

# QUANTUM OF FERTILITY AND CONTRACEPTIVE BEHAVIOUR IN INDIA AND UTTAR PRADESH

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## Abstract

In a developing country population explosion is a prime hurdle in the development of the community because of its management of resources. Family Planning is a key factor in checking the global population crisis. Family Planning is considered so far, a major determinant for the decline in total fertility rate (TFR). It is observed that in the several states of India TFR is reducing however there is not much increase is observed in contraceptive use. In this paper an attempt has been made to analyse the pattern of contraceptive use according to the birth order and sex of child. The NFHS data has been used for all the major states of India. Contraceptive practices are more or less same in all states (HP, MP, BR, WB, AS, GJ, MH, AP, KR, KL and TN) except few states (HR, PB, RJ, UP and OR) in NFHS-IV. Kerala shows different family planning behaviour as birth order increases. Study reveals that contraceptive practice is not only an important factor to regulate fertility of a community. Thus, there is a need to revisit to explore new determinants for the fertility.

**Keywords:** Birth Order, Total Fertility Rate (TFR), contraceptive prevalence rate (CPR), Determinants of Fertility

## INTRODUCTION

It is very complex to determine the relationship between fertility and its determinants because human fertility is a result of both biological and behavioural factors along with cultural and socioeconomic factors (Bongaarts and Potter, 1983). The biological and behavioural factors can be identified as proximate variables and cultural and socioeconomic factors as background variables. The background variables regulate the proximate variables which affects fertility as result. Davis and Blake (1956) bundled set of these variables as Intermediate determinants of fertility, later Bongaarts (1978) curtailed it to a smaller set and produced a simple model to quantify their effects on fertility. The variation in these determinants can cause the variation in pattern of fertility and its trend.

Contraception, one of the proximate determinants of fertility, is a primary method for reaching desired fertility goals and it is also used to avoid Pregnancy (Feyisetan and Casterline, 2000; Speizer et al., 2013). If the contraceptive using behaviour changes then fertility also changes necessarily. It is documented that the level of contraceptive practices in a population is negatively and causally related to the level of fertility (Bongaarts 2017; Bongaarts, 1984; Mauldin and Segal, 1988; Jain et al., 2014; Tsui, 2001; Westoff, 1990; United Nations, 2000).

The governments seeking to reduce fertility rates, organize programs to promote the practice of contraception (including surgical methods) as primary policy instruments. Prevalence of contraceptive and total fertility rate are two vital measures to evaluate population policy effectiveness. An increased attention to the dynamics of population along with socio-economic development by government, international organizations,

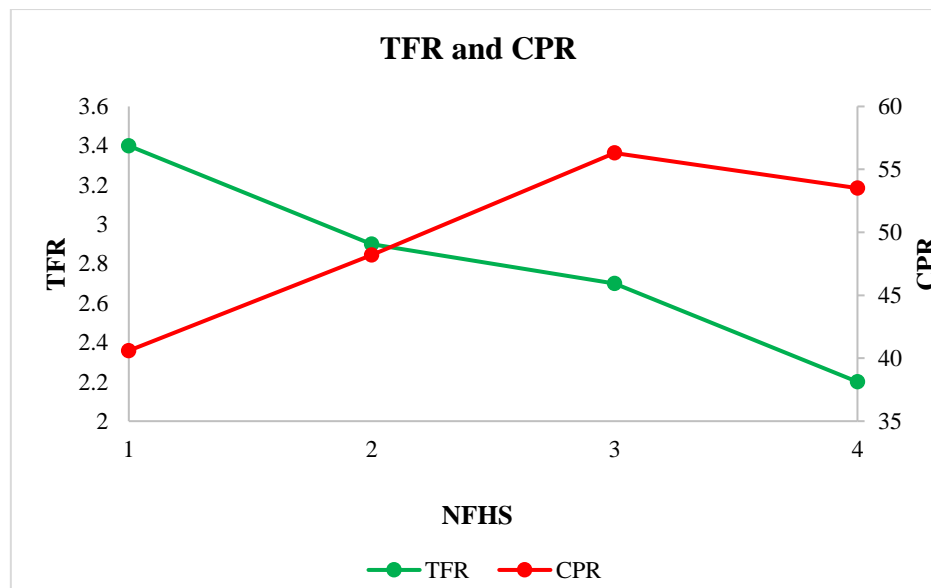
non-governmental organizations (NGO's) and the commercial sector, has led to a rapid increase in contraceptive use in India. However, the rise in contraceptive use and the pace of fertility decline has not been uniform throughout the country.

