts of houses as well as a few in agricultural fields. So this indirectly conserves those plants helping in amelioration of biodiversity loss. But recent changes in the mind setup, establishment of allopathic medicine shops in their villages, easy availability of allopathic medicines over the counter without doctor's prescription and socio-economic changes have triggered fast deterioration of these traditional healing practices. Moreover with the increase of population pressure and conversion of land for the purpose of agriculture and residence, rich biodiversity of this area has lost. So the newer generations are not familiar with the plants and their therapeutic applications.



Conclusion

The present study focused on the need of proper documentation of the medicinal plants used by the rural people of Nalanda district for common diseases prevailing at this area. However, present generation are least interested for traditional medicines. Proper documentation and conservation of the plants used by rural people is necessary which should play a great role in ayurveda, homoeopathy and in modern medicine.

Acknowledgement

The author expresses her deep sense of gratitude to the persons of rural people for sharing their inherited knowledge for the present documentation.

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HEALTH STATUS OF WOMEN IN INDIA – AN ANALYTICAL STUDY

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Abstract:

If health is defined 'as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity', it follows that existence is a necessary condition for aspiring for health. Healthy lifestyle and high intake of nutritious food can provide good health throughout the life of the humans. The poor nutrition and unawareness on the utilization of health facilities during their childhood and reproductive age are the major factors responsible for the high maternal mortality. Though government of India has been taking several efforts to improve the health status of women, poverty, gender discrimination and illiteracy are the major obstacles associated with the implementation of appropriate interventions. The present paper focuses on the major factors, which influence the health concerns of the women in India.

Introduction

Women's health concern is influenced by interrelated biological, social, and cultural factors (Figure 1). It is generally expected that women can live longer than men but it does not necessarily ensure a better quality of life. Profound studies reported that women are more sickly and disabled than men throughout the life cycle. It has been suggested that women are particularly vulnerable, where basic maternity care is unavailable. Due to the involvement of biological factors, women are more prone to sexual exposure of contracting sexually transmitted infections (STIs), including the human immunodeficiency virus (HIV) than men. Moreover an early marriage and childbirth could be responsible for prevailing wide variations in the socioeconomic status. Profound studies pointed out the voluntary involvement of the community, paramedical workers, NGOs, Policy makers in various developmental programs for the removal of poverty and to improve the literacy rate among females. Nutrition and health education should be strengthened through the department of Health to improve the nutritional status of mother and child, which are intimately linked. A strong and sustained government commitment is therefore needed to improve women's, health concern.

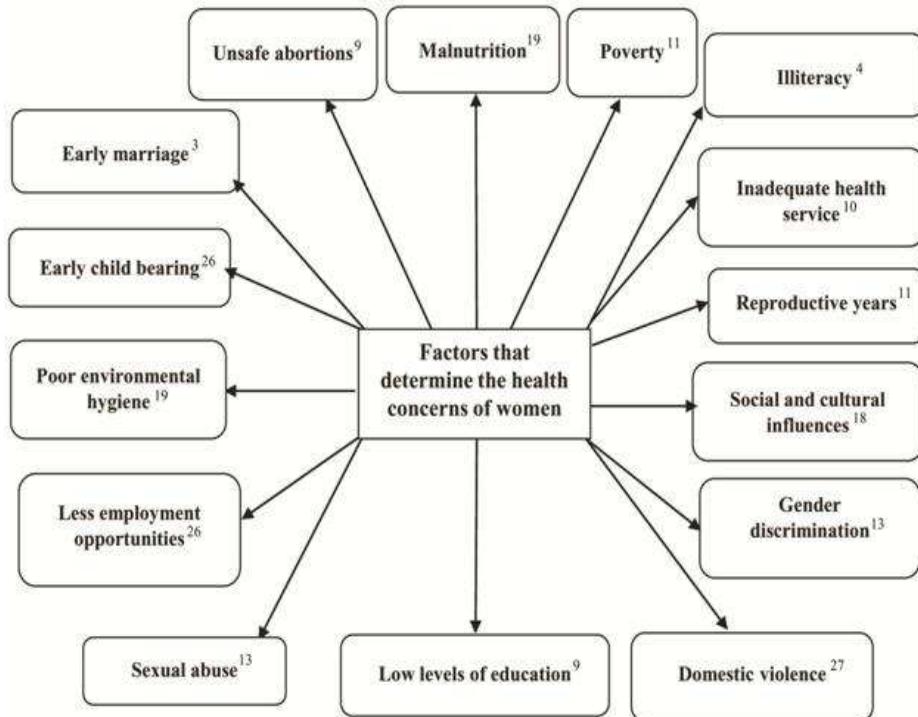


Figure-1: Factors that determine the health concerns of the women.

Objectives

The main objective of the present paper is to focus on the health status of women in India.

Data collection

The present paper to purely based on secondary data. Necessary data is collected from the published and unpublished sources like books, journals, publications and Government reports. Relevant data was also collected from the websites concerned.

Women Health in India

Health is complex and dependent on a host of factors. The dynamic interplay of social and environmental factors have profound and multifaceted implications on health. Women live experiences as gendered beings result in multiple and, significantly, interrelated health needs. But gender identities are played out from various location and



positions like caste and class. The multiple burdens of 'production and reproduction' borne from a position of disadvantage has telling consequences of women's well-being. The present paper on women's health in India systematizes existing evidence on the topic. Different aspects of women's health are *thematically* presented as a matter of presentation. The conditions of women's lives shape their health in more ways than one.

Some indicators on the quality of life in Asian countries, including India have improved over the years such as life expectancy, literacy and infant mortality, while others have remained static or deteriorated such as environmental sanitation and environmental degradation.

Health and nutritional status of Indian women

It has been suggested that the health and nutritional status of Indian women becoming worse due to the prevailing culture and traditional practices in India. Indian women are generally vulnerable to poor nutrition, especially during pregnancy and lactation. It has been pointed out that the impact of nutritional status of the mother is more pervasive than the impact of other factors on birth weight. It has been observed that the dietary intake of rural pregnant women was lower than the recommended level. Usually low weight infants are born to mothers with under nutrition and poor health. The incidence of anemia was found to be highest among lactating women followed by pregnant women and adolescent girls. Epidemiological studies pointed out that worldwide 50 percent of all pregnant women are anaemic, and at least 120 million women in less developed countries are under weight. In South Asia, an estimated 60 percent of women are under weight. Pregnant adolescents, especially who are underweight, are at greater risk of various complications such as obstructed labour and other obstetric complications. Unawareness on health care during pregnancy thus results in negative outcomes for both the mother and the child. Right and proper education to the mothers had a significant influence on their nutritional status and their health. Definite steps should be taken to educate women about the importance of health care for ensuring health pregnancies and safe childbirths.

Gender discrimination

Women's disproportionate poverty, low socio economic status, gender discrimination and reproductive role not only expose them to various diseases, but also their accesses to and use of health services. Domestic violence, rape, and sexual abuse against women affect their productivity, autonomy, quality of life, and physical and mental well being. Men transmit the infectious virus to women fourfold than women are to men. Women also acquire HIV infection when they receive blood transfusions to combat pregnancy-related anaemia or hemorrhage. Sexual abuse during childhood enhances the mental depression and reproductive tract infections in later life, which could often lead to female infertility. Gender discrimination (son preference) along with high dowry costs for their daughters, marriage, often results in the mistreatment of daughters. Bias in education and formal labor force participation as well as leading life under the control



of their fathers, husbands, and sons could exert a negative impact on the health concerns of Indian women. Though worldwide women have increased life expectancy at birth, the systemic problems associated with Indian women's health chances of a typical female advantage. In India, both men and women have the same life expectancy at birth. Financial support, old age security, property inheritance and dowry etc.. Contribute to the preference of sons over daughters. The Indian government has, however taken necessary steps to alleviate the current gender discrimination. Unwanted and illegal pregnancies terminated by unsafe abortions could have negative consequences on women's health. Reducing fertility may often improve the overall health of Indian women. The torture and violence given to women by her husband and mother-in-law could also be a key factor for the negative impact on the health and mental status of Indian women. Children who born to mothers with low level of education suffer from nutritional disorders twice fold than mothers with higher education.

Malnutrition

Malnutrition, deficiencies of calories, protein, vitamins, and minerals and other poor health and social status, affects millions of women and adolescent girls around the world (Figure 2). Malnutrition, a serious health concern, threatens the survival of Indian mothers and their children. Adequate nutrition is thus an essential cornerstone to maintain the health of any individual, especially women. Baby born to malnourished woman faces multiple complications, including cognitive impairments, short stature, lower resistance to infections, and a higher risk of disease and death throughout their lives. Women are more prone to nutritional deficiencies than men due to the fact of women's reproductive biology, low social status, poverty, and lack of education. The two most common nutritional deficiencies in the women worldwide are iron deficiency and around of the Indian pregnant women suffer from iron deficiency anemia's. Nutritional deficiencies, iodine deficiencies and low intake of essential nutrients. This enhances the chances of having a low birth-weight infant, as well as impaired fetal development in pregnant women. Low intake of nutrition during girls' childhood may cause stunted growth, which in turn leads to higher risks of complications during and following childbirth. Mental impairments impede physical development, and harm school performance. Maternal malnutrition often results due to the kind of reproductive cycle, they have and spending more times on household work. Around 450 million women are underweight due to lack of protein diet during their childhood in developing countries. The highest incidence of malnutrition among women. The disorders associated with malnutrition among in women, are is presented in

Figure-2

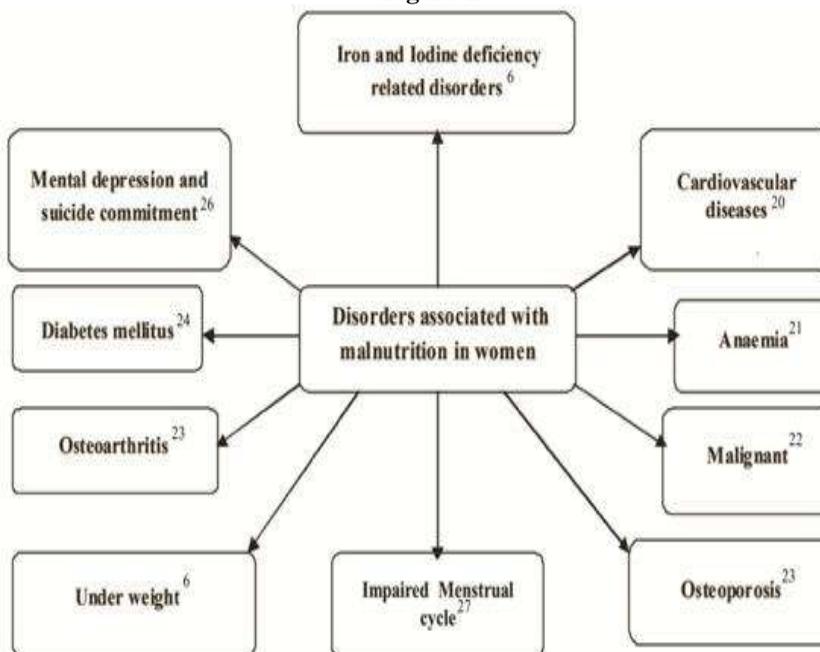


Figure-2: Disorders associated with malnutrition among women

Maternal mortality

Maternal mortality remains stubbornly high in India as compared to many developing nations India has contributed approximately 20% percent of all maternal deaths worldwide between 2006 and 2016 This was due to lower socioeconomic status and cultural constraints as well as limiting access to health care. Maternal mortality is 57 fold higher in Indian women than in the United States. India's maternal mortality ratio is lower than the ratios for Bangladesh and Nepal, while it is higher than those in Pakistan and Sri Lanka. Severe anemia accounts for 20% of all maternal deaths in India. It has been suggested that, higher literacy has greater maternal health as well as lower infant mortality. Cardiovascular disease is the major contributor to increased female mortality in India, which is due to differential access to health care between the sexes.

Moreover, Indian women suffer from mental depression at higher rates than Indian men. More Indian women committed suicide as compared to men, which are directly related to depression, anxiety, gender disadvantage and anguish related to domestic violence. Very strict, strong and sustained laws should be framed by the government to prevent the gender based violence as well as to improve the educational and health status of the women.



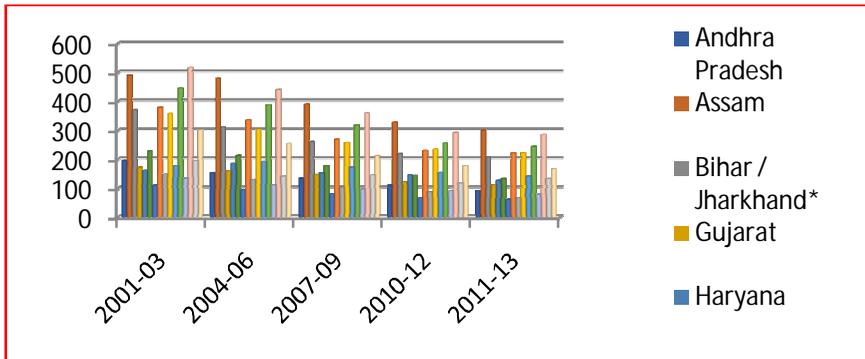
Table: 1

Maternal Mortality Ratio

State/UTs	2001-03	2004-06	2007-09	2010-12	2011-13
Andhra Pradesh	195	154	134	110	92
Assam	490	480	390	328	300
Bihar / Jharkhand*	371	312	261	219	208
Gujarat	172	160	148	122	112
Haryana	162	186	153	146	127
Karnataka	228	213	178	144	133
Kerala	110	95	81	66	61
Madhya Pradesh	379	335	269	230	221
Maharashtra	149	130	104	87	68
Odisha	358	303	258	235	222
Punjab	178	192	172	155	141
Rajasthan	445	388	318	255	244
Tamil Nadu	134	111	97	90	79
Uttar Pradesh / Uttarakhand*	517	440	359	292	285
West Bengal	194	141	145	117	133
India	301	254	212	178	167

Source: Sample Registration System, Office of the Registrar General, India

The Maternal Mortality Ratio has declined from 301 in 2001-2003 to 167 in 2011-2013. Among the major the states Maternal mortality rate is highest in Assam (301) followed by Uttar Pradesh (285) and lowest in Kerala (61) followed by Maharashtra (68)



Conclusion

Good health is a key criterion, which contributes to human wellbeing and economic growth. Adequate nutrition for women would help them to serve as productive members of the society to develop the consequent health generations. The government should take necessary and compulsory policies to improve the literacy rate and quality education as well as to provide adequate employment opportunities for women, which might explore positive impact on the women's health concerns. The government can also improve the health status of women by strengthening and expanding essential health services as well as by frequent counseling awareness on educational and nutritional needs and gender based violence.

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STUDENTS' PERCEPTION OF EXPECTATIONS, ASPIRATIONS, AND DIFFICULTY FACED IN ARCHITECTURAL EDUCATION

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Abstract:

The research paper presents results and analysis from an interview study conducted with 110 fresh B. Arch graduates from three institutes regarding their expectation, aspirations and difficulties they face in their undergraduate architectural education in India. The interviews sought to gain in-depth understanding of their needs, since they are takers of B.Arch. program and later, they will be exposed to a new world and way of thinking, perceiving and taking into cognition the subjects they have learnt and academic stipulations hence it is the responsibility of the educators who formulate the curriculum and syllabus to look into the user's expectations, aspirations and difficulties in learning architecture.

Keywords: Cognition, Perception, Retention, Interest, Skill, Empowerment

Introduction

Profession and education of architecture are at crossroads, *facing irrelevance*, as compared to yesteryears and is rising. It is important to probe into the reasons for such plight to the noble profession, which has always found meaningful and worthy expressions in terms of cultural products that made the habitation of humanity a bliss. In ascetics; *the students of architecture placed at one side*, and the other sides are occupied by statutory institutions of authority and schools of architecture consisting of management and faculty members. Teaching and learning happen in standardised spaces of instruction with mostly built and unbuilt spaces along with inadequate infrastructure and supporting laboratories. Stereotype dominates the design of such spaces regardless of the creative nature of the subjects being taught.

Although, admission to B. Arch program is regulated through common entrance examinations to ensure aptitude, it rarely attains the expected results and homogeneity in the students admitted. The case is worse in institutions of higher education like IITs, NITs, SPAs where the opportunity lies at the second year beginning for the highest-rankers for '*branch change*' that would fetch them in fifth year better campus placements with higher-package jobs or even for higher studies like MBA or research. As a regular student in the first year learns of the opportunities for a better future lies elsewhere, frustration sets-in. With this trend continuing, lack of interest is generally observed in students in the form of absenteeism, irregular submissions, skewed skill acquisition, and even depression. This situation has to be carefully studied and the reasons analyzed for generating appropriate solutions for active learning, retention of



interest, and improvement of perception leads to better cognition and empowerment of the learners so as to enhance the value of the B. Arch Program.

Architecture in the past is connected with producing individual works of art and culture, with the then available time-tested technology and science, mostly at the individual level. The design method was mostly intuitive and relied heavily on the experience, judgment, and talent of the individual designer. Although this approach to architecture resulted in some marvellous achievements of previous generations; today, the profession faces severe challenges of 'global nature' including that of the increasing influence of computers, changing roles of professionals, perils of climate change, falling economy and man-induced calamities that threaten its traditional roles (Salama, 1995). Research in architecture shall be given adequate importance and the *Education Policy 2020* places emphasis on this fact through appropriate verticals. It is time to think whether the authorities responsible for controlling education in architecture are taking appropriate steps to impart knowledge that are useful and enabling, skills that are giving choice and confidence for the students in order to face the changing requirements of a '*being changed*' world.

Although the pedagogical approach prevalent in architectural design gives a better opportunity and all aspects of architectural ideas, including formal aesthetics, building technology, theory, history and practical skills such as drawing or model making are covered; it is time now to get adapted to the rapidly changing needs to retain relevance of the profession. It is vital to find out the learning effectiveness of subjects taught and how it can be maximized by extending its influence through any alternative method. Further, learning to think and production of knowledge are to be emphasised. In this case, the Cognitive approach to learning comes as a '*novel and empowering*' method of learning and empowering the graduates. This study aims to investigate the perceptions, aspirations, and difficulties that learners face in undergraduate architecture education and to explore the appropriateness of the cognitive approach to effective learning and empowering. It is essential to understand which are the skills needed for empowerment of the graduates of B. Arch program; *especially in facing the new world challenges*. Although sketching, colouring, and model making are essential; the contemporary world has higher expectations from the design professionals in computation, modelling, efficiency evaluation, performance evaluation, and the simulation that are using advanced tools of modelling, simulation, and computation. So too, over and above the basic sciences, knowledge, and experience with building physics, services, BIM, project management, and in-depth understanding of modern materials and technology. It would be appropriate to redefine skills as a means to enable and empower the graduates to research further, expressions, and productions in architecture, keeping them relevant and worthy in a world of changing expectations. Therefore, it is vital to have a serious concern over the '*skills and the relevance of skills*' to be acquired.

Architectural Education:

Architecture education, like any other education, conveys, conserves, and transmits the profession, knowledge and a society's values at large. Successful professionals' study their life's work through specialized training which when applied, gives them personal experience and revelation. However, it is sad to note that teachers of professional courses in college and university are rarely prepared enough for performing their roles effectively, especially in the absence of 'mentorship' in teaching. They master disciplinary (domain-based) knowledge through focused undergraduate and graduate studies has given a domain-based separation rather than integration which is dropped in the *Education Policy of 2020 (MoE)*. However, only a few undergo instruction for imparting expertise to novices. It could be seen that the lacunae are overcome through faculty induction programs supported by Council of Architecture (CoA-NIASA), AICTE, and MHRD. Some graduates, mostly qualify and enter the teaching profession with innate skills for interacting with students, speaking publicly, and promoting better learning experiences. Others mature as teachers on the job, while their early struggle affects generations of students who enrol in their classes (Davies, 2006).

It is important to analyse content, process and teaching style in architectural education, if it is to remain relevant. There is a disparity between how architecture is approached in design education and how it is created in real life. Architecture in design education is regarded essentially as a fine art based on the principles of formal composition whereas architecture in built form, created in real life has less emphasis on such a formal design than on functional and structural goals Fig 1. The social implications of architecture have been increasingly emphasized in early nineteenth century, considerably affecting the concept of mass housing and urban design.

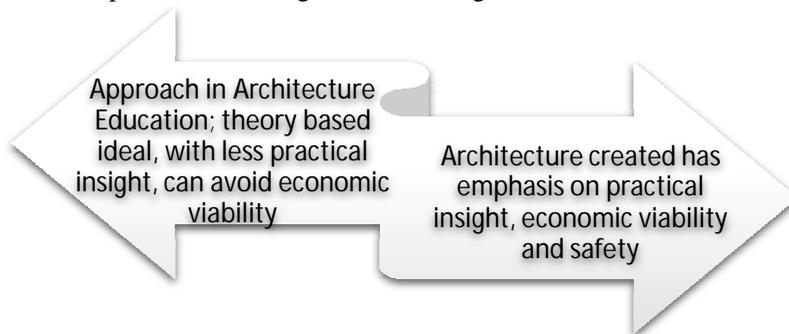


Fig 1: Disparity between Education and Practice (Source: Authors)

Student's perception regarding current scenario

Methodology used is online questionnaire survey of 110 students from three institutes; 30 students from Autonomous public technical and research university having a strong technical background, 40 from state university having strong design background and



other 40 from private university who thoroughly follows Council of India (CoA) guidelines. This study will help to investigate the expectations and aspirations along with the difficulties faced by learners in undergraduate architecture education and exploration towards alternative approach to overcome.

Successful teaching does not happen by accident or chance. It is achieved when the teacher understands current students and expectations of twenty first century; changing trends in teaching learning process, students’ behaviour and adopts an appropriate instruction methodology (Davies, 2006).

Findings

The results of which are summarised as given below:

Students were asked to list their expectations from B. Arch program.

Responses extracted from the students are *Designing ability, Information accrual, highly paid job, reputation, opportunities like other departments of engineering, soft skill development, starting to open their firm, secure future, sufficient open elective, and doing masters from the foreign university.*

Students from three institutes were asked to rate the expectation from the B. Arch program from the following parameters; *parameters like Highly paid jobs, Reputation, learning to design effectively, and innovation with empowerment.*

Table 3: Expectation level on different parameters of B. Arch Program

(Source: Authors)

Sr. No	Students Response regarding expectation when they Joined B. Arch Programme	Autonomous public technical and research university (30 Students)	State University (40 students)	Private University (40 Students)
1	Highly paid job: empowerment	3.2	3	3.2
2	Information accrual	3.3	3.4	3
3	Reputation: empowerment	3.7	3.5	3.5
4	Learning to design effectively: empowerment	3.9	3.8	3.5
5	Branch change: option for other streams	1.4	1.8	1.3
7	Opportunities same as other departments	4.5	2.4	2.4
8	Innovation: empowerment	0.7	3.3	3.8
9	Soft Skill Development	0.47	3.6	3.6

Notes: Each item is measured on a 5-point Likert scale, M scores 3 and above 3 implies expectations which are important; these are of the participants who reported either 4 or 5.

Students were asked if their overall expectation got satisfied over 5 years of B. Arch.

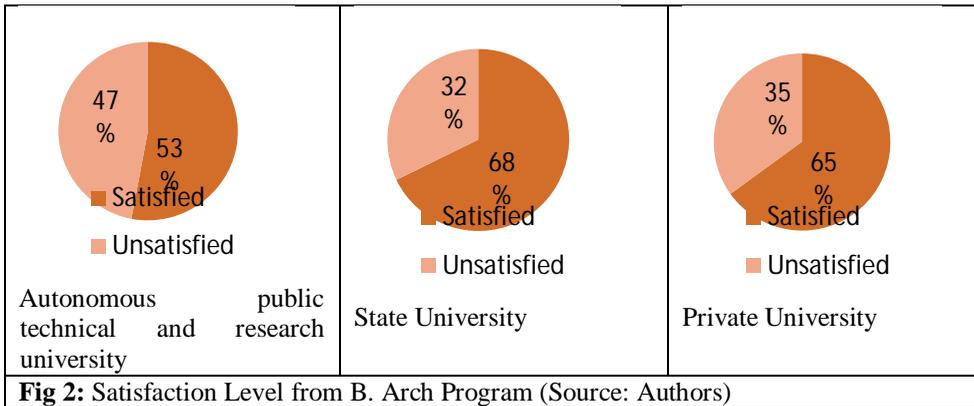


Fig 2: Satisfaction Level from B. Arch Program (Source: Authors)

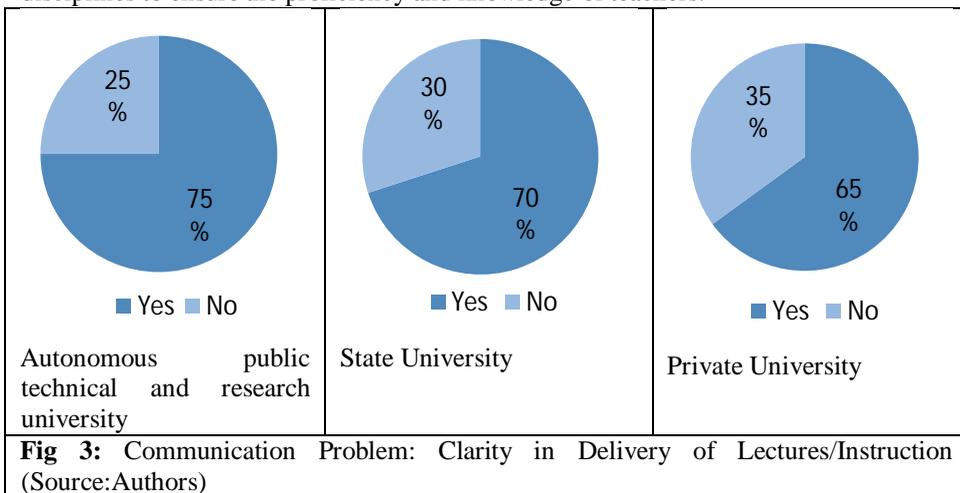
Table 4: Parameters where education got affected (Source: Authors)

Sr. No	Area where education got affected	autonomous public technical and research university (30 Students)	State University (40 students)	Private University (40 Students)
1	Learning about new technology and advancement in architecture	3.5	3.0	3.2
2	Modern tools	2.8	2.2	2
3	Time management	3	2.2	2
4	Global Exposure	2.5	2.1	2.3
5	Practical application of design	2	2.3	2.5
6	Work Pressure (heavy work load)	2.3	2.1	2
7	Influence from other departments in terms of placements and career opportunities	1.5	1.8	1.7

Notes: Each item is measured on a 5-point Likert scale, M scores 3 and above 3 implies students are satisfied; these are of the participants who reported either 4 or 5.

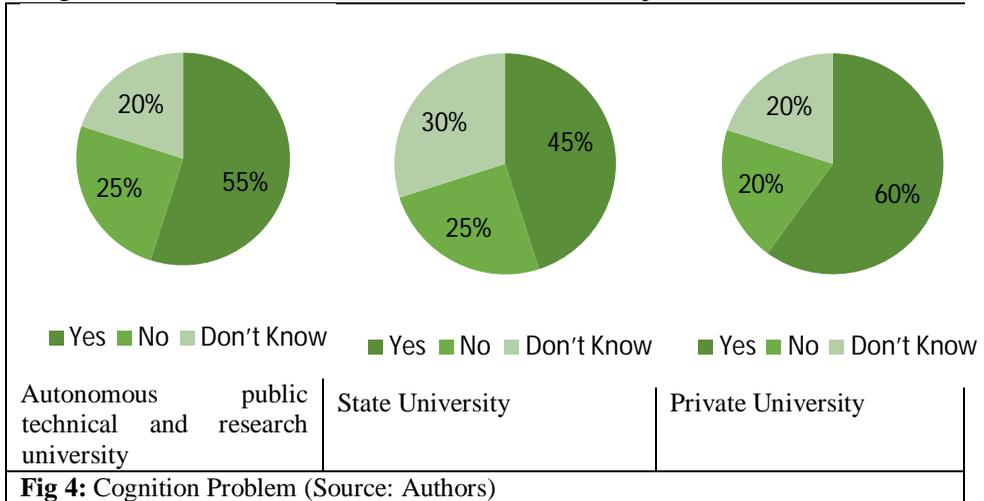
Students think their education got affected in terms of modern tools, time management, and global exposure, practical application of design, heavy workload, and influence from other departments in terms of placements and career opportunities. The field reality shows that unless empowered with necessary skills and knowledge, it will be difficult to design effectively resulting in low-pay packages! It is vital to take cognizance that ‘skill in architecture’ does not refer to drawing or modelling skills alone, but to computational, software, modelling and simulation, project management, parametric design and coding, building physics, economics and predictions and a whole array that will fetch the graduates to fit into a variety of a highly paid job or to have their own start-ups. Further, students have identified ten areas of concern out of which

four concern with ‘empowerment’ that they get during the course period of five years which is the finding and recommendation of Education Policy 2020 (MoE). Interestingly, in an institute offering B. Arch along with other B. Tech courses, which generally get placed with higher packages, the students of architecture are concerned with equal opportunity and pay package as their peers enjoy. Moreover, architecture is a slightly expensive course as believed by many since it involves an independent thesis and five-year duration as against four years in B. Tech courses. However, we must take cognizance of the ground reality that the beneficiaries do not understand the relevance of professional program initially; *B. Arch with integrated training in it*. Therefore, it is contextual and reasonable to restructure the B. Arch program to an integrated six-year program that gives exit possibility at the level I; *after three years of continuous study*, leading to B. Sc In architecture. B. Sc in architecture may be converted to B. Arch with three years of practical experience with a CoA registered professional or academician attached to a university having a Ph.D. in architecture and an Examination conducted by the CoA, to evaluate the students. Further, the program with continuous six years of study and learning with 12 months of independent training and thesis, will lead to M. Arch (Professional) a direct registration with CoA. However, any job in teaching at the university level shall require M. Ach (Professional) with Ph.D. in architecture or allied disciplines to ensure the proficiency and knowledge of teachers.

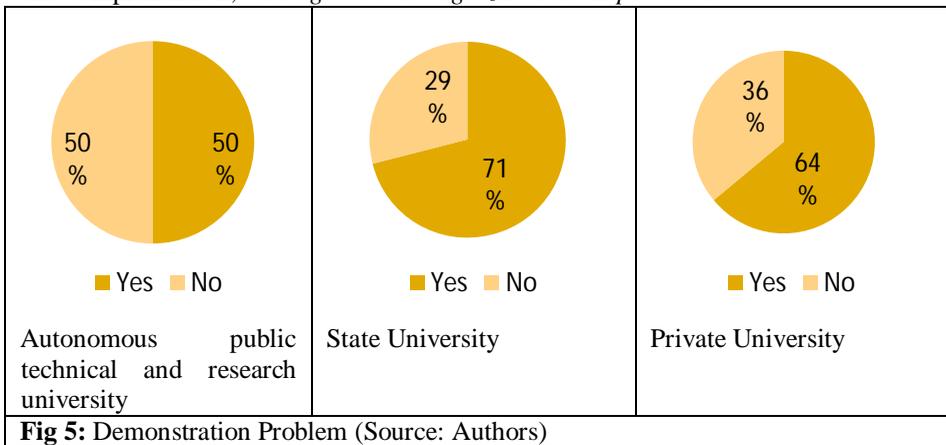


One of the highest problems that students face in classroom is of communication (Fig 3). There is no wonder since the student groups in the mass education system are drawn from a heterogeneous background and exposure, in a mass education system as exists in the contemporary world. It shows an alarming 75% of students experience communication problems in autonomous public technical and Research University, 70% of students experience communication problems in state university and 65% of students experience communication problem in private university in one-way lecturing mode of delivery in classrooms. This indicates the lower level of communicational skills, absence of discourse and interaction that are key parameters. Moreover, how to enhance

participation and discourse by way of tools and spaces of instruction becomes relevant along with skills which establishes the need of ‘skills and spaces with infrastructure’



Another problem facing empowerment in students is ‘lack of cognition’ (Fig 4). Cognition requires the joint effort of all five senses of perception whereas the lecturing mode considers majorly sight and hearing. Perception level and involvement of all perceptory senses in the process of learning has to be increased for better understanding and comprehension; *leading to better cognizance an empowerment.*



Regarding demonstration of key issues in classrooms (Fig. 5), in autonomous public technical and Research University, 50% students feels satisfied, leaving the other 50% unsatisfied not receiving expected level of knowledge and understanding. In State University and Private University percentage of unsatisfied students is 71% and 64%. To offset this problem, design classes often encourage site visits and case studies.

However, the inclusion of such are limited due to the prescribed time limits in semester and the expected outcome in order to justify the spending in management; *especially in state university and private schools* (Fig. 6). This is very serious especially in the wake of the decision by the concerned schools to merge professional training and final year thesis. However, to a great extent the need can be satisfied by the use of virtual reality, and the better perceptory design of learning spaces to generate and sustain attention of the learners.

