

## Study of Influence of Caste Differentials on Fertility and Contraception

Shubhagata Roy <sup>1,\*</sup>, K.K.Singh <sup>2</sup>, Brijesh P.Singh <sup>3</sup> and Kushagra Gupta <sup>4</sup>.

<sup>1</sup>Department of Statistics, Banaras Hindu University, Varanasi, India.

<sup>2</sup>Department of Statistics, Banaras Hindu University, Varanasi, India.

<sup>3</sup>Faculty of Commerce, Banaras Hindu University, Varanasi, India.

<sup>4</sup>Theorem Clinical Research, Bangalore, India.

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**Abstract:** Controlling fertility is one of the major goals of the developing countries like India. The tempo of fertility is measured by different indicators like CBR, ASFR and TFR. Several studies have been made to obtain the indirect measurement of these fertility indicators and various models based on age specific fertility rates have been developed by demographers which give information on fertility up to the age composition (for ASFR) or based on the assumption of experiencing current age specific fertility (for TFR).

In the present study, 7342 married females between 15-49 years from Uttar Pradesh, whose marital duration is more than 5 years, have been taken to study the distribution on different background characteristics and their behavior. Firstly, a univariate study was done to know the impact on contraceptive use and total children born (TCB) in last five years and further multivariate study has been carried out to know the effect of background characteristics and behavior on TCB in last five years jointly at different caste differentials.

The results show that highly educated working females belonging to urban areas and nuclear families have lesser children than the females who are non-working, uneducated or less educated, belonging to rural areas and joint families across all castes. The results also show that as compared to the females of 40 years or more, 15-19 years group has 3.6 times, 20-24 years group has 4.5 times, 25-29 years group has 3.4 times, 30-34 years group has 2 times and 35-40 years group has about 1.4 times high chance of high TCB. This re-establishes the fact that chances of high fertility diminishes as the age of females increase except for the case of 15-19 years, which is actually an immature age for child bearing.

**Keywords:** Fertility, Contraception, Caste Differential, Crude Birth Rate, Total Fertility Rate, Age Specific Fertility Rate, National Family Health Survey,

### 1. Introduction

Fertility is one of the basic measures of population change. Controlling fertility is one of the main goals of government for developing countries like India. The tempo of fertility is measured by different indicators like Crude Birth Rate (CBR), Age Specific Fertility Rates (ASFR) and Total Fertility Rate (TFR). Several studies have been made to obtain the indirect measurement of these fertility indicators. Models based on age specific fertility rates have been developed by several demographers. It includes the Coale- Trussell function (Coale and Trussell, 1974; 1978), the Beta and Gamma distributions equivalent to the Pearson Type I and III curves respectively (Hoem et al., 1981), the Hadwiger distribution (Hadwiger, 1940; Gilje, 1969; Yntema, 1969), and cubic Splines (Hoem and Rennermalm, 1978; Gilks, 1986). Additionally the Pearson Type I curve (Mitra, 1967; Romaniuk, 1973) and Type III curves (Nurul-Islam and Ali Mallick, 1987), the Brass procedures (Brass, 1974; 1978), the Gompertz curve (Wunsch, 1966; Murphy and Nagnur, 1972; Farid, 1973), Pearsonian Type I curve (Verma and Loh, 1992; Verma et al., 1996) and polynomial models (Brass, 1960) have been evaluated.

The other indirect measures of fertility are parity progression ratio (PPR), stable population method, regression techniques and number of births. . In the very beginning, indirect technique for estimating TFR was proximate determinants model, given by Bongaart (1978) and Bongaart and Potter (1983). Brass's (1968) suggested a P/F ratio method for estimating fertility and its advancement has been done by Hobcraft et.al. (1982). These methods need the data on last birth history with

\*Corresponding author e-mail: roy.shubhagata@gmail.com

the age group of females. Furthermore stable population method has been used by [Rele \(1967, 1987\)](#) for estimating TFRs. In indirect method, study based on regression analysis is also very popular for estimating TFR. [Mauldin and Ross \(1991\)](#), [Jain \(1997\)](#) have used contraceptive prevalence rate (CPR) to predict TFR of any population. The most recent work to estimate TFR using regression technique has been done by [Singh et al, 2012](#).

## 2. Methodology

In the present study, initially the distribution on different background characteristics and behavior has been studied for the females of Uttar Pradesh, India. First the effect of background characteristics has been observed one by one using univariate study to know the impact on contraceptive use and total children born (TCB) in last five years and further multivariate study has been carried out to know the effect of background characteristics and behavior on TCB in the last five years jointly at different caste differentials. Different variables used in this study have been categorized as:

Births in last five years (0-4 births), type of place of residence (urban, rural), educational attainment (no formal education, primary, secondary and higher), existing children (female more, equal, male more), child ever died (yes, no), caste or tribe (General, OBC, SC/ST), family structure (nuclear, joint), type of contraceptive use (permanent, temporary, non-user), mass media exposure (yes, no) and wealth index (poor, moderate, rich).