In 1952, India has launched an organised Family Planning Program (FPP) with the goal of lowering fertility and slowing the population growth rate. The most important instrument of the FPP advocated by government looking to reduce fertility rates is programs organized to promote the practice of contraception. Method of contraceptive practices is easiest method to control fertility rates and also prevent unwanted pregnancies and induced abortions. Several demographic literatures and population conferences motivated for promotions and investment in family planning programs which drives fertility transition in sustainable way and lead to an economic development. Several studies have shown a strong linear relationship between contraceptive prevalence and total fertility (Ross and Maudlin, 1991; Jain, 1997). Also, Maudlin et al. (1988) marked a very strong relationship between the level of contraceptive use and fertility in developing countries and this relationship is particularly strong when the measure of contraceptive use is limited to modern methods.

Bongaarts and Potter (1983) concluded although a number of determinants of fertility such as age at marriage, induced abortion, and breastfeeding can and do have an effect on fertility. The major cause of the reduction in fertility during the transition has been and likely will continue to be a large increase in contraceptive practice. Application of the Bongaarts (1978) model of proximate determinants to the NFHS data indicates that the total fertility in India is mainly determined by the level of contraceptive methods (Jain 1997). Literature indicates the intention of using contraception also varies according to level of agreement within couple (i.e. male and female individuals' relationships) and differences in characteristics of couple members, such as their socio-demographic variables (age, race/ethnicity, place of residence, etc.). (Ford et al., 2001; Howard et al., 1999; Ku et al., 1994; Manlove et al., 2007; Soler et al., 2000).

Socially accepted optimal size of family, attitude of family towards family planning and actual practice, desire of addition child and sex preference for composition of family etc. are key factor leading to determine use or non-use of contraceptive practices. It has been observed that couples prefer a family that contains more sons than daughters and for that exceed their desired parity unless they have desired number of sons by the time they reach the most preferred family size. Non-use of contraception is associated with factors such as low educational and socioeconomic status, rural residence, and desired fertility goals (Westoff 2001). Analyses based on qualitative data here indicate important relationship and contradictions of reproductive preferences and contraceptive behaviour that are often implicit such widely used notions as unmet need for family planning, contraceptive KAP-gap, spacing versus limiting births, spousal agreement on reproductive matters and desired family size. Although Contraceptive use is rapidly spreading, it remains experimental, and its users are often more concerned with contraceptives' negative side effects than with their effectiveness in preventing unwanted pregnancies and other complexities (Castle, 2003). In recent years, India senses substantial change in reproductive behaviour and like many other countries in the world today, India experienced lowering fertility but almost stagnant contraceptive use. So it can be said that contraceptive demand is not necessarily progress on the same level with fertility demand. According to NFHS IV

report, now the TFR of India is 2.18, about to reach replacement level, but only 53.5 percent of sexually active women age 15-49 are currently using any method of contraception. Modern contraceptive use in NFHS IV by currently married women has remained unchanged, at just below the level of 50 percent. The permanent method of fertility checks such as female sterilization, is still the most popular contraceptive method, used by 36 percent of currently married women. Despite the almost universality of contraceptive use in India today, still there is a gap between total wanted fertility (1.8 children per women) and actual fertility (2.18 children per women) rates in NFHS IV. It is reported that the wanted fertility rate in India was almost same in NFHS III 2005-06 (1.9 children) and NFHS IV 2015-16 (1.8 children) but the gap between actual and wanted fertility has declined by half (from 0.8 in NFHS III to 0.4 in NFHS IV). The surprising element is decline in contraceptive prevalence rate, 56.3 in NFHS III to 53.5 in NFHS IV. The unmet need for family planning in NFHS IV 2015-16, is 13 percent of currently married women, almost the same as the estimate in NFHS III 2005-06 (14%).



**Figure 1: Total fertility rate (TFR) and Contraceptive prevalence rate (CPR) according to NFHS**

Fig 1 show the level of TFR and CPR according to NFHS from first round to fourth round in India. In NFHS I (1992), TFR and CPR was 3.4 and 40.6 respectively and both varied according to their empirical relationship in NFHS II (TFR and CPR as 2.9 and 48.2 respectively) and NFHS III (TFR and CPR as 2.7 and 56.3 respectively). In NFHS IV (2015-16) they deviated from their routine relationship and decreased simultaneously (TFR and CPR are 2.2 and 53.6 respectively).