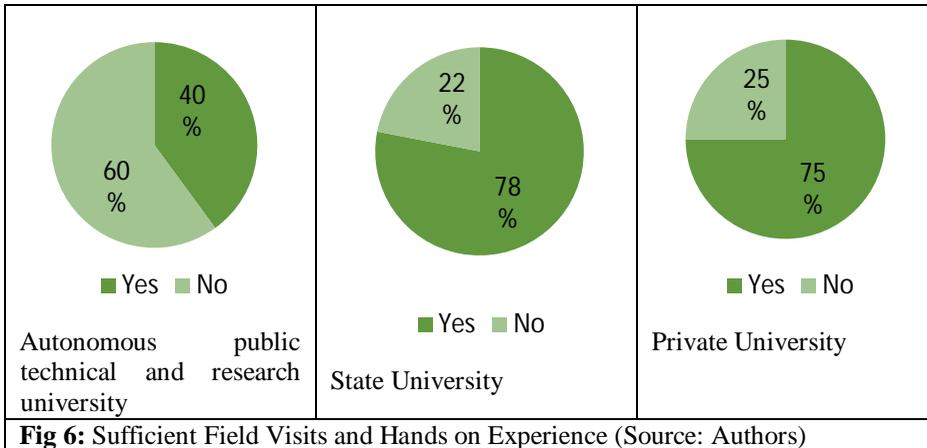


Fig 6: Sufficient Field Visits and Hands on Experience (Source: Authors)

Another important problem the students face is of internship placement. Not many architectural firms are willing to appoint interns since they themselves are facing problems of existence and also the interns do not possess the required level of skills and knowledge so as to be employed profitably. 40% of students from all three architecture schools from Autonomous Public Technical and Research University, State University and Private University face problems of rejection. Reputed Institute solves the problem with the support of alumni, collaborative institutes and professional friends. However, most of the problems can be solved by the use of appropriately designed learning spaces, tools for communication, empowered faculty members, and added influence and moulding strength vested in the seniors. Hence the need of the hour is to create Cognition-based curriculums that evoke interaction and discourse, a set of space definers and standards to invoke and retain interest of learners, which leads to learner empowerment.

Conclusion

There exists a disparity between how the subject of architecture is approached in design education and how architecture is created. Therefore, *it is crucial to analyze content, process, and teaching style in architectural education if it is to remain relevant.*

The Survey and studies done conclude that the expectations of final year B. Arch student (n = 110) are *'learning to design effectively, information accrual, and innovation'* which is essential for empowerment. Students aspire to have their *'own*



firms and highly paid jobs and opportunities as other branches of engineering'. Difficulties they face in B. Arch program lectures and studios are 'communication, demonstration, space, equipment's and infrastructure leading to cognition problems. They prefer practical and field knowledge by emphasizing conceptual understanding rather than drafting a drawing sheet. Even the new Education Policy (India) 2020 (MoE) talks about instilling skills, values, and dispositions that support responsible commitment to human rights, sustainable development, and living, and global well-being, thereby reflecting a truly global citizen, Cognitive learning benefits to increase student perception, retention of interest and information to which they are exposed and later to interpretation and empowerment of the learners. Learning to think effectively and creatively is the result of Empowerment to which the Nation aspires its designers to reach and master. Cognitive learning will enhance creative, critical thinking, and logical decision-making and innovation by instilling Empowerment in the learners of architecture.

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PNEUMATIC HOLLOW SHAFT BENDING DEVICE

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ABSTRACT

In line with the growth in the recent technologies, there are wide opportunities present in the piping sector. As a part of the piping industry the demand of the customer is being changed day by day. The manual pipe bending machines are not able to fulfil the raising demands of the market in quality and quantity as well as in cost perspective. Particularly in this machine, compressed air is used to perform the bending operations. This makes the process or the machine much more efficient over the manual operated bending machine. Radius of the bend can be obtained within the limits of this machine. The machine is very useful for the malleable pipes. The roller of the radius equal to the radius of the pipe is placed at the location suitable to the radius of the bend to be obtained. The horn which is having the radius equal to the radius of the bend is connected to the piston of the pneumatic cylinder. The required force is applied on the horn by the compressed air through the cylinder. The machine is designed to bend a pipe of aluminium and copper type of metallurgical grade.

Keywords: Pneumatic, Shaft Bending, Compressed Air

INTRODUCTION

1.1 Pipe Bending

A pipe bending is a device used for the bending of pipes or tubes for the required angle. Pipe Bending is a metal forming process used to permanently form pipes or tubes. Tube bending may be form-bound or use free form-bending procedures, and it may use heat supported or cold forming procedures. Form bound procedures for bending like “press bending” or “rotary draw bending” are used to form the work piece into the shape of a die. Straight tube can be formed using a bending machine to create a variety of single or multiple bends and to shape the piece into the desired form. These kinds of processes can be used to form complex shapes out of different types of ductile metal tubing. Three-roll-push bending, shapes the work piece kinematically, thus the bending contour is not dependent on the tool geometry.

Generally, round stock is used in tube bending. Rectangular and square tubes and pipes may also be bent to meet job specifications. Some other factors involved in the bending process are the wall thickness, tooling and lubricants needed by the pipe and tube bender to best shape the material, and the different ways the tube may be used.

1.2 Geometry

A tube can be made to bent in multiple directions and angles. Common simple bends consist of forming elbows, which are bends, and U-bends, which are 180° bends. Geometries which are complex includes multiple two-dimensional (2D) bends and three-dimensional (3D) bends. A 2D tube has the openings on the same plane; a 3D has



openings on different planes. Two-plane bend is defined as a compound bend that has a bend in the plan view and a bend in the elevation. When calculating a two-plane bend, one must know the bend angle and rotation (dihedral angle). The side effect of bending the workpiece is its wall thickness changes; the wall along the inner radius of the tube becomes thicker and the outer wall becomes thinner. In order to reduce this the tube may be supported internally and or externally to preserve the cross section. Depending on the wall thickness, bend angle and bending process the inside of the wall may wrinkle.

1.3 Concept

The sole purpose of this project is to understand the fundamental knowledge of design and mechanism by using the simple mechanism property. Prior Manual pipe benders are not only complicated in structure but also difficult to operate. The present innovation relates to a pipe bender, and more particularly to a pipe bender capable of bending different sized pipes. Conventional manual benders are either electrically or hydraulically driven, and needs to be operated by two hands.

Conventional manual pipe benders is a T-shaped structure formed by a longitudinally extending handle and a transversely extending fixing plate fixed on the handle. During usage, the pipe to be bent is pressed against two support members at two ends of the fixing plate, and then the handle is pushed to use a rack in order to push the pipe until it is bent. Is this type of the mechanism, problem is that the distance between the two support members at two ends of the fixing plate is adjusted by eye based on the user's experience, or based on the scale on the fixing plate, so that the adjustment is time consuming. By analyzing the problems of older devices, we have designed a new concept with solving the older problem. To design the machine, many mechanical system and equipment has to be understood. By using all this, the project is faster and easier. We also learn the proper methods of this type of machine and mechanisms. Choosing the component material is very important as it will affect the overall cost of the machine and the quality of the machine.

In this work, development of a pipe bending mechanism in a way that it can bend the malleable tubes with ease also without breakage in the pipe or tube. With the use of pneumatic pressure exerted by the air entering the cylinder the pulley is rotated correspondingly, thus as a result the required bend in a pipe is obtained. Objective of the work is to develop a pneumatic bending machine and to develop a device which create a pipe bend with stability.

PIPE BENDING MACHINE

A pipe bending is a device designed to give a required curved shape to the pipe or tube inserted in desired angle. The machine may be both manually and power operated. The big drawback of power operated machine is that it requires hand also. Fully power operated machine is highly expensive. So, the manually operated is mostly preferred in Indian market. Therefore, our objective is to develop a good quality and fully power operated machine at the minimum prize without affecting the pipe bending



productivity. There are basically four types of the pipe bending mechanism. They are as follows

A. Press Bending

Press bending is the simplest and cheapest method of bending cold pipes and tubes. The tube or pipe is restrained at two eternal points and a ram in the shape of the bend advances on the central axis and deforms the pipe. The bent tube or pipe is prone to deformation on both the inside and outside curvature. The tube or pipe is often deformed into an oval shape depending on the wall thickness of the material. This type of process is used where a consistent cross section of the pipe is not required. This bending is suitable for bending electrical conduit and similar light gauge product.

B. Rotary Draw Bending

This happens to be the most commonly used style of bender for bending pipe and tube where maintaining a good finish and constant diameter is important. Rotary draw benders (RDB) are very precise, that they bend using tooling or "diesets" which have a constant center line radius (CLR). The die set consist of two parts: The bend die creates the shape to which the material will be bent. The pressure die makes the work of pushing the straight material into the bend die while traveling the length of the bend. Positioning index table (IDX) is attached to the bender allowing the operator to reproduce complex bends which can have multiple bends and differing planes. Rotary draw benders are very popular machines for use in bending tube, pipe and solids for applications like: handrails, frames, instrument tubing and much more. Rotary draw benders develop aesthetically pleasing bends when the right tooling is matched to the application.

C. Roll Bending

Three-roll bending is used for producing work pieces with large bending radii. The method is also similar to the ram bending method, but the working cylinder and the two-stationary counter-rollers rotate, thus forming the bend. There are two fixed rollers and one moving roller and the work piece is passed forward and backward through the rollers while gradually moving the working roller closer to the counter rollers which brings about changes in the bend radius of the pipe. This method of bending causes small deformation in the cross section of the pipe and is suited to producing coils of pipe as well as long sweeping bends like those used in powder transfer systems which requires large radii bends.

D. Bending Spring

They are strong but flexible springs inserted into a pipe to support the pipe walls during manual bending. These have diameters only slightly less than the internal diameter of the pipe to be bent. Are typically only used for bending 15-to-25 mm soft copper pipe (used in household plumbing). The spring is made to push into the pipe until its center is roughly where the bend is to be. A length of very flexible wire can be attached to the end of the spring to facilitate its positioning and removal. The pipe is is



usually held against the flexed knee, and the ends of the pipe are pulled up to create the bend. To make it much easier to retrieve the spring from the pipe, it is a better idea to bend the pipe slightly more than required, and then slacken it off a little. They are much easier than rotary benders, but are not suitable for bending short lengths of piping when it is difficult to get the requires leverage on the pipe ends.

METHODOLOGY

In designing of pipe bending machine, a flow chart of methods is to be used to describe it systematically. First a process planning has to be charted out which acts as a guideline to be followed so that, the final model meets the requirement and time could be managed. This determines the efficiency of the project to be done. Regulating and analyzing these steps are very important as each of it has its own criteria to be followed. The Following Components were used in the work. 1. Pulley 2. Square pipe 3. Pneumatic cylinder 4. Solenoid switch 5. Pipes 6. Chain sprocket

4.1 Pulley

The pulley is a solid component which is general used to reduce the fatigue applied on pulling force by diverting the force applied through a perpendicular direction. In this project of a pipe bending machine it is used as a jig for the pipe to fit in so that while it is turned with a high pressure around its degree of motion.

4.2 Square pipe

The square MS (Mild Steel) pipes are used to build the frame of the work, as these pipes have edges and when used they stay rigid and are easier to weld together than a round pipe with no edges. The main reason to make the frame out of the square pipe is that it can be welded easily and machined easily compared to the normal round pipes. Since, the pipes are just the supporting the project we used the low-grade Mild steel pipes.

4.3 Pneumatic cylinder

In order to achieve the process, the pneumatic cylinder is used. when the pipe gets bent through the pressure that is exerted by the compressor used to pump the atmospheric air into the system. The cylinder that is used in this setup can withstand around 5 to 6 bars of pressure in working condition. Blue pneumatic pipes are used as the passage of the compressed air that will be passing from the compressor to the cylinder and from it through the piston cylinder arrangement the pulley which is attached will be rotated as per cranking of the cylinder's cranking of the piston from its cylinder. As the number of the rotation increases the required amount of bending angle could be gained out of it.

4.4 Solenoid Switch

These switches are used in a line circuit where the operation is in one direction and there is no other deviation in the pathway of the air which is being flowing through



the circuit to accomplish the aim of the project. This switch has one inlet and one outlet, from which the air enters and the outlet is let into the atmosphere directly. A lever is attached to it with a spring in it to operate the air flow through the solenoid and allow the air whenever the lever is operated. The lever is pulled when the pipe is placed in the jig made up of a pulley which has a plain square rod welded on to the outer surface of the pulley. This type of solenoid is used because the motion of the air in this system is passed only through one pathway, so using a solenoid is advisable and cost efficient.

4.5 Pneumatic pipes

The pneumatic pipes are the hard surfaced and thick-walled pipes so that there will be no leaks in the pipes even if these pipes are used in a hard manner. Pneumatic pipelines or the tubing are used in a pneumatic apparatus to ensure there will be no leakage and also no breaking. These pipes are hard surfaced but can be bent and used, the light weight of the pipe makes these pipes to be used in this work. Whenever there is a high pressure the normal pipes get removed automatically due to the reverse pressure applied at the part which helps hold the pipe and the outlet of the compressor. Whereas, these pipes withstand as they have a thicker inner wall boundary compared to the other normal pipes.

4.6 Chain sprocket

The Chain sprocket is used as the motion transferring member between the piston cylinder actuation and the pulley that rotates around its own axis. This sprocket converts the reciprocation motion of the piston's connecting rod into a rotating motion on a particular interval given as the piston is actuated. The Piston actuates when the air enters, then the switch is pushed on the DCV. The connecting rod pushes another cross member that is used as a motion transmitting rod between the sprocket and the actuator which is basically a piston cylinder. A chain sprocket is used in order to make it rotated in only one direction and the opposite motion is restricted naturally. The restriction of the motion is because of the bearing ball's motion is arrested in only one direction and the other direction is locked by the design itself.

WORKING PRINCIPLE

The setup is an idea of how a straight pipe can be bent into the required angle, here the project is fixed in a shape that the whole body can withstand the torsion force applied by the pulley and also the pushing force applied by the pneumatic cylinder. The working of this project is based upon an inter-connected stream line process. The working is split into 3 stages. First stage involves the pressure built up and secondly, the piston actuates finally the step wise rotation of the sprocket around its axis.

The air pressure should be built above 3 bar atmospheric pressure and then the air is made to flow inside the pipes. when the air is filled inside the pipes, the device will be ready for bending the pipes. As the pressure is built in the compressor, the air is made to pass into the system by actuating the DCV which is attached in the circuit of the setup. The DCV is actuated by pushing the push button, the gateway opens and the air is

made to pass through the whole system. Now the air enters the system the cylinder gets filled completely and the piston is pushed in the opposite direction of the air entry inside the cylinder.

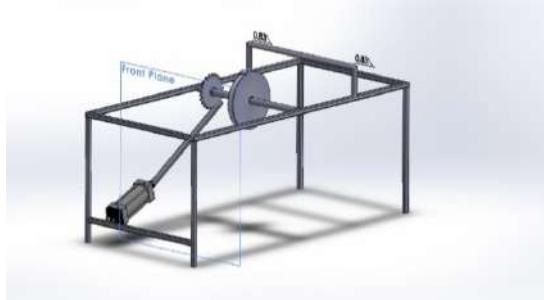


Fig1. Showing the Prototype model of the set up

The connecting rod is attached at the end of the piston, this makes the rod to move in a reciprocating motion which is made to travel through the system by the rods which are welded together in perpendicular in direction. A chain sprocket is welded with the rod whose degree motion is not arrested. The chain sprocket makes the reciprocating motion of the connecting rod into a rotary motion. As the sprocket gets rotated the rope pulley which is connected to it also rotates. Since, the sprocket is connected to the piston cylinder arrangement the motion of the pulley is constrained in one direction and also the pulley rotates in a step rotation. The pulley is made in a way that the pipe can be held in a position without getting deflected from the position. The pulley is the jig which helps hold the rod which is about to bend into the required angle of the demanders.

As the sprocket rotates the rod which is placed in the jig of the setup that holds the rod in a firm position while it operates. The jig is nothing but the pulley with a cross rod welded to the outer surface of the pulley. The rod which is to be bend is to be a thin one and the property of the rod should be in such a way that the rod can be bent in a slight amount of the force because the rod will bend down into the angle required. This project is just an idea of how a rod can be bent to required shapes with the help of pneumatic pressure and the pneumatic system. So that is why we put our idea into a project that could help any small-scale industrialists.

CONCLUSION

This work enables to use the compressed air in an effective way to bend the pipes. The compressed air is pumped for various purposes can be used, which is most economical; the small-scale industries can be benefitted with the idea of the work. If the concept idea is applied in a mass scale the usage of manual bending could be neglected and fatigue on the workers can be reduced. Work load will be reduced and the work rate will be extended in a progressive number. The rods that are made using this method of bending will be crack less and distortion free. As the pipes are in good quality the productivity also increases.



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THE RELEVANCE OF GANDHIAN PHILOSOPHY OF SARVODAYA: AN ANALYTICAL STUDY

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Abstract

Mahatma Gandhi meant Sarvodaya philosophy as synonyms of the good of all and progress of all. The concept of Sarvodaya was first implemented in action in modern India by M.K Gandhi. The word 'Sarvodaya' is comprised of '**Sarva**' meaning all and '**Udaya**' meaning rising that is the welfare of all. Sarvodaya sustains in the survival and development of all. Sarvodaya means an all-around development of all people irrespective of color, class, creed, religion, or caste in society removing the state-dominance and socio-economic evils. To Gandhi, Sarvodaya is not a mere utopian idea but it is a guiding vision that can reconstruct society and individuals. Sarvodaya prevents socio-economic ills in society to freedom for all. He dreamt of a classless society based on truth, non-violence, and justice for all. His idea of Sarvodaya democracy is very relevant to the present political situations also.

Keywords: Sarvodaya, Swaraj, Equality, Justice, Non- Violence, Fraternity, Development.

I. Introduction

The 21st century is the era of globalization. The new economic policy of globalization goes on to make the world a global village. New challenges and problems have emerged before the people. The belief that all emergent problems like social, economic, political, and moral-could be resolved by discoveries and technological innovations persists, features in the past notwithstanding. What is happening today is in line with what M.K Gandhi almost predicted in Hind Swaraj as he prepared its manuscript in 1908. (Parathara, T.J, 2017) Gandhi put forward four main goals before youth for humanity, to move towards its destination. These are Swaraj, Non-violence, Swadeshi, and Sarvodaya. These are the main pillars of the paper that has propounded in the Hind Swaraj. In this paper, an attempt is made to focus on Sarvodaya as one of the pillars to bring Hind Swaraj.

Mahatma Gandhi propounded Sarvodaya as consisting of the development of all. The universal in this distinguishes Gandhi from others such as Utilitarians who proposed happiness to the greatest number. His concept of Sarvodaya brings him close to the concept of Socialism. The main goal of Sarvodaya is to create a moral atmosphere in society through non-violence. To overcome the evils of castism, communalism, economic inequalities, and social divisions, Mahatma Gandhi launched the idea of



Sarvodaya (welfare of all). He dreamt to make a classless society and SarvodayaSamaj in India. Sarvodaya focused on the development of villages destroying socio-economic evils in the Indian Society. (Verma,VP,1980) Gandhi inspired every individual to imbibe the spirit of tolerance, kindness, fearlessness, love, truth, and non-violence to establish a truly democratic society.

II. Objectives of the study

- a) To understand the Gandhian concept of Sarvodaya.
- b) To know the role of Mahatma Gandhi for the Sarvodaya movement to develop all.
- c) To understand the significance of Sarvodaya to solve socio-economic problems in India.

III. The methodology of the study

This research study is observed on secondary data mostly on the books and articles related to Mahatma Gandhi. Gandhiji's writings were very important sources of this study. An attempt has been done to evaluate Gandhian thought about the reformation of Indian society.

IV. Meaning of Sarvodaya

Sarvodaya implies 'Universal Uplift' or 'Progress of All'. The term was first launched by Mohandas Gandhi as the title of his 1908 Gujarati translation of John Ruskin's tract on political economy, "Unto This Last", and Gandhi came to use the term for the ideal of his political philosophy. (Dasgupta, Nitish, 1997) Later Gandhian, like the Indian nonviolence activist VinobaBhave, embraced the term as a name for the social movement in post-independence India which strove to ensure that self-determination and equality reached all strata of India society.

The present world is full of Chaos and confusion because everybody is interested in filling his demand. Man is utterly selfish. Nobody has time to listen to other trouble. The fire of hatred is burning in the world internally but it is not visible outwardly. There is tension all around.

Now the question arises as to what should be the way out of this danger of Chaos and confusion? In the words of Mahatma Gandhi, there is only one way to solve this problem. That is to understand and cultivate the ideals of Sarvodaya philosophy. In other words, the happiness of human life lies in the application of Sarvodaya ideals. (Parathara, 2017)

V. History of Sarvodaya

The seed of Sarvodaya can be found in the ancient civilization of the world. Because from the very beginning of the civilization man has given prime importance to his well-



being. The Rishis and Maharishis of the past preached the well being of all. They preached that if anybody wanted to make himself happy, he should think about the happiness of others first.

Although the concept, Sarvodaya was used for the first time by a Jaina thinker, SamantBhadra. But its meaning was not very clear at that time. But Mahatma Gandhi, the father of our nation, gave a concrete form to this Sarvodaya Movement. He is the real architect of the Sarvodaya movement in India. "It is an extension of the work that Gandhi was himself doing in India, a work which was halted by his assassination" (Narayan, J.P.,1059).

The word Sarvodaya is Sanskrit in origin. It is a compound of two words "Sarva" which means "all " and "Udaya" means "Welfare" or "upliftment". Thus the etymological meaning of Sarvodaya is the welfare of all. In the words of Gandhi, "the welfare of all should be the aim of all human activities" (Mathai, M.P.,2000) It is the welfare not only of men but also of animals and even of the natural world. "In Sarvodaya society, there is no scope for exploitation, discrimination, inequality, and violence. It seeks the realization of a self-sufficient social order that would put an end to economic and political dependence". (Mashani, R, P, 1957)

VI. Aim of Gandhian Sarvodaya

The aim of "Sarvodaya" is not to establish a new version of the state. It aims at the establishment of a society where there will be no domination of one class by another class. The class oppression must stop, and along with it should go to the government rule. Gandhiji did not favor the establishment of equality with the help of state machinery. On the other hand, he relied on the moral consciousness of the people for the ushering in of a society where there is no economic inequality. He proposed that India's social and economic problems are many have faced but thought, the doctrine of Sarvodaya, India can solve her various problems through a Sarvodaya Society. (Sharma, B.S,1960)

Gandhi's Sarvodaya aimed at an all-round development or welfare of man as a whole. This all-round development or welfare includes man's social, political, economic, spiritual, etc. It was really with this idea of Sarvodaya in view, that Gandhi fought for the freedom of the Indian people. It is considered as "an unparalleled endeavor of men for the generation of human society." (Harijan)

The Sarvodaya is not an imaginary concept. It is not a mere imperial idea of Gandhiji about the solution to India's manifold problems. On the other hand, it is a great effort to revolutionize the country's thoughts and recognize the forces of love, co-operation, and non-violence as the basis of life. It is not an end in itself. It is rather the means to bring about a radical change in the whole social economic and political outlook of the Indian people. His ideas of Sarvodaya can only succeed if the people of our country are sincerely willing to uproot all social animals. The people should



understand the wrong of their social order and to right in the same in a righteous path. (Shanvan, Jaizadiswar,1941)

VII. Sources of Sarvodaya

The following sources, helped Gandhi to develop his concept of Sarvodaya. These were Ruskin's book, 'Unto This Last', Tolstoy's „the kingdom of God is within you“, Thoreau's Civil Disobedience, the Bhagavad Gita, Isavesyopanisad, Buddhism, Jainism, and Islam.

1) **Ruskin's Unto This Last:** Gandhi was very much influenced by John Ruskin and his book, 'Unto This Last'. When he was traveling from Johannesburg to Durban, during his journey he began to read the book. He did not stop until he completed it. It inspired him very much. His deepest convictions reflected in this great book of Ruskin and it transformed his whole life. From May to July 1908 Gandhi published a series of articles on the message of John Ruskin. He entitled his articles Sarvodaya. Gandhi called one of the chapters of his autobiography „The Magic Spell of Book, “wherein he describes the impacts of Ruskin's Unto This Last. The central teachings of Unto This Last according to Gandhi are: 1) That the good of the individual is contained in the good of all. 2) That a lawyer's work has the same value as the barbers in as much as all have the same right of earning their livelihood from their work. 3) That life of labor, i.e. the life of the tiller of the soil and the handicraftsman is a life worth living. These ideas impressed him very much and he at once determined to change his view of life with the ideals embodied in “Unto This Last”.

2) **Leo Tolstoy's 'Kingdom of God is within you':** Gandhi was greatly influenced by Leo Tolstoy through his book “The Kingdom of God is within you” and his essay on “Christianity and Patriotism”. Tolstoy's simplicity of life and purity of purpose influenced Gandhiji very much. Both Tolstoy and Gandhi respected the instrument of love to solve all problems in their lives. In the Kingdom of God is within you Tolstoy has given great emphasis on the truth, love, and non-violence. Gandhi firmly believed that these virtues can establish peace on earth and goodwill among mankind.

3) **Thoreau's Civil Disobedience:** Gandhi heard an echo of his thought in Thoreau. He was the well known American anarchist who refused to pay his taxes as a protest against slavery in America. He gave more importance to man. According to him, no society can progress on a denial of individual freedom. This idea is expressed in his revolutionary essay on “Civil Disobedience”. It was greatly influenced by Mahatma Gandhi. Gandhi liked the classical statement of Thoreau that „That government is best which governs the least“. This thought-provoking statement furnished Gandhi and he molded his political ideas.

4) **The Bhagavad Gita:** Gandhi drew his primary strength and inspiration from Sarvodaya ideal from the Bhagavad Gita. To Gandhi, the Gita is the Eternal Mother. According to him, the theme of the Gita is self – realization. It teaches the secret of non



– violence. The sole aim of Gita is to establish Dharma (religion). It wants to bring prosperity and peace to all, it also highlights the importance of all selfless service for the promotion of the welfare of the whole creation. In short, Gita preaches the message of the Sarvodaya.

5) **Isavasyopanisad:** The first verse of the Isavasyopanisad focuses on the ideology of Sarvodaya. The first part of the verse contains the principles of equality and fraternity. And the second part conveys the idea of renunciation, non- exploitation, and service to society. In short, the Isavasyopanisad preaches the philosophy of equality and fraternity, which are the core principles of Sarvodaya.

6) **Buddhism and Jainism:** Gandhiji was highly influenced and deeply impressed by the Buddhist philosophy which preached universal love and non-violence. According to Goutam Buddha, the whole world is an organism. Hence it is the duty of every one of us to share our fellow beings. Lord Buddha spent his whole life to redeeming the grief of the people. Jainism also teaches the essentials of Sarvodaya. The welfare of all is the cornerstone of the Jain Philosophy. It teaches non-violence not only to human beings but also to non-human beings.

7) **Islamic Contribution to Sarvodaya-** The term ‘ Islam’ means peace. It is a religion of peace and brotherhood. The prophet Mohammad laid the foundation of brotherhood and equality. All these aspects influenced Gandhi to form the Sarvodaya movement to help the weakest.

8) **Christian Contribution to Sarvodaya-** Jesus Christ’s personal life and his sublime message, his spirit of self-sacrifice, love and service for the neighbor, etc have become the cornerstone of Gandhian Sarvodaya Philosophy.

VIII. Characteristics of Sarvodaya

The word Sarvodaya itself presents that its aim is welfare or upliftment or prosperity of all. The characteristics of Sarvodaya are the following: i) Sarvodaya aims for universal good. ii) In Sarvodaya there is no barrier between man and man. iii) The basis of Sarvodaya is that everybody should be respected and given due share. iv) Truth, non-violence, self- sacrifice, and spiritual tolerance are the main pillars of Sarvodaya. v) Sarvodaya adopts Satyagraha as the sole weapon of social change. vi) Freedom, justice, equality, peace, love, and fraternities are the part and parcel of Sarvodaya.

IX. Virtues of Sarvodaya Workers

In the words of Mahatma Gandhi, the Sarvodaya workers must learn the art of self-control and self-suffering. Because these two are the armor for them. Their function should be to build the nation. Sarvodayaite must inculcate the habit of humility and have firm faith in the removal of untouchability and God. They should give up all drinks, drugs, intoxicants, and such other things. They should cultivate moral virtues like Truth,



Non- violence, Non – stealing, non – possession, Brahmacharya, etc. Above all they should have a Firm Faith in the Goodness of men.

The social order of Sarvodaya

“Sarvodaya may well be regarded as India’s distinctive contribution to social philosophy” (Sarvoday, M.K. Gandhi). The Sarvodaya social order, therefore, emphasizes equality at all levels. As an offshoot of his Advaitic faith Gandhi’s concept of equality is fundamentally different from the conventional idea of equality prevalent in mainstream political thought. Gandhi proposed structural measures to prevent the possibility of stratification, segregation, or exploitation of any kind in the social organization of his vision. Inspired by the vision of a grand millennium and living in an atmosphere of renewed consciousness which will constantly be strengthened by an inbuilt system of moral checks and balances, everyone under such a social rule will hold his talents and wealth in trust and use them for the good of all, especially of the neediest and the downtrodden in society. Thus the social groups will be free from evils and will create environments most conducive to the total development of all its members and the fulfillment of the top purpose of self–realization.

The economic order of Sarvodaya

Gandhi rejected the idea prevalent in the modern economic thought that economics is an autonomous activity operating according to independent principles and laws derived from its organization. So he wanted economic life and laws to be based on the values that are inherent in the quest for self-realization and insisted on integrating economics and ethics. In other words, he envisaged the ethical order of the economic life of man by replacing the values of competitions, exploitation, and domination underlying the existing economic system by non- violence, cooperation, and self-reliance. Based on these moral values Gandhian Economic organization highlights limitations of wants simplicity, self-sufficiency, de-centralized and need-based production, and distribution. (Bose, N.K, 1994) Gandhi visualized a network of such self-sufficient and autonomous communities reaching out to creative independence. Educational order of Sarvodaya in the educational order, the emphasis that Gandhi laid on the aspect of the transformation of the individual and his total liberation. The very definition that Gandhi accepted for education is that education is the drawing out of the best from the individual. Gandhi understood education as a process that would prepare the education for the final goal of life. His basic education scheme had been generally applauded as the best program for developing all the three dimensions of the human personality in an integrated manner. (Harijan)

X. Sarvodaya Movement

M.K.Gandhi's ideas have lasted well beyond the achievement of one of his chief projects, Indian independence (Swaraj). His followers in India (notably, VinobaBhave and JP) continued working to promote the kind of society that he envisioned, and their



efforts have come to be known as the Sarvodaya Movement. Anima Bose has referred to the movement's philosophy as "a fuller and richer concept of people's democracy than any we have yet known." Sarvodaya workers associated with Vinoba Bhave, J.P. Narayan, Dada Dharmadhikari, Dharendra Mazumdar, Shankarrao Deo, K. G. Mashruwala undertook various projects aimed at encouraging popular self-organization during the 1950s and 1960s, including Bhoodan and Gramdan Movements. Many groups inclined from these networks continue to function locally in India today. (Rathi, Dr.Suvangi)

XI. Conclusion

We can conclude that Sarvodaya principles are not practicable. Though the ideals of Sarvodaya will be noble. Nobody can find fault with them, in the actual world. They will be found wanting. It will be almost impossible to establish a society strictly based on great principles by Mahatma Gandhi and others. Sarvodaya doctrines are soaring and it is doubtful whether they can rest on the earth. The poor performance of Panchayat Raj in India bears testimony to the backward condition in which people are. In a highly competitive world, one country can not succeed in having Gramraj. (Rathi, Subhangi.)

In the 21st Century, the philosophy of Sarvodaya will be very important due to the complexity of human behavior. It is perhaps the only way to answer the problems of unemployment, unequal distribution of wealth, growing corruption in public life, etc. It is a searchlight for us which shows the right way through which we can reach our goals, namely freedom, peace, and national harmony. (Parathara, 2017) According to Gandhiji, there is no God higher than Truth. Truth is to develop all through non-violent means like Sarvodaya means. Dada Dharmakari said, " Sarvodaya is a concept with a wider meaning since it conceives of assimilation of all". (Dharmadhikary, 1984). In short, Sarvodaya is a Gandhian Philosophy that provides checks against the imperfections of the human mind and soul to re-construct society based on truth, non-violence, and co-operation. On the other hand, the Gandhian Sarvodaya concept was a great effort to revolutionize the country's thought and recognized the forces of love and co-operation as the basis of life. It was not an end in itself. It was rather the means to bring about a radical change in the whole social, economic, and political outlook of the Indian people. Dr.Etanly Jones in his "Mahatma Gandhi: An interpretation introduced the idea of the Sarvodaya Movement in the following words: "The Movement will have no organization, it will be a spiritual fraternity....Simple acceptance of the Gandhian principals of truth and non-violence will automatically make him a member". (Ghoshal, A.K.,1959).

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HISTORY OF COMMUNIST-LED PEASANT MOVEMENT IN BIRBHUM DISTRICT (1930-1950 AD)

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Abstract

The peasant and tribal movements were seen as the primary protest of the British Empire in Bengal in the early days. British imperialist policies created a class of indigenous beneficiaries, known as zamindars, Jathedar's and mahazans in rural society. They gradually became the pillars of the exploitation and oppression of the rural peasant class as a pillar of the British government exploitation policy. From the pre-independence period to the abolition of the zamindari system, the peasant class of Bengal seen to protest and resist against their exploitation and oppression. In the history of Birbhum district, between the 1930ad to1950ad we saw some protestant peasant movements which were characteristically area-based or disrupted, but their significance was not reduced to any part in the history of peasant agitation in Bengal. The peasant movement of the colonial period is what the traditional historians have written about various peasant movements from the Sannyasi-Fakir Rebellion to the Tebhaga Movement. Apart from that, very little is known about the area-based peasant movement and peasant politics in Bengal. Whenever the peasants started revolts or took part in national revolts and movements (political or social), historians took note of them and considered their activities with historical significance. But there is no chance to write the history of this region in the thrilling conditions of the revolutionary peasant war. Although a large number of peasants took refuge in struggles against their exploiters, most of the time these struggles are short-lived, scattered that history discussed here.

