

# AN EMPIRICAL ANALYSIS ON EFFECT OF LITERACY RATE ON THE FERTILITY RATE IN INDIA

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## ABSTRACT

*Various studies suggest that couples with more literacy have fewer children. This paper based on tries to analytically explain the same fact and establishes the relationship between literacy rate and fertility rate in India and which attempts to determine empirically the effects of literacy rate on total fertility rate in India when certain economic and demographic factors are held constant. The research concludes that literacy rate negatively make impact on the fertility rate. This paper also concludes that literacy rate among female make effect on the fertility rate but male literacy rate didn't.*

**Keywords:** Fertility, Literacy rate, India

## INTRODUCTION

Population is one of the major challenges which nations are facing but it is unanimously agreed observation that developing nations face more issue relating to population than the developed nations. The fertility rates in developing countries are very high vis-à-vis developed countries. Various factors can be held responsible for the higher rate of fertility in developing nations. The social concept of early marriage is one of the key force working behind that. The younger the age at marriage time, the longer will be the reproductive span, which results in higher fertility rate. Another reason is the lack of awareness regarding usage of contraception. Most of people knew about one or more contraceptive methods but the awareness about the need and benefits of limiting the number of child births is inadequate, to use contraceptives. Poverty also counts itself as one of the major reason of high fertility rate because in developing country like India it is believed that more the number of children, more will be the earning member. Still, of the entire reasons, one which has the major and highest impact is the level of literacy. Studies of fertility decline in the developing world have come to different conclusions about the presumed causes of these declines. But there is near unanimous agreement on one of the strongest influence on reduced fertility at both individual and community level that is increased literacy rate of the nations. There are exceptions, of course, but on the whole the exceptions only serve to strengthen the case that this indicator tends to depress fertility.

## LITERATURE REVIEW

A number of factors have been identified by social researchers on the basis of empirical research, which explain differential fertility. Of all the links between social factors and fertility, the relation between literacy and fertility decline has been seen as the most powerful. While the introduction mentions some of them, here some findings of the relationship between literacy and fertility will be briefly reviewed.

Sharma and Mishra (1978)<sup>1</sup> observed a negative relation between literacy and marital fertility and a decrease in fertility with rising educational status of the mother. The investigators concluded fertility decline would be induced by increasing literacy and educational attainment, higher age at marriage and acceptance of family planning. Puri (1989)<sup>2</sup> stated that fertility level declined sharply as the educational level of the women increased, while the total fertility rates for illiterate women was 5.1, it was 2.1 only for women, who were literate but below middle school level. Thus, he observed that fertility levels were declined as educational level increases. Das and Pandhiyar (1991)<sup>3</sup> reported that with an increase in the

<sup>1</sup> Sharma, A.K. and Misra, B.D. 1978. Fertility differentials in India-An analysis of census fertility data. J. Family Welfare, 25:44 56.

<sup>2</sup> Puri, R.K. 1989. Female education- Impact on dynamics of fertility. The Economic Times, 20<sup>th</sup> September.

<sup>3</sup> Das, M.P. and Padhiyar, A.C. 1991. A model to study socio-cultural determinants of fertility. An extension of Bongaart's model. J. Family Welfare, 37:30.

educational level of the husband and wife, the levels of total marital fertility rate have a tendency to decrease.

Josipovic (2007)<sup>4</sup> examined the relationship between the literacy and fertility. This view posited a simple linear relationship between the two. It was argued that literacy and fertility make, rather than a simply linear relationship, a subtle pair. The data analyzed was selected from geographical regions of Slovenia. The analysis brought curved relationship between literacy and fertility. He concluded that disparities in fertility rates among women with dissimilar levels of literacy in the studied territories were slowly diminishing through time, or have converted into other kinds of factor relations. (Cain, 1993)<sup>5</sup> stated that A higher general level of literacy often means lower fertility and higher contraceptive use throughout the society. A country's fertility level appears to be affected by the general level of education.