In regression analysis, dependent variable and independent variables taken into the study should be highly correlated. The study provides the impact on type of use of contraception based on different socio-cultural and demographic variations. Thus this analysis will provide the variables affecting the dependent variable (type of contraception).

### The Logistic Model:

The General form of this model is:

$$\ln(p/(1-p)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$$

Where,

- 1)  $0 < p < 1$ , coming from dependent variable Y.
- 2)  $X_i$ 's are indicator variables, coming from independent variables.

For knowing the variation of number of births in last five years, a simple Poisson regression analysis has been carried out. This technique is useful for count data analysis and since number of births in last five years has count measure, this technique has been efficiently applied by considering the assumptions of Poisson regression.

### The Poisson Model:

Y is a random variable, follows Poisson distribution with parameter  $\lambda$ . Thus

$$\text{Prob.}(Y = y) = \frac{\lambda^y \exp(-\lambda)}{y!}, \quad \text{Where } y = 0, 1, 2, 3 \dots$$

In this model mean is  $E(Y) = \lambda$ , and we can write it as:

$$\begin{aligned} \ln(E(Y)) &= \ln(\lambda) \\ &= \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + \dots + \beta_n \cdot X_n \end{aligned}$$

Where,  $\ln(\lambda) = \beta_0 + \beta_1 \cdot X_1 + \beta_2 \cdot X_2 + \dots + \beta_n \cdot X_n$

This model is known as Poisson regression with n independent variables. The basic assumption of this model is the dependent variable follows Poisson distribution i.e.  $[Y_i:s \sim \text{Poisson}(\lambda)]$ .

## 3. Data Source

Uttar Pradesh is one of the most populous states of India and has social variability. A large proportion of variation of fertility in India is governed by this state. In this study, the variation in fertility is measured for the state Uttar Pradesh. The availability and reliability of data is one of the major problems for studying the situation in bigger countries like India. For

studying the variation of number of births, the most reliable data are obtained from the National Family Health Survey (NFHS). The most recent third round of NFHS has been used to measure the current variation of number of births in last five years. In the present study, 7342 currently married females, whose marital duration is more than 5 years, with age group 15-49 of the most populous state of India 'Uttar Pradesh' have been considered.

#### 4. Results and Discussion

In the present analysis, the study of type of use of contraceptive at caste differentials has been carried out and the influence has been observed by many socio-cultural and demographic variates. Also to observe the current fertility scenario, the study of number of births in last five years for the females of Uttar Pradesh has been carried out. This analysis contains the females whose marital duration is more than 5 years. Firstly the distribution of females according to different demographic, socio-economic and cultural factors has been done. The effect of demographic, socio-economic and cultural variables on the use of contraception has been carried out at different caste differentials. After that the factors affecting significantly to the number of births in last 5 years has been used for parametric regression analysis.

**Table 1:** Demographic and Socio-economic distribution of females in Uttar Pradesh (N= 7342)

Variables	Percentage
<b>(1) Births in last 5 years</b>	
<b>0</b>	50.3
<b>1</b>	26.6
<b>2</b>	18.2
<b>3</b>	4.6
<b>4</b>	0.3
<b>(2) Place of Residence</b>	
<b>Urban</b>	39.3
<b>Rural</b>	60.7
<b>(3) Educational Attainment</b>	
<b>No education</b>	62.1
<b>Primary</b>	10.8
<b>Secondary</b>	19.6
<b>Higher</b>	7.5
<b>(4) Existing Children Group</b>	
<b>Female More</b>	29.9
<b>Equal</b>	31.4
<b>Male More</b>	38.7
<b>(5) Child Ever Died</b>	
<b>No</b>	64.2
<b>Yes</b>	35.8
<b>(6) Caste or Tribe</b>	
<b>SC/ST</b>	23.3
<b>OBC</b>	49.6
<b>General</b>	27.2
<b>(7) Family Structure</b>	
<b>Nuclear</b>	55.7
<b>Joint</b>	44.3
<b>(8) Type of Contraceptive Use</b>	
<b>Non User</b>	48.1
<b>Temporary</b>	29.1
<b>Permanent</b>	22.8
<b>(9) Mass Media Exposure</b>	
<b>No</b>	29.2
<b>Yes</b>	70.8

(10) Wealth index	
Poor	41.2
Middle	17.3
Rich	41.4

**Table 1** shows the demographic and socio economic distribution of females in Uttar Pradesh. The table clearly depicts that more than half, i.e. 50.3% of the females have no child births in the last 5 years. About 95 % females are having less than or equal to two births in last 5 years. As far as the place of residence is concerned, the data shows that around 60% of the females have rural background and 40% have urban background.