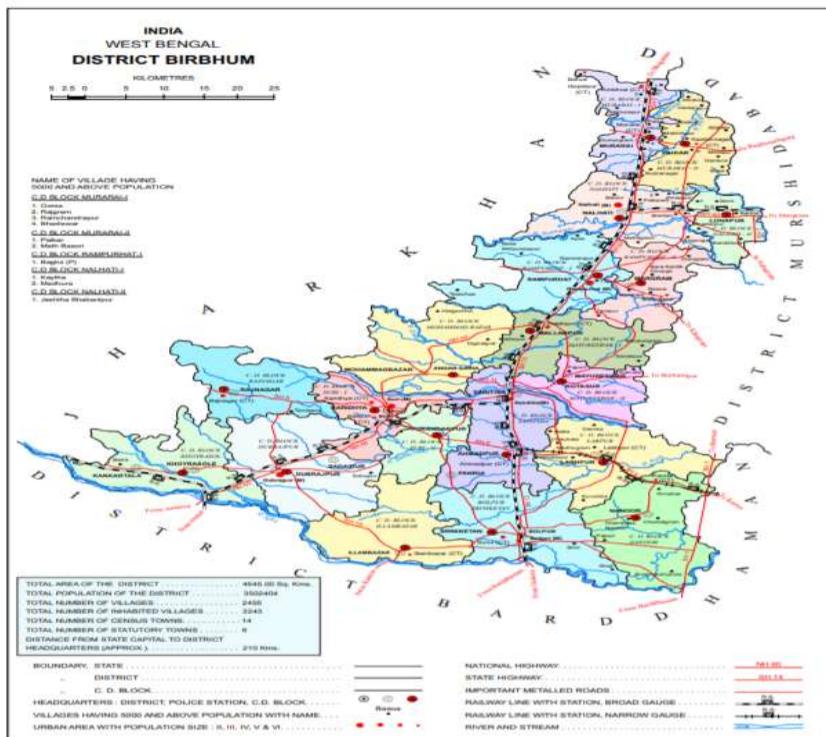
Key words:Jotdar, Mahajan, Derrbari, Floud Commission, Nationalist,Oppression, Gomosta, Nayab

Introduction

Before the British rule in Bengal, farmers were the owners of the land. Until the Mughal rule, they used to pay one third, or sometimes even less to the state through landlords or local rulers [1]. As a result of the practice of perpetual settlement under British rule, the peasants lost ownership of the land. The zamindars paid the British tax according to the quantity and fertility of the land. The zamindars had nothing to do with crop production. During this time as a middle class called Jotdar emerged between the zamindars and the peasants. They lease the land from the landlord through the practice of pottoni or ijaradari system [2]. This cultivator class used to supervise the cultivation of the peasants and to collect the rent. Farmers had to bear the full cost of producing the crop, but since they did not own the land, they had to pay half of the produce produced for the crime. Land holding and zamindari practices allow small farmers to exploit. Landowners use them as slaves to collect tax. Instead of producing crops, the farmer was forced to pay tax with money. As a result, farmers were forced to take loans from

rural Mahajan's [3]. With the passing away of the once prosperous Bengal peasants became a field laborer. This exploitation of landlords and landowners - oppression gave rise to protests in the peasantry. Organizing this protest, the 'All India Farmers' Association' was formed in 1936ad. In 1940ad FazlulHuq proposed the 'Floud Commission'(Land Revenue Commission) to reform the land system of Bengal at the initiative of the cabinet [4]. The recommendation of the Commission was to abolish the zamindari system and direct the peasants directly to the government and to give ownership of three-thirds of the crops they produce. Farmers' societies were united for the movement to implement this recommendation. Its outward appearance can be seen in various districts of Bengal as well as in Birbhum district.

Birbhum District:Birbhum, 23 ° 32 '30 "is located just above the tropical line and 24 ° 35' 0" north latitude and 87 ° 5 '25 "and 88 ° 1' 40" east longitude, and measures approximately 4,545 sq. km (1,755 sq. mi) a Triangular district [5]. The Ajay River forms the boundary between Birbhum and Burdwan districts. Jharkhand State forms the border on the north and the west and Murshidabad lies in the east. Saddar city of Birbhum is suri, although Rajnagar, Dabraipur, Rampurhat, bolpur, illambazr, Nanur, Lavpur, sinthia, Murarui, Mallapur, Nalhati are notable places[6].





WW. Hunter made the first sincere attempt to write the history of Birbhum district, his work called "The Annals of Rural Bengal" 1868 AD [7]. However, a statistical account of contemporary Bengal gives details of the geographical description, population, the people and their situation, such as agriculture, commerce, revenue and administration of the district which were published continuously by the Government of India's Statistical Department from 1875-77AD. Birbhum District Gazetteer by L.S. O'Malley is an important document of Birbhum district, published in 1910 from Kolkata. This is a book by Ashok Sen, Perth Chatterjee and Sougata Mukherjee" Three studies on the Agrarian Structure in Bengal 1850-1947 "deals with the agricultural structure of Bengal was published from Calcutta in 1982ad, where a comprehensive brushless version of the evolution of Bengal's agricultural economy was found [8]. Here they analyze the relationship between the peasants, landlords and the colonial state. Sirajul Islam, in his book "Bengal Land Tenor" (Calcutta, 1988), addresses the complex problem of the mediator settlement system in nineteenth-century Bengal. Some other works are "Peasant Movement of Bengal" (Calcutta 1975), Sunil Sen's Peasant Movements in India: Nineteenth and Twentieth Centuries (Calcutta, 1982), Peasant Movements in Bengal and Bihar (Calcutta, 1992) by Dipankar Bhattacharya where a history of peasant movements of Bengal can be found.

Peasant movements: Birbhum district was a major agricultural district, about 81% of the total population of Birbhum was dependent on agriculture. Until the start of the Mourakhi kannel project in the 1956 ad, only 72% of the land was cultivated [9]. Since Birbhum was traditionally a district of zamindars, the number of small zamindars was increased over the time and increasing exploitation and oppression. "according to the returns for 1908-09 there are 1058 estates on the revenue rolls of Birbhum, of which 1052 are permanently settled, one is temporary, settled and 5 are held directly by the Government" (O'Malley, L.S.S., Bengal District Gazetteer. Birbhum. The Bengal Secretariat Book Depot, Calcutta, 1910[10]. On the day of the plight of the peasant community, local newspapers and nationalist organizations came forward. At this time, the Congress sequence was strengthening as a national party and Mahatma Gandhi's return added a new dimension to the peasant movement. The non-cooperation movement and civil disobedience movement also had an impact on the peasant movement in Birbhum. The anti-union board tax movement and anti-settlement Operation movement that started in Birbhum district from 1221 AD [11] but the role of the District National Congress is not seen in the beginning of this time No district Congress leader came forward to support the peasantry except for the only Jitendralal Banerjee after he was arrested the movement became progressively slower[12]. Though the problems of farmers continue to increase, the role of the District Congress of Birbhum is not as favorable for peasant so the role of the Communist League will add a new dimension to the peasant and labor movement. At the beginning who have joined the communist league to protecting exploited and oppressed people, most of them were nationalist revolutionaries who had returned from British prisons. Many of them were associated with the Jugantar or Anusilon Samiti. In this connection, the names of Prabhat Kumar Ghosh, Dwarrick Banerjee, Klipada Vasishta, Suren Banerjee are worthy of mention [13]. But the man like Sudhir Kumar Roy of the village of Nagari (near Suri)



who came out of the Congress and joined the movement. They associated themselves with two groups, one was C.L.I and the other was C.P.I. [14] The role of the two groups with the peasant movement of Birbhum at this time was important because their purpose was the same," Assist farmers and solve problems". The activities of the Communist League in this phase can be classified into three main classes.....

1. To educate the poor farmers politically.
2. Organize a prayer to the concerned authorities to resolve the complaints of farmers.
3. Organize agitation against exploitation and extortion.[15]

In the first phase of the Communist League, Soumyendranath Tagore's name was a pioneer. After the formation of the C.L.I in 1934ad, Soumyendranath Tagore concentrated on bringing together the peasant and the working class. Under his leadership C.L.I sought to abolish the zamindari system. Soumendranath believed that landlords must be destroyed to protect the peasants. A contemporary Intelligence Branch report states that Khairasol, Dubrajpur, Murarai police stations were under CLI, which also affected Bollpur and Labpur police stations. "Birbhum District Kisan Organizing Committee" established in 1934 ad led by PannalalDasgupta.[16] On April 9,1938ad the CLI organized a district conference of their organization in Dubrajpur. 10,000 farmers participated in the conference chaired by Soumendranath Tagore. The message of Subhas Chandra Bose, Prof. NG Range, SwamiSahajanand was read out at this conference. Proposals regarding the problems of farmers were adopted. Poet Mohiuddin spoke at the urging to renounce communalism. BipinGanguli presented a welcome speech on behalf of the Birbhum District Congress Committee [17]. Soumendranath Tagore discusses the true picture of the peasants of Bengal and the economic condition of India. According to him – “not only the landlords and the great people suck your blood, the government is doing the same”. [18] The demands raised at this conference were as follows.

1. Establish a “Debt Settlement Board” with selected members from farmers.
2. have to close to collect land revenue during the period of drought by a zamindar.
3. Abolition of paddy-loan system (Derbari system)

In the same year, a farmer's conference was held on 22-26 April at LangalHata in Labpur by c.p.i, where the district congress leaders like Dr.Sharat Mukherjee, Kamdakinkar Mukherjee, MihirlalChattopdhyae etc were present at the meeting. After this, the farmers' conference was held at Nanur1939, Mallarpur 1940, Chadpur 1942, Rajnagar 1944, Deriyapur 1945, Ahmedpur 1946, respectively. The following movements developed during this phase.

[1] The movement against the dreaded paddy lending system (Derbari) began in Khirsola in 1938ad. It was a loan system during the sowing period where the farmer had to pay the loan after deducting the rice at 150 percent interest. Against this extra interest the Communist League began a movement. First, the movement started under the leadership of NakriBaghdi and SantiSoren.[19] After this, Soumendranath Tagore



organized a Farmer Meeting in Darpathila on July 1938, chaired by Manmathanathdey. The movement against the non-taxation of the zamindars started. At this time, Sarkar filed a criminal case under section 107 and took punitive action against the leaders of the League, like Pannaladasgupta, ManmanathDey, SurendranathBandyopadhyay, etc. [20] In April 1939, a large farmers conference of CLI was held in Khairsole where Soumendranath Tagore, GopikabilasSengupta and GopalDube spoke. About a thousand people attended the conference, chaired by SudhirDasgupta. After the conference, peasants in the area were pressing for the abolition of the Derrbari system by the Jathedar's and the Mahajan.[21] The District Magistrate of Birbhum directed the officers of the cooperative societies to provide short term loans to the needy farmers so that they could not borrow paddy loans under the Derrbari system.

[2] In the first half of the 1940s, under the leadership of the Communist League, an anti-zamindar movement took place in the Loba-Bhamra area of Dubrajpur. The landlord of this area was Shurid Kumar Dev, a missing landlord who lived in Kolkata. Under this condition, SomibhushanChakraborty and NaebPramthanathGanguly were exploiting the farmers.[22] On this march, Sachin Kumar Sarkar, president of the Communist League activist SaurindranarayanSen and the Loba Union Farmers' Committee, organized a mass petition and demanded a remedy from the zamindars. When the Birbhum District Magistrate intervened in it, the zamindar accepted all the demands of the farmers, so the movement became stable.

[3] In 1942ad, the peasant movement organized in Bollpur to reduce the price of rice by force and forcibly take up the rice, that gradually spread to the whole district, which continued till 1944ad. at this time the Communist leaders, such as the Chandisarkar, Shakti Roy and the peace government, brought together the peasants. They demanded - to set the price of rice at 2 paise per seer. 400 car drivers who were exported rice that time they joined the movement and take swear to do not export rice at Balpur High School. [23]The slogan developed, "A man will not go to war nor give a single penny" "I will keep the paddy in the village" "I will die but I will not give the rice." [24] At this time the Communist League divided the district into several regions and appointed 10 workers for each region whose task was to create public awareness so that the government could not buy paddy from them. In this situation, the government arrested many leaders of the Communist League, like DurgaBandyopadhyay and SaurandranathSen, as a result, the movement gradually slows down.

[4] After two years of independence, Damara a village near Gonpur, a large peasant uprising took place here in 1949ad against Zamindars and Mahajans.[25] This movement was led by leftist leaders DhariniRai, Deben Rai, Surindra Banerjee, Turk Hasda and others. mainly it was a strike movement against landlords and Mahajan's. The landlord and the Mahajan were united on this contention. On 24 June1949, the landlord SarojGhosal made a false diary of robbery, physical abuse, and unlawful charges against DeveenRai, Surindra Mukherjee, including others.[26] Based on this allegation, the police arrested Roohi Das, DukhuLett, GolabLett and BaulLett from Damara on June 25. On the same day, they arrested Deben Rai, Saroj Kumar Hajra,



Surindra Mukherjee, in a raid at the Turk Hassad's house at NeemPahari. Police arrested the protesters and broke Devein Rai's leg As news of police brutality spread around, thousands of peasants gathered to protest with the arrow bow demanding their release by the leadership of Turkahasda. The police barricaded them and fired 31 rounds bullet In this, DasuMajhi, KuddanMajhi, habal, Late ManikLett died, many people were critically injured, MuktiLett was injured and died at Bengoria Hospital. Finally, under the supervision of District Magistrate P.P.I VaidyaNath, a settlement is made after the farmers get 1/2 share of the crop, while on the other hand, the holder will get 2/3.[27] However, if another worker joins there, the landlord will pay him and the farmer will get the required straw from his landlord.

Conclusion

Our country has been witnessed many small movements but in history pages mainly we find only the history of large movements, most of the time, small movements were not only area-based but also the source of large movements. Now, the regional history gaining importance, new facts are adding to the deep stream of history. so, the history of this period of Birbhum is important not only in regional history but also in the history of the peasant movement of Bengal.

These movements were the result of the prevailing inequality in the district. After paying higher taxes and debt, the farmers did not get enough food and cloth in their hands. These problems led to the peasant movement. Although the peasant movements of this period were area-centric or disruptive, yet at least movements were succeeded in achieving their goal. Their success made it a point to settle the basic demands of free land distribution among farmers and agricultural workers, reduce revenue demand and abolish lending practices, abolish the zamindari system with no compensation.

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THE ANTIBIOGRAM OF BACTERIAL UROPATHOGENS AMONG PREGNANT WOMEN ATTENDING ANC CLINIC AT TERTIARY CARE CENTRE, SOLAPUR

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ABSTRACT

Introduction:Urinary tract infection (UTI) is frequently encountered complication during pregnancy.

Aims &Objectives: To identify bacteriological agents of UTI in pregnancies & to study their antimicrobial susceptibility pattern.

Materials & Methods: This was a retrospective study in which 340 midstream urine samples from symptomatic ANC patients were received in the Dept. of microbiology during the period from January 2019 to December 2019. These samples were subjected to bacterial culture. The bacterial isolates were identified as per standard microbiological techniques.

Results: Out of 340 urine samples 130 were bacterial culture positive and this is statistically significant ($p < 0.01$). *Escherichia coli* (*E.coli*) being the most common pathogen (56%) followed by *Klebsiellaspp*(16%) responsible for UTI in pregnancy. The antimicrobial agent Nitrofurantoin was found to be the most sensitive for both Gram Negative Bacilli (GNB) (70%)&Gram Positive Cocci (GPC) (90-100%)

Conclusion:In the present study 38 % of ANC patients has been detected positive for bacterial UTI ($p < 0.01$). This is only the peak of the iceberg. Many ANC patients have bacteriuria(>100000 bacteria /ml) which goes unnoticed(Asymptomatic bacteria)which is a silent enemy.Hence every ANC patient should be screened for UTI regularly to reduce the risk of complications during pregnancy.In the present study nitrofurantoin has been found to be 70 % sensitive in GNB. Therefore the rotational use of antibiotics and the formation of proper Hospital Antibiotic Policy will definitely help in treating the UTI in pregnancy and reduce the incidence of antimicrobial resistance.

Key Words: UTI, Pregnancy, Antibiotic resistance, GNB, GPC.

1.INTRODUCTION

A limited spectrum of microorganisms cause urinary tract infection(UTI). This include *E.coli* as the major etiological agent in UTIs. *Proteus mirabilis*, *Klebsiellaspp*,



Pseudomonas aeruginosa and *Enterobacterspp.* are less frequent causative agents. Enterococci, *Gardenerellavaginalis*, and *Ureaplasmaurealyticum* are also main agents in UTIs. Gram positive microorganisms including Group B *Streptococcus*, *Staphylococcus aureus*, *Staphylococcus saphrophyticus* and *Staphylococcus haemolyticus* have also been pinpointed as UTI agents in females.

Pregnancy is a state of relative immunocompromise. This immunocompromise may be one of the cause for the increased frequency of various infections during pregnancy. Urinary tract infections are frequently encountered in pregnant women. UTI in pregnancy is associated with significant morbidity for both mother and the foetus. Asymptomatic bacteriuria occurs in 5 to 10% of pregnancies, 20 to 30% of which progress to pyelonephritis if left untreated.(1,2).

Changes in the urinary tract and immunological changes of pregnancy predispose women to urinary tract infections. Physiological changes of the urinary tract include dilatation of ureter and renal calyces; occurs due to progesterone related smooth muscle relaxation and ureteral compression from the gravid uterus.

Decreased urinary bladder capacity commonly results in urinary frequency, vesicoureteral reflux may be seen. These changes increase the risk of urinary tract infection in pregnancy (3).

There is 50% increase in risk of low birth weight of baby while significant increase in preterm delivery & preeclampsia in pregnant women with bacteriuria(4).

The microorganisms which cause UTI in pregnancy are the same uropathogens seen in nonpregnant women. As in nonpregnant patients these uropathogens have proteins found on the cell surface which enhance bacterial adhesion leading to increased virulence.(5)

With the emergence of antimicrobial resistance (AMR) and narrow spectrum of antimicrobials in pregnancy it poses a great challenge to physician. Therefore this study was undertaken to determine the prevalence of different bacteria in the causation of UTI in pregnancy and studying their antimicrobial susceptibility.

2. MATERIAL AND METHODS:

The retrospective study was conducted in Microbiology Department in Dr. VMGMC and SCSMSH, Solapur from Jan 2019 to Dec 2019.

It includes 340 midstream Urine samples received from pregnant women with symptomatic UTI in reproductive age group 18 – 40 years.

The samples were processed for culture and identification of bacteria using standard microbiological techniques. Antimicrobial susceptibility testing was done by Kirby Bauer Disc Diffusion Technique and the results were interpreted using CLSI guidelines.

5) RESULTS:

CHART NO:1 Age distribution of patients (n=340)

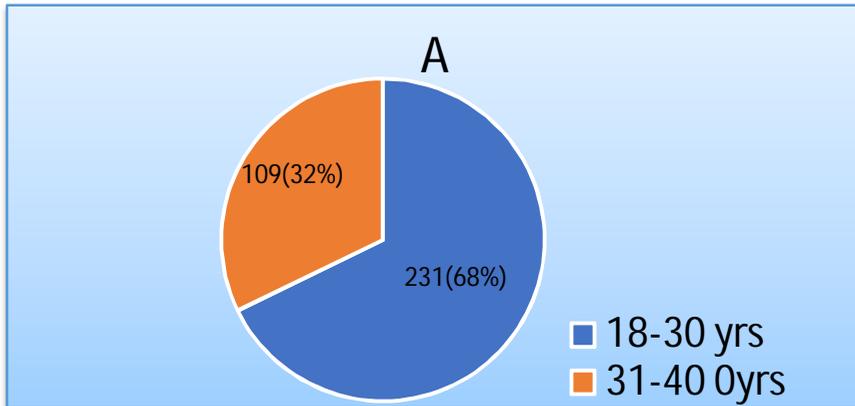


CHART NO: 2 Percentage of different Uropathogens(n=166)in patients with UTI

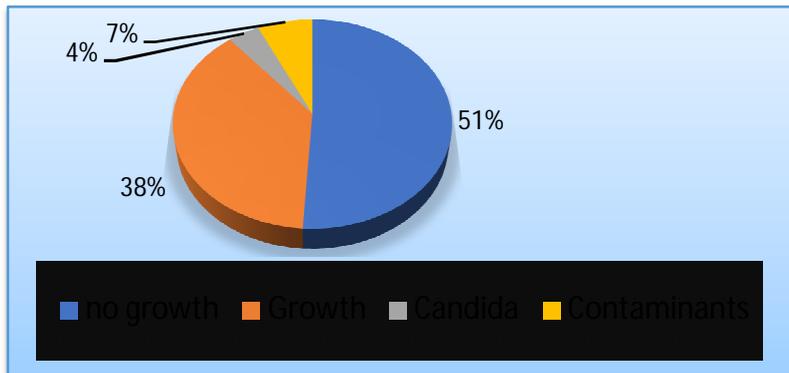


CHART NO: 3 Distribution of different bacteria(n=125)causing UTI

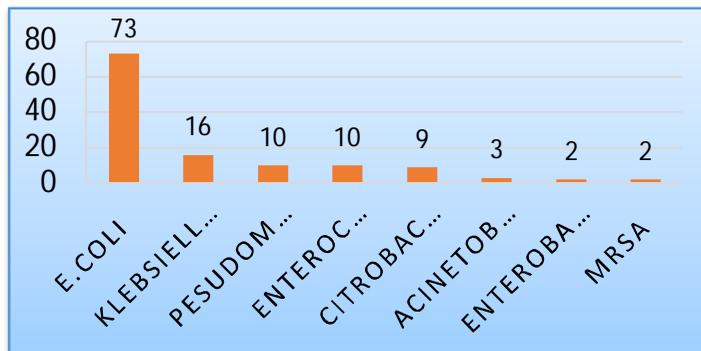


CHART NO: 4 Showing sensitivity of different gram negative bacilli(n=113) to antibiotics.

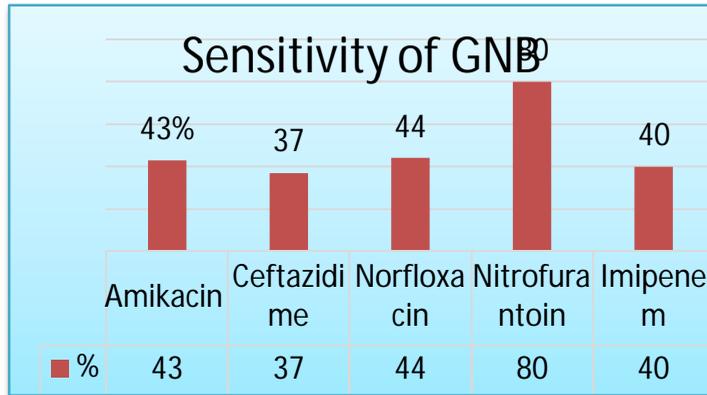


CHART NO 5

Showing the sensitivity pattern of Enterococcus spp (n=10) to different antibiotics.

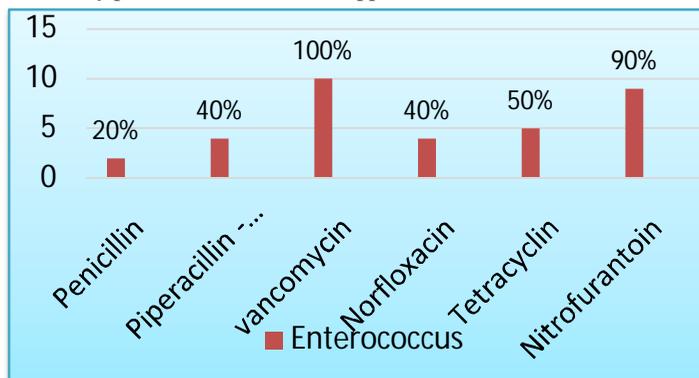
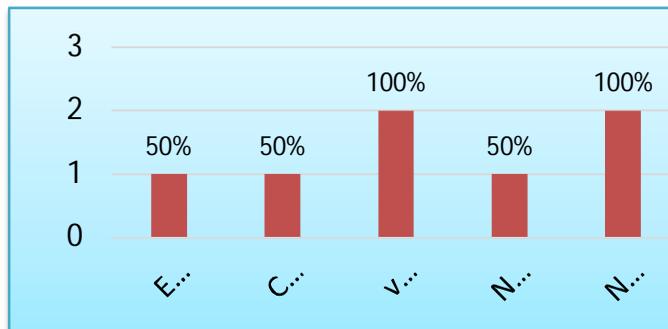


Chart No. 6 Showing sensitivity pattern of Staph.aureus (n=2) to different antibiotics.





3. DISCUSSION:

Bacteriuria occurs in 2- 7 % of pregnant women in the first trimester.(6) Asymptomatic Bacteriuria occurs in 5-10% of pregnancies, 20-30% of which progress to pyelonephritis if left untreated.(1,2)

In the present study symptomatic UTI was predominantly seen in 18 to 30 years of age group (68%). Tiyanathomas(7) also found the UTI to be higher in the 18 to 26 age group(74%). Similar findings were observed in a study by Moghdas et al.(8) Of 340 samples tested 166(49%) were found to be positive on culture in a present study. Out of it bacterial UTI was seen in 125patients ($p < 0.01$), fungal UTI seen in 13 patients, while contaminants were seen in 13 patients. In a study by Loveline M Ndamason(9)38% of samples were culture positive while in a study by Tiyanathomas she could find only 24% of samples to be culture positive. (7)This may be due to antibiotics given prior to sample collection inhibiting the growth of bacteria in culture.

In the present study, the most common bacterial agent causing UTI was *E.coli*(56%). *E.coli* was also found to be the main causative agent (50%) in a study conducted by Tiyanathomas et al(7). Naveed Altaf also found *E.coli* (65%) to be the main bacteria responsible for UTI(10) *Escherichia coli* may be the endogenous flora of the colon, they colonise in the vaginal introitus and the periurethral area; then ascend to the bladder and then to the renal pelvis by a receptor mediated ascending process. The *Escherichia coli* liberate a cytotoxin which elicits damage to the kidney epithelium.(10) In our study, the second predominant isolate was *Klebsiella* spp. followed by *P.aeruginosa*. Nithyalakshmi and Vijayalakshmi(11) also reported the second common isolate as *K.pneumoniae*.

In our study antibiotic susceptibility pattern showed highest sensitivity to nitrofurantoin (80%) followed by Amikacin (43%) and Imipenem(40%). The resistance to usually prescribed drugs in our study could be due to frequent exposure of antibiotics to the locality. The rotational use of antibiotics and forming proper Hospital Antibiotic Policy may help in overcoming the resistance to these antibiotics and antimicrobials. Tiyanathomas et al in their study also found that gram negative bacilli are most sensitive to the nitrofurantoin(93%)(7).

4. Conclusion

In the present study 38 % of ANC patients has been detected positive for bacterial UTI ($p < 0.01$). This is only the peak of the iceberg. Many ANC patients have bacteriuria(>100000 bacteria /ml) which goes unnoticed(Asymptomatic bacteria)which is a silent enemy. Hence every ANC patient should be screened for UTI regularly to reduce the risk of complications during pregnancy.

In the present study nitrofurantoin has been found to be 80 % sensitive in GNB & 90-100% in GPC. Therefore Nitrofurantoin having a good safety profile would be a rational



choice among antimicrobials to treat UTI in pregnancy. Therefore the rotational use of antibiotics and the formation of proper Hospital Antibiotic Policy will definitely help in treating the UTI in pregnancy and reduce the incidence of antimicrobial resistance.

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READING “IN THE PENAL COLONY” AS AN ARCHETYPE OF ETHNICAL CRISIS IN CENTRAL EUROPE

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Abstract

This paper intends to study Franz Kafka’s “In The Penal Colony” as an archetype of ethnic and identity crisis in and around the World War I. Late 19th and early 20th century in Central Europe is largely defined by a steep rise of political hatred between the European nations, resulting in frequent warfare activities. The epicentre of these battles had a common presence of the then Austro-Hungarian Empire and in its neighbouring nations like Bohemia, Bosnia, Herzegovina, Serbia, and other Balkan nations. Franz Kafka, in his diary had commented about the Czech capital Prague that, it is the city which he feared the most. This research is an attempt to establish the fact that “In the Penal Colony” is a reflection of the ongoing tussle for power and, in the process, rings a warning bell to the nations about the price that ought to be paid with the lives of the innocent.

Keywords: Power, Archetype, Habsburg Empire, Machines, Ideology

The late nineteenth and the early twentieth century in Central Europe was a period experiencing consistently rising ethnic conflicts that resulted in the First World War. The maxim of this bitter battle was heavily centered upon the then Austro-Hungarian Empire and in its satellite nations like Bohemia, Bosnia, Herzegovina, Serbia, and other Balkan nations. The populace of these satellite nations chiefly constituted of the Slav people, and they were in demand of liberation from the Empire. The murder of the Archduke Francis Ferdinand in Sarajevo by a group of Balkan nationalist group called ‘Black Hands’ indicates the extent of frustration and anger. Franz Kafka, being an immediate writer of this disturbing period could assume all the political interests that was acting behind this scene, and had attempted a prediction where all these atrocities could possibly end. This paper intends to study “In the Penal Colony” (1919) as an archetype of that age of ethnic and identity crisis.

Franz Kafka, in his diary, had commented about the Czech capital Prague that, it is the city which he feared the most. Prague was in a dilemma whether to stay with the Habsburg Empire or not. Being a weak nation, they had to follow a policy of extracting benefits from each possible chance. Many of the political leaders, from clerks to Social Democrats volunteered declarations of loyalty to the empire, and they were unquestionably sincere. In equal proportion, there were also others who worked from the grass root level to the highest order to bring the destruction of the empire with Russian help. Living with a powerful neighbour like Germany who threatened possible



aggression, these sections opted to stay as a province to Russia rather than the potentially weakening Habsburg Monarchy. To quote C.A. Macartney:

“These efforts, combined with the effects of hostility to everything German which had now become second nature to the Czech people, and of a more nebulous and less universal, but still fairly general sentimental attachment to Russia, really resulted in fairly widespread disaffection”. (812).

The analogy between the Czech people and the convicted man in “In The Penal Colony” can be established now. This particular man is convicted of insubordination and insulting an officer. He could be looked as a collective figure that stands for the section of Czechs, comprising mostly of the Jews to whom, Kafka himself belonged. They were so “doggishly submissive, it seemed as if one might allow him(them) to roam freely, and only needed to whistle when it was time for the execution, and he would come” (Kafka 2). The officer is the figure of those unquestionable sections of Czech nationals who volunteered total subordination and loyalty. The pattern of circumstances in the story requires to see the decaying execution machine as a metaphor for the Habsburg monarchy and the explorer as the neutral observer or the author himself. The claimed ‘enlightenment’ which the condemned received at the 12th hour of the execution process is the realization that there is no way to escape from the periphery of the empire. The Jewish community of the Slavonic people now serves as the microcosm of this dichotomy. Peter Neumeyer consolidates:

“...[I]t seems indisputable that Kafka says that there was once upon a time upon this earth, a Leader (Old Commandant) who gave birth to a system (religion, government) and to its attendant purgation’s, rituals; and that there were disciples. This leader decline in the story, and, with self-destruction of the engraving machine, are no more. And in this latter day there remain those who guard His grave, and await His return”. (Do not teach Kafka’s “In The Penal Colony”, Peter Neumeyer).

The execution, as it was ritualized in “In The Penal Colony” can be regarded as a political operation against those who didn’t remain loyal to the Habsburg Empire. It was logically formulated as a system of punishment. Franz Kafka dramatizes such livid times, giving his dark tale a dream like logic. The horror of the execution process reminds the brutal punishment that was conferred upon the convicted by the order of church and the state in medieval Europe. However, a process of humanization from dehumanization could be noticed in this context, as in ‘those days the engraving machine exuded an acid which is no longer permitted today’. Keeping in mind the socio-political condition of the then Czech people, Kafka’s notion of humanity seems to be relied upon some factors and expectations like:

- Not regarding the Jews as foreigner in Czechoslovakia.
- That they should be allowed to choose a life of their own.



- Since majority of them has adopted German as their mother tongue, German government could avoid their hostility towards the Czechs.

The fascination of Kafka with machines is evident in most of his texts. This attraction can be drawn back to his time as an employee in the Workmen's Accident Insurance Institute in Prague. GaliliShahar writes that it is in his office and the official trips to workshops and mines where "Kafka learnt the secret of the machine, the dialectic of production and the destruction, the legal and social complexities of the insurance laws and how all these influenced the damaged being of the worker" (259). Kafka was aware of the machinations of a nation and its associated civil boundaries as well as the politics running underneath the well-oiled machinery. His interests took Kafka to learn the legal complexities intertwined with the idea of a nation. In "Metamorphosis" the presence of the clock, which is continuously ticking in Samsa's room is representative of the fact that a person is continuously time bound and governed by the stated. Any failure to do so shall result in dire consequences. The instruments and apparatus, therefore, are metaphors or archetypes of the state. The depiction of these machines provide a gloomy presence in the human lives. The machine of "In the Penal Colony" is an example of the detrimental effect the mechanical age has upon the individuals. Shahar further states, "This remarkable piece of apparatus' of the Penal Colony, like the train, the writing machine, and the telegraph, creates strange and destructive moments, environments of alienation, and meaningless zones of life and death" (260).