**Table 1: Distribution of women currently using any method of contraceptive in India**

Contraceptive Methods	NFHS I	NFHS II	NFHS III	NFHS IV	
Non-User	59.7	54.0	57.7	62.7	
Users	Modern	35.6	40.5	36.4	32.8
	Traditional	4.7	5.5	5.9	4.5
	Total	40.3	46.0	42.3	37.3

In the above table 1, it is shown that the use of contraceptive practice increased from 1992 to 2005 but then onwards declined. The modern method of contraceptive increased first from NFHS I, (1992) to NFHS II, (1998) then it shows a decline in NFHS III (2005-06) and IV (2015-16).

Exploring this relationship between contraceptive use (upto different birth orders) and total fertility rate is important because in the process of time fertility preferences and subsequent childbearing changes accordingly. The availability and exposure to use contraception has increased nationwide extensively, yet these changes affected total fertility rate substantially. A major cause of Personal characteristics associated with the use of contraception at each birth order and sex of the child, have been investigated extensively. The present study has two objectives first, to re-examines the weakening effect of contraceptive use in fertility regulation in India. Second, to re-examines the changing behaviour of contraception according to parity over the time. Third, to assess the behaviour of contraceptive use according to various birth orders and sex of the child.

## DATA AND METHODOLOGY

The primary source of data for this article is the National Family Health Survey (NFHS). The analyses in this article focus on current use of contraceptives, including both sterilization and nonsurgical methods. This information is compared with similar data from all rounds of NFHS to examine trends of contraceptive use overall (from 1992 to 2015-16) as well as in age-group, parity, birth order and sex of child. Major populated states are taken in consideration. We have taken married women currently using contraceptive from age 15 to 49 years.

Here, we applied chow test (Chow, 1960) which is a statistical test of whether the coefficients in two linear regressions on different data sets are equal. It is widely used in time series analysis to test for the presence of a structural break and also in program evaluation to determine whether the independent variables have different impacts on different subgroups of the population etc.

Let  $SS_{res}$  be the sum of squared residuals from the combined data,  $SS_1$  be the sum of squared residuals from the first group, and  $SS_2$  be the sum of squared residuals from the second group.  $N_1$  and  $N_2$  are the number of observations in each group and  $k$  is the total number of parameters. Then the Chow test statistic is

$$\frac{(SS_{res} - (SS_1 + SS_2)) / k}{(SS_1 + SS_2) / (N_1 + N_2 - 2k)}$$

The test statistic follows the  $F$ -distribution with  $k$  and  $(N_1 + N_2 - 2k)$  degrees of freedom.

**Table 2: Total Fertility Rate and Contraceptive Prevalence Rate among major states of India**

States	TFR		CPR		Percent change in TFR	Percent change in CPR
	NFHS I	NFHS IV	NFHS I	NFHS IV		
Kerala	2.00	1.56	75.03	53.00	-22.0	-29.4
Assam	3.53	2.21	67.28	53.30	-37.4	-20.8
Gujarat	2.99	2.03	54.86	45.55	-32.1	-17.0
Tamil Nadu	2.48	1.70	56.07	50.92	-31.5	-9.2
Karnataka	2.85	1.80	54.83	52.31	-36.8	-4.6
Bihar	4.00	3.41	27.49	26.33	-14.8	-4.2
West Bengal	2.92	1.77	70.15	69.63	-39.4	-0.7
Haryana	3.99	2.05	59.41	65.45	-48.6	10.2
Maharashtra	2.86	1.87	58.56	65.11	-34.6	11.2
Punjab	2.92	1.62	67.01	76.02	-44.5	13.4
Madhya Pradesh	3.90	2.32	41.88	50.06	-40.5	19.5
Andhra Pradesh	2.59	1.83	49.80	69.01	-29.3	38.6
Orissa	2.92	2.05	42.05	59.37	-29.8	41.2
Uttar Pradesh	4.82	2.74	29.23	47.47	-43.2	62.4
Rajasthan	3.63	2.40	34.96	60.56	-33.9	73.2
<b>India</b>	<b>3.39</b>	<b>2.18</b>	<b>40.70</b>	<b>53.50</b>	<b>-35.7</b>	<b>31.4</b>

From the above table we cannot say that increase in contraceptive use is responsible for decrease in TFR, because in many states both TFR and contraceptive use is decreasing. Seven states out of fifteen states shows decline in both TFR as well as CPR. This finding opposes the general believe that CPR and TFR are inversely related. Kerala, Assam, Gujarat, Tamil Nadu, Karnataka, Bihar and West Bengal show a positively correlated fertility and contraceptive use as both declined simultaneously. Whereas Haryana, Punjab, Uttar Pradesh and Madhya Pradesh show negatively correlated fertility and contraceptive use.

