

Trends and Predictors of the Use of Modern Contraceptive Methods by Sexually Active, Non-Pregnant Women in India, 2005–2021

Sanjiv Singh
Kaushalendra Kumar Singh
Pragya Singh

Abstract

We analyse trend and predictors of the use of modern contraceptive methods in sexually active, non-pregnant women of reproductive age in India based on the data available through the National Family Health Survey. The proportion of sexually active, non-pregnant women of reproductive age using selected modern contraceptive method has increased over time. The analysis also suggests that the increase in the use of selected modern contraceptive methods has been different in women with different demographic and socio-economic characteristics, although this difference appears to have decreased over time.

Background

India was the first country in the world to launch an official family planning programme way back in 1952. However, family planning for reducing birth rate and achieve population stabilization received attention only after 1971 population census (Ibarra-Nava et al, 2020). The use of modern contraceptive methods in India, however, remains low when compared to other countries. In 2022, almost 59 per cent of the currently married or in-union women in the world in comparison to 70 per cent in India (United Nations, 2022). The contraceptive prevalence rate in India is found to be lower than that in countries like Finland where it is around 79 per cent for the women aged 15-49 years. The increase in the use of modern contraceptive methods in India has also been slow as compared to other countries. The prevalence of modern contraceptive methods in India increased from 42 per cent in 1992-1993 to 56 per cent in 2019-2021 according to the National Family Health Survey (Government of India, 2022).

The term contraceptive prevalence is popularly used to reflect the use of family planning methods. The contraceptive prevalence is defined as the proportion of women of reproductive age (15-49 years) who are currently using or whose sexual partner is currently using at least one method of contraception. If a woman reports using more than one

method, only the most effective method is used to calculate contraceptive prevalence. As such, the overall use of contraceptive methods frequently used in combination with other methods may be underestimated. in many ways (United Nations, 2022). For analytical purposes, contraceptive methods are often classified as either modern or traditional. Modern contraceptive methods include female and male sterilization, intra-uterine devices (IUD), implants, injectables, oral contraceptive pills, male and female condoms, vaginal barrier methods (including the diaphragm, cervical cap and spermicidal foam, jelly, cream and sponge), the lactational amenorrhea method (LAM), emergency contraception and other modern methods. Traditional contraceptive methods include rhythm, withdrawal and other traditional methods (United Nations, 2022). The conventional definition of contraceptive prevalence does not distinguish between pregnant and non-pregnant women of reproductive age. The pregnant women are not exposed to the risk of pregnancy as they are already pregnant and, therefore, may not be using any contraceptive method. Similarly, there may be a proportion of reproductive age women who had never been engaged in a sexual activity and so are not exposed to the risk of pregnancy. It is, therefore, more pertinent to consider women of reproductive age who are sexually active and who are not pregnant in estimating the prevalence of contraception. However, the trend and predictors of the use of modern contraceptive methods in sexually active non-pregnant women are not available in India. The present paper is, therefore, focuses on the use of modern contraceptive methods in sexually active, non-pregnant women of reproductive age and its predictors.

In this paper, we analyse the trend and predictors of the use of selected modern contraceptive methods in sexually active, non-pregnant women of reproductive age in India during the period 2005-2021. Sexual activity in India is largely confined within marriage only, although women outside marriage may also be using a contraceptive method. The paper analyses the trend and predictors of the use of selected modern contraceptive methods in sexually active non-pregnant women only as the official family planning programme of the country is directed towards currently married women of reproductive age only. The modern contraceptive methods considered in the present analysis include oral pill, intra-uterine devices (IUD), injections, diaphragm, condom, female condom, foam or jelly, and male and female sterilisation.

Data and Methods

The paper is based on the third (2005-2006), fourth (2015-2016), and fifth (2019-2021) rounds of the National Family Health Survey (NFHS) organised by the Government of India and implemented by the International Institute for Population Sciences, Mumbai. Details of NFHS are given elsewhere (Government of India, 2022). The NFHS Programme was instituted in 1992-1993. The present analysis is limited to the last three rounds of NFHS only. During the third (2005-2006) round of the survey, 87,925 currently married women of reproductive age were covered. This number was 499,627 in the fourth (2015-2016) and 512,408 in the fifth (2019-2021) round of the survey. The number of currently married, sexually active, non-pregnant women of reproductive age covered during the three rounds of NFHS were, however, 79304, 448488 and 461288 respectively (Table 1). Weights were

used to calculate the proportion of currently married, sexually active, non-pregnant women of reproductive age using selected modern contraceptive methods.

Table 1: Categories of women of reproductive age covered in different rounds of NFHS.