Most of the females (more than 60%) have never taken any formal education whereas around 30% have been educated from primary to secondary level. Highly educated population is quite low, i.e. only 7.5%. The sample consists of around 30% females who have lesser male children than female whereas 39% females have more male children than females. The rest 31% have equal no. of male and female children. From the given females, around 36% have experienced any child death in their life whereas 64% are fortunate enough of not experiencing the same.

Most of the females (around 50%) belong to OBC category whereas 27% & 23% belong to General and SC/ST category respectively. As far as the family structure is concerned, most of them (around 56%) are from nuclear family system whereas only 44% are from joint families. Out of the total females about 65% were unemployed and 35% were engaged in some work or the other. But the figures do not tell us the nature of their employment; whether it is permanent or temporary and whether the females who are unemployed now were employed at some point of time.

Most of the females (about 48%) do not use any kind of contraceptive whereas rests of them use it either temporarily or permanently. Around 71% of the females have been exposed to the mass media and 29% have not come across any type of media exposure. As far as the wealth is concerned, the proportion of rich and poor females are almost equal (little over 41%) and around 17% belong to the middle class families.

**Table 2:** Mean Number of Children ever born for complete and last five year birth history among currently married females of age 15-49 by Caste in Uttar Pradesh, 2005-06 (N=7342)

Variables	General		OBC		SC/ST		Exposed Females
	Complete	Last 5 Years	Complete	Last 5 Years	Complete	Last 5 Years	
<b>Place of Residence</b>							
Urban	3.11	0.48	4.12	0.71	4.20	0.67	2914
Rural	4.00	0.74	4.32	0.87	4.60	1.02	4428
<b>Education Attainment</b>							
No	4.66	0.76	4.66	0.84	4.78	0.91	4520
Primary	3.88	0.53	3.85	0.80	3.95	0.83	788
Secondary	3.06	0.58	3.05	0.77	3.11	0.94	1449
Higher	2.26	0.41	2.36	0.69	2.08	0.60	585
<b>Children Ever born</b>							
Son More	3.59	0.54	4.33	0.74	4.58	0.84	2835
Equal	2.86	0.57	3.58	0.74	3.79	0.83	2309
Daughter	3.95	0.70	4.63	0.98	4.82	1.06	2198
<b>Child Ever Died</b>							
Yes	5.38	0.66	5.76	0.78	5.87	0.90	2610
No	2.87	0.58	3.36	0.84	3.34	0.91	4732
<b>Family Structure</b>							
Nuclear	3.28	0.72	4.04	0.94	4.25	1.03	4084
Joint	3.75	0.46	4.50	0.66	4.82	0.71	3258
<b>Contraceptive Use</b>							
Non User	3.72	0.74	4.15	0.96	4.19	1.12	3512
Temporary	3.14	0.68	4.24	0.87	4.55	0.92	2153
Permanent	3.67	0.23	4.50	0.43	4.97	0.42	1677
<b>Mass Media Exposure</b>							
Yes	3.27	0.54	4.00	0.77	4.21	0.85	2127
No	4.75	0.89	4.71	0.90	4.95	1.02	5215
<b>Wealth Index</b>							
Poor	4.56	0.91	4.55	0.94	4.77	1.04	2997
Middle	4.19	0.84	4.30	0.83	4.16	0.86	1261
Higher	3.08	0.46	3.83	0.65	3.96	0.62	3084
<b>Age Group of the Females</b>							
15-19	-	-	1.20	1.20	1.47	1.47	43
20-24	2.20	1.64	2.36	1.61	2.41	1.65	901

<b>25-29</b>	2.69	1.13	3.30	1.37	3.40	1.45	1593
<b>30-34</b>	3.39	0.73	4.35	0.79	4.73	0.90	1587
<b>35-39</b>	3.85	0.34	4.98	0.42	5.48	0.53	1405
<b>40-44</b>	4.14	0.07	5.63	0.20	5.94	0.18	1095
<b>45-49</b>	4.33	0.02	5.83	0.05	6.20	0.07	718

**Table 2** is a bivariate table which shows the caste-wise distribution of mean number of children born (MCB) for the complete child bearing age and last five years, on the basis of various demographic and socio economic factors mentioned above for the State Uttar Pradesh. From the Table it is clear that as far as the place of residence is concerned, MCB of rural women stands to be more than that of urban women for both complete and last five year birth history, which may be due to lack of education, awareness of contraceptive usage, etc. On the basis of caste-wise categorization, it is established that General category females (both rural and urban) have the least MCB whereas SC/ST women have the maximum MCB from the data of complete and last five years birth history. The females related to SC/ST category with rural place of residence show more than one MCB from the last 5 year history data, which indicates high current fertility group of females. In Urban place of residence high (more than 1 child MCB) difference has been observed between the females of General and OBC as well as SC/ST categories.