It also shows that the fertility decline between the two surveys was lower than expected as compared to the increase in contraceptive use during the same period and indicates the declining accountability of contraception in fertility reduction. There may be an effect of indirect checks i.e. factors that influence proximate determinants of fertility and the contraceptive use had not the maximum effect for fertility reduction as expected.

**Table 3: Regression on Contraceptive practices during NFHS I & IV**

Variable	NFHS I		NFHS IV		NFHS I & IV Combined	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
All States						
CPR	-0.033	0.008	-0.028	0.003	-0.035	0.001
Period					-0.462	0.027
Period*CPR					0.001	0.524
Constant	4.941	0.000	3.673	0.000	5.364	0.000
R <sup>2</sup> : overall	0.433		0.507		0.713	
Chow test						
F statistics						17.0438
p-value						0.000

The above table presents associations between Total Fertility Rate (TFR) and Contraceptive Prevalence Rate (CPR) in two periods: NFHS I (1992) and NFHS IV (2015-16). For each 10 percent increase in CPR there is 0.33 decline in TFR in earlier period (NFHS I) whereas 0.28 decline during later period (NFHS IV). We can interpret it as a decrease in TFR by 1 was associated with a 30.3 percentage point increase in CPR during the earlier period and 35.7 percentage point increase in CPR during the later period.

Chow test shows the small difference in coefficient is statistically significant change. It means that the relationship between TFR and CPR has attenuated. Furthermore, the model has substantially lower R-squared in the second period compared to the earlier period.

**Table 4: Contraceptive usages in NFHS IV according to birth order**

States	Percentage of contraceptive use according to birth order					
	1	2	3	4	5	6
Andhra Pradesh	15.6	86.3	88.3	87.2	85.1	87.5
Assam	52.0	58.5	56.9	51.6	47.6	45.6
Bihar	4.8	24.2	36.6	38.7	38.2	33.2
Gujarat	22.2	52.6	60.5	61.1	56.9	53.3
Haryana	50.2	76.7	77.8	74.7	64.4	55.1
Himachal Pradesh	37.3	65.2	68.6	66.1	71.7	64.3
Karnataka	19.6	64.4	74.1	78.6	77.1	70.7
Kerala	23.0	70.1	72.8	63.1	55.0	46.7
Madhya Pradesh	19.6	55.1	64.3	65.5	65.2	64.3
Maharashtra	34.5	75.1	83.1	84.9	82.3	76.5
Orissa	48.2	66.5	70.3	69.0	64.3	64.3
Punjab	64.2	83.6	85.1	82.5	85.6	82.1
Rajasthan	33.4	68.9	76.3	75.4	71.7	70.9
Tamil Nadu	21.2	65.9	67.2	67.3	62.3	65.8
Uttar Pradesh	30.3	51.7	58.2	58.4	55.9	51.2
West Bengal	62.3	77.3	78.2	72.4	70.9	59.7
India	30.8	60.1	63.2	60.4	56.5	51.0

The table 4 exhibits that percentage of women currently using contraceptive according to birth order. The contraceptive use is increasing with increasing birth order. There is a steep increase in use of contraceptive from first to second birth order and mild increase in subsequent birth orders. It is an indication that there is a gradual shift of percentage of contraceptive use according to birth order.

In NFHS IV, Assam, Haryana, Punjab and West Bengal having more than fifty percent users at first birth order. The peak of contraception is at third birth order in NFHS IV. An increasing trend in contraceptive use from first to third birth order and then it decrease mildly for subsequent birth orders. Andhra Pradesh show highest increase in contraceptive users in second birth order compared to first birth order (i.e. from 15.6 to 86.3 percent) and reached its peak at third birth order. This indicates almost 90 percent women used contraceptive up to third birth.