Demographer Caldwell (1979)<sup>6</sup> studied literacy as a factor in fertility and mortality decline in Nigeria and found that educated women are more capable of maneuvering in the modern world than are less educated women. It was found that the influence of mother's literacy exceeded that of health care availability and several other important variables. Although health care might be available to all, mothers with knowledge about the modern world are more likely to use such services, to be assertive in that use, and to see health care as a right rather than is a gift. Caldwell further contended that children of educated mothers are healthier because their mothers are more likely to obtain better health care for their children, even if it means challenging the authority of mother-in-law, husbands or medical personnel. This in turn, may influence their further fertility goals.

Adam-Chack and Ntseane (1992)<sup>7</sup> in a study of the relationship between literacy and fertility for men and women in 37 sub-Saharan nations during the period of 1960s to 1980s found an interesting result of the impact of education. Results indicate that primary school enrollment in 1960 and 1980 for both males and females had a weak negative and non-significant relationship with total fertility rate 15 to 30 years later. However, secondary school enrollment for males in 1980 had a significant negative effect on the total fertility rate 10 to 25 years later. Because they found that though husband's literacy tends to increase the perceived ability to afford children, other factors may become more important determinants in fertility decline.

## RESEARCH METHODOLOGY

This paper has used secondary data for the research. Total literacy rate, Male literacy rate, female literacy rate and total fertility rate of all the states and union territories for year 2011 have been taken for analysis. SPSS was applied for the statistical analysis.

## DATA ANALYSIS

Literacy in India is a key for socio-economic progress. As per census 2011, Literacy rate in India was 74.0 % where Male literacy rate was 82.1 % and female literacy rate was 65.5%.

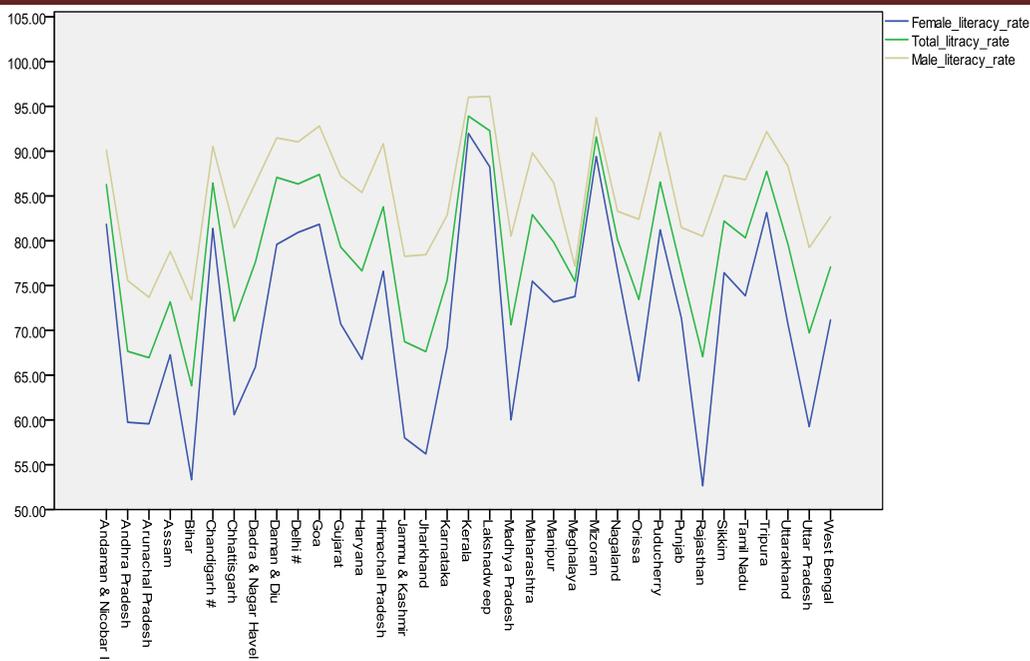
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<sup>4</sup> Josipovic, D. 2007. Literacy and fertility: Do educated parents have fewer children? *Anthropological Notebooks*, 13(2): 35-50.