Kafka could see no hope of security and serene life for the people of his community. The experience of this trauma had given him a sense of social responsibility. The execution is justified by the officer that it will exempt the people from being disloyal. The intensity of the crime that the condemned man committed is important in this context. He just failed "in the performance of his duty. He is required to get up every hour, and salute outside the captain's door". Being severely beaten, he, rather than 'begging for forgiveness', threatened the captain to 'gobble' up. Kafka points here the system of the anarchist bureaucracy which demands total subordination and dependence. To quote Michel Foucault:

"The term 'penal torture' does not cover any corporal punishment: it is a differentiated production of pain, an organized ritual for the marking of victims and the expression of the power that punishes; not the expression of a legal system driven to exasperation and, forgetting its principles, losing all restraint. In the 'excess' of torture, a whole economy of power is invested." (34).

The self-chosen execution of the officer indicates the cluster of the loyal Czechs whom Kafka regarded has taken suicidal steps by remaining conform to the Austro German policy of union or the conception of the greater Second Reich. It was evident that, a government who was in a way to a decisive fall may harm anyone for holding the throne, it does not matter who were their foes and friends. The possibility of harm is greater when it is concerned with anti-Semitism. The officer fetched his death from a technically questioned mechanism to whom, he remained always faithful. Kafka invites



to examine the authenticity and credibility of remaining a devotee to this murderous system. Yet the failure of the victim to understand the real truth disturbs him. He pointed to the loyal pro-monarchy cluster of Czechs, 'there was no trace of the promised transfiguration, the officer had himself failed to find; his lips were pressed together, his eyes were open, their expression was that of a living man, their look was firm and assured'. The death of the officer is analogous to the death of Francis Ferdinand, two of them being an heir of similar political ideology. Adolf Hitler remarks:

"I felt somewhat dumbfound in face of the inexorable vengeance which destiny had wrought. The greatest friend of the Slavs had fallen a victim to the bullets of Slav patriots." (149).

Kafka appears to predict the continental unrest that was coming ahead with the each passing day. The prediction is hidden in the epilogue of the story. The inscription on the gravestone was a hard to accept truth, which Kafka could realize. "Here rests the Old Commandant. His supporters, who now have no name, dug him this grave and set this stone for him. It is prophesied that after a certain number of years, the commandant will rise again, and from these premises here, lead his followers on to the reconquest of the colony. Believe and be patient". If the colony is taken as a symbol of the whole European Union, the acceptability of this prophecy goes higher. This also bears resemblance to the German premier Bismarck's prediction. Unhappy of the unhealthy foreign policies adopted by the then German emperor Kaiser William II, Bismarck could realize the strong possibility of an upcoming world war. To Kafka's case, the arrival of Adolf Hitler and Benito Mussolini consolidates the claim even though it was thought to be 'ridiculous'.

Unlike the Balkans in the southern states, Czechoslovakia, as a wholesome nation was not a nation having similar political ideology. There were divisions between Czechs and Slovaks and Germans. The section of Jewish among these ethnic communities was a subject of suppression. Franz Kafka, being a member of this meek and passive class, could only feebly protest against the prejudice that his community was beginning to face. "In The Penal Colony" is a silent observation of the facts rather than a strong voice. It is more an awareness than a resistance that comes from a socially responsible author. But he can't be convicted of being so passive, for its because of the dualism which Czech people lived made him to make a silent protester then roar like Dylan Thomas:

"Do not go gentle into that goodnight
Rage, rage against the dying of the light".

(Thomas, August Assembly, 1.18-19)



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GENERAL PROBLEMS OF HEALTHCARE FACILITIES AMONG THE RURAL HOUSEHOLDS OF KERALA

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Abstract

Health is a wealth of a nation. Every state has independent role to determine the healthcare services on the basis of central government norms. The problems of healthcare facilities are categories in to general care facilities problems, healthcare facilities problems, medical care facilities problems and the financial facilities problems. The structural equation model were used for the factor analysis and confirmation factor analysis also used for the fit of the model. On the basis of the regression coefficient for the four components; healthcare facility problems are the major problems followed by general facilities problems, medical care facilities problems and the financial facility problems.

Key words: Healthcare, Households, Financial Facilities, Medical care, Regression Coefficients.

Introduction

WHO stated that, "Health is a state of complete physical, mental and social well – being and not merely the absence of disease or infirmity" and the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, and political belief, economic and social condition. The problems of healthcare facilities are vary from rural area to urban area. Urban householders were getting more healthcare facilities in urban areas than the householders of the rural areas.

The general problems of healthcare facilities are classified in general facility problems, healthcare facility problems, medical facilities problems and the financial facility problems. The general care facilities include the variable poor surrounding, no respect to the patients and visitors, uncommitted paramedical and labour staff, inefficient in hospital administration and the poor sanitary facilities. Healthcare facilities include poor quality of treatment, poor quality of services by medical staff, lack of personal attention, negative attitude of the hospital staff, lack of co-operation between the staffs and corrupt practices followed by paramedical staff. In the medical care facilities, less building capacity, lack of drugs, lack of modern technology, lack of medical facilities, lack of equipped rooms, located in inconvenient place and not working equipment. In the financial facilities, treatment cost was very costly, financial consideration are not given in the healthcare facilities, payment are not arranged to the healthcare facilities and the cost of bills are not shown with transparent are included.



Objective of the study

To examine the general problems of healthcare facilities among the rural households of Kerala on the basis of general facilities, healthcare facilities, medical care facilities and the financial facilities.

Significance of the study

The problems of general healthcare facilities are exist in rural and urban areas. The householders of rural area face more problems than the urban area. The problems of general healthcare facilities in the rural area are classified in to general healthcare problems, healthcare facilities problems, medical facilities problems and the financial facilities problems. Out of the four categories of problems identify which one are more serious problems of rural householders.

Methodology

The primary data were collected from the households living in the districts of Malappuram, Ernakulam and the Trivandrum of the state of Kerala. Out of 675 samples; 225 samples were collected from each district with well prepared questionnaire scheduled used. Problems of general healthcare facilities are measured under the various heads, viz, General care delivery, Healthcare delivery, Medical care Delivery and Financial care facilities. For the analysis of the data, Structural Equation Model (SEM) to evaluate the influence of these constructs on problems of general healthcare services.

Hypothesis

The following are the hypothesis to test the model.

- H1: General care delivery is a problem of healthcare facilities and services.
- H2: Healthcare delivery is a problem of healthcare facilities and services.
- H3: Medical care Delivery is a problem of healthcare facilities and services.
- H4: Financial facilities are a problem of healthcare facilities and services.

The confirmatory factor analysis (CFA) is special case of SEM equation model. This model provides the factor analysis on the basis of chi square test, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normal fit index (NFI), comparative fit index (CFI), root mean square residual (RMR), root mean square error of approximation (RMSEA). Chi square test determine the goodness of fit of the model. GFI and AGFI values lie 0 to 1 and over the 0.9 are generally considered that the model accepted. NFI and CFI values lies 0 to 1 and its value 0.95 or greater indicate that the models were fit. RMR values lies 0 to 1 and its value 0.08 or less were considered that model were accepted. RMSA value also lies 0 to 1 and its value 0.06 or less is indicators of the model were accepted. The CFA results were given in the table 1.1.



Table 1.1:Model fit Indices for CFA- Problem of healthcare facilities and services

	χ^2	D F	P	Norm ed χ^2	GFI	AGF I	NF I	CF I	RM R	RMSE A
Problem of Hospital facilities/health care services	.223	1	.637	.223	1.00	.99	1.0	1.0	.039	.000

Source: Analysis of primary data.

All the attributes loaded significantly on the latent constructs. The value of the fit indices indicates a reasonable fit of the measurement model with data. In table 1.2 present the regression coefficients.

Table 1.2: The regression Coefficients

Path	Estimate	Critical Ratio (CR)	P Value	Variance explained
General care delivery →Problem of healthcare facilities and services	0.753	25.401	<0.001	56.6
Healthcare delivery →Problem of healthcare facilities and services	0.882	35.896	<0.001	77.7
Medical care Delivery →Problem healthcare facilities and services	0.688	21.883	<0.001	47.3
Financial facilities →Problem of healthcare facilities and services	0.526	15.155	<0.001	27.7
PGCD1 → General care delivery	0.514	14.728	<0.001	26.4
PGCD2 → General care delivery	0.714	23.209	<0.001	51.0
PGCD3 → General care delivery	0.598	17.888	<0.001	35.8
PGCD4 → General care delivery	0.673	21.158	<0.001	45.2
PGCD5 → General care delivery	0.807	28.991	<0.001	65.2
PHCD1 → Healthcare delivery	0.613	18.502	<0.001	37.6
PHCD2 → Healthcare delivery	0.870	34.557	<0.001	75.7
PHCD3 → Healthcare delivery	0.744	24.870	<0.001	55.3
PHCD4 → Healthcare delivery	0.641	19.698	<0.001	41.1
PHCD5 → Healthcare delivery	0.760	25.825	<0.001	57.7
PHCD6 → Healthcare delivery	0.708	22.894	<0.001	50.1
PMCD1 → Medical care Delivery	0.576	17.017	<0.001	33.1
PMCD2 → Medical care Delivery	0.532	15.371	<0.001	28.3
PMCD3 → Medical care Delivery	0.488	13.828	<0.001	23.8
PMCD4 → Medical care Delivery	0.702	22.585	<0.001	49.3
PMCD5 → Medical care Delivery	0.509	14.553	<0.001	25.9
PMCD6 → Medical care Delivery	0.826	30.470	<0.001	68.2
PMCD7 → Medical care Delivery	0.795	28.123	<0.001	63.2
PFF1 → Financial facilities	0.469	13.189	<0.001	22.0
PFF2 → Financial facilities	0.596	17.807	<0.001	35.5
PFF3 → Financial facilities	0.779	27.033	<0.001	60.6
PFF4 → Financial facilities	0.720	23.529	<0.001	51.9

PGDC = problems of general care delivery, PHCD = problems of healthcare delivery



PMDC = Problems of Medical care delivery, PFCD=Problems of financial care delivery

H1: General care delivery is a problem of healthcare facilities and services.

The results exhibited in Table 1.2 revealed that the regulatory construct General care delivery is a problem of healthcare facilities and services in Kerala as the standardised direct effect of this construct on problem of healthcare facilities and services as 0.753, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₁ is accepted and concludes that General care delivery is a problem of healthcare facilities and services.

H2: Healthcare delivery is a problem of healthcare facilities and services.

The results exhibited in Table 1.2 revealed that the regulatory construct Healthcare delivery is a problem of healthcare facilities and services in Kerala as the standardised direct effect of this construct on problem of healthcare facilities and services as 0.882, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₂ is accepted and concludes that Healthcare delivery is a problem of healthcare facilities and services.

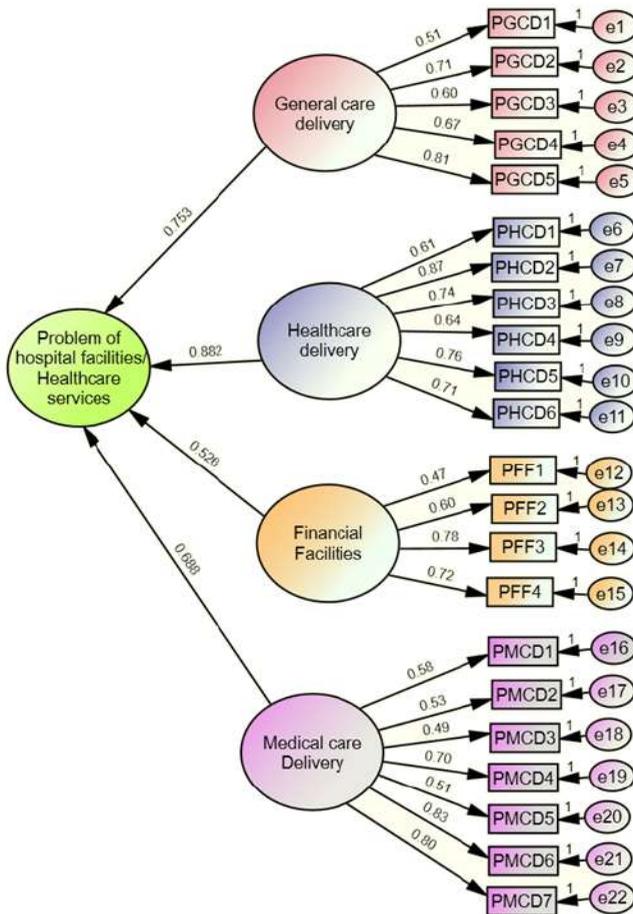
H3: Medical care Delivery is a problem of healthcare facilities and services.

The results exhibited in Table 1.2 revealed that the regulatory construct Medical care Delivery is a problem of healthcare facilities and services in Kerala as the standardised direct effect of this construct on problem of healthcare facilities and services as 0.688, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₃ is accepted and concludes that Medical care Delivery is a problem of healthcare facilities and services.

H4: Financial facilities are a problem of healthcare facilities and services.

The results exhibited in Table 1.2 revealed that the regulatory construct Financial facilities is a problem of healthcare facilities and services in Kerala as the standardised direct effect of this construct on problem of healthcare facilities and services as 0.526, which is more than the recommended value of 0.4 (p value is significant). So the hypothesis H₄ is accepted and concludes that financial facilities are a problem of healthcare facilities and services. The structural equation model is given in the figure 1.1.

Figure 1.1
 Structural equation model



The regression equation for the Problems of healthcare facilities/services is provide the four categories; for +0.753 in General care delivery, + 0.882 in Healthcare delivery, + 0.688 for Medical care Delivery and + 0.526 for Financial Facilities. The general care delivery problems are the poor surrounding (0.51), no respect to the patient and visitors (0.71), uncommitted paramedical and labour staff (0.60), inefficient in hospital administration (0.67) and poor sanitary facilities (0.81). in the healthcare facilities includes poor quality of treatment (0.61), poor quality of services by medical staff (0.87), lack of personal attention (0.74), negative attitude of the hospital staff (0.64), lack of co-operation between the staffs (0.76) and corrupt practices followed by



the paramedical staff (0.71). For the medical care facilities include the less building capacity (0.58), lack of drugs (0.53), lack of modern technology (0.49), lack of medical facilities (0.70), lack of equipped rooms (0.51), located in inconvenient place (0.83) and not working equipment (0.80). For the financial facilities; treatment cost was very costly (0.47), financial consideration were not given in the healthcare facilities (0.60), payment are not arranged to the healthcare facilities (0.78) and the cost of bills are not shown with transparent (0.72).

Conclusion

Based on the regression coefficient we can conclude that the most contributing factor towards the general problems of healthcare facilities/services is Healthcare delivery as its regression weight is 0.882, followed by General care delivery as its regression weight is 0.753, Medical care Delivery as its regression weight is 0.688. Financial Facilities comes in the last position and its regression weight is 0.526. Therefore, the healthcare delivery and its components are the main focusing point.

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FUEL COMBUSTION CHALLENGES ON A DREDGER

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Abstract

Unlike ships operating in the marine environment, dredgers operate more in a complex and demanding environment and to understand the fuel consumption of a dredger the dredging operational cycle is fundamental. The key factors that influence the fuel consumption of a dredger are, type of soil to be dredged, depth of dredging, dumping distance, sailing speed, sailing empty, shore pumping, tidal and currents of the region, wind speeds, restricted operational areas, traffic in and around the port and competencies of the dredging crew. All these multifarious factors complicate to estimate the fuel consumption of a dredger more precisely. For the dredger not all the parameters are of equal importance that can influence and control the fuel consumption as the dredger most of the times operate on partial power, unlike a cargo ship which moves from one port to another, sailing at a constant speed. When a ship is on voyage, for most of its operative life, sails on a well defined pattern in terms of sailing speed, draught, power and environment. Whereas a dredger operation is scrutinized on hourly basis, variation in sailing speed, rapid changes in power distribution and draught, and has to perform in an undefined project environment. Against this background applying the general principles of fuel economy to a dredger needs a stronger debate and a pragmatic validation. The environment benefits of fuel efficiency continue to be a compelling proposition, control fuel consumption and reduce fuel costs as operating a dredger is an expensive business. This article is presented to provide a vital step towards closing the existing knowledge gap to meet the combustion challenges on a dredger and also to provide some perspective and assistance on fuel efficiency improvements in the operation of dredger working in a marine environment.

Keywords: Marine Environment, Dredger, Dredging, Dumping, Fuel Combustion, Fuel Costs, Sailing, Operational Cycle.

Human primary energy needs comes from fuels and they are consumed to provide energy services. When a fuel is combusted in an engine it gives a form of energy and this energy is influenced by the engine speed, design of the combustion chamber, compression ratio, injection timing, ignition quality and viscosity of the oil, as not all fuels can be used in any one engine. Fuels used in marine environment are lower grade, as dredgers deploy massive engines to propel consume large quantities of fuel each day.

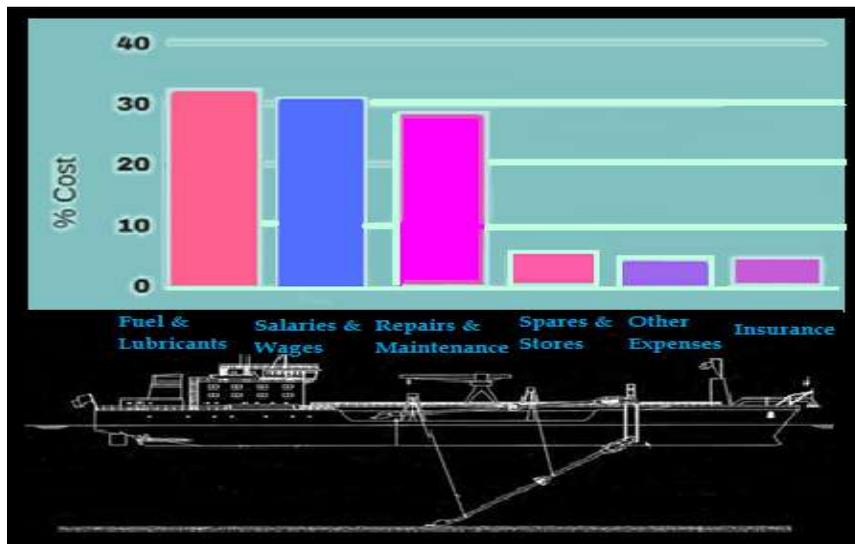
Fuel cost is intrinsically linked to revenue generation, and, as a result, dredge owners and operators are increasingly demanding measures that cut fuel expenditure. Fuel cost have risen by an average at 16% year-on-year since 2005 and maritime demand is also increasing, putting further upward pressure on fuel prices. To maximize profits and to reduce environment impact, dredge owners and operators spend vast

amounts on fuel efficiency and optimization measures. Dredging is a competitive industry and any small efficiency or reduction in consumption can add up to big competitive advantage. Even a small percentage saving in fuel can equate to a significant cost saving and the return on investment can become very attractive.

In the recent years, the environmental profile of commercial dredging has dramatically changed worldwide. The marine industry of the present times is gripped with environmental interest that reaches far beyond the management of the dredger. The need to develop a solid approach to incorporate environmental issues and corporate social responsibility within dredging industry is gaining momentum. Like any other industry, with the intensification of trade and rising resource depletion has enhanced the knowledge of key stakeholders.

The driving need for dredge owners and operators is to reassess their operations and technologies to conform to environmental standards. The adaptation of new technologies into the maritime sector is a complex matter and this prompts the need for a structured management approach to address on fuel efficiency and optimization measures. A solid strategy is essential to improve the fuel efficiency and environmental consciousness of dredging operations and satisfy societal, stakeholder and regulatory demands.

The market is driving the dredge owners and operators to streamline their operations and become more efficient in terms of fuel efficiency, operations efficiency and management of the dredger. Fuel cost is a dynamic parameter in the operational cost of the dredger and the costs involved per dredging one cubic metre of soil, fuel costs form a major share of the expenses nearly 30%, for this reason fuel consumption is an area of serious concern.





With high cost of fuel and regulatory authority framework to reduce carbon emissions it is vital diesel engines are operated cost-effectively and scrupulously maintained so as to keep the specific fuel consumption to the minimum. In order to monitor how efficiently the engines are operated at the rated load and at the rated rpm, it is necessary to have the right equipment installed to accurately track fuel consumption. The traditional standard noon-to-noon measurement of fuel consumption based on fuel tank soundings are prone to manipulation and not accurate and cannot measure the changes in specific fuel consumption of the engines, as fuel consumption varies directly with engine power.

Before we proceed to study the fuel combustion challenges on a dredger, as an important step it is pertinent to value rudimentary acquaintance with what is dredging and a dredger, how it operates and how it compares with a normal sea going ship.

Dredging:Bray et al. (1997) explained that dredging is the removal of soil or rock underwater or from one place to another (e.g., from a riverbed or sea to other places) by using dredger (vessel or floating plant equipped with a machine, mechanically and / or hydraulically). Dredger is used for dredging the shipping lane and port basin to keep the depth and ensure the safety of the ship operations. The dredging work can be divided into two types, namely: capital dredging and maintenance dredging. The capital dredging is used to make a new port while the maintenance dredging is used in the existing port in order to keep the depth of the port basin and shipping channel from the sedimentation (Bray, 1997).

Dredging is the process of excavating and removing unwanted material from the bottom of harbors and waterways, thereby dredging keeps our harbors and waterways navigable. With the progress of civilisation, people, equipment and materials have been transported by water. This has resulted in the need to enlarge and deepen the rivers and canals, to provide adequate access to ports and harbours. Nearly all the major ports in the world have at some time carried out dredging works. Dredging is vital to social and economic development and is a very important aspect on the world's economy because without dredging shipping channels, ports and harbours would be in great distress due to sediment build-up in these navigable areas.

Dredger:All dredgers can be broadly classified, regardless into two main types a Trailer Hopper Suction Dredger (TSHD) and Cutter Suction Dredger (CSD). The dredging equipment on these two types of dredgers diverges according to the methods of excavation and operation.

Trailing Suction Hopper Dredger (TSHD) trails its suction pipe underwater over the sea bed when working, and loads the dredge spoil into the hopper of the vessel. When the hopper is full, the TSHD sails to a disposal area and dumps the material through the bottom doors in the hull or sometimes pumps the material out of the hopper into the open sea.



Cutter Suction Dredger (CSD) cutter ladder with suction tube has a cutter head at the suction inlet, to loosen the earth and transport it to the suction mouth. The cutter can also be used for hard surface materials like gravel or rock. The dredged soil is sucked up centrifugal pump and discharged through a pipe line or on to a barge.

Dredgers due to nature of operation are exposed to the marine environment like wind, waves, swell and swift currents. In this paper the primary concern of the study is limited towards a TSHD only, as this dredger compares itself in almost every aspect with an ocean going ship, in terms of sailing, propulsion machinery, manoeuvrability, bridge equipment, crew on board and statutory documentation. When compared to a CSD which is not ocean going and not in continuous operation, even differs very much in terms area of deployment. Against this background a study was carried out on fuel consumption pattern for eight TSHD dredgers working at various projects around the country.

Based on the daily fuel consumption, data has been collected for these eight dredgers on daily basis and averaged for every month for a period of six months against the operational days for that month and this data was selected for analysis and tabulated.

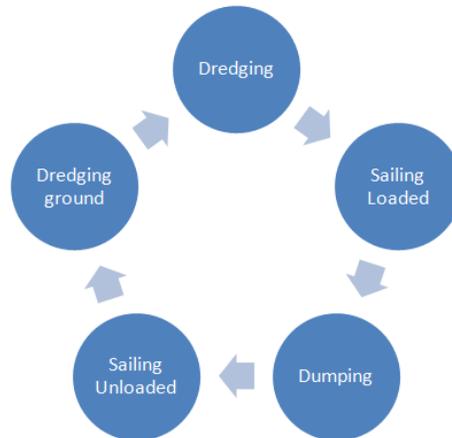
The relevant data obtained for this study is collected from eight TSHD dredgers operating continuously at projects. A tabular annex is prepared against each dredger, taking specific fuel consumption of the main engine, the main engine horse power, operational days, with fuel consumption for each month, average fuel consumption per day and operating efficiency. The table also indicates for each dredger, the fuel consumption at 100% Maximum Continuous Rating (MCR), at 80% MCR, 70%MCR, 60% MCR.

In order to make interpretations easy the operating efficiencies were calculated by dividing average fuel consumption per day by fuel consumption at 100% MCR and the resulting scores are converted into operating efficiency percentage. The average fuel consumption per day is calculated by dividing the fuel consumption for the month by the number of dredger operating days. From the table it is seen the average operating efficiency of the eight TSHD dredgers is gravitating to close 50% MCR, with only one dredger is at 53% MCR. It is certainly desirable for dredge owners and operators to have an operating efficiency percentage scores at 70% MCR for each dredger as well as overall. Dredgers having operating efficiency percentage scores above 60% MCR are indicative of a reasonably good efficiency operation and economical. Since the TSHD almost measures up to with an ocean going ship the operating efficiency is not on par, as all ships by nature of their operation, operates at 75-80% MCR or even more. In the following pages we will study why the TSHD operates at these low operating efficiencies.

Dredgers operate more in a complex and demanding environment unlike ships and to understand the fuel consumption of a dredger the dredging operational cycle is fundamental. The standard dredging cycle involves dredging, sailing loaded to the dumping ground, dumping the dredge spoils, sailed empty to the dredging ground, and

starting dredging. The complete dredging cycle varies in duration for each happening in the cycle from project to project. The fuel consumption also fluctuates largely between different stages of the dredging cycle. In dredging, time is a precious factor and its operation is highly dynamic unlike a ship.

Standard Dredging Cycle



TSHD is a seagoing hopper dredge that involves greater exertion than required for an ordinary ocean cargo vessel, because it satisfies the needs of navigation of a self-propelled vessel and also the needs associated with its dredging operation. Comparing dredging vessels with ship on fuel consumption is multifarious as it involves many factors and lot of information from different fields of expertise on mechanical, civil, hydrodynamics, electrical and electronics, soil mechanics and naval engineering and all must be mutual.

Many parameters influence the actual fuel consumption of a dredger and this depends on several key factors. The operation environment conditions, nature of soil to be dredged, depth of dredging, dumping distance, sediment budgeting of the areas, wind speeds, tidal currents, local traffic and speed regulations of the port, type of dredging equipment and maintenance condition of the dredger deployed, crew competencies significantly influence the performance of that vessel by optimizing the production and achieving operational efficiency. The key drivers to maximize operating efficiency of a TSHD is by minimizing the dredging cycle time and hopper loading time and this depends on the performance of the draghead and other dredging machinery on the sea floor underwater.

The fuel consumption on TSHD can be minimized when the main engines are exploited at the rated MCR, by limiting the overflow duct operation, de-hoppering with



only one pump, avoid using dredge pumps overboard discharge for quick turning, thwart using both dredge pumps for cleaning the hopper, avoid full bunkers, avert from placing heavy spares on board, plan dredging cycle in consultation with port authorities. The operational crew should be placed with more power of autonomy to manage their vessel and their competencies enhanced time to time. By creating awareness and interest in energy efficiency, some reduction in fuel consumption can be achieved if all the on board personnel involved are aware of the impact of their day to day tasks on fuel consumption.

There are several multifarious factors that influence and complicate to estimate precisely the fuel consumption of a dredger. The operating efficiency of the dredgers in this study is close to average 50%, as dredgers most of the times operate on partial power, unlike a cargo ship which moves from one port to another, sailing at a constant speed. When a ship is on voyage, for most of its operative life, sails on a well defined pattern in terms of sailing speed, draught, power and environment. Whereas a dredger operation is scrutinized on hourly basis, variation in sailing speed, rapid changes in power distribution and draught, and to perform in an undefined project environment. Against this background applying the general principles of fuel economy to a dredger needs a stronger debate and a pragmatic validation.

This research article has been drafted to provide some perspective and assistance on fuel efficiency improvements and also to provide a vital step towards closing the existing knowledge gap to meet the combustion challenges on a dredger working in a marine environment. It can be concluded that the foremost active forces encouraging application of fuel economy challenges on a dredger are manifold besides the environmental concerns and the regulatory authority framework. ***

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Monthly Fuel Consumption													Annex	
Dredger No.	Rated Fuel Consumption of Dredgers as per OEM (KJ/Day)					Operational Days			Fuel Consumed			Average Fuel/Day	Operating Efficiency	
	SFOC/ KW	100% (MCR)	80% (MCR)	70% (MCR)	60% (MCR)	Oct/ Nov'19	Dec/ Jan'20	Feb/ Mar'20	Oct/ Nov'19	Dec/ Jan'20	Feb/ Mar'20			
1.	182/5800 HFHSD*	29.50	23.60	20.70	17.70	21.50/26.50	27.68/28.65	21.83/26.87	352.20/425.10	365.12/352.65	316.49/365.74	14.20	0.48	
2.	182/5800 HFHSD	29.50	23.60	20.70	17.70	00/06.50	00/0.64	25.78/29.32	00/63.70	00/93.16	308.47/358.63	13.20	0.45	
3.	189/7600 HFHSD	40.00	32.00	28.00	24.00	26.00/25.00	20.42/20.91	21.68/16.77	418.20/427.23	297.53/294.46	336.51/279.34	15.70	0.39	
4.	190/7800 HFHSD	42.50	33.70	29.50	25.70	20.00/25.00	28.54/27.44	24.54/27.76	438.20/574.80	549.05/532.30	483.50/474.59	19.90	0.47	
5.	190/7800 HFHSD	42.50	33.70	29.50	25.70	26.50/19.00	28.00/22.07	02.38/00	551.00/426.00	492.56/408.26	90.80/138.84	21.50	0.51	
6.	187/8200 HFO**	40.50	32.40	28.35	24.30	30.50/22.50	29.92/21.14	24.00/30.13	735.50/502.00	643.57/470.27	474.13/600.67	21.70	0.53	
7.	187/8200 HFO	40.50	32.40	28.35	24.30	30.50/17.00	24.98/23.82	24.20/22.09	658.90/365.60	441.50/439.98	447.66/521.12	20.20	0.49	
8.	187/8200 HFO	40.50	32.40	28.35	24.30	29.00/26.00	23.11/23.31	20.22/28.14	512.50/405.90	413.57/435.48	394.30/492.33	17.80	0.44	
											Total Average	18.03	0.48	

Note: 1. SFOC- Specific Fuel Oil Consumption, 2. MCR- Maximum Continuous Rating, 3. OEM- Original Equipment Manufacturer.

4. KW- Kilo Watt, 5. KL- Kilo Litre.

* Density of High Flash High Speed Diesel (HFHSD) -0.83 Ton/M³, ** Density of Heavy Fuel Oil (HFO) -0.94 Ton/M³



THE STUDY OF EFFECT OF NEW NORMAL AFTER THE COVID-19 ON THE WORK LIFE HARMONY

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ABSTRACT

Irrespective of the profession, work life balance is very much needed element in the usual life of any employee. During this pandemic situation, it is more frequently heard issue as the lifestyle of the employees have changed dramatically. Absence of servant maids, taking care of kids and elders, efforts to support the company to sustain in the market during this pandemic and moreover trying to be safe and be away from threat of Covid-19 spread. IT employees are among those few professional, who have worked from home and tried to balance between the costs and benefits of their companies. So the present study is taken to understand the work life balance of the IT employees from Twin cities of the Telangana state. Primary data is collected through structured questionnaire and descriptive statistics are used to analyse the collected data. From the study it was found out that the work is interfering with the personal life of the respondents, as many of the respondents are worried about the lengthy working hours. One more interesting fact found out from the study is that the respondents' spouse have very good understanding and they are supporting to have right balance between the work and family life.

Keywords: Work life balance, Lifestyle, Pandemic

INTRODUCTION

Work life balance is an interaction between the work and the other activities including family, community, leisure, conflicts at home and work, and personal development. It increases effectiveness as well as improves satisfaction in both the professional life as well as personal life. Work life balance is balancing work and life with equal importance in both personal and work life of a person. Work life balance in today scenario is a challenge to many employees, balancing life with work and work with life has become an issue in today's world. Every person at this pandemic situation is looking forward to have healthy lifestyle and good diet for survival. Work from home reflects the work life balance of an employee, because of stress one may not be working flexibly. The covid-19 pandemic has had an extraordinary effect on the way the employees work. Many have turned to work from home in greater numbers than ever seen before, very often with their children at home.

LITERATURE REVIEW

Family-friendly policies should be provided in the organization such as parental leaves, job sharing arrangements, provision of childcare facilities etc. so that women can be motivated and encouraged to prove their competence. Also, work flexibility and autonomy make nurses and



lady doctors more highly committed towards their work resulting in high productivity and job satisfaction. Work-life policies of an organization will help in enhancing organizational and cultural support for work, family and personal life and empower employees to control and get on their work and care giving, which will increase work augmentation and bring about typecasts of ideal workers (Fasla and Dhanlakshmi, 2019)

Regardless of the factors that enhance performance, personal factors are considered most effective than the professional factors affecting the work life balance (Ritika Arora & Dr. Vally 2018). There are certain aspects of maintain work life balance such as training and meeting after working hours and shift work are weak in Indian organizations (Maruthamuthu. M et.al 2018).

Work interference with personal life (WIPW) and Personal life interference with work (PLIW) have negative relationship with job satisfaction and work personal life enhancement have positive relationship with job satisfaction (Agha. K et.al 2017). There is positive relationship between work life balance and employee performance, job satisfaction (Mendis M.D.V.S. & Weerakkody W.A.S. 2017).