**Table 5: Current contraceptive usages according to birth order and sex of the child in NFHS IV**

States	Percentage contraceptive use by birth order and sex of child											
	1		2		3		4		5		6	
	M	F	M	F	M	F	M	F	M	F	M	F
Andhra Pradesh	16.1	15.1	87.6	84.6	88.6	87.9	86.4	88.0	83.0	88.2	86.2	89.5
Assam	52.6	51.2	59.6	57.3	57.8	55.7	52.7	50.4	46.7	48.5	43.8	47.6
Bihar	5.3	4.3	29.3	16.9	40.6	30.6	41.3	35.0	41.8	33.7	33.4	32.9
Gujarat	25.8	16.9	56.2	46.4	63.0	56.2	63.5	57.0	58.0	55.3	55.1	50.7
Haryana	55.4	40.0	79.6	71.1	80.1	73.4	76.9	70.5	66.6	60.6	59.4	48.9
Himachal Pradesh	43.2	27.9	68.3	59.8	69.8	66.4	68.0	62.4	72.6	69.8	72.3	54.1
Karnataka	23.1	15.2	67.5	60.4	77.2	70.2	81.8	74.6	76.9	77.3	76.2	65.4
Kerala	23.6	22.3	71.2	68.7	74.9	70.5	65.3	61.0	59.1	52.6	60.0	20.0
Madhya Pradesh	37.4	30.6	78.2	70.6	84.8	80.0	86.6	82.3	84.2	79.3	77.9	74.5
Maharashtra	22.4	15.9	58.5	49.3	67.4	58.9	68.8	60.4	68.4	60.5	64.9	63.5
Orissa	50.1	45.6	69.0	62.8	73.1	66.6	70.2	67.2	65.2	63.1	65.9	62.5
Punjab	69.4	54.6	85.5	80.1	85.8	84.0	82.2	82.9	88.0	82.2	84.5	78.4
Rajasthan	35.7	29.9	74.1	59.9	80.2	69.3	79.3	69.0	75.1	66.5	74.9	65.0
Tamil Nadu	23.5	18.4	66.8	64.8	67.6	66.6	67.3	67.4	61.2	63.3	59.5	73.5
Uttar Pradesh	33.3	26.4	55.4	45.9	62.0	52.1	61.0	54.6	58.0	53.0	53.4	48.3
West Bengal	64.4	59.7	79.0	75.2	78.8	77.4	74.1	70.4	72.4	68.7	63.9	54.0
India	33.4	27.3	63.0	55.8	66.1	58.8	63.2	56.6	59.1	53.0	52.5	49.0

From the above table it is clear that in NFHS IV, Andhra Pradesh, Haryana, Punjab and West Bengal having maximum percent of contraceptive users whereas Bihar, Uttar Pradesh, Gujarat and Madhya Pradesh having minimum. All the states at each parity contraceptive use is more when the child is male but it is less for female child.

The use of contraceptive is increasing with higher parity and for the second parity it is observed that there is much increase in user percentage of contraceptive than that of first birth order. Andhra Pradesh, Assam, Tamil Nadu, Punjab and West Bengal show very less difference between contraceptive users whether child is male or female but it is inclined towards male child.

Andhra Pradesh also shows a peculiar behaviour that for first, second and third birth order contraceptive users are more when the child is male whereas after third birth order, it is reversed. In NFHS IV, Assam having almost same percent of contraceptive user for every birth order and no much difference either the child is male or female although it is biased towards male child.

Above table depicts that contraceptive practices are decreased for both sexes of child at first birth order and increased for second and subsequent birth orders. For female child at each birth order contraceptive uses are less than male child. This implies a son preference in other way. It means the couple who does not have a male child at first parity they are more intended to go for next parity.