Particulars	NFHS-3	NFHS-4	NFHS-5
Total women interviewed	124385	699686	724105
Women never had sex	29894	164940	173182
Women pregnant	5911	32420	28398
Unmarried	6545	35021	38376
Missing	2731	18817	22861
Final sample for the present study	79304	448488	461288
Proportion of total women interviewed (per cent)	63.76	64.10	63.70

Source: Authors

The dependent variable in the present paper is a dichotomous one. It has a value 1 if a currently married, sexually active, non-pregnant woman of reproductive age is using any one of the following modern contraceptive methods – female sterilization, male sterilization, oral pill, intra-uterine devices (IUDs), injections, diaphragm, condom, female condom, foam or jelly – and 0 otherwise. Other modern contraceptive methods have not been considered in the analysis as information about the use of these methods is not available for all the three rounds of NFHS. On the other hand, the variables used as predictors of the use of selected modern contraceptive methods include age of the woman, place of residence, household religion and caste, level of education of the woman, household wealth index, number of living children, exposure to media, awareness about family planning awareness, and zones of the country. Detailed description of the predictor variables is given in table 2. The entire country has been divided into six administrative zones for the present analysis as the use of modern contraceptive methods has been found to vary in different parts of the country.

Both bivariate and multivariate statistical analyses have been carried out to identify the predictors of the use of selected modern contraceptive methods by currently married, sexually active, non-pregnant women of reproductive age. The bivariate statistical analysis has been carried out to identify predictor variables which are statistically significantly associated with the use of the selected modern contraceptive methods. Based on the findings of the bivariate statistical analysis, predictor variables were selected for the multivariate statistical analysis. Since the dependent or the study variable in the present analysis is a dichotomous one, bivariate logistic regression was applied to test the association of selected predictor variables with the study variable or the dependent variable. Before the application of the bivariate logistic regression analysis, the multicollinearity in the dataset was examined. Multicollinearity refers to the linear relationship between explanatory or predictor variables. The variance inflation factor was calculated to test the multicollinearity among the independent or the predictor variables included in the present analysis. We found a variance inflation factor of close to 3 which indicates there was no harmful multicollinearity between the explanatory or the predictor variables (Thompson et al, 2017). The data used in the analysis were also examined for the presence of outliers. Results of the bivariate logistic regression analysis are given in terms of adjusted odds ratio.

Table 2. Description of predictor variables.

Variable	Categories
Age (Years)	15-19 20-24 25-29 (Reference) 30-34 35-39 40-44 45-49
Place of residence	Rural (Reference) Urban.
Religion	Hindu Muslim (Reference) Others
Caste	Scheduled Castes/Tribes (Reference) Other Backward Classes Others
Education	No education (Reference) Primary Secondary Above Secondary
Wealth Index	Poor (Reference) Middle Rich.
Media exposure	Rare – women who rarely read newspaper/magazine, of listen to radio, or view television/cinema. (Reference) Frequent – women who frequently read newspaper/magazine, of listen to radio, or view television/cinema Regular – women who regularly read newspaper/magazine, of listen to radio, or view television/cinema.
Family planning Awareness	No – women not aware of family planning (Reference) Yes – women aware of family planning
Number of Living children	0 1 (Reference) 2 3 and more than 3.
Zones	North Himachal Pradesh, Punjab, Chandigarh, Haryana, Delhi, Rajasthan, J&K, Ladakh (Reference) South Andhra Pradesh, Karnataka, Kerala Tamil Nadu, Telangana. West Gujarat, Goa and Maharashtra East Bihar, Sikkim, Orissa, Jharkhand, West Bengal. Central Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh. Northeast Assam, Nagaland, Meghalaya, Manipur, Mizoram, Tripura, Arunachal Pradesh.

Source: Authors

Results

Table 3 gives the proportion of currently married sexually active non-pregnant women using selected modern contraceptive methods in different rounds of NFHS. This proportion was 52.3 per cent in 2005-06 which decreased to 51.0 per cent in 2015-2016 but increased to 59.6 per cent in 2019-2021. The odds using selected modern contraceptive methods was 10 per cent higher than the odds of not using selected modern contraceptive methods in 2005-06 which decreased to 4 per cent in 2015-2016 but increased to 47 per cent in 2019-2021. By comparison, the proportion of currently married women of reproductive age using a modern family planning method in India, according to NFHS, was 42 per cent, 48 per cent, and 56 per cent respectively. This implies that the odds of using a modern contraceptive method by currently married women of reproductive age was 4.6 per cent higher than the odds of not using a modern contraceptive method by currently married women in 2005-06 which decreased to 2.02 per cent in 2015-2016 but increased to 19.10 per cent in 2019-2021. As expected, the use of selected modern contraceptive methods in currently married, sexually active, non-pregnant women is higher than the use of modern contraceptive methods in currently married women of reproductive age. The relatively higher use of selected modern contraceptive methods among sexually active, non-pregnant, married women is primarily due to their immediate need to prevent or postpone pregnancy. At the same time, all modern contraceptive methods have not been considered in the present analysis which may result in a lower use of modern contraceptive methods among currently married, sexually active, non-pregnant women.