The experience of work life balance is determined by the career salience of person, family culture, presence of young child at home (Nidhi Bansal & Upasna AAgarwal 2017). Work life balance have positive relationship with job satisfaction, job commitment, service delivery, target achievement, career development and have negative relationship with work stress and rate of absenteeism (Sathya Dev. S & John Mano Raj. S , 2017). Work to family conflict is prevalent as compared to family to work conflict as the employees seek support from their family members which have impact on the parent's personal and professional life (Saloni Pahuja 2017).

Female employees are playing dual role, one at the workplace and another at their home. It is difficult for them to manage both the sides. The lives of female employees are getting affected due to improper balances in their professional & personal life. This paper also reveals about what is more obstructing, family obstructs work or work obstructs family and how these imbalances are creating problems like stress, intention to leave, burnout on the part of female employees (Tiwari, 2017). In the recent time the issue of work-life balance has gained more concern due to the reason that an individual's work life and personal life may present contradictory demands, while demand from both the spheres are equally important. This problem is more prominent amongst female employees (Hafiz, 2017)

The professionals who were having satisfaction with their family life and with their patients were found to have positive impact on work life balance, whereas professionals having satisfaction with their profession only were having negative impact on work life balance. (Madhavi, 2016). Career focused people are more involved in work and less psychologically involved in their families, whereas family-focused people adjust their work schedules to accommodate family or personal needs (Pratibha Barik & Pandey. B. B, 2016).

There is a significant relation of work life balance programs on job satisfaction and that these programs help to reduce the work burden and perform effectively at work (Adikaram D. S. R, 2016). The employees in organization should be aware of the facilities and work life balance policies and that the organization should provide the job sharing or flexible time options to the employees (Pooja Ainapur et.al, 2016).



The respondents have real problem in striking balance between work and family and though many of them enjoy their work in serving people they are facing stress related health issues. Most of the respondents feel if proper work scheduling and timely support provided by both family and hospitals, they will be stress free to some extent and will be able to strike balance between work (Marie and Maiya, 2015)

NEED FOR THE STUDY

The current pandemic has affected each and every person alike. It left huge impact on the work life harmony of the employees. It is highly imperative that a Human Resources Manager and individuals as well be aware of the triggers that impact their well-being and cause disruption in work like balance.

A Human resource manager, for that sake each and every employee needed to be aware of their stress triggers and how to make a work life balance.

RESEARCH GAP

The research has been conducted on questionnaire based survey which has been restricted to only city of Hyderabad and specifically employees belonging to Information Technology.

RESEARCH METHODOLOGY

Objectives of the study

- 1) To learn respondents view about the work interference with personal life.
- 2) To learn respondents view about the personal life interference with work.
- 3) To measure the respondents satisfaction with their work life harmony

The primary data is by collected through a structured questionnaire. The secondary data is through books, magazines, journals, compilations from computerized databases. Convenient sampling technique is adopted and the sample size is 112 IT employees from Twin cities of Telangana State are considered for the study. The collected data is analyzed using descriptive statistics.

RESULTS AND DISCUSSIONS

Questions relating to the study are framed on five point rating scale i.e., strongly agree, agree, neutral, disagree and strongly disagree. Mean Value of 3 represents the neutral attitude of the employees towards the statement given. Mean value above 3.5 shows the agreement and below 2.5 disagreement. All the items in the scale are taken from the standard scales on Work Life Balance.

Table 1: Descriptive statistics for the statements relating to work interference with personal life

Statements	Mean
My job requires me to work after hours to complete my routine tasks	3.11
The number of hours I work is a concern for me	3.38
As I have to spend more time in my work , I often fail to fulfill my family responsibilities	2.89
I am often pre occupied with profession work even after I get home	2.77



I come home from work too late to look after family roles	2.70
Demands arising from my work make my personal life stressful	2.75
I suffer from work related stress which manifests at physical ailments like headaches, insomnia, depression, blood pressure, etc	2.88
Power, Position and Money define success to me	2.82
Work related stress often make me irritable at home	2.63
Sacrificing personal life is the way an individual can grow fast in their profession	2.40
My spouse feels uncomfortable due to my preoccupation with the work	2.26
I often have to compromise on my social engagement on account of work	2.67

From table-1.Majority of the respondents are concerned about their long working hours and as they have to spend most of the time at work, it is making their personal life stressful and they are unable to fulfil the family responsibilities and their routine tasks. Least mean value is observed for the statement "My spouse feels uncomfortable due to my preoccupation with the work" (M=2.26), which is good indication that there is very good understanding among the couples which helps them to balance their work.

Table - 2: Descriptive statistics for the statements relating to personal life interference with work

Statement	Mean
I am often pre occupied with home related thoughts during work hours	2.42
I am often distracted by personal/family worries while at work	2.18
My spouse does not understand my work demands which impacts on my marital relationship	1.72
Family/home related stress makes me irritable at work	2.10
My home responsibilities affect my performance at work	2.09
Many a times, I have to postpone things at work due to demands at home	2.08
Due to role overload at home, I am physically tired to discharge my work responsibilities	2.20
I often have to compromise on the work front to keep my family happy	2.04
The needs and demands of my family interfere with my work related activities	1.97
I cannot concentrate in my work due to the dependent care issues at home	1.98

It is very much obvious from table-2 that, there is a minimal interference in the work due to family issues, as the mean values are very low. But when noticed, the highest value is observed for the statement "I am often pre occupied with home related thoughts during work hours". This might be because of personal reasons of the employee.

Table - 3: Descriptive statistics for the statements relating to respondents satisfaction with work life balance

Statement	Mean
I am successful in managing my work and home demands	3.49
I am happy with the contributions I make towards my home and family	3.67
I am satisfied with the opportunities I have to perform my job well and yet able to perform home duties	3.99
I have the time to reach my personal and career goals satisfactorily	3.23
I am satisfied with the way I divide my time between work and personal life	3.32

Most of the respondents are successful in managing their work and home demands and are satisfied with the opportunities they have to perform their job well and yet able to perform home



duties.

Table - 4: Descriptive statistics for the statements relating to strategies taken personally to overcome work life balance problems

Statement	Mean
I spend time for doing physical exercise/yoga/meditation	2.87
I take initiatives to manage my diet that support good health	3.11
I spend most of the time with my family/friends	2.91

Table-4 shows the response of the employees regarding the strategies adopted to have better work life balance. Employees are trying to overcome work life conflicts by engaging in activities like spending time with family/friends and my maintaining health by proper diet and physical and mental exercises.

When asked an open ended question, employees expressed that having a proper schedule for both work and family life, taking guidance from superiors, by being focused ,one can have a work lifebalance.

CONCLUSION

During the critical times of a business, employers expect more from their people, which leads to them feeling more pressure to achieve greater results. Consequently, this leads to longer working hours, and less time spent with family. For employees and this is not an easy task to achieve work life balance especially during this unpredictable and dynamic work environment. From the study, it can conclude that the work is interfering with the personal life of the respondents, as many of the respondents are worried about the lengthy working hours. One more interesting fact found out from the study is that the respondents' spouses have very good understanding and they are supporting to have right balance between the work and family life. Most of the IT employees neither satisfied not dissatisfied with their work life balance and they are trying to overcome work life conflicts by engaging in activities like spending time with family/friends and my maintaining health by proper diet and physical and mental exercises.

LIMITATIONS OF THE STUDY

- This study conducted relating to the IT sector employees , so the result which we gather is only applicable for IT employees .
- The response from the sample may be biased, or may contain cooked up from the respondent.

SCOPE FOR FURTHER RESEARCH

The results of this study opens new avenue for further research and can be used as source of hypothesis for further quantitative study

Further research is possible on the motivational factors that motivate employees to work more during this pandemic.



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PSYCHO SOCIAL ATTITUDES OF PARENTS, TEACHERS AND STUDENTS TOWARDS EDUCATION: A STUDY OF UTTAR PRADESH

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Abstract

The education of children is influenced by interplay of a range of factors at school, society and family, especially for the tribal children. For school participation, it is important that all the three factors should be positive or at least one or two factors should be strongly favorable. The children from families with more socio-economic resources are more often enrolled in school. For wealthier families, the direct costs associated with education, such as fees, books and uniforms are less likely to be an obstacle. The government has emphasized on importance of parents/guardians as key decision makers in the educational process. Therefore, it is imperative that parents/guardians be provided with a clear delineation of child study roles and functions. Favorable attitude towards schooling and education enhances parental involvement in children's present and future studies. Parent's attitude towards their children's education is affected adversely by low socio-economic status and since the tribal constitute the disadvantaged population, Efforts have been made to ensure greater access to the disadvantaged groups by making provisions for free ships, scholarships and reservation. Primary education is the basic need of all children. Learning at this stage may be characterized by group activities, play way techniques, language, number games and activities directed to promote socialization and environmental awareness among children to help them in the process of attaining physical, mental and emotional maturity. Approaches in developing life skills and the formation of good habit and living togetherness need to be addressed with great care. Against this backdrop, present paper aims at examining the psycho social attitudes of parents, teachers and students towards primary schooling and education in Uttar Pradesh.

Introduction

Uttar Pradesh is the second largest and most populous state of India. Despite recent sign of progress, Uttar Pradesh is still facing challenges in social infrastructure like education, health, social welfare and safety net. State also has a low quality of human recourse .Uttar Pradesh is the hub of human capital but the quality of its human capital is low. Hence the state economy is not able to realize the benefits of its growing population. Though all indicators of social infrastructure having a distinct place in itself. I have taken here education sector to understand educational administration of Uttar Pradesh. An elementary education is an institution where children receive the first stage of compulsory education known as elementary or primary education. In India elementary school provide education from class 1 to 7. The students generally in these classes are aged between 5 to 12 years. It is the next stage of Kindergarten. Elementary school exists worldwide as the basic foundation institution in the formal educational structure. Like all other states in the country, schools in Uttar Pradesh are



divided into elementary, which include primary and upper-primary, secondary and senior secondary schools.

For the purpose of educational administration and management the department of education in Uttar Pradesh is divided into 18 divisions. Each division is headed by a Joint Director of Education and a Divisional Deputy Director of Education. Both these officers look after the issues that relates to secondary education. The state is divided into 75 districts. In every district, there is one office headed by district Basic Shiksha Officer who looks after all issues related to basic education, mid day meal and education for all (SSA). Sometimes, they also manage Saksharta and VaikalpikShiksha (as per directives of district level committee. One of the distinguishing features in Uttar Pradesh is that there are different cadres for male and female teachers at all levels. Significantly, a large part of increase in number of teachers is due to increase in number of women teachers. As mentioned earlier, the rate of growth in numbers of schools has outpaced rate of growth of teachers. Under SSA, there was a provision to hire para-teachers for classes I and II in primary schools that were run by the Basic ShikshaParishad. About 1.71 lakh ShikshaMitra posts were approved over between 2001-2008. Out of these, 1.65 lakhs ShikshaMitras were recruited and posted in schools. It is important to note that the ShikshaMitras are paid very low salaries i.e. Rs. 3,500 per month, for 11 months in a year. The state government has recently taken a decision to regularize the ShikshaMitras, which will bring their salaries at par with the existing primary teachers. In order to fulfil the requirements of the RTE Act, the State Government made a provision to appoint instructors for SUPW in Upper Primary schools in which there are more than 100 students. Project Approval Board had approved 41307 part time instructors for Upper Primary School in the supplementary AWP&B 2010-11 on the basis of DISE 2009-10. These posts were created under three categories – Health and Physical Education, Art Education, and Work Education. The Anudeshaks, like ShikshaMitras, are contractual teachers and are paid a consolidated salary of Rs. 7,000/- per month. The Kasturba Gandhi BalikaVidyalaya (KGBV) Scheme enables the establishment of residential schools for girls at upper primary level. The aim of the scheme is to reach out to girls from marginalized social groups in over 3,000 educationally backward blocks in the country where the female rural literacy rate is below the national average. Uttar Pradesh has established the highest number of schools in the country under this scheme.

Review of Literature

Kalita (2017) is of the view that teachers play a pivotal role for education of all type of children. Favourable and positive attitude of teachers towards children with disabilities is a major aspect of teaching-learning process and also for the growth and development of children with disabilities in the inclusive classroom. Favourable and positive attitude of teachers is must for proper implementation of inclusive education in the educational institutions. Smitha and Acharya (2010) found that teachers have unfavourable attitude towards inclusive education. Conclusively, it can be said that teachers' attitude towards disabled students, in particular and inclusive education, in general is the main pivot for making the concept of 'inclusion', a successful venture. RekhaChavhan (2013) found



that majority of pupil-teachers posses medium level of attitude towards inclusive education. It was seen from the results that there is significant difference between male and female student-teachers' attitude towards Inclusive Education. Female student teacher has favourable Attitude towards Inclusive Education than male student teachers. Shane and Christopher (2013) found was no significant difference in the attitude of male and female teachers. Khanduri and Yadav (2017) studied the difference between primary and secondary school teachers attitude towards teaching as career choice. Dickens and Smith (1995) conducted a study on the attitudes of both regular and special educators towards inclusion. The both groups of respondents reveal more favourable attitudes towards inclusion after their in-service training. They concluded that staff development is the key to the success of inclusion. Johnson (1996) in a study described and analyzed the perceptions held by regular education teachers toward the placement of students with learning disabilities in their classrooms. Nayak (2008) examined the attitude of both parents and teachers towards inclusive education. Results of the study reported that teachers look forward to teaching in an inclusive environment and are ready to face the challenges. Result of the study also showed significant difference in the opinions of teachers of normal school. ledge and understanding of their attitudes or perception towards having special needs students. Doinbusch& Ritter (1988) found that parental attitude and involvement is generally negative or low in minority and low socio - economic status families. McLoyd (1989) found that parent who experience difficult economic times have children who are more pessimistic about their educational and vocational futures. Sen (1992) in his study found that the culture factor may play an intermediate role. They influence the choice made by individuals, through their own attitudes, and those of the people in their close environment. Breen &Goldthorpe (1997) indicated that household wealth, the educational level and labour market position of the parents is expected to play a major role in deciding the educational level of the child. It was found in his study that children with a working mother are significantly less in school. Children from wealthier households are significantly more in school. Conger et al. (2002) conducted that indices of family socio –economic status, including parent education, would predict the quality of family interaction and child behaviour. Michigan Department of Education (2002) found that when parents are involved in school work, such as supporting school learning through activities such as reading at home, then children will have greater academic success, higher school attendance and higher self- esteem. Ganguly (2004) studied determinants of academic achievement in rural and urban areas and found that parental care about children's education, emotional climate at home a socioeconomic status of family had a positive correlation and crowded living conditions at home had a negative correlation with the academic achievement of students in rural and urban areas. Sharpe (2006) indicated that male prospective teachers have more favourable attitude towards multicultural education than female prospective teachers. Henning (2013) examined the students' attitudes and motivation towards education and discusses types of motivation, causes of motivation and the timing of the student's life at which motivation can be studied. Results indicate that parental decisions to be involved are statistically related to invitations from school, role construction, and self-efficacy. Larocque, Kleiman, and



Darling (2011) describe parental involvement as family involvement, defining it as “parents’ or caregivers’ investment in the education of their children.

Objectives and Methods

Present paper purports to examine the psycho social attitudes of parents, teachers and students towards schooling and education in the state of Uttar Pradesh. The paper is based on primary data collected through field survey in selected primary schools in five development blocks viz. Hargaon, Laharpur, Biswan, Kasmanda, and Parsendi of Sitapur district of Uttar Pradesh. The sample comprises of 10 schools, 237 students, 38 teachers and 198 parents. A review of the current literature has yielded many studies pertaining to correlations between parental involvement and student academic achievement, or student motivation and academic achievement. However, these ideas are analyzed as separate entities.

Discussion of Results

There has been rapid expansion of education system in terms of enrolment, number of institutions, growth rate, etc since independence. The system has undergone a unique transformation from elitist to an egalitarian one. Therefore, all sections of the population have gained as a result of the enlargement of the system. However, the disparities between the disadvantaged groups viz. minorities and non-disadvantaged groups have continued. Therefore, there is need to provide special care and opportunities to the traditional disadvantaged population in a democratic society such as ours, which stresses egalitarianism, social justice and economic development for all sections of society. It is with this in view that the Indian constitution provides an ideal of ‘Equality of opportunities’. Efforts have been made to ensure greater access to the disadvantaged groups by making provisions for free ships, scholarships and reservation

To ensure the attendance of teachers, special administrative and managerial arrangements should be taken. Providing transport facility to female teachers and special incentives for the teachers serving in remote tribal areas can be proved helpful. Teachers should motivate parents to enroll their daughters in schools especially the parents who are reluctant to do so due to unawareness and ignorance. The parents who focused only on religious education for their daughters also need motivation and inspiration. Up gradation of girls’ schools is also recommended. Giving stipend to enrolled girls is a good solution. Early marriage of the girls should be discouraged. Poor parents should be given stipends so that they might be able to educate their daughters. To overcome the social problems institutions of higher education should be established for female education only. Parental attitudes towards being involved in and the importance of education in relation to student academic motivation and achievement is a complex matter. A change in one environment can often lead to a change in another environment. When a child’s home and school environments are working together for the betterment of that child, this will most likely lead to higher involvement on the part of the parent and higher achievement on the part of the child. The challenge India is facing concerning the educational sector is wide and covers policy, redistributive, efficiency, cultural and several other aspects. Since the early 1990’s Indian policy was



aimed at expanding access to education through the adoption of several programs and goals declarations (DPEP, SSA, RTE, MDM, Universal Elementary Education etc.). The general trends of the mainstream indicators – enrolment, literacy, gender gap, out of school, drop-out - suggest that relative progress had been made. Remarkable progresses have been made in the economically backward states. The rural-urban divide has been narrowed in recent years. Despite these trends of school enrolment, were not proceeding together with increases of progress, numbers are still discouraging: inequality of education across states is still high, all the persistent gaps (gender, between castes, rural/urban) persists both on quantitative indicators and effective learning indicators. Government schools are those presenting the worst performance with respect to other private schools. Drop-out rates, both in rural and urban areas are still highly alarming. The slow growth of teachers supply results in a higher pupil-teacher ratio. Moreover, teachers' absenteeism has been seen as one of the main problem of Indian school system. And these are the same teachers whose salary is even 10 times the salary of a teacher in private school in rural India. It follows that investments in trainings for teachers are not matching the desired effect, being not the only solution in addressing school quality. The importance of private schools is clearly shown by the growth in private school enrolment rate and share. This study finds evidence of the widely unregulated system in which private schools are operating, despite very severe standards are necessary in order to get recognition. The private schools with the same student target may better address children learning due the effective leadership effects and school setting and targets – such as secondary school for female – shaping and attracting parents' priorities. The government-aided school taken in consideration in this research actually presents very low standards and performance. Government-aided schools are subsidized with no concerning on school performance.

Main Research Findings:

- The education of children is influenced by a range of factors at school, society and family. Primary education is the basic need of all children. Learning at this stage may be characterized by group activities, play way techniques, language, number games and activities directed to promote socialization and environmental awareness among children to help them in the process of attaining physical, mental and emotional maturity. Approaches in developing life skills and the formation of good habit and living togetherness need to be addressed with great care. The attitude of teachers, guardians and students regarding primary education has direct bearing on educational development of children as it provides direction for school management, creating conducive educational environment and imparting of education.
- The Right to Education Act, 2009 ensures that every child in the age group of 6-14 years has a right to full time elementary education of satisfactory and standard quality in a formal school that fulfils essential norms and standards as per the requirement. The Act incorporates the principles of child centred education spelt out in the National Policy on Education and elaborated in the National Curriculum Framework, 2005. There has been speedy progress towards universal elementary education over the last decades.



- There has been significant improvement in the school facilities and enrolment, retention and pass out of children over the period. The learning levels of children are indicators of effectiveness or productivity of the education system. The productivity of education system reveals that there has been decline of 9 percentage points over the period of 2008 to 2018. There is clearly a positive change in most states over the last two years which points out towards an increase emphasis on improved learning levels in many states. It is to be noted that 17.6 per cent girls in the age group of 11-16 years are not enrolled in school at the national level.
- There has been remarkable growth in recognized educational institutions in India during the recent period. However, there has been decline in enrolment of students in primary schools over the period of 2006-07 to 2015-16. However, there has been significant increase in enrolment of students in upper primary and secondary level of education over the corresponding period. About 30 per cent students were found enrolled in private and aided schools.
- In the state of Uttar Pradesh, less than 1/3rd schools were private schools. This was found more pronouncing in secondary schools (71.5 per cent). However, less than 1/4th primary schools consisted of private schools during 2017-18. There has been significant increase in the number of schools in the state of Uttar Pradesh during 2014-15 to 2017-18. About 3.43 million students were found enrolled in class-1-8 in various schools in the state during 2017-18. There were more than 2 lakh teachers in primary and about 32000 teachers in upper primary schools during 2017-18 in the state.
- As per ASER, 2018, there has been significant improvement in educational performance in the state of Uttar Pradesh. School facilities have drastically improved in the state over the period of 2010-2018. Similarly, the learning levels of children have improved significantly however, the levels of learning of students were reported far below in government schools as compared to private schools.
- District Sitapur in Central Uttar Pradesh was selected for study. There has been significant increase in educational institutions in Sitapur over the period of 1990-91 to 2016-17. There were 4052 primary schools and 1574 upper primary schools in the district during 2016-17. Out of them, 384 primary schools and 146 upper primary schools were reported in urban areas.
- There has been significant growth in enrolment of students in educational institutions in the district however, a large proportion of students are getting admission in private schools. There has been gender disparity in enrolment of students in primary schools in the district. The gender disparity was recorded high in Pisawan, Mishrikh, Parsendi, Behta, Reusa, Kasmanda, Rampur Mathura and Mehmoodabad.
- On an average, less than 200 students were reported in selected schools. However, enrolment of students was recorded low in Hargoan, Parsendi and Kasmanda. Out of



total enrolment of students, most of students were from weaker and marginalized sections of society. Gender disparity was recorded significantly high in Biswan, Laharpur and Hargoan. However, basic infrastructure was found satisfactory in selected schools.

- About 2/5th teachers were males while about 2/3rd teachers were from OBC, SC/ST and minority communities. About 3/4th teachers were from the age group of 35-45 years. More than half teachers were B.Ed. qualified and more than 3/4th teachers had teaching experience of less than 5 years.
- All the teachers have received training and most of them received training at BRC level. The teachers were found satisfied with the quality of training. Most of teachers were found aware about the knowledge of new initiatives under universalization of primary education, knowledge of MIS system.
- The overwhelming majority of teachers rated the high importance of formal education, innovative education, alternative education and non-formal education. Majority of teachers rated social and education values as high importance. These values were related to girl education, mid-day meal, free text books, free uniform and bags, motivation programmes for learning, moral education and physical education. Majority of teachers were found satisfied with the quality of mid-day meal, teaching, environment of school and sanitation facility in schools. However, overwhelming majority of teachers accepted that they have burden of multiple class teaching.
- Majority of teachers reported that teacher-parents meetings are held on monthly basis. They further reported that they are participating in national festivals and parents meetings. However, a large proportion of teachers admitted that they do not carry children of school for educational exposure. Overwhelming majority of teachers admitted that they teach free in additional hours in schools for educationally backward children. They also visit villages to convince parents for enrolment of children. Besides, they motivate children to participate in activities other than course curricular.
- About half students were males. They were mainly from weaker sections of society. Most of them were from nuclear families. Most of students were in the age group of less than 12 years. Significant proportions of students were also physically and mentally challenges.
- Quality of education was measured in terms of excellent, good, satisfactory and dissatisfactory levels. Majority of students were found in the category of good mental skill. More than half of the students were rated as good in maths while about 60 per cent students had good mental level in Hindi. More than half of students were rated good mental level in English and about 58 per cent students had satisfactory mental level in general knowledge.
- About 2/3rd students reported that there is regular cooking of meal however, about 1/3rd students admitted that cooking of meal as per menu. Most of students accepted



that they get free text books, free school uniform and bag.

- Satisfactory level of school was recorded high for regular attendance of teachers, teaching methods, behaviour of teachers, teaching, management and discipline.
- Most of students admitted that they get quality of mid-day meal. They are being taught moral education and get regular home work. Most of the students further reported that they assist their parents in domestic work.
- Majority of students reported that they get opportunity to participate in sports competition and cleaning of schools. They also participate in community work.
- The parents were mainly from Hindu communities however, majority of them were from SC/ST and OBC communities. Their educational levels were reported to be low. More than half of them were from joint families. The main occupation of parents was reported agriculture, labour and self employment. Thus, most of the parents were from lower class and lower middle class. Their annual income was reported less than Rs. 75000.
- Most of parents were found in favour of the view point that education will help children in their future. They admitted that they give priority for education to their children. However, about 29 per cent parents reported that their children are out of school. Non-affordability and need to earn were the main reasons for non-enrolment and dropout from educational institutions.
- Majority of parents reported that they assist their children in their studies. Most of parents further reported that their children assist in their work at home. Most of parents revealed that their children study daily at home. They further reported that their children talk about happenings of schools to them.
- Most of parents reported that their children are participating in teaching learning activities. They were in favour of co-curriculum activities for development of children. About 59 per cent parents reported that their children sometimes do home work regularly. About 61 per cent parents revealed that sometimes they attend parent-teachers meetings.
- About 2/3rd parents were found in favour of the view point that school environment is conducive for their children education. Most of parents were found satisfied with educational infrastructure of schools. All the parents reported that their children are availing mid-day meal, free text books and free school uniform.
- Most of parents were found in favour of compulsory education to all children. Most of parents were found in favour of the view point that Right to Education will improve enrolment, retention and quality education of children. Similarly, most of parents were found in favour of the view point that educational incentives will improve enrolment, retention and quality education of children.
- About 2/3rd parents reported that Village Education Committee has been constituted. Most of respondents admitted that such committee is playing effective role in resolution of educational problems. Less than half of respondents were members of



such committee. Majority of the parents were of the view point that the contribution of Village Education Committee in educational environment, enrolment of children, attendance of students and teachers and monitory and supervision of mid-day meal is found to be very good, good and satisfactory. Most of respondents further reported that School Management Committee has been constituted.

- Majority of parents rated the importance of educational values as high, very high and average. It was found more pronouncing in case of education to all children, education to girl children, moral and ethical education to children, environmental education to children, physical education and inculcation of cultural values in course.

Suggestions

- Teachers need to be trained to shed away some of the lecture method of teaching, and use more of group–discussion method and interactive method, using more of audio–visual devices, over–head projectors, multi–media devices etc. The institutions must make adequate provision for these devices, and the teachers should be encouraged to make their optimum use.
- Students should be provided with the basic study material (on reasonable price), and should be further motivated to substantiate the same by additional readings from library, field surveys etc. This is done in some management institutions. This should be extended to all courses and programmes.
- Teachers should be trained, and helped to develop friendly relations with students. Specially, teachers should be discouraged from adopting an indifferent (or even an aggressive) attitude towards students. They must develop such an attitude towards students that treats them as valued “customers” who must be satisfied. This attitudinal change among teachers is a must. They must be provided counselling to do so.
- Infrastructure of schools should be developed and further strengthened. Teachers find computer laboratory, communication facility (such as telephone, fax, e–mail etc.), and electricity supply, as inadequate. These facilities should be made more and more accessible to both the teachers and students.
- Library resources need to be further enriched. They must be made more and more accessible to the students. Librarians of these schools need to shed away their “close access” approach to work and display of literature and information resources.
- The management of schools has so far lacked emphasis on quality of the system or monitoring of its productivity and performance. Therefore, performance and productivity assessment mechanism should be evolved, strengthened and implemented in order to improve the efficiency and performance. A student and society oriented total quality management approach be adopted in the schools.
- There should be the provision of extra classes for the subjects of English, Math and General Knowledge to the students having poor educational standards and coming from backward areas and low income groups so that they may join the mainstream of



education system.

- There is need to ensure effective functioning of Village Education Committee and School Management Committee through enhancing the role of community and increased interface of teachers – parents meetings. The civil society organizations and NGOs working in the area may promote the educational environment and may strengthen the Village Education Committee and School Management Committee through providing training and capacity building in collaboration with DIET.
- There should be budgetary provision for creating sports facilities for students and their educational tour so that students may be exposed to external educational environment and may get the opportunities for their overall development.
- There should be regular monitoring of the functioning of schools and educational performance of students by DIET and Basic ShikshaAdhikari while students having poor performance and educational standards should not be promoted into next class in order to maintain the educational standards .
- There should be inculcation and incorporation of educational , social and cultural values in the course curriculum of students while there should be provision of extra classes for imparting educational , social and cultural values to students so that students may learn their culture , history, society and polity besides learning their course text books.
- The shortage of teachers in primary and upper primary schools should be addressed through engaging trained ShikshaMitra and Subject Experts. The vacancies of teachers should be filled with priority while the unrest among ShikshaMitra regarding their posting should be removed through bold political decision.
- There should be more emphasis on home work for students , however, the students coming from weaker sections may be properly guided to complete their home work as some of the parents may not be able to help their wards to complete home work due to poor educational levels. The students should be encouraged to assist their parents in their domestic work as well as community work.

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OPPORTUNITY OF DEMOGRAPHIC DIVIDEND WITH SKILL DEVELOPMENT

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Abstract: The paper entitled “opportunity of Demographic Dividend with Skill Development” is an attempt to analyze demographic dividend and its benefits through skill development for enhancing the job opportunity in India. The paper is divided into three sections: the first section discusses introductory note and the key words namely demographic dividend and skill development with their linkages for skilled workforce and enhancing the level of employment and the level of national income/GDP. It also highlights the current scenario of the country and focuses on need and justification of the study. This section also discusses objective of the study and research methodology. Second section discusses the analysis of secondary data and comparative pattern of growth age group wise in different census of the country. Working age population is continuously increasing in different census. In 1971 it was 52 and increased on 62.5 in 2011. The other table provides the estimated workforce demand for the year 2022 in various sections based on ministry of skill development and entrepreneurship. It shows after about one decade the additional job opportunity in 2022 shall be 109.73 million. The last section discusses the government’s steps taken for skill development and some suggestion.

Keywords: Working Age Population, Demographic Dividend, Skill Development

JEL Codes: E24, J01, J11, J22, J24, O15.

Introduction

The future of any country lies in the hands of its youth. An empowered youth is the greatest wealth and strength of any nation. So, it’s the responsibility of the governing body and trained society to empower their youths for empowering the country. At the present scenario, when the richest countries of the world will have a shortage of working age population to support their economies, India is harvesting its rich demographic dividend. UN population report, 2015 reveals that by the year 2020, the average age of Indian would be 29 years which would be one of the youngest in the world as compared to 37 years in China & the US, 45 years in west Europe and 48 in Japan. The demographic advantage is an opportunity for India to be the human resources factory of the world. But, demographic dividend does not mean just working age population (people of the age group 15 to 59); it is associated with educated, skilled and trained professionals. Meaning thereby it is skill & education which will fertilize our huge working age population as dividend. Government of India realized this and has lunched “The national skill development mission” on July 15, 2015 on the occasion of first world youth day. The GoI also started some other supportive programs like



startup India, Mudra Bank, Deen Dayal Upadhyay Grameen Kaushal Yojana etc for empower their youth.

Demographic Dividend

A population bulge in working age group, however decreasing dependency ratio resulted surplus production and increasing national income is demographic dividend. But, the benefit of the bulge of working age population can get only if the window of opportunity available to educate, to train, to skill, to re-skill, to provide job, by doing this we can convert our working age population into workforce and get the demographic dividend. Demographic dividend is also known as the ‘Demographic bonus, the ‘Window of opportunities’ and ‘Youth bulge’

Present Scenario of India

India has its own initiative to get the demographic benefit such as an initiative to rebuilt, reinvent and reenergize the working age population. The golden ‘Growth’ era in the demographic dividend context is no longer a progression of thoughts but a reality that reflects youthful India’s firm strides towards overall economic development. The focus towards both job generation and skill development, is leading the nation to greener “Demographic Dividend” pastures. The vision of 2020 is taking shape. With a population of 1.3 billion, of which about 0.8 billion in the working age, youthful India is surely going to paint the world red. Now India is one of the youngest nations in the world with more than 62.5 percent of the population in the working age group (15-59 years) and almost 50 percent falling below 25 years of age. The mean age of India will be 29 years in 2020, which makes it one of the youngest populations in the world. Around 12 million youth enter the working age each year. The key challenge that the nation faces is finding jobs for the millions of youth below 25 years of age constitution 50 percent of population.

Since, India has set a huge target for itself of 500 million people it requires programs that are scalable, replicable and accessible, this has created a unique opportunity in terms of economies of scale for the new providers entering the market.

The world (both developed and developing economies) is experiencing an ever widening gap between the demand and supply of skilled labour. The world’s population is growing old. By 2050, the world population of people above 60 years will hit the 1.3 billion mark. This trend will lead to the widening of the demand-supply gap, especially in the developed nations like America, Germany and France. On the other hand, India is emerging with one of the youngest populations in the world comprising of a highly mobile, English speaking population Training such a workforce will imply that India can become the major exporter in the services sector as well as an exporter of manpower itself. It is estimated that by 2022, India will face a demand of 500 million skilled workers.

Need for the Study

At present, our country faces a dual challenge of paucity of highly trained workforce, as well as non-employability of large sections of the conventionally



educated youth, who possess little or no job skills. Skill development is critical for economic growth and social development. The demographic transition of India makes it imperative to ensure employment opportunities for more than 12 million youths entering working age annually. India's workforce, the second largest in the world after China, needs to be trained across four levels, from the 'White Collar' workers to the 'Rust Collar' workers, linking them to job opportunities and market realities.

As stated, world population is ageing rapidly while India is youngest population in the world. But it faces a paradoxical situation where youth is looking for job and on the other hand, economies is suffering from availability of skilled workers because there is wide gap between the skills required in services and industry and those provided by the education system. If we want to shrink or finished this gap, we were estimate what is the demand for skilled worker and how we supply employable worker?