In the Bivariate analysis of caste vs. educational attainment, the Table indicates that educational level and MCB have inverse relationship in every case except one or two. It is evident that on an average, as the educational level increases, the MCB comes down from both complete and last five year birth history data. The table shows that SC/ST females having no education have the maximum MCB in both the cases whereas General category women having high educational backgrounds have the lowest MCB analyzed by both complete and last five year birth history. It is worthwhile to mention that if we divide the data according to educational status of female then no significant difference is observed in MCB (considering complete birth history) according to caste. This clearly indicates that the MCB depends on the educational status of female and it does not depend on the caste to which they belong. If the variable children ever-born has been considered, it is clear that females with more MCB have more daughters ever-born than sons across the caste considered for both complete and last five year birth history data, which clearly indicates that in expectation of a son the females keep on delivering more girl children. The families having equal number of sons and daughters ever-born have MCBs between the first two categories for both complete and last five year birth history data.

The Table clearly shows that MCB of females who have ever experienced any child death is quite high than the females who have not experienced it. For the complete birth history MCB is more than 5 across all caste groups and the difference is quite significant. As far as the family structure is concerned, the MCB of females living in joint family system are more than that of the females living nuclear family females for all castes if we consider the data of complete birth history, but the case is opposite in when the data of last five year birth history has been considered. MCB difference between the females living in nuclear and joint family is about 0.5 children in all caste groups when the complete birth history of the female has been considered.

When it comes to contraceptive usage, the females who use temporary methods have lesser MCB than those who use permanent methods. This shows that females, who have attained a desired family size, generally opt for permanent contraceptives across all castes. The result shows that the females belonging to OBC and SC/ST caste start using contraception after attaining their desired family size and these group have MCB more than 4 children at any contraceptive differentials. Among non-users, the MCB increases as we move from General category to OBC and OBC to SC/ST females. Among the OBC and SC/ST females, MCB is least for non-users and highest for permanent contraceptive users in complete birth history whereas the trend is reverse if the birth for last five year birth history is considered. This clearly indicates that the awareness level among females about the benefits of contraceptives has increased in last five years. Females who are exposed to the mass media have lesser MCB than those who are not exposed to it. The trend continues across all castes and for both complete and last five year birth history data. This indicates that media has played a very crucial role in spreading awareness about family planning and its benefits. If we analyze caste-wise, MCB is least for General category females and highest for SC/ST females.

The Table also indicates that MCB increases as the wealth decreases. Among poor and middle class females, the MCB is more than 4 across all castes from the data of completed birth history whereas in last five year birth history, it is less than 1 in all cases except one which is SC/ST. The results one can conclude that as the females become wealthier there education as well as expose to mass media is increasing and thus usage of contraceptives also increases and due to this an inverse relationship between wealth index and MCB is observed. The age-group of females has been divided into seven categories with class width of 5 and both limits inclusive from 15-19 years to 45-49 years. Age group differentials considering the data of last 5 years provide the current, whereas, the data with complete birth history provide the scenario of the completed fertility. This means that last five years MCB provide the current fertility with age specificity and complete birth history with age group 45-49 provides the completed fertility view. From the last 5 year birth history data it is clear that on age

group 20-24 years has highest MCB for all caste differential. After this age group the trend is decreasing i.e. current fertility is decreasing after age 24. Highest fertility is shown by females of SC/ST group in the age group 20-24 years. In general the females belonging to age interval 20-29 years have high fertility for any caste dividend. General category females show lower MCB as compared to females belonging to OBC and SC/ST group in each age group. In terms of completed fertility (age group 45-49 years), MCB is more than 4 children for General category females and the females belonging to OBC and SC/ST have MCB close to 6 children.

**Table 3:** Univariate logistic Study of caste differential influence of the use of type of contraceptives v/s non user due to other socio-cultural and demographic factors