<sup>5</sup> Cain, M.T., 1993. 'Patriarchal Structure and Development Change' In Federici, N., Mason, K.O. and Sogner (eds.), *Women's Position and Demographic Change*, Oxford, Clarendon Press: 43-60.

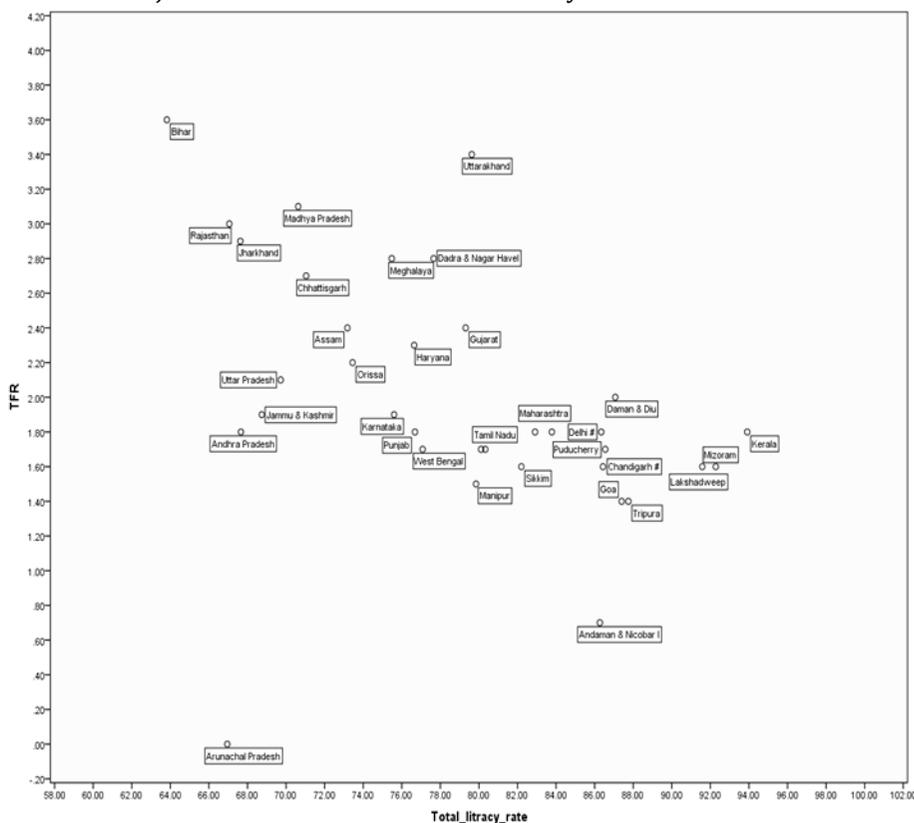
<sup>6</sup> Caldwell, J., 1979. 'Literacy as a Factor in Mortality Decline: An Examination of Nigerian Data', *Population Studies*, Vol. 33, November: 395-413.

<sup>7</sup> Adam-Chack, D.J. and Ntseane, P.G. 1992. 'Gender, Literacy and Fertility- A Cross-National Analysis of Sub-Saharan African Nations', *Sociological Spectrum*, Vol.12, No.2.



**Figure 1 Male, Female and Total Literacy rate**

Figure 1 shows the Literacy rate, Male literacy rate and female literacy rate across all the states and union territories of India. Literacy rate in India is uneven and as such, different States and Union Territories of India have differences in their literacy rates. Kerala has the highest total literacy rate and female literacy rate whereas Lakshadweep had the highest male literacy rate. Bihar has the lowest total literacy rate and male literacy rates while Rajasthan has the lowest female literacy rate.