Objectives of the Study

1. To provide an understanding of the concept of demographic dividend in the India.
2. To focus on importance of skills challenges to fill the gap between demand and supply of workforce.
3. To suggest possible solutions or ways forward.

Methodology

This study is based on secondary data that has been taken from various census reports and published sources like journals, articles, reports and other government publications. Table, figures and graphs have been built as the requirement of the study.

Analysis of the Study

The table, given below, shows the changing age structure of India. As per available data from census, there has been a gradual decline in the share of Population in the age group 0-14 from 42.14 to 39.70 per cent during 1971 to 1981 and 37.76 to 29.5 percent during 1991 to 2011, whereas, the proportion of working population (15-59 years) has increased from 52 to 53.8 percent during 1971 to 1981 and 55.5 to 62.5 per cent during 1991 to 2011. On account of better education, health facilities and increase in life expectancy, the percentage of elderly population (60+) has gone up from 6.0 to 6.4 percent during 1971 to 1981 and 6.8 to 8.0 percent during 1991 to 2011 respectively. This means that the dependent ratio of less than 15 year is declining will boost saving and investment on one hand and Increasing working age population which means labour supply will increase the production of goods and services on other hand. So it is a very good opportunity to use our working people to increasing growth rate of nation.

Table 1: Percentage Distribution of Population in India

Age group	1971	1981	1991	2001	2011
0-14	42.14	39.70	37.76	35.3	29.5
15-59	52	53.8	55.5	56.9	62.5
60+	6.0	6.4	6.8	7.4	8.0

Source: Different population censuses.



Labour Force: Level of education and vocational training

The skill challenge is that the general education level of India’s labour force in the age group 15-59 remains extremely low (Table). The total labour force in 2009-10 was 470 million. However, for the analysis in this paper we have used labour force estimates of those aged between 15 and 59 years (the working age population) which is 431 million. Of the labour force of 431 million between the ages 15 and 59 in 2009-10 nearly 126 million or 29% of the labour force, are not even literate. An additional 102 million, or nearly 24%, of the labour force either has below primary or only primary level of education. In other words, well over half of the labour force between 15 and 59 years of age has extremely low levels of education or none at all. An additional 17.6% had middle level education in 2009-10 and a further 12% had attained secondary level education. In other words, the remainder of only 17% has higher secondary and higher levels of education (including diploma/ certificate, graduates and post-graduation levels of education).

Table 2: General Education level of labour force (PS+SS) in age group 15-59

Description	Members (Millions)	Share in labour force in age group 15-59 (%)	Share in labour force (470.1 million)
Not literate	125.7	29.1	26.7
Literate without formal schooling	2.1	0.5	0.5
Below primary + primary	102.4	23.7	21.8
Middle	76.1	17.6	16.2
Secondary	52.4	12.2	11.1
Higher Secondary	29.2	6.8	6.2
Diploma/ Certificate Course	6.0	1.4	1.3
Graduate	28.0	6.5	6.0
Graduate and above	9.4	2.2	2.0
Total	431.2	100	91.7

Source: computed from NSS (66th round), PS= principle status, SS= subsidiary status

Skill Requirements by 2022

As per the skill gap study conducted by the National Skill Development Cooperation over 2010 - 2014, there is an additional net requirement of 109.73 million skilled manpower by 2022 across twenty four key sectors. As India strengthens its base as a knowledge economy, there would be additional requirements to the highly skilled workforce in sectors like financial services, IT/IITs, Bio-technology, Healthcare and Pharmaceuticals. Further, with value added industries being given a policy push under the ‘Make in India’ initiative, highly skilled workforce would also be required in high-end industries.



Table 3: Incremental Human Resource Requirement across Sectors by 2022

Sr. No.	Sector	Employment Base in 2013 (million)	Projected Employment By 2022 (million)	Incremental Human Resource Requirement (2013-22)
1	Auto and Auto Components	10.98	14.88	3.9
2	Beauty and Wellness	4.21	14.27	10.06
3	Food Processing	6.98	11.38	4.4
4	Media and Entertainment	0.4	1.3	0.9
5	Handlooms and Handicrafts	11.65	17.79	6.14
6	Leather and Leather Goods	3.09	6.81	3.72
7	Domestic Help	6	10.88	4.88
8	Gems & Jewellery	4.64	8.23	3.59
9	Telecommunication	2.08	4.16	2.08
10	Tourism, Hospitality and Travel	6.96	13.44	6.48
11	Furniture and Furnishing	4.11	11.29	7.18
12	Building, Construction and Real Estate	45.42	76.55	31.13
13	IT and ITES	2.96	5.12	2.16
14	Construction Material and Building Hardware	8.3	11	2.7
15	Textile and Clothing	15.23	21.54	6.31
16	Healthcare	3.59	7.39	3.8
17	Security	7	11.83	4.83
18	Agriculture	240.4	215.6	(24.8)
19	Education/ skill development	13.02	17.31	4.29
20	Transportation and Logistics	16.74	28.4	11.66
21	Electronic and IT Hardware	4.33	8.94	4.61
22	Pharma and Life Sciences	1.86	3.58	1.72
23	BFSI	2.55	4.25	1.7
24	Retail	38.6	55.95	17.35
	Total	461.1	581.89	120.79
	Removal of Duplication in Retail Sector	(10.37)	(21.43)	(11.06)
	Total Requirement	450.73	560.46	109.73

Source: Ministry of Skill Development & Entrepreneurship



Problems of skilling for India

In the beginning there were numerous challenges in this endeavor like lack of literacy, quality education, dropout, skill and training programs, healthcare facilities, access to modern amenities, understanding and access of advance technologies, unawareness of opportunities etc.

Government's Initiatives on skill development

The government has started many plans and policies in the context of skilling the youths as vocational training programs, ITIs, Polytechnics, IITs, skill India, PradhanMantriKausalVikasYojana etc. Some are as follows:

National Policy on Skill Development and Entrepreneurship

To encash the opportunity of huge working age population Ministry of skill development has started the national policy of skill development and entrepreneurship. The objective of the National Policy on Skill Development and Entrepreneurship, 2015 is to meet the challenge of skilling at scale with speed and standard quality. It aims to provide an umbrella framework to all skilling activities of the country. It integrate them with common standards and link the skilling with demand addition to laying down the objectives and probable outcomes, the effort will also be to identify the various institutional frameworks which can act as the vehicle to reach the expected outcomes.

National Skill Development Mission

The National Skill Development Mission (NSDM) was launched by the GoI on 15th July, 2015 on the occasion of World Youth Skills Day. The Mission has been launched to accelerate the skill and training across the sectors and States. It has the vision of 'Skilled India, the NSDM would not only consolidate and coordinate skilling efforts, but also to increase the decision making across sectors to achieve skilling at scale with speed and standards. The Mission will be supported by three other institutions: National Skill Development Corporation (NSDC), National Skill Development Agency (NSDA) and Directorate General of Training (DGT). all of which will have horizontal linkages with Mission Directorate to facilitate smooth functioning of the national institutional mechanism. To do a comprehensive task seven sub-missions have also been proposed.

(i) Institutional Training, (ii) Convergence, (iii) Infrastructure, (iv) Overseas Employment, (v) Trainers, (vi) Sustainable Livelihoods, (vii) Leveraging Public Infrastructure.

Standard Training Assessment and Reward (STAR) Scheme

The National Skill Certification and Monetary Reward Scheme, known as STAR (Standard Training Assessment and Reward), was operational between August 2013 and September 2014.



Suggestions

1. Our focus should be laid not only educating and skilling the workers but also on a continuous process of training, skilling, re-skilling, multi-skilling and skill modulation. It'll update our workers with the advancement of technology.
2. Focus on Informal sector by finding a model that reaches out to the people and livelihood promotion institution and NGOs are engaged effectively.
3. A successful R-EDP (Rural Entrepreneurial Development) Model has been implemented by the Grameen Bank in Bangladesh across various rural pockets. This has been customized and implemented by the Indian Government as well.
4. Innovative E-learning Platforms have been gaining more popularity in recent times. They offer a greater mobile and flexible learning environment. Students can learn and attend classes and participate in discussion forums online, at their convenience, from their offices, homes and so on.
5. Greater interaction should be encouraged among industry, academia and skills providers to narrow the gap between the demand and supply of skilled manpower.

Conclusion

The above paper highlights the gap between demand and supply side workforce constraints. India is looking the opportunity of demographic dividend on the ground of its huge working population and we have to make not only vocational training but also doing much broader activity as skilling to include vocational, technical as well as general education. Because we have time constraint, our opportunity of demographic dividend is expected to continue till about 2040. Therefore, if we have to realize the concept of inclusive and sustainable development, it should need to be more aware.

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डॉ० राजेन्द्र मिश्र के एकांकी एवं जनसंख्या वृद्धि समस्या का समाधान

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विशेष प्रजाति के अन्तः जीव प्रजनन के संग्रह को जनसंख्या कहते हैं, इसी प्रकार से समाजशास्त्र में मनुष्यों के संग्रह को जनसंख्या कहते हैं। जनसंख्या की संरचना का तात्पर्य जनसंख्या के संरचना से है अर्थात् जन की संख्या, उसकी आयु, लिंग, धर्म, भाषा, साक्षरता, जनसंख्या वृद्धि की प्रवृत्ति, घनत्व, व्यवसाय ग्रामीण एवं नगरीय अनुपात आदि से है। वस्तुतः जनसंख्या किसी भी राष्ट्र के निर्माण के लिए आवश्यक तत्व होता है जो उस राष्ट्र की वस्तुओं व सेवाओं का उत्पादन करती है और वितरण के साथ-साथ उपयोग भी करते हैं; यही कारण है कि जनसंख्या को किसी भी देश के साधन और साध्य का स्थान दिया जाता है। कार्ल मार्क्स ने ठीक ही लिखा है कि किसी भी समाज के अस्तित्व व निरन्तरता के लिए दो प्रकार के उत्पादन की जरूरत होती है। प्रथम जीवित रहने के लिए आवश्यक वस्तुओं का उत्पादन और द्वितीय बच्चों का उत्पादन।¹

इस तरह से किसी राष्ट्र की सम्पूर्ण जनसंख्या को मानवीय संसाधन कहा जाता है मानवीय संसाधन कौशल और उच्च कोटि की प्रौद्योगिकी के बल पर ही प्राकृतिक संसाधनों का उपयोग कर औद्योगिक और प्रगतिशील राष्ट्र का निर्माण करते हैं। वस्तुतः प्राकृतिक संसाधन निष्क्रिय होते हैं। वे सक्रिय मानवीय संसाधनों का स्पर्श पाकर ही राष्ट्र के विकास की सुदृढ़ नींव रखते हैं। यदि किसी देश या राष्ट्र की जनसंख्या अधिक है तो इसका कदापि यह अर्थ नहीं होता है कि वहाँ अधिक मानवीय संसाधन हैं। जिस देश या क्षेत्र के लोगों में शिक्षा, तकनीकी ज्ञान, संस्कृति और सभ्यता मानसिक तथा शारीरिक क्षमता आदि गुण जितना अधिक

¹. सामाजिक समस्यायें, रविन्द्रनाथ मुकर्जी एवं भरत अग्रवाल, विवेक प्रकाशन, 2005, पृष्ठ संख्या-184



विद्यमान होगा, वहाँ मानवीय संसाधन निश्चित ही उपयोगी और उस राष्ट्र के विकास में सहायक सिद्ध होगा। जनश्रुतियों से स्पष्ट है कि “किसी चीज की अति बड़ी बुरी होती है।” यह कथन इस बात को इंगित करता है कि यदि कोई व्यक्ति, वस्तु या स्थान अपने मानक को पार करके अतिशयता की प्रकृति को प्राप्त करता है तो विकृति सभाव्य है। अतः यदि जनसंख्या का स्वरूप एक मानवीकृत रूप से विचलित होकर उत्तरोत्तर वृद्धि की दिशा होते हुए सघन दृष्टिकोण हो तो सम्भावित है कि सम्बन्धित समस्याएँ उत्पन्न होगी, जिससे जन और पर्यावरण दोनों पर गहरा निषेधात्मक प्रभाव पड़ सकता है अतः यह भी कहा जा सकता है कि जनसंख्या में वृद्धि होने पर जनसंख्या के घनत्व में भी वृद्धि होगी। इस प्रकार जनसंख्या घनत्व को राज्य के क्षेत्रफल अर्थात् निश्चित भू भाग और मनुष्यों की संख्या के अनुपात के रूप में देखा जाता है।

जनसंख्या घनत्व में वृद्धि या जनसंख्या में वृद्धि से उत्पन्न समस्त समस्याओं के प्रभाव को समाज, समुदाय एवं जन व्यवस्थाओं पर प्रच्छन्न एवं अप्रच्छन्न रूप से देखा जा सकता है। यथा— मानसिक समस्याएँ, दैहिक समस्याएँ, स्वास्थ्य सम्बन्धी समस्या, भोजन, पानी, शिक्षा सम्बन्धी समस्याएँ आदि। एक अध्ययन में यह दर्शाया गया कि जनसंख्या वृद्धि का जीवन की गुणवत्ता पर प्रभाव पड़ता है, इसलिए घरेलू वेदना सूची के पाँच मापदण्ड को प्रस्तुत किया गया, पक्का मकान, सुरक्षित पीने का पानी, बिजली, सफाई व्यवस्था तथा खाना पकाने के लिए ईंधन (बोस, 1966)।² इस प्रकार से इस सामाजिक समस्या के प्रति समाजशास्त्रियों, मनोवैज्ञानिकों, अर्थशास्त्रियों तथा अन्य विद्वतजनों द्वारा प्रकाश डाला गया है तथा साथ ही साथ संस्कृत साहित्य एवं एकांकी में भी आचार्यों तथा विद्वतजनों द्वारा प्रकाश डाला गया तथा इसके दीर्घकालिक प्रभावों को भी दर्शाया गया।

2. *मीटिंग इंडियाज बेस्ट नीड्स : द ह्यूमन डेवलपमेंट इण्डेक्स, आशीस बोस, दिल्ली, 1966,*



इस प्रकार से जनसंख्या वृद्धि व्यापक स्तर पर किसी भी देश के लिए अहितकर सिद्ध होती है। इस समस्या को समाजशास्त्रियों, अर्थशास्त्रियों तथा विभिन्न विद्वतजनों द्वारा उद्घाटित किया गया है। ऐसे विभिन्न समस्याओं को उद्घाटित करने में संस्कृत साहित्य भी पीछे नहीं है। संस्कृत साहित्य के विभिन्न विधाओं यथा- एकांकी, काव्य, कथा, नाटक इत्यादि में विस्तृत उल्लेख मिलता रहा है और वर्तमान समय में भी इन विधाओं में समस्याओं को प्रस्फुटित करने का कार्य चल रहा है; यद्यपि संस्कृत साहित्य विभिन्न विज्ञानों की जननी है। ऐसे में संस्कृत साहित्य के ख्याति प्राप्त विद्वान डॉ० राजेन्द्र मिश्र जहाँ लोक साहित्य के जीवन के अन्तर्दृष्टा हैं, तो कहीं एकांकी नाटकों में भी लोक जीवन की मर्मस्पर्शी परिस्थितियाँ तथा समस्याओं को सामाजिक पटल पर रखने वाले युगदृष्टा भी हैं। इस सन्दर्भ में रामकुमार वर्मा का कहना है कि- “मेरी मान्यता है कि संस्कृत-साहित्य में इस शैली का प्रवर्तन करने वाले वे प्रथम एकांकीकार हैं।”³

डॉ० राजेन्द्र मिश्र जी ने जनसंख्या वृद्धि की समस्या को एक सामाजिक एवं राष्ट्रीय समस्या के रूप में उद्घाटित करने का प्रयास किया है। यह सफल प्रयास ‘चतुष्पथीयम’ नामक ग्रन्थ में एक अंक के नाट्यकृतियों के संकलन में से ‘वैधेयाविक्रमम’ नामक नाट्यकृति को मई, 1981 को सृजित किया, जो कि स्वानुभवप्रमाण से सृजित नाट्य है।

इस नाट्यकृति में प्रो० मिश्र ने जनसंख्या वृद्धि का जीवन की गुणवत्ता पर प्रभाव स्पष्ट किया तथा जन साधारण के जागरूक न होने का दृष्टान्त प्रस्तुत किया है, जिसे गृहस्वामी और शारदा नामक पात्रों द्वारा कथोपकथन के आधार पर देखा जा सकता है। शारदा अपने पति को जलपान करा रही है, पति अर्थात् गृहस्वामी जलपान में दिये गये खीर की प्रशंसा करता है, ऐसे में शारदा कहती है कि वाक्पटुता छोड़िए और कान तक बड़े बाल (केश) को

³. *त्रिवेणी कवि : अभिराज राजेन्द्र मिश्र, व्यक्तित्व एवं कृतित्व- डॉ० (श्रीमती) राजेश कुमार मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2005, पृष्ठ संख्या-*



कटा लीजिए, प्रत्युत्तर में गृहस्थी वालों को अनमने ढंग से लेते हुए कहता है कि इस सन्दर्भ में कोई चिन्ता नहीं करता और न मैं ही चिन्ता करूँगा। मेरे द्वारा चिन्ता करने के उपरान्त भी मुझे कोई पुरुष की तरह अपना यौवन समर्पित कर मुझको युवा नहीं बना देगा। शारदा गुस्से में आकर कहती है तुम्हारा यौवन जल जाये। ग्यारह पुत्र को जन्म देकर मुझे बूढ़ी बनाकर भी तुमको संतुष्टि नहीं हो रहा है। प्रत्युत्तर में गृहस्वामी कहता है, बहुत हुआ, तुम मेरा यौवन कलंकित मत करो। न जाने पुनः दूसरे जन्म में परस्पर एक साथ होंगे कि नहीं, इसीलिए इसी जन्म में एक साथ रहकर ग्यारह पुत्रों को पैदा किया हूँ। पुत्र के उत्पादन में कुशल होने के कारण मैं प्रजापति दक्ष हूँ।⁴

प्रो० मिश्र ने इस एकांकी के माध्यम से गृहकलह, कोलाहल तथा तुच्छ मानसिकता को उद्भूत किया है, जिसमें अतार्किक ढंग से धार्मिक विश्वासों को जोड़ते, लोगों को दिखाया गया है।

4. शारदा : वार्द्धक्यमुपगच्छन्प्रायोऽपि नर्मवाक्कौशलं न जहासि।

कर्णपालीपलितकेशास्तावच्चिन्तय।

गृहस्वामी : को नु चिन्तयतु ! नाहं चिन्तशिष्यामि। किमेवं चिन्तयति मयि कोऽपि।

पूरुः स्वयौवनं समर्प्य माँ पुनरपि युवानं विधास्याते ?

शारदा : (सकृतकक्रोधम्)

विदहतु ते यौवनम्। एकादशरुद्रान् समुत्पाद्य मामकलावृद्धां विधायापि यन्न सन्तुष्यसि ?

गृहस्वामी : अलं मम यौवनं कलङ्कास्पदीकृत्य। न जाने पुनरपि जन्मनि मिथः

साहचर्यं भवेत् न वेति सम्प्रधार्येव युगपदेकादशमितान् पुत्रान्

उत्पादितवानस्मि। पुत्रोत्पादनदक्षत्वादेव मैं प्रजापतित्वम्।

(गृहाभ्यन्तरे कोलाहलं श्रूयते)

— 'वैधेयविक्रमम्', चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004,

पृष्ठ 65-66



इस नाट्यकृति के माध्यम से यह भी स्पष्ट करने का प्रयत्न किया गया है कि परिवार में अत्यधिक संख्या होने पर/विस्तृत पारिवारिक संरचना होने पर गृहकलह, अशान्ति, सम्पूर्ण पोषण आहार की कमी, निषेधात्मक मनोदशा, घरेलू- हिंसा इत्यादि लक्षण प्रस्तुत होने लगते हैं। इस नाट्य कृति में प्रो० मिश्र शारदा से यह वाचन करवाते हैं कि तुम्हारे ये ग्यारह रुद्र (ग्यारह पुत्र) महाप्रलय का नाटक कर रहे हैं। उन्हें शान्त करो तथा उनको घर में धरती पर बैठाओ। इस पर प्रत्युत्तर में शारदा के पति ने कहा कि अर्द्धाग्निनी ? तुम भी आधे की हिस्सेदार हो। पाँच रुद्रों को तुम शान्त करो और छः रुद्रों को मैं शान्त करूँगा। सभी बच्चे आपस में झगड़ते हुए माँ से प्रातःकालीन भूख की तृप्ति हेतु पेय पदार्थ माँगते हैं तथा सभी बच्चे एक-दूसरे पर आरोप-प्रत्यारोप लगाते हैं।⁵

5. शारदा : पश्येदानीम् । एकादशरुद्रास्ते महाप्रलयताण्डवं नाटयन्ति । साम्प्रतं परिसान्त्वय तान् । धारय च भवनधरित्रीम् ।
गृहस्वामी : (स्मेराननः)
अर्द्धाग्निनि ! त्वमप्यर्धसाहाय्यमाचर । पन्चरुद्रान् त्वं सान्त्वय षट् चाहम् ।
(कोलाहलध्वनिर्वर्धते । सर्वेऽपि दारकाः पर्याकुलमूर्द्धजाः ससम्भ्रमं बहिर्निस्सरन्ति)
एकः अम्ब ! प्रातराशं देहि । क्षुधा मां बाधते ।
द्वितीयः अम्ब ! मामपि !
तृतीयः अम्ब ! मामपि !
चतुर्थः अम्ब ! अलीकं भणति महेशः । नायं बुभुक्षुः । अनेन निलिखलमपि पायसं निभृतनिभृतमुत्थाय भक्षितम् ।
तृतीयः अम्ब ! न मयैकलेनैव भक्षितम् । मत्तोऽपि पूर्वं सुरेशे न भक्षितम् । तं भक्षयन्तं दृष्ट्वैव मया भक्षितम् ।
पंचमः अम्ब ! मह्यं न प्रदत्तम् ।
षष्ठः मह्यमपि ।
- 'वैधेयविक्रमम्', चतुष्पथीयम्- डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, (2004),
पृष्ठ - 66



पारिवारिक संरचना के विस्तृत होने पर बाल दुर्व्यवहार (मारने-पीटने सम्बन्धी व्यवहार), मनोवैज्ञानिक दुर्व्यवहार (गाली-गलौज देने सम्बन्धी तथा बुरा वर्ताव करने सम्बन्धी) इत्यादि प्रवृत्तियाँ प्रदर्शित होने लगती है। प्रो० मिश्र जी ने अपने नाट्यकृति में यह दर्शाते हैं कि बड़े परिवार हो जाने पर मुखिया छोटे-छोटे गलतियों पर मारना, पीटना तथा प्रताड़ना देने जैसे कृत्यों को प्रदर्शित करने लगते हैं। ऐसे ही व्यवहार का प्रदर्शन इस एकांकी में पिता द्वारा पुत्र पर दिखाया गया है। पिता अपने पुत्र महेश को रोकता है और गलती होने पर उसे दण्ड के रूप में कान पकड़कर ऐंठता है और गाल पर चाँटा भी मारता है।⁶ ऐसे में महेश की माँ शारदा महेश के पिता से बचाव करती है और अपने पति से इस दुर्व्यवहार के प्रति प्रत्युत्तर में बुरा भला कहती है। वह कहती है इस प्रकार पुत्रों को पीटकर दुष्ट आचरण क्यों दर्शाते हो, धिक्कार है। चौराहे के साँड़ की तरह मोटे होकर अपने दिन बिताते हो। पुत्रों को जन्म देने में वीरता समझते हो और पालन करने में अपनी वीरता नहीं समझते हो। पालन-पोषण में तो तुम्हारी कोई वीरता नहीं नजर आती। रोते हुए शारदा यह भी कहती है कि बच्चों को मार करके तुमने जो धिनौना कार्य किया। आज से तुम्हारा मुँह भी

6. गृहस्वामी : अपेहित्वम्। महेश / मुहूर्तमितस्तावत्।

महेश : (सभयम्)

मातर्वारय माम्। न मया किञ्चित्कृतम्। अग्रे पुनरप्येवं न करिष्ये।

गृहस्वामी : पुत्रक ! एकवारं यत्कृतं तस्य पुरस्कारं तावद्गृहाण।

(इति कर्णशष्कुलीं दृढमुष्ट्या निष्पीड्य चपेटाघातैः कपोलमण्डलं

बिम्बफलाभं विद्धाति)

— 'वैद्येयविक्रमम्', चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004,

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नहीं देखूँगी।⁷

इस प्रकार से प्रो० मिश्र ने विस्तृत पारिवारिक संरचना की निषेधात्मक परिणति को प्रदर्शित किया है। यद्यपि प्रो० मिश्र द्वारा यह साध्य स्वानुभाव के उपरान्त ही प्रदर्शित हुआ, लेकिन इस सन्दर्भ में कई अध्ययन यह दर्शाते हैं कि उच्च सघनता की दशा में परिवार में तनाव तथा व्यक्तियों में निषेधात्मक मनोदशा प्रदर्शित होती है (ग्रीनवर्ग : वैरने तथा सहयोगी)⁸

प्रो० मिश्र ने इस एकांकी के माध्यम से यह भी प्रदर्शित किया कि परिवार की संख्या बटने से गृहकलह तथा दुर्व्यवहार ही नहीं उत्पन्न होता, अपितु परिवार को आर्थिक संकटों का

7. शारदा : (सङ्गम्यमागत्य दारकं वारयति)
किमेवं नृशंसमाचरसि ? धिक्त्वामसाम्प्रतकारिणम् । चत्वरवृषभ इव
न्थमभ्यस्यन् दिनान्यतिवाहयसि । निर्गृहघट्टोऽसि । सन्तत्युत्पादन एव शौर्यं
वर्तते न खलु परिपालने । पोषणे लालने वा न ते विक्रमो मया दृष्टः ।
(सविलापस्वरम्)
पश्य तावत् । पशुमारं मारितोऽयं माणवकस्त्वया निर्धृणेन । अद्यारभ्य
मुखमपि न ते प्रेक्षिष्ये ।
गृहस्वामी : लप यथेप्सितम् । द्वित्रैरेव क्षणैर्विलपिष्यसि ? तवैव वात्सल्याडम्बरेण एते
दुष्टाः विकारिताः । श्रुतं त्वया न वा यद् दण्डः शास्त्रितः प्रजाः । दण्डकाष्ठं
सर्वमपि साधययति ।
— वैधेयविक्रमम्, चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ संख्या—68
8. शारदा : वेतनं वेतनं वेतनम् । कियन्मितं वर्तते तव वेतनम् सहस्रमितं लक्षमितं वा
? यदि नामाहं रिक्तसमये प्रतिवेशिबालकानां वस्त्राणि स्यूत्वा अर्थसाहाय्यं
न कुर्यां तर्हि शाकलवणमपि संघटितं न भवेत् ।
गृहस्वामी : (संक्षुब्धः सन्)
प्रतीयते यत्त्वमेव मम भर्ताऽसि । अहमेव तव पत्न्यस्मि ।
शारदा : किमत्रापि वर्तते संशयः ? लोका उपहसन्ति नाम मां दर्श दर्शम् ।
पुरुषजनकरणीयं सर्वकार्यं सम्पादयन्ती गृहिणी कीदृशी भवति, किमेतदपि
न जानासि ?
गृहस्वामी : को न खलु दास्याः पुत्रो भणत्येवम् ? ब्रूहि तदभिधानम् । ग्रीवां तस्य
मडमडायिष्ये ।
— वैधेयविक्रमम्, चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ संख्या
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सामना भी करना पड़ता है यह तथ्य तब प्रदर्शित होता है, जब गृहस्वामी शारदा को अपने वेतन की धौंस देता है। उसके प्रत्युत्तर में शारदा कहती है कि वेतन— वेतन रट रहे हो। तुम्हारा वेतन कितना है एक हजार अथवा एक लाख। यदि मैं खाली समय पड़ोसी के बालकों के वस्त्रों को सीकर रुपये का सहयोग न करूँ तो एक तिनका भी धन नहीं जुटा सकते हो। इस बात पर क्षुब्ध होकर गृहस्वामी कहता है कि ऐसा प्रतीत हो रहा है तुम ही मेरा पति हो और मैं तुम्हारी पत्नी। प्रत्युत्तर में शारदा कहती है— क्या इसमें भी शंका की बात है। लोग मुझे देखकर मेरा उपहास कर रहे हैं। पुरुष के करने योग्य सभी कार्य मैं सम्पादित करती हूँ। ऐसी गृहिणी कैसी होती है ? क्या यह भी नहीं जानते ?

इस पुरुष प्रधान समाज में पुरुष बाहरी कमाई करता है तो घर के अन्य सदस्यों को उपेक्षित दृष्टि से देखने लगता है, का दृश्य प्रो० मिश्र ने अपने इस कृति के माध्यम से प्रकट करते हैं। गृहस्वामी का यह कहना कि मेरे ही वेतन का उपभोग करना (पत्नी हेतु) नितान्त मनोग्रन्थि को पोषित करता है। क्योंकि परिवार को आगे ले जाने में पति—पत्नी दोनों की ही जरूरत पड़ती है। पति को यदि बाहरी धन का स्रोत बनाया है तो महिला घर के सम्पूर्ण आवश्यक कार्यों को करती हुई दो वक्त की रोटी पकाकर परिवार के सदस्यों को खिलाती है। जिसे पुरुष समाज हीन दृष्टि से देखता है इस भारतीय समाज की हीन दशा का परिचायक है, जिसे प्रो० मिश्र निम्न वाक्यों के आधार पर कहलवाते हैं—

प्रो० मिश्र जी अपने नाट्यकृति में यह दर्शाते हैं कि बाल दुर्व्यवहार तो जनसंख्या वृद्धि की परिणति है ही, लेकिन साथ—साथ घरेलू हिंसा भी परिणति है। अपने नाट्यकृति में मिश्र जी स्पष्ट करते हैं कि पारिवारिक कलह और अशान्ति से आगे वृहत्तम रूप घरेलू हिंसा परिलक्षित होने लगती है। पुरुष प्रधान समाज होने के कारण पुरुषों में श्रेष्ठता की ग्रन्थि विकसित हो जाती है और नारी को उपभोग की वस्तु समझने लगते हैं, जिससे नारी पर भी दुर्व्यवहारात्मक प्रतिक्रिया देने लगते हैं। एक जगह मिश्र जी नाट्य पात्रों से दुर्व्यवहार को



प्रदर्शित करते हैं। शारदा क्रोधित होकर पति के डण्डे को जलाने की बात करती है तथा बच्चों को पीटने पर दुराचरण की संज्ञा भी प्रदान करती है। इस पर गृहस्वामी क्रोधित स्वर में शारदा को डांटते हुए कहता है— क्या तुम मेरे पराक्रम को नहीं देख रहे हो, अपनी मोटे कमर में चाँदी लटकाकर जो घर में घूम रही हो, वह मेरे ही वेतन का फल है।⁹

प्रो० राजेन्द्र मिश्र ने वैधेयविक्रमम् नायक इस एकांकी के माध्यम से यह भी स्पष्ट किया कि जनसंख्या वृद्धि से आर्थिक संकट तथा व्यवहारिक कठिनाइयों के साथ-साथ खाद्यान्न अभाव के भी संकट स्पष्ट होने लगते हैं। यह तथ्य तब इंगित होता है, जब बालक माँ से जलपान हेतु आग्रह करते हैं। तभी चतुर्थ बालक ने अपने भाई महेश को सम्पूर्ण खीर ग्रहण कर लेने की बात बतायी। ऐसे में शारदा बहाना का नाटक करते हुए कहती है, हे भगवान मैं इस समय क्या करूँगी, बोल रे रमेश तूने अकेले ही पन्द्रह सोलह लोगों के खीर को खा लिया है। तुम वृकोदर हो। तुम्हारे उदर में कितनी बड़वाग्नि जलती है। अपराध मात्र में महेश

९. शारदा : (सरोषम्)

ज्वलतु ते दण्डकाष्ठम्। पुत्रमप्रसूय पुत्रप्रसवपीडां त्वं कथं ज्ञास्यसि ?
साम्प्रतं सीव्य स्वकीयं जर्जराधरकर्पटम्। गोपय निजं सिंहकलेवरं
प्रकोष्ठगहवरे। दृष्टं त्वदीयं पराक्रमणम्।

गृहस्वामी : (सक्रोधम्)

किं न पश्यसि मम पराक्रमम् ? पृथुकटितटे रजतकाञ्चीमालम्ब्य
यद्गृहाङ्गणे विहरसि तन्ममैव वेतनस्य समुज्जृम्भितम्।

वैधेयविक्रमम्, चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ
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खीर खाने की बात को स्वीकारता है और रोने लगता है। ऐसे में शारदा बालक को चुप कराती है और कहती है— 'डरो मत, खीर खाने के लिए ही होती है।' जाओ बाहर खेलो।¹⁰

इस तथ्य के माध्यम से प्रो० मिश्र खाद्यान्न अभाव को भी इंगित करते हैं।

अन्ततः वेधेयविक्रमयु नामक एकांकी प्रो० मिश्र की अनुपम कृति जिसमें ऐसे काहिल पति के रोचक वर्णन को प्रस्तुत किया गया है, जो जीवन में संतुलित नहीं है। या तो वह ऋजुता के नाम पर 'पत्नी का सेवक' होता है अथवा मनस्विता के नाम पर यमराज की भाँति बन जाता है। वह बच्चों को पीटकर पत्नी को धौंस जमाकर अपने खोखले व्यक्तित्व को प्रदर्शित करता है। परन्तु अन्ततः कर्मशीला पानी की फटकार से मूढ़ बन जाता है। यद्यपि प्रो० मिश्र

¹⁰. शारदा : (विमूढ़तां नाटयन्ती)

हे भगवन् ! साम्प्रतं कि करिष्यामि ? ब्रूहि रे महेश ! एकलेनैव त्वया
कथं पन्चदशजनैः सायासं भक्षणीयं पायसं भक्षितम् ? वृकोदर ! किन्तेऽपि
जठरार्णवे वाडवाग्निः प्रज्ज्वलति ?