Variables	Caste group	Temporary Contraceptive Use				Permanent Contraceptive Method			
		Exp(B)	P-Value	95% Confidence Interval		Exp(B)	P-Value	95% Confidence Interval	
				Lower	Upper			Lower	Upper
<b>Place of Residence<sup>1</sup></b>									
Urban	General	2.7660	0.0000	2.2463	3.4061	2.2546	0.0000	1.7943	2.8330
	OBC	2.2949	0.0000	1.9511	2.6993	1.5776	0.0000	1.3194	1.8862
	SC&ST	1.7231	0.0000	1.3447	2.2080	2.4134	0.0000	1.8773	3.1025
<b>Education Attainment<sup>2</sup></b>									
Primary	General	1.4008	0.0680	0.9754	2.0117	1.7500	0.0019	1.2298	2.4903
Secondary		3.1985	0.0000	2.4562	4.1653	2.7016	0.0000	2.0511	3.5585
Higher		6.7650	0.0000	5.0177	9.1207	2.5485	0.0000	1.8048	3.5987
Primary	OBC	1.4797	0.0037	1.1356	1.9281	1.5199	0.0022	1.1621	1.9878
Secondary		2.7981	0.0000	2.2725	3.4452	1.5692	0.0002	1.2334	1.9966
Higher		3.9291	0.0000	2.5943	5.9506	0.6775	0.2781	0.3353	1.3691
<b>Children Alive<sup>3</sup></b>									
Son Preferred	General	1.1277	0.2646	0.9131	1.3927	2.1317	0.0000	1.6963	2.6789
	OBC	1.1618	0.0700	0.9878	1.3664	2.5267	0.0000	2.1292	2.9984
	SC&ST	1.4443	0.0024	1.1394	1.8306	2.2214	0.0000	1.7418	2.8331
<b>Child Ever Died<sup>4</sup></b>									
Yes	General	0.3888	0.0000	0.3034	0.4984	0.7873	0.0561	0.6161	1.0062
	OBC	0.8299	0.0243	0.7057	0.9761	1.1279	0.1678	0.9506	1.3382
	SC&ST	1.0411	0.7324	0.8264	1.3117	0.9792	0.8637	0.7704	1.2447
<b>Family Structure<sup>5</sup></b>									
Nuclear	General	1.2849	0.0147	1.0504	1.5716	0.8411	0.1284	0.6729	1.0513
	OBC	1.2598	0.0038	1.0775	1.4730	0.8730	0.1116	0.7385	1.0320
	SC&ST	1.1067	0.4063	0.8712	1.4057	0.7998	0.0706	0.6279	1.0189
<b>Mass Media Exposure<sup>6</sup></b>									
Yes	General	3.4033	0.0000	2.5229	4.591	2.8295	0.0000	2.0439	3.9171
	OBC	1.8801	0.0000	1.5885	2.2252	1.9162	0.0000	1.5940	2.3036
	SC&ST	2.1986	0.0000	1.7071	2.8315	2.2489	0.0000	1.7272	2.9281
<b>Wealth Index<sup>7</sup></b>									
General	Middle	1.2819	0.2008	0.8762	1.8755	1.2463	0.2993	0.8224	1.8888
	Rich	3.8961	0.0000	2.9157	5.2061	3.2382	0.0000	2.3595	4.4441
OBC	Middle	1.1331	0.2603	0.9116	1.4084	1.2706	0.0356	1.0163	1.5886
	Rich	2.5049	0.0000	2.1019	2.9850	1.9525	0.0000	1.6127	2.3638
SC/ST	Middle	1.1123	0.5477	0.7863	1.5734	1.4458	0.0365	1.0234	2.0427
	Rich	2.6396	0.0000	2.0063	3.4728	3.0576	0.0000	2.3041	4.0574

Reference Category:<sup>1</sup>Rural, <sup>2</sup>Nominal or No Education, <sup>3</sup>Son not preferred, <sup>4</sup>No, <sup>5</sup>Joint, <sup>6</sup>No Exposure, <sup>7</sup>Poor.

**Table 3** represents the caste differential influence of the use of type of contraceptives due to other socio-cultural factors. This table provides the results of caste wise univariate logistics study of use of temporary and permanent method of contraceptive use with respect to non-user group, considering different demographic and socio economic background characteristics as independent variables.

The variable “child ever died” generally reduces the use of contraceptives. The significant change has been observed by General and OBC group females for the use of temporary contraceptive use. For General category females experiencing child death ever, have 61% lower risk and OBC category females have 13% lower risk of use of temporary contraceptives. For the use of permanent method of contraception the effect of child death is insignificant at caste differentials.

The table shows a univariate study of caste differential influence on the use of contraceptives considering different socio-cultural and demographic factors. From the Table it is clear that, in general, the females with urban place of residence have higher chance of using contraceptives as compared to the females belonging to rural living area and the usage of contraceptives differs significantly with the change in place of residence among different caste group. As far as the temporary contraceptives are concerned, urban females of General, OBC and SC/ST females have respectively 2.8 times; 2.3 times and 1.7 times higher usage than the rural females and the difference is quite significant. When it comes to the usage of permanent contraceptives, the urban General, OBC and SC/ST females use them respectively 2.3 times, 1.6 times and 2.4 times more than their rural counterparts and the difference is significantly high. If we compare the usage of temporary and permanent methods among urban and rural females, the Table shows that General and OBC urban females depend more on temporary methods than rural females whereas SC/ST urban females use permanent contraceptives more than rural females. From the result it may be concluded that the urban females are more aware about the usage pattern and benefits of contraceptives.

