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Effects of Socio-Cultural Determinants on Fertility

Prof. Dr. K.J. Thankachan Director, Shri Jaysukhlal Vadhar Institute of Management Studies

ABSTRACT

The main objective of this study is to throw some light on the influence of female literacy and of some other factors on the fertility of women and subsequent effect on population. The paper establishes the relationship of total fertility rate with these factors through a multiple regression model along with finding. The methodology adopted for this paper is review of literature and secondary data from 2011 Census figures was used to make analysis and subsequent inference. Hypothesis has been set for the relationship which is found using Karl Pearson's Coefficient of Correlation and has been tested and inferred.

KEYWORDS: Fertility, Sex Ratio, Literacy, BPL.

I INTRODUCTION

Fertility is the most of significant factor which influence population growth. Fertility indicates how many children are born to a female. The birth of a child is determined by several factors like economic, social, cultural, geographical, religious, educational level, etc. Fertility is further influenced by sex and capacity to bear a child. The longer this fertility period, generally held to be between 16 and 30 years, the higher is total fertility. Fertility generally decreases with age and hence fertility is not limitless. Fertility is also influenced by infant mortality rate and is directly is proportional to it. Thus, the higher the infant mortality rate, the higher will be fertility. Fertility differs between the rural and urban sectors also. Thus fertility is influenced by several factors, It is argued that it can differ from caste to caste and race to race.

Fertility depends up on
(i) Age at which females marry
(ii) Duration of the period of fertile union and
(iii) The rapidity with which they build their families

II. RESEARCH METHODOLOGY

The methodology adopted for this research study is described as under.

1) Objectives of the Study

- To analyse the effect of female literacy on fertility of a woman.
- To analyse the influence of certain demographic factors on women's fertility.

2) Review of Literature.

Prabhu J. C. "Social and Cultural Determinants of Fertility in India", Indian International Publication, Allahabad, 1974) discussed all the factors influencing fertility. The discussion is based on reasoning and empirical historical studies with reference to social and economic situation. Female education is expected to have a negative relation with fertility due to multiple reasons. (Dyson and Moore, 1983). According to Dreze and Murthi (1995) in India female education can tune fertility levels and trends at distinct stages. Md. Abdus Salam and Navendu Shekhar (2006), has made a study of the major states of India in terms of gender gap in literacy and found that the gender disparity in literacy rate reveals widely differing trends. Mrinal Kumar Dasgupta and Tathagata Dasgupta (2006), has compared the human development index of some states in India and asserts that the social attitude and political turmoil often bring difficulties in achieving the target of improving human development index.

3) Sources of Data and Classification of Data:

This research paper mainly depends on secondary data gathered from Provisional Populations Totals of the Census 2011 published by the Directorate of Census. 17 Sample States have been included in the study which have, in turn, been selected by categorising the all the 30 states of Union of India according to Sex ratio, i.e. states with sex ratio above 1000 (1 State), 950-1000(6 States), 900-950(6 States) and below 900 (4 States). Union Territories have not been included in the present study.

The variables under study are listed as under:
Yi = Total Fertility Rate
X1 = Sex ratio
X2 = Percentage of Rural Population
X3 = Percentage of Urban Population
X4 = Density of Population
X5 = Human Development Index
X6 = Male literacy
X7 = Female literacy
X8 = Percentage of population below poverty line

4) Methods of Analysis and Inference:

The following statistical tools have been used for analysis and interpretation.
1) Pearson's Correlation Coefficient
2) Multiple Regression Model
3) Students' t-test

5) Hypothesis:

H_0: The Correlation between Y_i and X_1, Y_i and X_2, Y_i and X_3, Y_i and X_4, Y_i and X_5, Y_i and X_6, Y_i and X_7 and Y_i and X_8 is not significant ($r = 0$)

H_1: The Correlation between Y_i and X_1, Y_i and X_2, Y_i and X_3, Y_i and X_4, Y_i and X_5, Y_i and X_6, Y_i and X_7 and Y_i and X_8 is significant ($r \neq 0$)

III DATA ANALYSIS

In Table 1, figures of Total Fertility Rate and data pertaining to various factors affecting fertility rate of seventeen selected state of the country is given and in Table 2 coefficient of correlation between these variables are given which are self explanatory. Table 3 tries to establish relationship between Total Fertility Rate and the variables listed above.

Table 1 State wise data regarding Relationship of Different Variables with Total Fertility Rate of Some Selected States in India – Census 2011

Sr. No	States	Total Fertility Rate	Sex Ratio	% of Rural Population to Total Population	% of Urban Population to Total Population	Density of Population	Human Development Index	Male Literacy	Female Literacy	% of Population BPL
		Y_i	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
1	Andhra Pradesh	1.80	992	66.51	33.49	308	0.57	75.60	59.70	20.86