महेश : (सापराधानुभवम्)

मातर्न मयैकलेनैव पायसं भक्षितम् ! शृणु तावत्, मयोत्थितेन प्रसभं
विलोकिताऽसिता बिडाली कृतभूरिविक्रमा। सुपायसं कण्ठपुटे प्रकुर्वती तवैव
मातर्धृतिराशु धर्षिता।

(इति भयभीतस्सन्रोदितुमुपक्रमते)

शारदा : (प्रह्वीभूय)

अलमलम्। भवतु, मा भैषीः। यदि नाम पायसं भक्षितं तर्हि भक्षितमेव।

किमिदानीं मुग्धा रोदिषि? याहि, बहिद्वरि क्रीड।

(ततः प्रविशति विरलदशनो मलिनवेषो गृहस्वामी)

— वैधेयविक्रमम्, चतुष्पथीयम्— डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ
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इस नाट्यकृति के माध्यम से जनसंख्या विस्फोट की परिणति को प्रदर्शित करते हैं। डॉ० मिश्र यह प्रदर्शित करते हैं कि जनसंख्या वृद्धि से बेरोजगारी, गरीबी एवं जन-जन में खाद्यान्न अभाव जैसे जुड़ी उप समस्याएँ अपने आप उत्पलवित होती जा रही हैं। यदि बच्चे अधिक पैदा होंगे तो परिवार का आकार भी बढ़ता जाएगा। अधिक बड़ा परिवार समस्याओं का केन्द्र होता है। अधिक बड़े परिवार में उदरपूर्ति ही मुख्य समस्या बन जाती है।

जनसंख्या वृद्धि समस्या का समाधान :

जनसंख्या वृद्धि जैसी समस्या वस्तुतः समस्त व्यक्तियों के जागरूक न होने का परिणाम है। प्रो० राजेन्द्र मिश्र ने जनसंख्या वृद्धि समस्या को चतुष्पथीयम् एकांकी संग्रह के 'वैधेयविक्रमम्' नामक एकांकी में उद्धृत किया है। प्रो० मिश्र 'चतुष्पथीयम्' एकांकी संग्रह के सन्दर्भ में कहते हैं- 'चतुष्पथीयम् में संकलित ये नवीनतम एकांकी सामाजिक अधिक्षेप कहे जा सकते हैं। इनके माध्यम से समाज में व्याप्त भ्रष्टाचार एवं कुरीति का कृत्रिम तथा भ्रामक अवगुण्ठन खोला गया है चतुष्पथ का अर्थ होता है- चौराहा। आजकल चौराहा शब्द रूढ़ हो गया है, दुष्प्रवृत्तियों के केन्द्र-स्थल के अर्थ में। क्या चौराहा बना रखा है ? चलो तुम्हें चौराहे पर समझ लूँगा। ऐसे मुहावरे खूब प्रचलित हो रहे हैं।'¹¹

प्रो० मिश्र ने इन एकांकी के माध्यम से जहाँ जनसंख्या वृद्धि की समस्या को प्रकाश में लाने का कार्य किया, वहीं इससे निपटने के अन्यान्य उपायों को भी इंगित किया। यद्यपि यह कहना उचित ही है कि इस समस्या के उत्पत्ति के पीछे भी व्यक्ति का हाथ होता है और आगे भी व्यक्ति का हाथ होता है।

11. वैधेयविक्रमम्, चतुष्पथीयम्- डॉ० अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ संख्या- 23



प्रो0 राजेन्द्र मिश्र के वैधेयविक्रमम् एकांकी में जनसंख्या वृद्धि को रोकने के लिए निम्नलिखित उद्घरण परिलक्षित होते हैं। यथा—

1. राष्ट्र के प्रत्येक जन को जागरूक होना चाहिए, जिसमें महिलाओं में अधिक चेतना जागृत की जानी चाहिए, क्योंकि यह देखा गया है कि महिलाओं के शिथिल होने से प्रजनन दर में स्वतः ही कमी आ जाती है।

महिलाओं को जागरूकता के सन्दर्भ इस एकांकी में ऐसे कई प्रसंग आते हैं जो महिला के जागरूक, शिक्षित और भविष्य उन्मुखी होने का प्रमाण देते हैं। जैसे शारदा अपने पति से यह कहती है कि— 'तुम्हारा यौवन जल जाये। ग्यारह पुत्र को जन्म देकर मुझे बूढ़ी बनाकर भी तुमको सन्तुष्टी नहीं हो रही है।' ¹² गृहस्वामी अर्थात् पति को शारदा पुनः व्यंग्य करते हुए कहती है — 'अब देखों, तुम्हारे ग्यारह रुद्र महाप्रलय ताण्डव मचा रहे, सम्प्रति उनको शान्त करो।' ¹³

2. प्रो0 मिश्र ने यह प्रदर्शित किया कि पत्नी या पति में से किसी की जागरूकता तथा सम्पूर्ण शिक्षा का होना भी इस समस्या को दूर करने में सहायक सिद्ध हो सकता है, परन्तु

12. शारदा : (सकृतकक्रोधम्)

विदहतु ते यौवनम्। एकादशरुद्रान् समुत्पाद्य मामकालवृद्धां विधायापि यन्न सन्तुष्यसि ?

वैधेयविक्रमम्, चतुष्पथीयम्— डॉ0 अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ संख्या— 66

13. शारदा : पश्येदानीम् ! एकादशरुद्रास्ते महाप्रलय ताण्डवं नाटयन्ति। साम्प्रतं परिसान्त्वय तान्। धारय च भवनधरित्रीम्।

— *वैधेयविक्रमम्, चतुष्पथीयम्— डॉ0 अभिराज राजेन्द्र मिश्र, वैजयन्त प्रकाशन, इलाहाबाद, 2004, पृष्ठ संख्या— 66*



किसी एक की जागरूकता, शिक्षा तथा अनुनयात्मक परामर्श दूसरे व्यक्ति के समझने तथा जानने योग्य हो, तो जनसंख्या वृद्धि की समस्या अपने-आप ही दूर हो सकती है। प्रो० मिश्र आगे यह स्पष्ट करते हैं कि व्यंग्यात्मक परामर्श भी व्यक्ति को सुधार सकता है। ऐसे सन्दर्भ में शारदा अपने पति को असफल व्यंग्यात्मक परामर्श देते हुए यह कहती है इस प्रकार का दुष्ट आचरण क्यों कर रहे हो ? तुमको धिक्कार है। चौराहे के साँड़ की तरह मोटे होकर अपना दिन बीताते हो। पुत्र की जन्म देने में ही तुम्हारी वीरता है न कि पालन करने में। पालन-पोषण में तुम्हारा कोई भी योगदान नहीं दिखायी दे रहा है।' यद्यपि इस एकांकी में व्यंग्यात्मक परामर्श का कोई सार्थक प्रभाव नहीं स्पष्ट होता है। परन्तु अनेक साहित्यकारों ने इस परामर्श के व्यक्ति के ऊपर सकारात्मक प्रभावों को दिखाया है।

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छायावादी कविता में राष्ट्रीय चेतना

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संक्षिप्तका

प्रस्तुत शोध पत्र का उद्देश्य छायावादी कविता में राष्ट्रीय चेतना के तत्व को उजागर करना है। छायावाद के प्रमुख कवियों ने सामंती मर्यादाओं और अंग्रेजी साम्राज्यवाद के विरुद्ध कई रचनाओं को प्रस्तुत कर समकालीन भारतीय समाज को प्रभावित किया। भारत भूमि की प्रशंसा में प्रसाद का गाना गीत, निराला की काव्यगत रचनाओं में अपनी परंपरा का गौरव बोध, मैथलीशरण गुप्त की रचनाओं में भारत माता की भव्यता की कल्पना इत्यादि ने राष्ट्रीय चेतना में संबल प्रदान किया। यद्यपि छायावादी कविता पर यह आरोप लगता है कि यह अपने युग के विमुख रही है किंतु नामवर सिंह जैसे साहित्यकारों ने छायावादी कविता को अपने युग के राष्ट्रीय आंदोलन में सहयोग देने वाला पुष्ट किया है। हालांकि इस युग के कवियों ने समान रूप से इस भाव की कविताएं नहीं लिखी किंतु यह भी सत्य है कि सभी कवियों ने राष्ट्रीय आंदोलन की किसी न किसी पहलू को चित्रित किया है। शोध पत्र में इन सम्पूर्ण तथ्यों का विवेचन किया गया है।

प्रस्तावना

छायावाद आधुनिक कविता का शीर्ष काव्यआंदोलन रहा है इसलिए इसे अनेक दृष्टियों से विश्लेषित किया गया है। छायावाद एक तरह से बीसवीं शताब्दी के आरंभिक दो दशकों से होने वाले भारतीय नवजागरण का काव्यात्मक अन्वय है। इसके शीर्षस्थ कवियों में प्रसाद, पन्त, निराला और महादेवी का नाम लिया जाता है। छायावादी कविता की उन्नति में इन कवियों की महती भूमिका रही है। 'छायावाद' नाम कैसे प्रचलित हुआ इस बिंदु पर साहित्यिक विचारकों के अनेक मत हैं आचार्य शुक्ल इस नामकरण का श्रेय बांग्ला रचनाकारों को देते हैं उनके मत में पुराने इसाई संतों के छायाभास (फैंटसमाटा) का यूरोपीय काव्यक्षेत्र में प्रवर्तित आध्यात्मिक प्रतीकवाद के अनुकरण पर रची जाने के कारण बांग्ला में ऐसी कविताएं छायावाद कही जाने लगी थी। आचार्य शुक्ल ने लिखा "यह स्वच्छंद नूतन पद्धति अपना रास्ता निकाल रही थी कि रविंद्रनाथ की रहस्यात्मक कविताओं की धूम हुई और कब एक साथ रहस्यवाद और प्रतीकवाद या चित्र भाषावाद को ही एकांत ध्येय बनाकर चल पड़े चित्र भाषा और अभिव्यंजन पद्धति पर ही जब लक्ष्य टिक गया तब उसके प्रदर्शन के लिए लौकिक या अलौकिक प्रेम का ही क्षेत्र काफी समझा



गया इस बंधे हुए क्षेत्र के भीतर चलने वाले काव्य ने छायावाद नाम ग्रहण किया । छायावाद की नामकरण को लेकर एक साहित्यिक संदर्भ प्राप्त होता है यह संदर्भ दो पत्रिकाओं के दो लेखों से सम्बद्ध है पहले तो यह कि पंडित मुकुटधर पांडेय ने श्री शारदा नामक पत्रिका में सन 1920 में हिंदी में छायावाद चार अंकों में प्रकाशित कराया था दूसरे यह कि श्री सुशील कुमार ने सरस्वती नामक पत्रिका में सन 1921 में 'हिंदी में छायावाद' शीर्षक से ही अपना निबंध दो अंकों में प्रकाशित कराया था । मुकुटधर जी एवं श्री सुशील कुमार जी सरीखे दोनों लेखकों ने अपने अपने लेखों में यद्यपि छायावाद पर व्यंग्य प्रहार किए हैं परंतु आगे चलकर यही छायावाद नाम प्रचलित हो गया ।

हिंदी साहित्य के लिए कुछ युग खंड वरदान स्वरूप साबित हुए हैं। उनमें छायावाद को आधुनिक युग का वरदान ही कहना चाहिए। यद्यपि छाया, छायावाद एवं छायाभास जैसे शब्द रूप अपने अर्थबोध में अति संश्लिष्ट या कि जटिल हैं फिर भी हिंदी साहित्य की काव्यात्मक अन्वित में इन्हें अपरिभाष्य नहीं रहने दिया गया है । छायावाद को परिभाषित करते हुए आचार्य शुक्ल ने लिखा है " छायावाद का प्रयोग दो अर्थों में समझना चाहिए एक तो रहस्यवाद के अर्थ में जहां उसका संबंध कथावस्तु से होता है अर्थात् कवि उस अनंत और अज्ञात प्रियतम को आलंबन बनाकर अत्यंत चित्रमयी भाषा में प्रेम की अनेक प्रकार से व्यंजना करता है छायावाद का दूसरा प्रयोग काव्य शैली या पद्धति विशेष के व्यापक अर्थ में है ।

छायावाद विशेष रूप से हिंदी साहित्य के रोमांटिक उत्थान कि वह काव्य धारा है जो 1918 से 1936 तक की प्रमुख युगवाणी रही जिसमें प्रसाद, निराला, पंत, महादेवी मुख्य कवि हुए जो देश कालगत वैशिष्ट्य के साथ संसार की सभी जातियों के विभिन्न उत्थान शील युगों की आशा आकांक्षा में निरंतर स्वच्छंद रूप से व्यक्त होती रही है। स्वच्छंदता की उस सामान्य भाव धारा की विशेष अभिव्यक्ति का नाम हिंदी साहित्य में छायावाद पड़ा।

छायावादी कविता पर प्रायः यह आरोप लगता रहा है कि जब देश में स्वतंत्रता आंदोलन के लिए संघर्ष चल रहा था तब छायावादी कवि कल्पना लोक में विचरण कर रहा था लेकिन साहित्य का अविकल अनुवाद करने वाले लोग ही ऐसा कह सकते हैं राष्ट्रीय आंदोलन के दो मोर्चे थे एक मोर्चा प्राचीन सामंती मर्यादाओं के विरुद्ध और दूसरा अंग्रेजी साम्राज्यवाद के विरुद्ध। छायावाद ने इन दोनों मोर्चों पर खुद को युगानुकूल ठहराया है । छायावाद का व्यक्ति स्वातंत्र्य सामंती मर्यादाओं के विरुद्ध बड़ा कदम था जहां तक साम्राज्यवाद विरोधी मोर्चे का सवाल है तो छायावाद में परोक्ष रूप से साम्राज्यवाद देश प्रेम जागरण तथा आत्मगौरव का गाना गाया है जिसे निम्नलिखित रूपों में विवेचन किया गया है। 1

राष्ट्रीय आंदोलन में छायावादी कविता का योगदान

छायावादी कविता में राष्ट्रीय चेतना के तत्व नहीं थे ऐसा विभिन्न विचारकों का मानना है । इस कविता पर निरंतर पलायनवादी कविता का आरोप लगता रहा है किंतु नामवर जी ने इसमें राष्ट्रीय चेतना के तत्व को दर्शाते हुए लिखा "छायावाद के बारे में प्रायः कहा जाता है कि इसका संबंध तत्कालीन राष्ट्रीय आंदोलन से कतई ना था आलोचकों का बड़ा पुराना आरोप है कि जिस समय में देश में स्वतंत्रता



के लिए संघर्ष हो रहा था छायावादी कवि कल्पना लोक में बैठकर हूतंत्री के तार बजाया करते थे लेकिन ऐसा वही लोग कहते हैं जो साहित्य को समाज का अविकल अनुवाद समझते हैं अच्छी तरह से देखने पर पता चलेगा कि छायावाद अपने युग को आवश्यक रूप से अभिव्यक्त किया है । 2 नामवर जी छायावाद और राष्ट्रीय जागरण को स्पष्ट करते हुए लिखते हैं " छायावाद की काव्य सौंदर्य के विवेचन से स्पष्ट है कि यह सारा सौंदर्य व्यक्ति की स्वाधीनता की भावना से उत्पन्न हुआ है और वह स्वाधीनता भी व्यक्ति माध्यम से सम्पूर्ण समाज की स्वाधीनता की अभिव्यक्ति है परन्तु काव्यगत स्वाधीनता को तत्कालीन स्वाधीनता संग्राम से मिलाकर देखने से पता चलता है की स्वाधीनता संग्राम के कुछ पहलु छूट गए हैं और कहीं कहीं छाया भी बहुत धुंधली और मूल से दूर चली गई है द्य फिर भी छायावाद की कविता से राष्ट्रीय जागरण का पर्याप्त आभास मिलता है । 3

छायावादी कविता का प्रभाव राष्ट्रीय आंदोलन पर पड़ा किन्तु यह प्रभाव प्रत्यक्ष नहीं था इसे छायावाद का दोष मान लेना उचित नहीं है नामवर जी लिखते हैं " व्यक्तित्व की स्वाधीनता प्रकृति का साहचर्य और स्वतंत्र नारी का साहचर्य पाकर आधुनिक पुरुष व्यापक सामाजिक और राजनीतिक जीवन में सक्रिय रूप से भाग लेने लगा वह केवल प्रेम और सौंदर्य का ही बंदी नहीं रहा उसने केवल प्रेम राज्य में ही रुढ़ियों का विद्रोह नहीं किया बल्कि जीवन के जिस क्षेत्र में उसे विषमता, पराधीनता और अन्याय दिखाई पड़ा वहीं उसने संघर्ष आरंभ कर दिया इस व्यापक राष्ट्रीय जागरण का प्रभाव छायावाद की कविता पर भी पड़ा । निसंदेह यह प्रभाव उस समय अत्यंत स्पष्ट और प्रत्यक्ष नहीं था और यह छायावाद का कोई अपराध नहीं है कविता राजनीतिक और सामाजिक घटनाओं का अविकल अनुवाद नहीं है । 4

हमारे राष्ट्रीय आंदोलन की दो मोर्चे हैं एक मोर्चा प्राचीन सामंती मर्यादाओं के विरुद्ध था तो दूसरा अंग्रेजी साम्राज्यवाद के द्य छायावाद का व्यक्ति स्वातंत्र्य सामंती मर्यादाओं के विरुद्ध बहुत बड़ा कदम था निराला के पंचवटी प्रसंग में राम सीता से आधुनिक युवक के हृदय की बात कहते हैं ।

छोटे से घर की लघु सीमा में

बंधे हैं क्षुद्र भाव

यह सच है प्रिये

प्रेम का पयोनिधि उमड़ता है

सदा ही निःसीम भूपर । 5

सामंती रुढ़ियों से नारी को मुक्त करके भी छायावादी कवि ने राष्ट्रीय आंदोलन में सहयोग दिया तिरस्कृता विधवा को इष्टदेव के मंदिर की पूजा सी पवित्र कहना, भोग्या नारी के संग में पावन गंगा स्नान की कल्पना और उसे देवी मा सहचरी प्राण कहकर पुकार उठना आदि बातें आधुनिक कवि के नारी आदर्श की सूचक हैं । छायावादी कवि ने नारी को अपमान के पंक और वासना के पर्यंक से उठाकर देवी और सहचरी के उच्च आसन पर प्रतिष्ठित किया ।



साम्राज्यवाद के विरुद्ध छायावादी कवि ने स्पष्ट रूप से अंग्रेजों का विरोध तो नहीं किया लेकिन परोक्ष रूप से साम्राज्यवाद के विरुद्ध देश प्रेम जागरण तथा आत्म गौरव का गान गाया भारत भूमि की प्रशंसा में प्रसाद का गाया गीत ।

अरुण यह मधुमय देश हमारा
जहां पहुंच अनजान क्षितिज को मिलता एक सहारा
सरस तामरस गर्भ विभा पर नाच रही तरुसिखा मनोहर
फैला जीवन हरियाली पर मंगल कुंकुम सारा । 6

छायावादी कवियों में प्रसाद के बाद निराला की काव्यगत रचनाओं में अपनी परंपरा के गौरव का बोध सबसे अधिक रूप में स्पष्ट रूप में परिलक्षित होता है । 'छत्रपति शिवाजी का पत्र' (1922) औरंगजेब समर्थक जयसिंह के लिए नहीं बल्कि अंग्रेज बहादुर के समर्थक आधुनिक जय सिंहों के लिए है छ जिसमें अंत तक जाते-जाते वे कहते हैं ।

एकीभूत शक्तियों से एक हो परिवार
फैले संवेदना
व्यक्ति का खिचाव यदि जातिगत हो जाय
देखो परिणाम फिर
स्थिर न रहेंगे पैर
पस्त हौसला होगा
ध्वस्त होगा सम्राज्य
जितने विचार आज
मारते तरंग हैं
साम्राज्यवादियों की भोग वासनाओं में
हिंदुस्तान मुक्त होगा घोर अपमान से
दासता के पास कट जाएंगे । 7

मैथली शरण गुप्त ने अपनी रचनाओं में भारत माता के विराट रूप को चित्रित कर देश प्रेम के भाव को जागृत करने का प्रयास किया छ उनकी की कविताओं में भारत माता के शिखर पर जहाँ हिमालय है वही निचले तल पर पैर धोने के लिए समुद्र को स्थापित किया यथा ।

नीलाम्बर परिधान हरित पट पर सुन्दर है
चन्द्र सूर्ययुत मुकुट मेखला रत्नाकर है
नदियाँ प्रेम प्रवाह, फुल तारे मंडन है
बंदीजन खग बृंद, शेष-फन सिंहासन है



करते अभिषेक पयोद है, बलिहारी उस देश की द्य
हे मात्र भूमि तु सत्य ही सगुण मूर्ति सर्वेश की । 8

अंततः यह स्पष्ट है की छायावादी कवियों की कविताओं चेतना के भाव विद्यमान है । इस तरह छायावाद ने प्रत्यक्ष रूप से भी समकालीन राष्ट्रीय आंदोलन को प्रभावित करने में महत्वपूर्ण योगदान दिया । कुछ कवियों ने अपने ज्यादातर कविताओं के माध्यम से राष्ट्रीय आन्दोलनों को प्रभावित किया जबकि कुछ छायावादी कवियों ने छिट-पुट काव्यगत रचनाओं से लोगों को प्रभावित किया ।

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- 8 – नामवर सिंह छायावाद , पांचवा संस्करण, 1990, राजकमल प्रकाशन, नयी दिल्ली, पृष्ठ सं० 77 ।



వున్నవ వారి మాలపల్లి నవల మహమ్మారి చిత్రణ

డా॥ గుడిపెళ్ళి అనిత

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ఉన్నవ లక్ష్మీనారాయణ రచించిన మాలపల్లి నవల జాతీయోద్యమం ఆంధ్రదేశమంతా ఉద్యతంగా నడుపబడుతున్న తరుణంలో రచించబడిన నవల. రచయిత సంఘ సంస్కరనాభిలాషుడు రాయ వెల్లూరు జైలులో ఉన్నప్పుడు 1922లో రచించబడినది.

ఈ నవల ప్రముఖ ఉద్యేశ్యం, అస్పృశ్యత, దుర్భర జీవితాలను చిత్రిస్తూ 1920-21 నాటి దేశ సామాజిక, ఆర్థిక పరిస్థితులకు అద్దంపడుతూ, మానవీయ విలువలను స్పృశిస్తూ రాయబడినప్పటికీ ఆ రోజుల్లో విలయతాండవం చేసిన మశూచి మహమ్మారిని కళ్ళకుకట్టినట్లు చిత్రించబడినది.

ఈ నవలలోని కథ చెప్పడానికి మనకు సమయం సరిపోదు ఈ వెబినార్ ప్రముఖ ఉద్యేశ్యం దిశగా ఈరోజు నాయి ప్రసంగాన్ని చేస్తున్నాను.

మంగళాపురంలోని చౌదరయ్య అనే భూస్వామికి, ఆవూరి లోని ఒక సామాజిక వర్గానికి చెందినవారికి మధ్యన ఈ కథంతా నడుస్తుంది.

చౌదరయ్య చిన్న కుమారుడు రామానాయుడు. ఈయన భార్య కమల తన భర్త తరపు బంధువు అయిన మోహనరావుతో కమల ఎవరికీ చెప్పకుండా వెళ్ళిపోతుంది. వీరిరువురు మద్రాస్ వెళ్ళి అక్కడ మాంబకంలో ఒక మేడను అద్దెకు తీసుకొని హాయిగా కొద్దిరోజులు గడుపుతారు. తరువాత కమల గర్భవతి అవుతుంది. మోహనరావు తన తల్లికి అనారోగ్యమని తెలియడంతో కమలను వదిలివేసి తన ఊరికి వెళ్ళిపోతాడు. అనివార్య కారణాల వల్ల అతను తిరిగి కమల వద్దకు రాలేక పోతాడు.

పెరియముత్తు అనే పని మనిషి సాయంతో ఉన్న కొద్దిపాటి డబ్బులతో మోహనరావు రాక కోసం ఎదురుచూస్తూ కమల రోజులునెట్టుకొస్తుంది. చూస్తుండగా కమలకు నెలలు నిండుతాయి. ఒకరోజు పెరియముత్తు సహాయంతో కమలమ్మ ప్రసవించింది. దగ్గర ఉన్న నగలు ఖర్చయిపోయినాయి. రెండు వందల రూపాయలు మాత్రం మిగిలినవి. ఈ సమయంలో ఆవూరిలో మశూచి మహమ్మారి ప్రవేశించినది. ఊరంతా స్కోటకాలు



ముజ్జిడ్డుగా ఉండటం చేత పెరియముత్తు భయపడి రాత్రులు రావడం మానివేసింది. పిల్లవాడికి జ్వరం తగిలింది. ఇది చూసి పెరియముత్తు పగలు కూడా రావడం మానివేసింది. మశూచి భయంకరమైన అంటువ్యాధి. ప్రస్తుతం పనివాళ్ళు రానట్టే అదే పరిస్థితి సోషల్ డిస్టెన్స్. పిల్లవాడికి కమలమ్మకు జ్వరం ఎక్కువైంది. పూరంతా స్ఫోటకం అల్లకున్నది. వూరి జనం సగం లేచిపోయి నెలవుల వెంబడి తక్కిన పేటలలో ప్రవేశించినారు. ప్రతివాండ్రకు నల్లపోత ఖానీ వైద్యులు రోగులను స్నానాలు చేయిస్తుంటే ఈ రోగానికి మందు లేదు. కావున వైద్యం చేయవద్దని మున్నిపాలిటీ వారు వుత్తర్యు వేసారు.

ఈ రోజుల్లో మన కరోనా కాలంలో సోషల్ మీడియాలో పుకార్ల వలెనే ఆరోజుల్లో కొంతమంది వైద్యం అంటూ మోసం చేసినవారున్నారు. మనకు ఇప్పుడు ప్రభుత్వం మీడియా ద్వారా కరోనా విషయంలో సంపూర్ణ అవగాహన కలిగించినట్టే ఆ రోజుల్లో కూడా ప్రభుత్వం ప్రజల పట్ల పూర్తిగా స్పందించి ఈ రోగానికి మందులేదు ఖానీ వైద్యం చేయవద్దని మున్నిపాలిటీ వారు ఉత్తర్యు జేశారు.

అందరికీ పొడిపెళ్ళు వేయిస్తున్నారు. అంటే గుర్తులు గుర్తులు వేసినవారికి నిండుపాతపోస్తున్నది. మన నేటి కరోనా వల్ల విదేశాల నుండి వచ్చినవారికి కూడా చేతులపైన క్వారంటైన్ ముద్రలు వేశారు. స్ఫోటకం పోసిన వాళ్ళలో ఎక్కువ మంది చనిపోతున్నారు. పోసినవాళ్ళకూ మళ్ళీ పోయడం కొన్ని ఇండ్లలో పారేవేసేవాండ్లు లేక శవాలు మురిగి కంపు కొడుతున్నవి. కొందరికి అట్టపోతపోసి వాళ్ళంతా తోళ్ళువూడి చూడడానికి భయంకరంగా ఉంది. మున్నిపాలిటీ వారు వూరికి దూరంగా పాకలు వేయించి రోగులను వాటిలో బెడ్డించి వైద్యానికి డాక్టర్లను ఏర్పాటు చేశారు. కానీవారు వైద్యం మాత్రం చేయడం లేదు. అంటే మందు లేదు కాబట్టి వైద్యం ఏవిధంగానూ సహకరించదనేమో పాకలలో గాంతెండినా నీళ్ళుపోసేవారు లేరు.

రెండు మోటారు డబ్బాలను ఏర్పాటు చేసి అనాధ ప్రేతాలను, రోగులను మోసుకొని పోతున్నారు. బండి శబ్దం విని కొందరు శవాలను తెచ్చి వాకిట్లో పెడుతున్నారు. కొన్ని శవాలు కుళ్ళి చేతికి రావడం లేదు. వాటిని రేకుల మీదికి దొర్లించి (అంటే స్టెప్పర్స్ కి బదులుగా వెడల్పాటి రేకులను వాడేవాళ్ళు). మోసి మోటార్లలో పెడుతున్నారు. వాళ్ళొక్కడాంట్లో పన్నెండు శవాలనూ పన్నెండు మంది రోగులకు మాత్రమే స్థలముంది. శవాలు యెక్కువ కావడంచేత రోగులతోనే కలిపి ఒక బండిలో వేస్తున్నారు. వాకముసలమ్మ రోగులను కూడా తీసుకొని పోతూ వుంటే ఏడుస్తుంటే 'ఇప్పుడు ప్రాణం గుటగూట్లాడుతున్న అక్కడికి పోయేవరకు పోదా' అని ఒక పోలీసువాడు జవాబు చెప్పాడు.



పోలీసులు, మోత కూలీలు శవాలను మోయడం కంటే యింట్లు సవరించడం ఎక్కువైంది. విలువగల సామానులు దొరికినప్పుడు శవాలనూ రోగులను ఒక బండిలో వేసి రెండవ దాంట్లో సరుకులను నింపుతున్నారు. ప్రారంభంలో శవాలను విడివిడిగా పూడ్చిపెట్టేవారు కాని పీనుగులెక్కువైనకొద్ది పెద్ద బొందలు తప్పి దజనుల తరబడి వొకదాంట్లోకేతోసి మట్టికప్పుతున్నారు. గంటకు వందలకొలది పీనుగులను మోసుకుపోతున్నారు. యెక్కడా రోదన శబ్దం లేదు. కులీల అరుపులు, పదాలు, చిందులు ప్రళయరుద్రుని హృదయానందం వెల్లడిస్తున్నవి మృత్యుదేవత యధేచ్ఛగా విహరిస్తున్నది.

గస్తీ పోలీసులు మరణిస్తున్నారు. కొన్ని రోజులు శవాలను పగలు మాత్రమే మోయవలెననే వుత్తర్వు ఉన్నా పగలు సమయం సరిపోక రాత్రులు కూడా శవాలను మోస్తున్నారు. కూలీలు తలుపులు గొట్టి మీ యింట్లో శవాలు ఉన్నవా అని కేకలు వేస్తున్నారు. కొన్ని ఇంట్లలో శవాలు తప్ప పలికేవారు లేరు. పలికినా కొన ఊపిరితో ఉన్నవారిని తీసికెళ్ళి శవాల బండిలో వేస్తారని ఎవరు వలకటం లేదు.

పోలీసులు డబ్బుగలవాండ్ల దగ్గర డబ్బు తీసుకొని కొన ఊపిరితో వున్న వాళ్ళను రోగుల బండిలోనే ఎక్కిస్తున్నారు. ప్రారంభంలో ఒకసారి మశూచి వచ్చిన వాండ్లకు మళ్ళీ రాదని ఊరు విడిచి పోసిచ్చారు. కానీ పోసిన వాండ్లకు మళ్ళీ పోయడం చేత వ్యాధి ఇతర చోట్లకు వ్యాపిస్తుందని యెవరూ ఊరు విడిచి వెళ్ళ వద్దన్న వుత్తర్వులు ఇచ్చారు. పోలీసులు అహెంరాత్రులు గస్తీ తిరుగుతున్నారు. ఎవరూ బయటకు రాకుండా ధనవంతులు మాత్రం పొరుగుూరుకు పోతున్నారు.

కమలమ్మకు పిల్లవాడికి స్ఫోటకం వొళ్ళతంగా చిత్తవత్తుగా కండపోతపోసింది పిల్లవాడు పక్కన వున్నా కమలమ్మకు తెలివిలేకుండా పోయింది. తెలివికొచ్చిన కమలమ్మకు పిల్లవాడి దేహం చల్లగా తగిలింది.

పోలీసులు వచ్చి ఇద్దరినీ రేకు మీదికి దొర్లించుకుని దొరికిన డబ్బు తీసుకొని ఇద్దరినీ ఒక బండిలోనే వేసుకొని వెళ్ళారు.

ఆ తర్వాత కథలో కమలమ్మ గుర్తుపట్టకుండా ఒక కంట్లో పువ్వు, మరొక కంట్లో కాయ మశూచీ గుర్తులతో, గుర్తుపట్టకుండా మారి పోతుంది. తాను పునర్జన్మను పొందినట్లుగా భావించి తన అత్తవారింటికి వచ్చి తన మొదటి కొడుకును చూసుకుంటూ బతుకుతుంది.



సాహిత్యం సమాజానికి దర్పణం, మశూచి మహమ్మారి ప్రజలను ఎంత భయంకరంగా పీడించిందో ఉన్నవారు తన నవలలో వున్నది ఉన్నట్లుగా వర్ణించి మనకు ఆ కాలపు పరిస్థితులను గ్రంథస్థం చేసినారు.

తరువాత కాలంలో ఈ మహమ్మారికి వాక్సిన్ కనిపెట్టబడింది. నేడు ప్రపంచ వ్యాప్తంగా దీని ఆనవాళ్ళు లేవు. కాబట్టి మనము నేడు అనుభవిస్తున్న కరోనా చాలా వరకు మేలు అనే చెప్పవచ్చు ఎందుకంటే మొట్టమొదటిది మరణాల శాతం అత్యల్పం.