For General category, increment of educational attainment leads to increment in the use of contraceptives. Only primary education does not make significant change for the use of temporary method of contraception among females. For primary educated females, permanent method of contraception is more preferred but secondary and higher educated females are more likely to use temporary methods. Higher education of the females has 6.7 times higher risk of using temporary contraception to non-educated females. The risk difference for the use of temporary and permanent methods of contraception is high for higher educated females. For OBC group higher education does not make significant difference for the use of permanent method of contraception with non-educated group. The negative coefficient shows that non-educated or nominal educated group females have more risk of using permanent method of contraception than higher educated group females. This higher educated group of female shows about 4 times higher risk of using temporary contraception than non-educated group. In this case primary educated females prefer permanent method of contraception and secondary and higher educated females prefer temporary contraception. For SC/ST group females, the number of cases for highly educated females is low; hence this analysis didn't apply for this category.

From the table, it is observed that son preferring females with living children prefer permanent method of contraceptives across all caste differentials. When compared with the females who do not prefer sons, the chance of using temporary contraceptive of son preferring females is 1.1 times higher for General and OBC category females which is not significant at 5 percent level of significance, while the same is 1.4 times higher for SC/ST females which is highly significant. This may be due to fact the SC/ST females have higher number of children ever-born than other caste group and they prefer permanent method of contraceptive after completing their fertility. Similarly if permanent contraceptive usage is taken into consideration, the chances are 2.1 times, 2.5 times and 2.2 times higher for General, OBC and SC/ST caste category respectively for the females who are preferring son. The difference is highly significant.

The table shows that the variable “child death ever” generally reduces the use of temporary method of contraceptive contraceptives and it has almost no effect on the use of permanent method of contraception. The significant change has been observed by General and OBC caste group females that the use of temporary contraceptive decreases as the female has ever experienced child death and the difference is highly significant. For SC/ST females, the change is insignificant. As far as the usage of permanent contraceptives are concerned, the differences are 0.79 times, 1.13 times and 0.98 times respectively for General, OBC and SC/ST females which the difference are insignificant.

The table shows that the effect on temporary contraception has positive coefficients and that of permanent contraception has negative coefficients for nuclear families. This explains that nuclear families have higher chance of using temporary contraceptives and lower chance to use permanent contraceptives in comparison to the females of joint families. The table explains that contraceptive usage among females belonging to nuclear families is higher in comparison to those belonging to joint families. The reason behind this is that upbringing of children in joint families is easier than in nuclear families because of more members. The table also shows that the females from all sections of the society depend more on the temporary contraceptives. The chances of using temporary contraceptives among both General and OBC category females are 1.3 times more which is significantly higher than their counterparts in joint families. As far as the usage of permanent contraceptives is concerned, the usage is high but the difference is insignificant.

The table indicates that media has played a major role in creating awareness about the benefits of contraceptives among different category females. It is evident that whether it is temporary method or permanent method, females those who have

media exposure, have high chances of using them across all caste category. Females having media exposure depend more on permanent methods of contraception except for General category females who depend 57% more on temporary methods than permanent methods. The difference of usage in comparison to females who are not exposed to mass media is highly significant across all categories.

The last item in the table shows that usage of contraceptives, both temporary and permanent, increase with increase in wealth across all categories and among middle and rich families as compared to poor families. Middle class wealth status females do not significantly affect the use of temporary contraception for each caste differentials than the females who belong to the household with poor wealth index and the difference is insignificant. The females belonging to the household with rich wealth index has more chance to use the temporary as well as permanent method of contraception with respect to females belonging to the household with poor wealth index in all caste group differentials and the difference is quite significant.

**Table 4:** Univariate Poisson regression analysis of caste differential influence of the births in last five years due to other socio-cultural and demographic factors

Parameter s	General				OBC				SC/ST			
	IRR	P- Valu e	95% Confidence Interval		IRR	P- Valu e	95% Confidence Interval		IRR	P Value	95% Confidence Interval	
			Low er	Upp er			Low er	Upp er			Low er	Upp er
<b>Place of Residence<sup>1</sup></b>												
<b>Urban</b>	0.76 7	0.00 0	0.716	0.822	0.855	0.00 0	0.805	0.908	0.705	0.00 0	0.645	0.771
<b>Education Attainment<sup>2</sup></b>												
<b>Primary</b>	0.79 3	0.00 0	0.709	0.886	-	-	-	-	-	-	-	-
<b>Secondary</b>	0.83 2	0.00 0	0.762	0.908	-	-	-	-	-	-	-	-
<b>Higher</b>	0.70 7	0.00 0	0.647	0.773	-	-	-	-	-	-	-	-
<b>Existing Children<sup>3</sup></b>												
<b>Son Preference</b>	0.74 5	0.00 0	0.698	0.795	0.736	0.00 0	0.695	0.78	0.763	0.00 0	0.698	0.834
<b>Child Ever Died<sup>4</sup></b>												
<b>Yes</b>	1.07 5	0.07 4	0.993	1.164	0.926	0.01 2	0.872	0.983	0.965	0.43 5	0.881	1.056
<b>Family Structure<sup>5</sup></b>												
<b>Nuclear</b>	1.29 1	0.00 0	1.208	1.38	1.306	0.00 0	1.233	1.384	1.367	0.00 0	1.251	1.494
<b>Current Contraceptive User<sup>6</sup></b>												
<b>Yes</b>	0.78 1	0.00 0	0.728	0.839	0.757	0.00 0	0.714	0.803	0.653	0.00 0	0.597	0.715
<b>Mass Media Exposure<sup>7</sup></b>												
<b>Yes</b>	0.71 1	0.00 0	0.638	0.791	0.898	0.00 1	0.843	0.957	0.853	0.00 1	0.773	0.94
<b>Wealth Index<sup>8</sup></b>												
<b>Middle</b>	0.93 1	0.33 3	0.807	1.075	0.905	0.01 6	0.834	0.981	0.819	0.00 3	0.719	0.933
<b>Rich</b>	0.63 9	0.00 0	0.575	0.71	0.757	0.00 0	0.71	0.807	0.647	0.00 0	0.588	0.712