2	Assam	2.50	954	85.92	14.08	397	0.53	78.80	67.30	37.34
3	Bihar	3.70	916	88.70	11.30	1102	0.45	73.50	53.30	52.36
4	Delhi	1.90	866	2.50	97.50	9340	0.78	91.00	80.90	13.91
5	Haryana	2.30	877	64.19	24.25	573	0.64	85.40	66.80	19.42
6	Jharkhand	3.00	947	75.95	24.05	414	0.51	78.50	56.20	38.28
7	Kerala	1.80	1084	52.25	47.72	859	0.92	96.00	92.00	11.86
8	Madhya Pradesh	3.20	930	72.37	27.63	236	0.49	80.50	60.00	36.06
9	Mizoram	2.90	975	48.49	51.51	52	0.79	93.70	89.40	21.08
10	Orissa	2.30	978	83.32	16.68	269	0.45	82.40	64.40	36.52
11	Punjab	1.80	893	62.51	37.49	550	0.68	81.50	71.30	15.70
12	Rajasthan	3.10	926	75.11	24.89	201	0.54	80.50	52.70	24.34
13	Sikkim	2.00	889	75.03	24.97	86	0.68	87.30	76.40	13.16
14	Tamil Nadu	1.70	995	51.55	48.45	555	0.68	86.80	73.90	16.88
15	Tripura	2.20	961	73.82	26.18	350	0.61	92.20	83.10	17.16
16	Uttar Pradesh	3.50	908	77.72	22.28	828	0.49	79.20	59.30	36.97
17	West Bengal	1.80	947	68.11	31.89	1029	0.63	82.70	71.20	26.31

Source: Census of India 2011 - Provisional Population Totals

IV MULTIPLE REGRESSION MODEL ON FERTILITY

We can derive in to a multiple regression model on the basis of the above data

$$Y_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8$$

Where Yi , X1 , X2 , X3 , X4 , X5 , X6 , X7 , X8 are the same variables as identified above.

This function is not all inclusive. At the same time, covers a number of social, economical and cultural factors which affect either positively or negatively the birth rate and fertility rate of a region.

Table 2 Correlation Matrix from Table 1 : Fertility Model

Variables	Y_i	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Y_i	1.00								
X_1	-0.25	1.00							
X_2	0.45	0.07	1.00						
X_3	-0.44	-0.03	-0.99	1.00					
X_4	-0.20	-0.36	-0.80	0.80	1.00				
X_5	-0.60	0.29	-0.72	0.71	0.32	1.00			
X_6	-0.46	0.29	-0.61	0.59	0.25	0.84	1.00		
X_7	-0.57	0.35	-0.58	0.58	0.23	0.87	0.93	1.00	
X_8	0.78	-0.11	0.62	-0.60	-0.22	-0.81	-0.73	-0.71	1.00

BPL : Below Poverty Line

A correlation Matrix is given by Table 3 which measures the extent of relationship exists in between each of the variable given in Table 1

Rate of fertility defers country to country, region to region and time to time. It is found higher among underdeveloped and developing countries. The main and the obvious cause is prevailing traditional value system.

Table 3 Correlation Chart of Table 1

Sr. No	Variables: Total Fertility Rate (TFR)= Y_i	Correlation Coefficient	Calculated Value of t	Null Hypothesis
1	Y_i and Sex Ratio	-0.25	0.99	Accepted
2	Y_i and Percentage of Rural Population	0.45	1.98	Rejected
3	Y_i and Percentage of Urban Population	-0.44	1.92	Rejected
4	Y_i and Density of Population	-0.20	0.79	Accepted
5	Y_i and Human Development Index	-0.60	2.88	Rejected
6	Y_i and Male Literacy	-0.46	1.99	Rejected
7	Y_i and Female Literacy	-0.57	2.68	Rejected
8	Y_i and Percentage of Population BPL*	0.78	4.75	Rejected
Table value of $t_{0.05} = 1.753$				

BPL : Below Poverty Line

V FINDINGS

- The Total Fertility Rate (TFR) is expected to decline from 2.9 during 2001-2005 to 2.0 during 2021-25 in India. The assumption is that the Total Fertility Rate (TFR) would decline steadily and would touch the floor value of 1.8 in some states like Kerala, West Bengal, Punjab and Andhra Pradesh etc. With this, the weighted TFR is projected to reach the replacement level of 2.1 by the period 2021.
- Even though the correlation between while TFR and Sex ratio and

TFR and Density of Population is found (-0.25) and (-0.20) respectively, both are low negative. But the hypothesis that the correlation is not significant stands accepted in both the cases.

- The correlation between TFR and Percentage of Rural Population (+0.45) is found moderately positively related and the hypothesis that the correlation is not significant stands rejected. As the percentage of rural population increases TFR also increases and vice versa.
- Similarly, correlation between TFR and Percentage of people below poverty line (+0.78) is found highly positively related and the hypothesis is accepted. As the Percentage of people below poverty line increases TFR also increases and vice versa.
- The correlation between TFR and Human Development Index (-0.60), TFR and Female Literacy (-0.57) is found highly negatively related and the hypothesis that the correlation is not significant stands rejected. Any increase in any either Human Development Index or Female literacy result in decrease of TFR and vice versa.
- Similarly, the correlation between TFR and Percentage of Rural Population (-0.44), TFR and Male Literacy (-0.46) is found moderately negatively related and the hypothesis that the correlation is not significant stands rejected. An increase or decrease in Percentage of Rural Population and an increase or decrease in Male literacy will result in a decrease or increase in TFR.

VI CONCLUSION

A high fertility rate means a high population growth. The above analysis reveals that literacy influences the fertility rate. Increase in the literacy rate and effective measures for the eradication of poverty and improvement in the Human Development Index are the means by which the fertility rate can be controlled.

The first step to empower women is removing the social, economical and cultural barriers in female literacy in the state. The prevailing social system is the main barrier in promoting women education in India. Reduce the over impact of religion and traditions among the rural people by promoting rural education. By all effective means the economic backwardness of rural India which is an important barrier in the process of women education in India is to be removed.

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