**Table 6: Female sterilization according to birth order and sex of the child in NFHS IV**

States	Percentage Female sterilization by birth order and sex of child											
	1		2		3		4		5		6	
	M	F	M	F	M	F	M	F	M	F	M	F
Andhra Pradesh	13.2	13.6	86.4	83.5	88.0	87.2	85.7	88.0	83.0	83.8	86.2	84.2
Assam	0.8	0.6	11.3	9.4	18.6	14.0	15.2	14.5	13.8	12.5	13.3	13.3
Bihar	1.7	0.2	22.8	12.1	37.4	26.9	38.4	32.1	39.0	30.4	31.1	30.6
Gujarat	5.4	1.5	44.1	34.2	56.8	49.3	58.5	51.6	55.1	50.2	50.2	47.9
Haryana	13.4	2.3	53.2	40.4	61.2	53.4	60.6	52.5	52.7	44.3	45.3	33
Himachal Pradesh	5.7	1.5	43.7	34.5	49.5	43.8	53.9	42.7	54.8	46.0	51.1	37.8
Karnataka	17.9	9.7	65.5	57.9	76.2	69.1	81.4	73.9	75.1	75.9	76.2	65.4
Kerala	9.3	7.9	65.7	63.6	71.4	65.1	65.3	52.8	54.5	50.0	60.0	20.0
Madhya Pradesh	13.3	7.6	65.3	55.4	78.6	72.6	80.7	75.2	77.8	71.7	74.3	66.7
Maharashtra	6.3	2.1	48.3	37.9	61.6	52.1	64.2	55.7	64.7	56.2	60.1	58.6
Orissa	4.6	2.4	39.2	28.8	50.3	41.4	49.6	45.0	46.8	44.9	42.7	40.1
Punjab	12.5	3.2	47.2	38.1	59.6	54.9	62.5	59.3	68.1	60.7	65.5	45.9
Rajasthan	5.4	1.3	49.8	32.8	65.7	53.2	67.3	55.7	64.1	52.7	62.7	50.2
Tamil Nadu	15.6	9.7	64.0	62.0	65.8	64.9	65.8	66.4	59.7	61.7	59.5	73.5
Uttar Pradesh	1.3	0.5	16.0	9.0	31.3	22.6	32.2	26.7	30.4	24.9	25.4	21.5
West Bengal	4.6	2.7	45.2	39.3	54.8	49.3	50.0	44.7	39.2	38.5	33.6	21.8
India	6.1	3.0	42.4	34.8	50.7	42.7	48.5	41.4	44.2	37.7	37.2	33.4

Female sterilization is still the most popular contraceptive method, used by 36 percent of currently married women. One of the most used contraceptive methods is female sterilization to limit the number of births. From the above table it is obvious that almost all states show increase multiple times in female sterilization from first birth to second birth for both sexes of child. At third birth order it is attains peak for both sexes of the child. For female it is increased more significantly than male child.

In NFHS IV, Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu shows maximum percent of female sterilization whereas Assam, Bihar and Uttar Pradesh show minimum female sterilization at each birth order. Female sterilization at first and second birth order has maximum difference and almost stabilizes for subsequent birth orders. When child is male the female sterilization is more than when child is female for all states in NFHS IV. For the first birth order, pattern of female sterilization is same for all states except Andhra Pradesh where it is opposite.

**Table 7: Cumulative distribution of currently using any contraceptive method and Female sterilization according to parity from NFHS I to IV (1992 to 2015-16) India**

Age groups	Parity	Currently Contraceptive Users				Female Sterilization			
		IV	III	II	I	IV	III	II	I
15-19	0	46.2	37.2	30.5	31.0	1.0	0.0	0.0	0.0
	1	91.4	81.9	75.7	77.8	9.2	0.0	2.6	10.8
	2	99.7	97.1	96.0	95.7	98.0	80.0	79.5	75.7
	3+	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
20-24	0	8.2	4.7	6.6	7.4	0.2	0.0	0.1	0.1
	1	49.9	38.3	35.5	35.3	2.7	2.4	1.9	1.4
	2	89.0	79.8	74.0	71.3	75.1	62.2	51.8	44.1
	3	98.5	95.0	93.0	92.4	96.5	90.9	86.3	84.4
	4	99.8	98.9	98.5	98.4	99.6	98.0	96.9	97.1
	5	100.0	99.8	99.7	99.7	100.0	99.6	99.4	99.3
6+	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	