**Reference Category:** <sup>1</sup>Rural, <sup>2</sup>Nominal or No Education, <sup>3</sup>Son not preferred, <sup>4</sup>No, <sup>5</sup>Joint, <sup>6</sup>Non User, <sup>7</sup>No Exposure, <sup>8</sup>Poor.

**Table 4** represents the results of influence of different socio cultural factors on the total child birth (TCB) in last five years with the help of univariate Poisson regression model for different caste group. The present analysis describes the caste wise

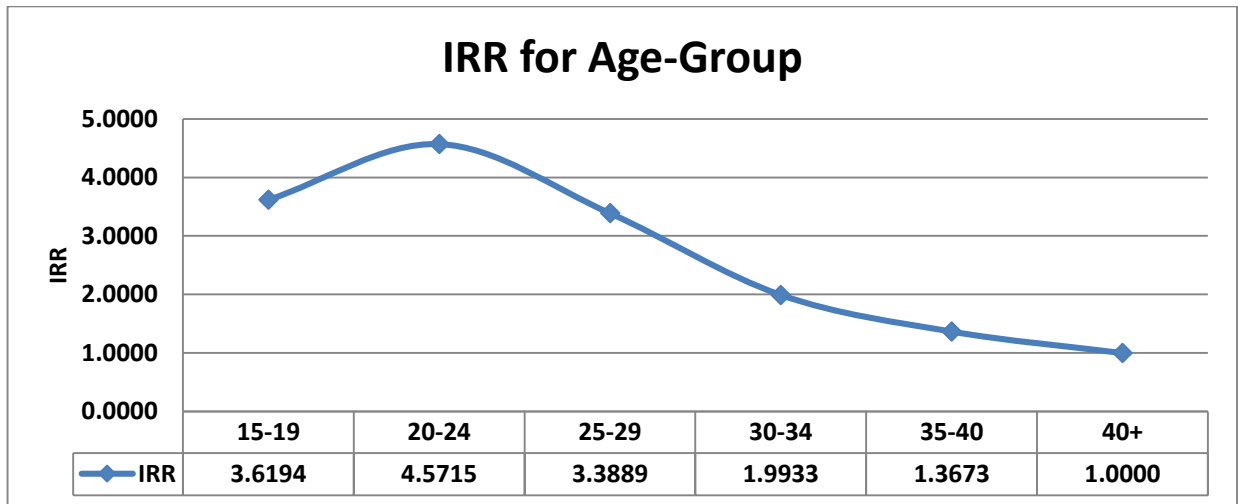


effect of some socio-cultural and demographic variables on the current fertility. Place of residence has a very high impact on child births in last five years. The table shows that urbanization leads to population control and that too across all categories. The TCB of the female who are living in urban areas is significantly lower than the females who are residing in rural areas in all caste groups. The maximum difference in TCB is observed in SC/ST category. The females in SC/ST category with urban residence has 30% less risk of high TCB in comparison to females residing in urban areas. The figures are 23% and 14% respectively for General and OBC category females. The analysis for educational attainment is done only for General category since the other caste differentials do not have sufficient number of cases in the study. It is observed that General category females who are primary educated, have 21% lower risk of high TCB, secondary educated females have 18% lower risk of high TCB and the highly educated females have the maximum, i.e., 30% lower risk of high TCB in last five years as compared to the females who have nominal or no education. Thus, it can be interpreted that education also has a positive impact on TCB and it decreases significantly as the educational level increases.