రెండవది వాక్సిన్ లేకపోయినా నివారణ మన చేతుల్లోనే ఉంది. మశూచికి నివారణ అనేది లేదు ఆ రోజుల్లో. నేడు ఒక మాస్కు, చేతులు మాటి మాటికి శుభ్రంగా కడుక్కోవడంతో మనల్ని మనం కాపాడుకోవచ్చు.

నేటి మన కరోనాను కవితా వస్తువుగా చేసి కవులు ప్రజల్లో చైతన్యం తీసుకొస్తున్నారు. కానీ కరోనా వల్ల బ్రతుకులు భిద్రమైన వారి దయనీయ స్థితిని ప్రధాన వస్తువుగా తీసుకొని మాలపల్లి లాంటి నవలలను సృష్టిస్తే ముందు తరాల వారికి కరోనా కరాళ నృత్యాన్ని గ్రంథస్థం చేసినవారమౌతాము.



വിശേഷണങ്ങൾ - താരതമ്യപഠനം

ഡോ.ആർ.അശ്വതി
അസി.പ്രൊഫസർ
മലയാളവിഭാഗം
എൻ.എസ്.എസ്.കോളേജ്, പന്തളം

മലയാളത്തിന്റെ സമ്പർക്ക ഭാഷകളെന്ന നിലയിൽ, സംസ്കൃതം, ഇംഗ്ലീഷ് എന്നീ ഇൻഡോ- ആര്യൻ ഭാഷകളിലെയും സഗോത്രഭാഷകളെന്ന നിലയിൽ തമിഴ്, തെലുങ്ക്, കന്നഡ എന്നീ ദ്രാവിഡ ഭാഷകളിലെയും നിലവിലുള്ള നാമവിശേഷണ സങ്കല്പം വ്യക്തമാക്കുകയാണ് പ്രബന്ധലക്ഷ്യം. പദസംവർഗ്ഗമെന്ന നിലയിൽ നാമവിശേഷണത്തിന്റെ അവ്യവസ്ഥിതതം എല്ലാ ഭാഷകളുടെയും പ്രശ്നമാണെന്നു കാണിക്കുക മാത്രമാണ് ഉദ്ദേശ്യം.

1. നാമവിശേഷണ വർഗ്ഗീകരണം

I ക. സംസ്കൃതത്തിലെ നാമവിശേഷണവർഗ്ഗീകരണം

സംസ്കൃതത്തിലെ നാമവിശേഷണപദങ്ങൾ ഗുണ (Quality) വാചികളാണ്. അവ ലിംഗ വചനഭേദങ്ങൾ കുറിക്കുന്നു. നാമവിശേഷണങ്ങളെ പൊതുവേ വ്യുൽപ്പന്നങ്ങളെന്നും അവ്യുൽപ്പന്നങ്ങളെന്നും വർഗ്ഗീകരിക്കുന്നു. സംസ്കൃതത്തിലെ നാമവിശേഷണങ്ങൾ ആതിശായന പ്രത്യയങ്ങൾ സ്വീകരിക്കുന്നു. (തരപ്, തമപ്, ഇയസുൻ, ഇഷ്ഠൻ) തുടങ്ങിയവ.

സംസ്കൃതത്തിലെ നാമവിശേഷണങ്ങൾ ശുദ്ധഭേദകം, തദ്ധിതഭേദകം, സമസ്തപദ ഭേദകം എന്നിങ്ങനെ മൂന്നുവിധമുണ്ട്.

1. ശുദ്ധഭേദകം - ശുദ്ധഭേദകങ്ങൾ ധാതുക്കളോട് കൂറ് പ്രത്യയങ്ങൾ ചേർന്നുണ്ടാകുന്നവയാണ്. മറ്റ് ശബ്ദങ്ങളിൽ നിന്നും നിഷ്പന്നമല്ലാത്തവയും ശുദ്ധഭേദകങ്ങളിൽപ്പെടുന്നു.

ഉദാ:	ധാതു	പുല്ലിംഗം	സ്ത്രീലിംഗം	നപുംസകലിംഗം
	സുന്ദര	സുന്ദരഃ	സുന്ദരീ	സുന്ദരം
	ശുചി	ശുചിഃ	ശുചീഃ	ശുചി

2. തദ്ധിത ഭേദകം - നാമങ്ങളോട് തദ്ധിത പ്രത്യയങ്ങൾ ചേർന്നുണ്ടാകുന്നവ.

ഉദാ:	ധാതു	പുല്ലിംഗം	സ്ത്രീലിംഗം	നപുംസകലിംഗം
	കുലീന	കുലീനഃ	കുലീനാ	കുലീനം

3. സമസ്തപദ ഭേദകം - സമാസത്തിന്റെ ശക്തിയിൽ വിശേഷണങ്ങളായി വരുന്നവ.

ഉദാ:	ധാതു	പുല്ലിംഗം	സ്ത്രീലിംഗം	നപുംസകലിംഗം
	സുതനു സുതനുഃ	പുല്ലിംഗം	സ്ത്രീലിംഗം	നപുംസകലിംഗം
		സുതനുഃ	സുതനുഃ	സുതനു

4. ഇവ കൂടാതെ സർവ്വനാമങ്ങളെ നാമവിശേഷണമായി ഉപയോഗിക്കുന്നു.
 ഉദാ: അന്യ, അന്യതര, ഇതര, ഏകതമ,... തുടങ്ങിയവ.
5. സംഖ്യാനാമങ്ങൾ നാമവിശേഷണമായി ഉപയോഗിക്കുന്നു.
 ഉദാ: നവരാത്രി, സഹസ്രാബ്ദം
6. അവ്യയങ്ങൾ നാമവിശേഷണമായി ഉപയോഗിക്കുന്നു.
 ഉദാ: അതിമാനുഷ, അതിക്രൂരം
 ഇപ്രകാരമാണ് സംസ്കൃത വ്യാകരണങ്ങളിലെ നാമവിശേഷണ വർഗ്ഗീകരണം.



II ഖ. ഇംഗ്ലീഷ് ഭാഷയിലെ നാമവിശേഷണ വർഗ്ഗീകരണം.

ഇംഗ്ലീഷിൽ നാമവിശേഷണങ്ങൾ ഗുണവചനങ്ങളാണ്. നാമവിശേഷണങ്ങൾ നാമത്തിനോ സർവ്വനാമത്തിനോ, അർത്ഥഭേദം വരുത്തുന്നു.

ഉദാ: Beautiful-more beautiful/most beautiful

ഈ രണ്ടു രീതികളും പിൻതുടരാത്ത പദങ്ങളും ഉണ്ട്.

ഉദാ:	Good	better	best
	Bad	worse	worst

ഉദാ: Sita is a clever girl.

നാമത്തിന്റെ സ്വഭാവം, എണ്ണം, അളവ് എന്നിങ്ങനെ ധാരാളം അർത്ഥഭേദങ്ങൾ വിശേഷണപ്രയോഗത്തിലൂടെ ഉണ്ടാകുന്നു.

ഇംഗ്ലീഷിലെ നാമവിശേഷണ വിഭാഗങ്ങൾ.

1. ഗുണവിവരണാത്മകം (Descriptive)

വ്യക്തിയുടെയോ വസ്തുവിന്റെയോ സ്വഭാവം വ്യക്തമാക്കുന്നു.

ഉദാ: He is an honest man.

Chennai is a large city.

2. പാരിമാണികം (Quantifier)

നാമത്തിന്റെ കൃത്യമായ എണ്ണം, ഏകദേശം എന്നിങ്ങനെ പലവിധം അളവുകളെ കാണിക്കുന്നു.

ഉദാ: The hand has *five* fingers.

She ate *some* rice.

Most boys like cricket.

Sunday is the *first* day of the week.

Here are *some* ripe mangoes.

On *either* side is a narrow lane.

Every word of it is good.

3. വിവേചകം (Demonstrative)

എന്തിനെയെങ്കിലും വേർതിരിച്ചു കാണിക്കുന്നു.

ഉദാ: *These* mangoes are sweet.

I hate *such* things.

That boy is industrious.

4. ചോദ്യവാചികം (Interrogative)

ചോദ്യവാചിയായി നാമത്തോടു ചേർക്കുന്ന പദങ്ങൾ.

ഉദാ: *What* type of mango is this?

Whose book is this?

Which way shall we go?



- 5. **നിശ്ചിതവാചികം (Emphasising)**
 നിശ്ചിതാർത്ഥം കാണിക്കാൻ ഉപയോഗിക്കുന്ന പദങ്ങൾ.
 ഉദാ: I saw it with my *own* eyes.
 That is the *very* thing we want.
- 6. **വ്യാക്ഷേപകം (Exclamatory)**
 അത്ഭുതാർത്ഥ ദ്രോതകമായ പദങ്ങൾ ചേർത്ത് നാമത്തിന് അർത്ഥഭേദം വരുത്തുക.
 ഉദാ: Wooden - made of wood
 (നിർമ്മിതിയെ ഭേദപ്പെടുത്തുന്നു.)
 Indian Culture
 (അർത്ഥത്തെ ഭേദിപ്പിക്കുന്നു.)
 Dog in Dog food
 (പ്രയോജനത്തെ സൂചിപ്പിക്കുന്നു.)
 What genius!
 What an idea!
 What a beauty!
- 7. ഇവ കൂടാതെ സർവ്വനാമങ്ങളുടെ സംബന്ധികാരൂപങ്ങളും, നാമവാക്യങ്ങളും, നാമവിശേഷണങ്ങളായി വരുന്നു.
 ഉദാ: My Rose
 The King of England
- 8. നാമങ്ങളിൽ നിന്ന് വ്യുൽപ്പാദിപ്പിക്കുന്ന നാമവിശേഷണങ്ങൾ
 ഉദാ: Length - Long
 Width - Wide
- 9. ക്രിയകളിൽ നിന്ന് വ്യുൽപ്പാദിപ്പിക്കുന്നവ
 ഉദാ: To lead the nation- National leader
 To parents refuse - Parental refusal.
- 10. സംഖ്യാനാമങ്ങൾ നാമവിശേഷണമാകുന്നു.
 ഉദാ: One penny
 Two times

നാമവിശേഷണ രൂപീകരണം ഇംഗ്ലീഷിൽ.

- 1. നാമനിഷ്പന്നം
 നാമവിശേഷണങ്ങളയികവും നാമത്തിൽ നിന്ന് നിഷ്പാദിപ്പിക്കപ്പെട്ടവയാണ്.
 Boy - Boish Laugh - Laughable
 Care - Careful Storm - Stormy
 Dirt - Dirty Trouble - Troublesome
 Gift - Gifted Yellow - Yellowish



2. ക്രിയാനിഷ്പന്നം

ക്രിയാരൂപങ്ങളിൽ നിന്ന് നിഷ്പാദിപ്പിക്കപ്പെട്ടവ നാമവിശേഷണങ്ങൾ

- ഉദാ: Cease - Ceaseless
- Move - Movable
- Tire - Tireless

3. ദേശകനിഷ്പന്നം.

വിശേഷണങ്ങളിൽ നിന്നു തന്നെ രൂപപ്പെടുന്ന വിശേഷണങ്ങൾ

- ഉദാ: Black - Blackish
- Sick - Sicky
- Three - Threefold
- Whole - Wholesome

4. വിശേഷണങ്ങളുടെ ആതിശായന രൂപങ്ങൾ

ഒരേ ഗുണത്തിന്റെ തന്നെ ഏറ്റക്കുറച്ചിലുകൾ, പല ഗുണങ്ങളുടെ കൂടുതൽ കുറവുകൾ എന്നിവ കാണിക്കുന്ന വിശേഷണങ്ങൾ. ആതിശായനത്തിന്റെ മൂന്നു തലങ്ങളാണ് സാധാരണ പ്രയോഗങ്ങളിൽ വരാറുള്ളത്. 1. സാമാന്യതലം (Positive degree), 2. ഗുണത്തിന് കുറെക്കൂടെ ആധിക്യം കാണിക്കുന്നത് (Comparative degree), 3. ഗുണത്തിന്റെ ഏറ്റവും കൂടിയ അവസ്ഥ കാണിക്കുന്നത് (Superlative degree).

- ഉദാ: This boy is strong - Positive
- This girl is clever - Positive
- This boy is stronger than that - Comparative
- This girl is cleverer than that - Comparative
- This is the strongest boy. - Superlative
- This is the cleverest girl - Superlative

5. വിവേചകം (Articles)

ഏതെങ്കിലും ഒരു നാമത്തെ വിവേചിച്ചു കാണിക്കുന്നു.

ഉദാ: a doctor, an apple, ഇതിലെ 'a', 'an' എന്നിവ സർവ്വവാചികളാണ്.

'The Doctor you met' എന്നതിലെ 'the' നിർദ്ദിഷ്ട വാചിയും.

ഇംഗ്ലീഷിലെ നാമവിശേഷണങ്ങളുടെ ലക്ഷണം, നിഷ്പാദനം, പ്രയോഗം എന്നിവയാണ് ഇവിടെ വിവരിച്ചത്.

ഗ. നാമവിശേഷണ വർഗ്ഗീകരണം - തമിഴ്, തെലുങ്ക്, കന്നഡ ഭാഷകളിൽ

ആധുനിക തമിഴിൽ 'പെയർ അടൈ' എന്ന പേരിൽ നാമവിശേഷണങ്ങളെ വർഗ്ഗീകരിക്കുന്നു. തെലുങ്കിലെ നാമവിശേഷണങ്ങൾ രണ്ടുരീതിയിൽ വിവരിക്കപ്പെടുന്നു. സ്വഭാഷാപദങ്ങൾ, സംസ്കൃതപദങ്ങൾ എന്നിങ്ങനെ. ഗുണവചനങ്ങളെയാണ് കന്നഡ ഭാഷയിൽ നാമവിശേഷണങ്ങളായി കരുതുന്നത്. ഈ ഗുണവചനങ്ങൾ വാക്യത്തിലെ നാമങ്ങൾക്ക് മുമ്പ് പ്രത്യക്ഷപ്പെടുന്നു.

- ഉദാ: തമിഴ് - പെരിയ മനിതൻ
- തെലുങ്ക് - പെസ്സ മനിസി
- കന്നട - ദൊസ്സ മനുഷ്യനു

തമിഴ്, തെലുങ്ക്, കന്നട എന്നീ ഭാഷകളിൽ നാമവിശേഷണങ്ങളെ വ്യുൽപ്പന്നങ്ങളെന്നും അവ്യുൽപ്പന്നങ്ങളെന്നും വർഗ്ഗീകരിക്കുന്നു.



III ക. തമിഴിലെ ശുദ്ധനാമവിശേഷണങ്ങൾ (അവ്യുൽപ്പന്നങ്ങൾ)

നല്ല പെരിയ, ചിന്ന, പുതു, പഴയ.... ഇവ കൂടാതെ അവ്യുൽപ്പന്നരൂപങ്ങളായി വിവേചകങ്ങൾ, ചോദ്യവാചികൾ, സംഖ്യാവിശേഷണങ്ങൾ എന്നിവയെയും തമിഴ് വ്യാകരണ കർത്താക്കൾ പരിഗണിക്കുന്നു.

ഖ. വ്യുൽപ്പന്ന നാമവിശേഷണ രൂപങ്ങൾ.

1. ആന, ഉള്ള എന്നീ പേരെച്ച പ്രത്യയങ്ങൾ ചേർത്ത് നാമവിശേഷണ രൂപങ്ങൾ സൃഷ്ടിക്കുന്നു.
 ഉദാ: അഴകാന പെൺ
 ഘനമുള്ള കണ്ണാടി
2. നിറങ്ങളെ സൂചിപ്പിക്കുന്ന, ക്രിയാജന്തുങ്ങളായ ചില നാമവിശേഷണരൂപങ്ങൾ തമിഴിൽ കാണാം.
 ഉദാ: കറുപ്പ്, വെള്ള, പച്ച, ചെമ്മ്പ്പ്....
3. വിശേഷണരൂപങ്ങൾ ആഖ്യാതവാക്യങ്ങളിൽ പ്രയോഗിക്കേണ്ടിവരുമ്പോൾ തമിഴിൽ അവയോടൊപ്പം ലിംഗപ്രത്യയങ്ങൾ ചേർക്കുന്നു.
 ഉദാ: അവൻ പെരിയവൻ ആണ്.
 ഇവയല്ലാതെ 'അതു' 'കു' എന്നിവയും ചേർക്കാറുണ്ട്.
 ഉദാ: അവൻ വീടു പെരികു/ചിന്ന അതു?

IV. ക. തെലുങ്കിലെ ശുദ്ധനാമവിശേഷണങ്ങൾ (അവ്യുൽപ്പന്നങ്ങൾ)

തെലുങ്കിലെ ശുദ്ധവിശേഷണങ്ങൾ വിശേഷ്യനാമങ്ങളെ വിശേഷിപ്പിക്കുന്നു. വിവേചക ധാതുക്കൾ, ചോദ്യവാചീധാതുക്കൾ എന്നിവ ഈ വിഭാഗത്തിലുൾപ്പെടുന്നു.
 ഉദാ: അ, ഇ, എ ഇവകൂടാതെ ഒക്ക (ഒരു) പ്രതി (സംസ്കൃതരൂപം) തുടങ്ങിയ രൂപങ്ങളും ഈ വിഭാഗത്തിൽ ഉൾപ്പെടുന്നു.

ഖ. വ്യുൽപ്പന്ന നാമവിശേഷണങ്ങൾ

1. ഈ വിഭാഗത്തിൽ നാമങ്ങളുടെ സംബന്ധിക വിഭക്തിപ്രത്യയങ്ങൾ ചേർന്നുവരുന്നു.
 ഉദാ: ഇന്റീ കാപ്പ (വീടിന്റെ മേൽക്കൂര)
 നാ പേരു (എന്റെ പേര്)
2. ഭാവനാമങ്ങളോടൊപ്പം പേരെച്ച പ്രത്യയമായ 'അയന' (ഐന) ചേർക്കുന്നു.
 ഉദാ: അൻദം - അയന (ഐന) പിള്ള, (സുന്ദരിയായ പെൺകുട്ടി)
3. പാരിമാണിക വിശേഷണങ്ങളോടൊപ്പം 'എണ്ടു' (endu) പ്രത്യയമായി ചേർക്കുന്നു.
 ഉദാ: മുർഎണ്ടു (a Cubit of)
4. അതു (atu), ഇതു (itu), ഏതു (endu), എന്നിങ്ങനെ വിവേചകധാതുക്കളിൽ നിന്നും നാമ വിശേഷണരൂപങ്ങൾ സൃഷ്ടിക്കുമ്പോൾ അവയോടൊപ്പം 'വാണ്ടി' (Wanti) എന്ന നാമ വിശേഷണ പ്രത്യയം ചേർക്കുന്നു.
 ഉദാ: അതു വാണ്ടീ മനിസി
 (അതുപോലെയുള്ള മനുഷ്യൻ)
5. ചിന്ന (ചെറിയ) പെസ്സ (വലിയ) ചെസ്സ (ചീത്ത) എക്കുവ (കൂടുതൽ) അന്റ (അത്ര) ഇന്റ (ഇത്ര) തുടങ്ങിയ നാമങ്ങൾ നാമവിശേഷണങ്ങളായി ഉപയോഗിക്കുന്നു.
6. ചില പദങ്ങൾ നാമവിശേഷണമായും ക്രിയാവിശേഷണമായും യാതൊരു മാറ്റവുമില്ലാതെ ഉപയോഗിക്കുന്നു.
 ഉദാ: ഏക്കുവ (കൂടുതൽ), കാലാ (ഏറ്റവും)



- 7. ചില നാമവിശേഷണരൂപങ്ങൾ നി, ടി എന്നീ ഇടനിലകൾ ചേർത്ത് സൃഷ്ടിക്കുന്നു. ഇവ ഭാവനാമങ്ങളിൽ 'നാ' എന്നും, ക്രിയാവിശേഷണ രൂപങ്ങളിൽ 'ഗാ' എന്നുമാകുന്നു. നിറം, രുചി, ആഴം എന്നിവയെ സൂചിപ്പിക്കുന്ന വിശേഷണ പദങ്ങളോടൊപ്പമാണ് ഈ രൂപങ്ങൾ ചേർക്കാറുള്ളത്.
ഉദാ: തെല്ല- ടി, തെല്ല - നി - (വെള്ള)
തെല്ല - ന - (വെണ്മയുള്ള)
തെല്ല-ഗ-(വെളുക്കുക)
തെല്ലവാഡു - (വെളുത്ത മനുഷ്യൻ)

- 8. ഗുണവിശേഷണങ്ങളെ ആവർത്തിച്ചു പ്രയോഗിച്ച് വിശേഷണവാക്യങ്ങൾ സൃഷ്ടിക്കുന്നു.
ഉദാ: ചിന്ന ചിന്ന റാല്ല
(വളരെ ചെറിയ കല്ലുകൾ)

V ക. കന്നടയിലെ ശുദ്ധനാമവിശേഷണങ്ങൾ (അവ്യയരൂപങ്ങൾ)

ശുദ്ധധാതുക്കൾ, സംഖ്യാനാമങ്ങൾ, ചോദ്യവാചികൾ, ചുട്ടെഴുത്തുകൾ, ഇവ ശുദ്ധ നാമവിശേഷണങ്ങളായി ഉപയോഗിക്കുന്നു.

ഉദാ: വിവേചക രൂപങ്ങൾ	-	അ, ഇ, അവ
സംഖ്യാവിശേഷണം	-	അയ്-നൂറ്- (അഞ്ഞൂറ്)
ശുദ്ധധാതുക്കൾ	-	ഒൾ - മുടി - (നല്ലവാക്ക്)
തൻ-ഇലാർ	-	(തണുത്തകാറ്റ്)

ഖ. വ്യയരൂപ നാമവിശേഷണങ്ങൾ

- 1. നാമങ്ങൾ തന്നെ നാമവിശേഷണമായി ഉപയോഗിക്കുന്നു.
ഉദാ: അലർ - അംബു = പുഷ്പശരം
- 2. ക്രിയാജന്യരൂപങ്ങളോ, പേരെച്ചരൂപങ്ങളോ, നാമവിശേഷണമായി പ്രയോഗിക്കുന്നു. 'അ' എന്നതാണ് കന്നഡത്തിലെ പേരെച്ചപ്രത്യയം.
ഉദാ: നോ - ന്ഡാസിംഗ (മുറിവേറ്റ സിംഹം)
ദൊസ്സ - (വലിയ), ചിക്ക (ചെറിയ)
- 3. സമസ്തപദങ്ങൾ നാമവിശേഷണമായി വരുമ്പോൾ 'ട്ട' (tta) വിശേഷണ പ്രത്യയമാകുന്നു.
ഉദാ: മൊട്ട - മോദൽ (Motta-Modal) (ഏറ്റവുമധികം)
നട്ട - ഇരുൾ (natt - irul) (അർദ്ധരാത്രി)
- 4. സംഖ്യാനാമങ്ങളോടൊപ്പം 'അനിയ' നാമവിശേഷണ പ്രത്യയമായി വരുന്നു.
ഉദാ: ആറ് അനിയ (ആറാമത്തെ)
നാമക്രിയ പദസംഹിതകളിൽ പ്രത്യക്ഷപ്പെടുന്ന വിശേഷണപദങ്ങളെ ആധുനിക കന്നട ഭാഷയിൽ നാമവിശേഷണങ്ങളായിത്തന്നെ ഉപയോഗിക്കുന്നു.
ഉദാ: ചിക്ക ഹുഡുഗ (ചെറിയകുട്ടി)
അവൻ ചിക്ക അവനു - (അവൻ ചെറിയ മനുഷ്യൻ ആണ്)

തമിഴ്, തെലുങ്ക്, കന്നഡ എന്നീ ഭാഷകളിൽ നാമവിശേഷണങ്ങളോടൊപ്പം ഏറെ ഏറ്റവും തുടങ്ങിയ അർത്ഥങ്ങളിൽ ആതിശായന പ്രത്യയ രൂപങ്ങൾ ചേർക്കുന്നു.

ഈ ഭാഷകളിലെ നാമവിശേഷണ രൂപങ്ങൾ ലിംഗ വചന വിഭക്തി ഭേദം കുറിക്കുന്നില്ല. എന്നാൽ ആഖ്യാതവാക്യങ്ങളിലും 'ആയ' പ്രത്യയം ചേർന്നു വരുമ്പോഴും അവയോടൊപ്പം ലിംഗവചന പ്രത്യയങ്ങൾ ചേർത്ത് ഉപയോഗിക്കുന്നു.

ഉദാ: കുട്ടി നല്ലവൻ ആണ് (ആഖ്യാത വാക്യം)
സമർത്ഥനായ രാമൻ ('ആയ'പ്രത്യയം ചേർന്ന് നാമവിശേഷണ രൂപം)



നാമവിശേഷണ നിഷ്പത്തി തമിഴ് തെലുങ്ക് കന്നടങ്ങളിൽ

തമിഴ്, തെലുങ്ക്, കന്നഡ എന്നീ ദ്രാവിഡ ഗോത്ര ഭാഷകളിൽ ആധുനിക ഭാഷാശാസ്ത്ര വീക്ഷണമനുസരിച്ച്,

1. നാമങ്ങളിൽ നിന്നും നിഷ്പാദിപ്പിക്കുന്ന നാമവിശേഷണങ്ങൾ.
2. ക്രിയകളിൽ നിന്നും നിഷ്പാദിപ്പിക്കുന്ന നാമവിശേഷണരൂപങ്ങൾ.
3. നാമവിശേഷണങ്ങളിൽ നിന്നും നിഷ്പാദിപ്പിക്കുന്ന നാമവിശേഷണരൂപങ്ങൾ.
4. ക്രിയാവിശേഷണരൂപങ്ങളിൽ നിന്നും നിഷ്പാദിപ്പിക്കാവുന്ന നാമവിശേഷണ രൂപങ്ങൾ എന്നിങ്ങനെ വർഗീകരിച്ചിട്ടുണ്ട്. ഓരോ ഭാഷയ്ക്കും യോജിച്ച നാമ-നാമവിശേഷണ ക്രിയ-ക്രിയാവിശേഷണ, പ്രത്യയങ്ങൾ ചേർത്താൽ മതി.

ഇൻഡോ-ആര്യൻ ഭാഷകളായ സംസ്കൃതത്തിലും, ഇംഗ്ലീഷിലും ഇതേ രീതി തന്നെയാണ് നാമവിശേഷണ നിഷ്പത്തിക്ക് സ്വീകരിച്ചിരിക്കുന്നത്.

ഈ ഭാഷകളിൽ നാമവിശേഷണങ്ങൾ വിശേഷ്യത്തിന് മുമ്പും പിമ്പും വരുന്നു.

ഉദാ: രാമൻ വിവശ അഭവത് - (സംസ്കൃതം)

(രാമൻ വിവശനായി)

He was brave ഇംഗ്ലീഷ്

(അവൻ ധീരനായിരുന്നു)

ആധുനിക ഭാഷാശാസ്ത്രവീക്ഷണമനുസരിച്ച് വിശേഷണവിശേഷ്യങ്ങൾ പൂർവ്വാത്തര പദങ്ങളായി വരണം എന്ന നിബന്ധന സ്വീകാര്യമല്ല.

വ്യാകരണ വിഭാഗങ്ങൾക്ക് പ്രത്യേക വ്യവസ്ഥകൾ പൂർവ്വവൈയാകരണന്മാർ കൽപ്പിച്ചിട്ടുണ്ടെങ്കിലും ഭാഷാശാസ്ത്രത്തിന്റെ വളർച്ച, നിലവിലുള്ള നിയമങ്ങളെ വസ്തുനിഷ്ഠമായി പരിശോധിച്ച് വ്യവസ്ഥകൾക്ക് വേണ്ടത്ര രൂപഭേദം വരുത്തുവാൻ ആധുനിക ഭാഷാശാസ്ത്രകാരന്മാരെ സഹായിച്ചിട്ടുണ്ട്. ഭാഷയെ സംബന്ധിച്ചുള്ള പുതിയ വീക്ഷണങ്ങളും, നിർദ്ദേശങ്ങളും, അഭിപ്രായങ്ങളും കണ്ടെത്തലുകളുമാണ് ഭാഷാശാസ്ത്രത്തെ ചലനാത്മകമാക്കുകയും, വികസിപ്പിക്കുകയും ചെയ്യുന്നത്.

2. മലയാളത്തിലെ നാമവിശേഷണങ്ങൾ

ഭാഷാശാസ്ത്രപരമായ നവീന വീക്ഷണങ്ങളാണ് മലയാളമുൾപ്പെടുന്ന ദ്രാവിഡ ഭാഷകളിൽ ശുദ്ധവും, സ്വതന്ത്രവുമായ നാമവിശേഷണങ്ങളുണ്ടോയെന്ന ചർച്ചയ്ക്ക് വഴിയൊരുക്കിയത്.

മലയാളത്തിൽ നാമവിശേഷണങ്ങളെക്കുറിച്ച് വ്യത്യസ്തങ്ങളായ രണ്ടഭിപ്രായങ്ങളാണ് നിലനിൽക്കുന്നത്.

മലയാളത്തിൽ ശുദ്ധവും സ്വതന്ത്രവുമായ നാമവിശേഷണങ്ങളില്ലെന്നും, അവയെ വ്യാകരണത്തിൽ ഒരു പ്രത്യേകപദവിഭാഗമായി കണക്കാക്കുവാൻ സാധിക്കുകയില്ലെന്നും ഒരു വിഭാഗം ഭാഷാനിരീക്ഷകർ അഭിപ്രായപ്പെടുന്നു. എന്നാൽ മറ്റൊരു കൂട്ടർ മലയാളത്തിൽ ശുദ്ധവും സ്വതന്ത്രവുമായ നാമവിശേഷണങ്ങളുണ്ടെന്നും അവയെ വ്യാകരണത്താൽ പ്രത്യേക പദവിഭാഗമായി നിർദ്ദേശിക്കണം എന്നും വാദിക്കുന്നു.

1. മലയാളത്തിൽ ശുദ്ധവും സ്വതന്ത്രവുമായ നാമവിശേഷണങ്ങൾ ഉണ്ടെന്ന് വാദിക്കുന്നവർ, നാമവിശേഷണങ്ങളുടെ നിഷ്പത്തി സംബന്ധമായ അവ്യവസ്ഥിതത്വം പ്രകടമാക്കുന്നു.
2. നാമവിശേഷണങ്ങൾക്ക് നാമത്തെപ്പോലെയോ ക്രിയയെപ്പോലെയോ വ്യക്തമായ നിഷ്പാദനരീതിയും പ്രത്യയങ്ങളും കൽപ്പിക്കുവാൻ വ്യാകരണകർത്താക്കൾക്ക് സാധിക്കുന്നില്ല.
3. ഇത് നാമവിശേഷണങ്ങൾ നാമജന്യങ്ങളോ, ക്രിയാജന്യങ്ങളോ ആണ് എന്ന അഭിപ്രായത്തെ സാധൂകരിക്കുവാൻ സഹായിക്കുന്നു.



- അവ്യുൽപ്പന്നം, വ്യുൽപ്പന്നം എന്ന രീതിയിലുള്ള നാമവിശേഷണ വിഭജനം, മറ്റ് ദ്രാവിഡഭാഷകൾ (തമിഴ്, തെലുങ്ക്, കന്നഡ) വിഭജനങ്ങളോടും സംസ്കൃതം, ഇംഗ്ലീഷ് തുടങ്ങിയ ഇൻഡോ-ആര്യൻ ഭാഷകൾ എന്നിവയിലെ നാമവിശേഷണ വിഭജനങ്ങളോടും സാദൃശ്യം പുലർത്തുന്നുണ്ട്.

ഭേദങ്ങളുടെ നിഷ്പത്തി സംബന്ധമായ അവ്യവസ്ഥിതത്വമാണ് തർക്കങ്ങൾക്ക് കാരണമായത്. ആദ്യകാല വ്യാകരണഗ്രന്ഥങ്ങളിൽ നാമത്തിന്റെയോ ക്രിയയുടെയോ അർത്ഥത്തെ പരിഷ്കരിക്കുന്ന പദങ്ങളായാണ് വിശേഷണങ്ങളെ (ഭേദകങ്ങളെ) കണക്കാക്കിയിരിക്കുന്നത്. അതുകൊണ്ടാണ് പല പദവർഗ്ഗീകരണങ്ങളും അർത്ഥകേന്ദ്രിതമായതും നാമവിശേഷണം എന്നൊരു പദസംവർഗ്ഗം ഉണ്ടെന്ന് തീരുമാനിക്കപ്പെട്ടതും. ഭാഷാശാസ്ത്രം വികസിച്ചതോടെ 'പദം' എന്ന സങ്കല്പത്തിനും മാറ്റം വന്നു. ഈ മാറ്റമാണ് രൂപത്തെയും പ്രയോഗത്തെയും ആസ്പദമാക്കി പദവർഗ്ഗീകരണം നടത്തണം എന്ന നിരീക്ഷണത്തിന് കാരണമായത്. വാക്യത്തിൽ പദങ്ങളുടെ സ്ഥാനം, ധർമ്മം (Function) പ്രയോഗരീതി എന്നിവ മാനദണ്ഡമാക്കി പദവർഗ്ഗീകരണം നടത്തുകയെന്നതാണ്, സംഗ്രിഹിച്ച് കക്ഷ്യയിൽപ്പെടുന്ന ഭാഷകളുടെ കാര്യത്തിൽ അഭികാമ്യമായിട്ടുള്ളത്.

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