**Figure 2 Total Literacy rate and Fertility Rate**

Figure 2 show the graphical representation of total literacy rates and Fertility rate across all the states and union territories of India. Figure 2 indicate that there is negative relationship between literacy rate and fertility rate. Bihar, Rajasthan, Jharkhand and Madhya Pradesh who has low literacy rate have higher amount of fertility rate. Where, Kerala and Mizoram who has high literacy rate have lower amount of fertility rate.

Regression analysis was carried out to quantify the relation between literacy rate and fertility rate. Fertility rate was inserted as the dependent variable and total literacy rate was inserted as the dependent variable in the simple linear regression.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.423 <sup>a</sup>	.179	.154	.66335

a. Predictors: (Constant), Total\_litracy\_rate

Model summary indicate that correlation between total literacy rate and fertility rate is 0.423 with the coefficient of determination of 0.179. Which indicate that 17.9% change in the fertility rate can be explain through literacy rate.

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.162	1	3.162	7.185	.011 <sup>b</sup>
	Residual	14.521	33	.440		
	Total	17.683	34			

a. Dependent Variable: TFR

b. Predictors: (Constant), Total\_litracy\_rate

P value of the regression model is 0.011 which is less than 5 % level of significant. ANOVA table indicate that regression model is statistically significant with the f value of 7.185.

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.968	1.107		4.486	.000
	Total_litracy_rate	-.038	.014	-.423	-2.681	.011

a. Dependent Variable: TFR

Coefficient table indicate that literacy rate negatively make impact on the fertility rate. Standardized beta weight is -0.423 which is statistically significant with p value of 0.011. Regression line can be written as below:

$$\text{Fertility rate} = 4.968 - 0.423 (\text{Total Literacy rate})$$

This paper also tries to find out the effect of male and female separate literacy rate on the fertility rate. Fertility rate was inserted as the dependent variable and male literacy rate and female literacy rate was inserted as the dependent variables in the multiple regression analysis.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542 <sup>a</sup>	.294	.250	.62457

a. Predictors: (Constant), Female\_litracy\_rate, Male\_litracy\_rate

R square of the model is 0.294 which indicate that 29.4% of the variance in the fertility rate can be explained through male literacy and female literacy rate.

ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.200	2	2.600	6.665	.004 <sup>b</sup>
	Residual	12.483	32	.390		
	Total	17.683	34			

a. Dependent Variable: TFR

b. Predictors: (Constant), Female\_literacy\_rate, Male\_literacy\_rate

P value of the regression model is 0.004 which is less than the significant value (5%). ANOVA test is statistically significant with the f value of 6.665 which indicate the overall regression model statistically significant.

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.537	1.853		.830	.413
	Male_literacy_rate	.060	.036	.529	1.673	.104
	Female_literacy_rate	-.065	.022	-.948	-3.003	.005

a. Dependent Variable: TFR

Coefficient table indicate that female literacy rate is statistically significant but male literacy rate is not statistically significant. Coefficient table indicate that literacy rate among female make effect on the fertility rate but male literacy rate didn't. Standardized beta weight of female literacy rate is -0.948 which indicate that female literacy rate negatively affect on the fertility rate. Overall multiple regression model as below:

$$\text{Fertility rate} = 1.537 - 0.948 (\text{female literacy rate})$$

## CONCLUSION

This paper concludes that Kerala has the highest total literacy rate and female literacy rate whereas Lakshadweep had the highest male literacy rate. Bihar has the lowest total literacy rate and male literacy rates while Rajasthan has the lowest female literacy rate. Bihar, Rajasthan, Jharkhand and Madhya Pradesh who has low literacy rate have higher amount of fertility rate. Where, Kerala and Mizoram who has high literacy rate have lower amount of fertility rate. This paper conclude that literacy rate negatively make impact on the fertility rate. This paper also concludes that literacy rate among female make effect on the fertility rate but male literacy rate didn't.

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