Son preference among the females and their families also has a high impact on lowering the TCB in last five years. The table shows that females of OBC have the highest 26% less chance of high TCB as compared to those who do not prefer sons; the figures are 25% and 24% respectively for General and SC/ST category females. This clearly indicates the preference and dominance of male children in our society and due to that the current fertility rate is quite high. As far as the variable “child ever died” is concerned, it has no significant impact on lowering TCB in last five years as the females who have lost their child, may attempt to compensate the loss through birth of more children. Family structure has also a significant impact on TCB but in opposite way – it tends to increase the TCB in last five years. The data shows that females belonging to nuclear families have higher chance of high TCB in last five years as compared to those belonging to joint families. General category females have about 29% higher chance, OBC females have about 31% and SC/ST females have the maximum about 37% higher chance of high TCB.

Contraceptive usage has also similar type of impact in lowering the risk of high TCB in last five years as compared to non-users. General category females have 22% less chance of high TCB; OBC females have 24% less chance and SC/ST females have about 35% less chance of high TCB. The effect of contraceptive usage has created a significant difference in lowering the TCB in last five years. The effect of mass media is also highly significant in controlling TCB. The effect is more on General category females as compared to OBC and SC/ST contraceptive using females. General category females, who have 29% less chance of high TCB as compared to those who are not exposed to mass media, are ahead of OBC and SC/ST females who have respectively 10% and 15% less chance of high TCB in last five years. For analysis wealth index differentials, increment in wealth status reduces the current fertility for each caste categories. In middle class wealth index group the effect is highest for SC/ST category in reduction in current fertility i.e. (highest risk for lowering the TCB) but for rich group the effect is highest for General category for reduction in current fertility. All the wealth differentials for different caste significantly affect the TCB in last 5 years except for General category middle wealth index group females.

**Figure 1** shows the univariate study of number of births in last five years based on the age-group of females. From the figure, which is based on Incidence Relative Risk (IRR), shows that females of age-group 20-24 years have the highest chance of high TCB while females of age 40 years or more have the least chance of high TCB. As compared to the females of 40 years or more, 15-19 years group has 3.6 times, 20-24 years group has 4.5 times, 25-29 years group has 3.4 times, 30-34 years group has 2 times and 35-40 years group has about 1.4 times high chance of high TCB. This procedure can help you to know the tempo of fertility at different age group of females.



**Figure 1:** Impact of age-group of females on Number of births in last five years in Uttar Pradesh (A Univariate Study).

**Table 5:** Impact of different socio-economic and demographic covariates on Number of births in last five years in Uttar Pradesh

Parameters	IRR	P-Value	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper
<b>1) Type of Place of Residence</b>				
Urban	0.8494	0.0000	0.8139	0.8864
<b>2) Educational Attainment</b>				
Primary	0.9676	0.2935	0.9099	1.0289
Secondary	0.9857	0.5882	0.9358	1.0384
Higher	0.9522	0.1367	0.8926	1.0157
<b>3) Caste Categories</b>				
OBC	0.9311	0.0074	0.8837	0.9810
GEN	0.7912	0.0000	0.7464	0.8387
<b>4) Existing male child are more</b>				
more	0.7708	0.0000	0.7422	0.8005
<b>5) Current Contraceptive users</b>				
Yes	0.8088	0.0000	0.7752	0.8440
<b>6) Mass Media Exposure</b>				
Yes	0.9134	0.0004	0.8689	0.9602

**Table 5** shows the multivariate study of Poisson regression analysis for number of births in last 5 years. Before this study, it has been checked that the distribution followed by number of births in last 5 years is Poisson. It has also been checked that the variables used for explaining the number of births in last 5 years has significantly affected individually. Further, multivariate study has been done. From the table, the people living in urban area have less chance (about 15%) for the higher number of births than the females living in rural area and this difference is statistically significant. The results clearly indicate that the education attainment of the females does not play a significant role and there is 5% or less chance of higher number of births for different education background females than the females with nominal or no education. In terms of caste, females of SC/ST group have higher risk of higher number of births than General and OBC group females. The females belong to OBC group have 7% less chance and the females belonging to General group have about 21% less chance of higher number of births than the females belonging to SC/ST group. The variable existing son preference significantly affects the number of children born in last five years. The group of females where existing male child is more

shows less chance (about 23%) for higher number of births in last five years with reference to the females having existing male child less or equal to the female child. Use of contraception also plays a significant role in births in last five years. The females using contraception shows about 20% less chance than the non-user females for higher number of births. Mass media exposure significantly reduces the higher number of births in last five years. The females with mass media exposure have 10% less chance for higher order births in last five years.

## 5. Conclusion

In a nutshell, the study shows that the awareness about adverse effects of rising population is still lacking among the rural, low-educated and financially and socially deprived category of people, as this is evident from the higher MCB of these category females. The usage pattern of contraceptives also changes from temporary to permanent method as they move up the social ladder and become more educated, financially more stable and once they attain a desirable family size. The females belonging to the household with rich wealth index has more chance to use the temporary as well as permanent method of contraception. Although, the family structure and mass media exposure also play a significant role in spreading awareness about the usage of contraceptives, but the initially mentioned reasons still remain the major culprit for lesser knowledge of family planning.

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