25-29	0	1.7	1.4	1.5	1.6	0.1	0.0	0.0	0.0
	1	19.9	16.9	14.2	13.2	2.0	1.5	0.9	1.1
	2	67.8	57.1	48.8	43.5	58.2	44.2	34.7	28.0
	3	90.6	82.8	77.0	72.9	88.2	78.4	70.6	65.7
	4	97.9	94.3	92.0	89.8	97.4	93.0	90.4	87.8
	5	99.6	98.3	97.6	96.7	99.5	98.1	97.5	96.9
	6	99.9	99.5	99.4	99.1	99.9	99.5	99.4	99.1
	7	100.0	99.9	99.8	99.9	100.0	99.9	99.9	99.8
8+	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
30-34	0	0.4	0.4	0.4	0.5	0.1	0.0	0.0	0.0
	1	8.8	8.0	6.4	5.1	2.1	1.3	0.9	0.8
	2	50.6	43.3	32.8	27.0	45.1	35.6	24.3	16.5
	3	79.1	70.8	61.5	55.1	77.8	68.5	57.7	48.9
	4	92.4	86.0	81.0	76.7	92.4	86.0	80.5	74.6
	5	97.5	94.1	91.4	89.5	97.7	94.8	91.9	89.6
	6	99.3	97.8	96.5	95.8	99.4	98.2	97.0	96.2
	7	99.8	99.3	98.9	98.5	99.9	99.5	99.1	98.9
	8	100.0	99.8	99.6	99.5	100.0	99.9	99.7	99.7
	9	100.0	99.9	99.8	99.9	100.0	100.0	99.9	99.9
	10	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
11+	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
35-39	0	0.2	0.1	0.3	0.3	0.1	0.0	0.0	0.0
	1	5.2	4.7	3.5	2.9	2.7	1.3	0.7	0.6
	2	40.6	33.3	24.3	18.8	38.2	27.5	18.3	11.6
	3	69.6	61.4	51.6	42.9	69.8	59.2	48.6	36.7
	4	86.1	79.1	72.3	64.7	87.1	79.5	72.5	61.6
	5	94.2	89.4	85.3	81.0	95.0	91.0	86.5	80.4
	6	97.8	94.7	92.9	90.6	98.2	96.1	93.7	91.3
	7	99.2	97.6	97.0	95.7	99.4	98.7	97.6	96.5
	8	99.7	99.0	98.7	98.1	99.8	99.5	99.1	98.6
	9	99.9	99.6	99.5	99.3	100.0	99.8	99.7	99.6
	10	100.0	99.9	99.9	99.7	100.0	99.9	100.0	99.9
	11	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0
12	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
40-44	0	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.0
	1	4.3	3.8	2.7	1.7	3.1	1.0	0.7	0.6
	2	33.4	27.5	18.0	13.7	32.3	22.5	12.1	7.9
	3	62.1	55.1	41.1	33.1	62.9	52.4	36.8	26.2
	4	80.6	75.7	63.2	53.7	82.2	75.8	61.3	48.8
	5	90.7	87.4	79.4	71.2	92.1	88.4	79.2	68.3
	6	95.8	93.5	89.1	84.2	96.8	94.6	89.6	83.2
	7	98.3	96.7	94.5	91.8	98.9	97.6	95.3	91.8
	8	99.3	98.6	97.2	96.5	99.6	99.1	98.0	97.0
	9	99.7	99.5	98.7	98.5	99.9	99.7	99.2	98.8
	10	99.9	99.8	99.5	99.4	100.0	99.9	99.8	99.6
	11	100.0	99.9	99.9	99.8	100.0	100.0	100.0	99.8
12	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
45-49	0	0.2	0.2	0.3	0.3	0.2	0.0	0.1	0.1
	1	4.2	2.3	2.2	2.1	3.8	1.1	0.8	0.9
	2	28.8	20.6	14.1	10.6	28.4	17.4	8.6	6.5
	3	57.2	47.7	34.9	26.9	58.0	45.3	28.5	20.1
	4	76.8	70.1	56.3	46.6	78.3	69.4	51.1	40.4
	5	88.1	83.9	72.4	64.5	89.5	83.8	68.9	60.3
	6	94.4	91.9	84.7	77.9	95.4	92.3	83.2	75.0
	7	97.5	96.4	91.9	87.9	98.1	97.0	91.3	86.6
8	99.0	98.5	95.9	94.0	99.3	98.9	96.0	93.5	

	9	99.6	99.4	98.3	97.2	99.7	99.5	98.3	96.9
	10	99.9	99.7	99.3	99.3	99.9	99.8	99.4	99.4
	11	100.0	99.9	99.7	99.9	100.0	99.9	99.9	99.8
	12	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	13	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All	0	1.54	1.35	0.94	1.25	0.12	0.02	0.03	0.04
	1	12.57	11.53	8.32	8.11	2.80	1.32	0.88	0.87
	2	48.88	42.93	33.32	29.06	40.23	31.21	22.76	17.25
	3	74.72	68.72	59.67	54.10	70.86	62.51	52.88	45.39
	4	88.38	84.13	78.16	73.26	87.10	81.77	74.82	68.25
	5	94.85	92.33	88.85	85.70	94.58	91.82	87.29	83.29
	6	97.85	96.37	94.67	92.86	97.88	96.45	94.01	91.71
	7	99.15	98.39	97.62	96.65	99.23	98.65	97.42	96.26
	8	99.68	99.36	98.95	98.56	99.73	99.50	98.91	98.47
	9	99.88	99.74	99.54	99.41	99.91	99.80	99.55	99.37
	10	99.96	99.90	99.85	99.82	99.98	99.93	99.87	99.84
	11	99.99	99.97	99.96	99.93	100.00	99.98	99.97	99.95
	12	100.00	99.99	100.00	99.98	100.00	99.99	100.00	99.99
	13	100.00	100.00	100.00	99.99	100.00	100.00	100.00	100.00
14+	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

The table 7 below exhibits that current age-group wise cumulative percent of contraceptive uses according to parity in all rounds of NFHS. It is an indication that there is a gradual shift of percentage of contraceptive use according to parity. Age-group wise analysis shows a gradual shift of percentage of contraceptive user at earlier parity in NFHS IV which was at lower parity in earlier rounds of NFHS. As cumulative frequency observed in the age-group 15-19, in NFHS IV almost 100 percent are using contraception at second parity whereas in NFHS I it is 95.7 percent. This means the percentage of contraceptive use according to parity is already been covered in NFHS IV before achieving the respective parity for NFHS I, II and III. Female sterilization in this age group 15-19, is also increased from 1992 to 2015-16. In NFHS IV (2015-16) at second parity 98 percent women are getting sterilized while in NFHS I (1992) it is only 75.7 percent.

Again, in the age group 20-24 in NFHS IV percent of contraceptive uses reaches maximum at fourth parity i.e. 99.8 percent whereas it is 99.7 at fifth parity in NFHS I. In 20-24 age group, almost all women get sterilized up to fourth parity in NFHS IV whereas it was at sixth parity in NFHS I. The same pattern can be found in each age-group. Further, as the age is increasing the use of contraception decreasing from earlier age-group in respective parity. The proportion of women using contraceptive is covered at earlier parity in NFSH IV from NFHS I. We can observe that the cumulative percentage of proportion covers hundred percent at earlier parity, it means that contraception used in the high parity.

## CONCLUSION

Since the country is strengthening educationally and economically day by day, the increasing contraceptive use and reducing fertility should be major outcomes in fertility transition. As it is known that there are many possible reasons for fertility decline in which the two major reasons are education and use of contraceptives. Education does not directly affect fertility decline as it affects the variables such as late marriage, postpartum amenorrhea and abstinence, abortion, and use of contraception. In country like India, still above factors is somehow difficult to reach up to desired level

except use of contraception. Nowadays contraception is widely accepted and most consented method of regulating fertility.

In recent years, it can be observed that the fertility-contraceptive relationship has weakened, meaning that in order to achieve a comparable reduction in fertility, greater contraceptive prevalence is needed but it is decreasing with notable decline in TFR. Among all the proximate fertility determinants, the relationship between contraception and fertility is one of the strongest: every 15-percentage point increase in the contraceptive prevalence rate (CPR) is associated with a reduction in the total fertility rate (TFR) (Mauldin and Segal, 2015; Ross and Frankenberg, 1993; Tsui, 2001) whereas 17 percentage point increase in CPR with a reduction in TFR is suggested by Choi et al. (2018). Recently, several demographers have explored possible reasons for the declining association between CPR and TFR, such as unknown heterogeneity (Bongaarts, 2015; Stover and Winfrey, 2017) and shifts towards less efficient methods in method mix (Bertrand et al., 2014; Ross et al., 2015; Zheng et al., 2012). The need for updating the original model has risen over time thus a few modifications in the classical model of Bongaarts (1978) has been suggested by Stover (1998) and Bongaarts (2015) for better results in the current TFR scenario.

The extent of contraceptive practice to regulate the timing and to limit the number of births has increased rapidly during the past decade. There are three main conclusions of this article, first the pattern of contraceptive use is not changed but the total fertility rate is declined which indicates some other cause which regulates quantum of fertility. Second, according to birth order, percentage of contraceptive use in NFHS IV is shifted earlier than what was in NFHS III. Third, female sterilization is increased significantly at each parity. The principal pattern in the use of contraception in NFHS III and IV is increase in contraceptive practices according to sex of the child. If child is male contraceptive used is more than that if child is female at each birth order. This might be a concrete evidence for son preference. The general belief is that higher prevalence of contraceptive use leads lower TFR but it is observed from the above analysis that the relationship between contraceptive prevalence rate and fertility is against the general belief. It means the role of contraception in regulating fertility has declined and some other factor is also playing a vital role in case of declining fertility.

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