Table 3 also shows use of selected modern contraceptive methods by the background characteristics of currently married, sexually active, non-pregnant women and the associated odds of using selected modern contraceptive methods. The impact of some of the background characteristics on the use of selected contraceptive methods is revealing. For example, there has been a marginal increase in the use of selected modern contraceptive methods in currently married, sexually active non-pregnant women in the rural areas between NFHS-3 and NFHS-4 but there has been a marked decrease in the use of these methods in the urban areas. On the other hand, the increase in the use of selected modern contraceptive methods between NFHS-4 and NFHS-5 has been more rapid in the rural areas as compared to that in the urban areas of the country. The odds of using selected modern contraceptive methods increased steadily which indicates that the probability of using selected modern contraceptive methods has increased over time in younger women. Most age groups saw an increase in odds from NFHS-3 to NFHS-5, with the odds generally rising more rapidly in the older age groups. Among Muslim women, odds of using selected modern contraceptive methods rose from NFHS-3 (0.66) to NFHS-5 (0.97), indicating an increase in contraceptive use, though the overall odds remained lower compared to other religious groups. In women with no education, the odds of use showed slight fluctuations but generally increased, reflecting rising contraceptive use. Among women with higher education, odds decreased in NFHS-4 but increased in NFHS-5, indicating a recovery in contraceptive use among highly educated women. In the context of any kind of media exposure over the period 2005-06 to 2019-21 odds remained high and have increased, indicating a strong correlation between media exposure and contraceptive use. In almost all zones, odds increased, indicating rising use of contraceptives.

Table 3: Use of selected modern contraceptive methods in India, 2005-2021.

Predictor variables	Proportion (per cent) of currently married, sexually active, non-pregnant women using selected modern contraceptive methods			Odds of using selected modern contraceptive methods		
	NFHS-3	NFHS-4	NFHS-5	NFHS-3	NFHS-4	NFHS-5
All	52.30	51.01	59.55	1.10	1.04	1.47
Residence						
Urban	59.18	54.34	61.00	1.45	1.19	1.56
Rural	49.15	49.33	58.88	0.97	0.97	1.43
Age						
15-19	8.12	12.23	22.55	0.09	0.14	0.29
20-24	30.97	27.97	37.07	0.45	0.39	0.59
25-29	52.88	45.83	53.58	1.12	0.85	1.15
30-34	63.66	57.91	64.35	1.75	1.38	1.81
35-39	64.90	61.49	68.80	1.85	1.60	2.21
40-44	61.29	60.78	67.81	1.58	1.55	2.11
45-49	59.33	57.44	65.84	1.46	1.35	1.93
Religion						
Hindu	53.76	51.96	60.99	1.16	1.08	1.56
Muslim	39.69	40.07	49.34	0.66	0.67	0.97
Others	56.46	58.92	57.37	1.30	1.43	1.35
Social class						
SC	50.87	52.60	60.30	1.04	1.11	1.52
ST	46.42	48.14	58.36	0.87	0.93	1.40
OBC	51.69	49.58	59.76	1.07	0.98	1.49
Others	55.44	53.41	58.86	1.24	1.15	1.43
Education						
No Education	49.08	51.41	62.18	0.96	1.06	1.64
Primary	57.16	55.80	64.42	1.33	1.26	1.81
Secondary	54.23	50.62	58.57	1.18	1.03	1.41
Higher	55.38	44.35	51.71	1.24	0.80	1.07
Standard of living						
Poor	42.97	44.30	56.42	0.75	0.80	1.29
Middle	53.52	53.73	61.54	1.15	1.16	1.60
Rich	60.10	55.69	61.44	1.51	1.26	1.59
Number of living children						
0	4.66	7.35	14.57	0.05	0.08	0.17
1	25.86	29.98	40.55	0.35	0.43	0.68
2	64.63	63.42	70.20	1.83	1.73	2.36
3 or 3+	62.79	59.25	67.97	1.69	1.45	2.12
Exposure to media						
Very Rare	41.60	38.93	53.68	0.71	0.64	1.16
Frequently	45.76	45.94	58.65	0.84	0.85	1.42
More frequently	58.13	54.91	62.39	1.39	1.22	1.66
Awareness about family planning						
No	46.72	45.89	56.59	0.88	0.85	1.30
Yes	56.42	54.03	61.20	1.29	1.18	1.58

Predictor variables	Proportion (per cent) of currently married, sexually active, non-pregnant women using selected modern contraceptive methods			Odds of using selected modern contraceptive methods		
	NFHS-3	NFHS-4	NFHS-5	NFHS-3	NFHS-4	NFHS-5
Administrative zones						
North	54.88	59.74	62.12	1.22	1.48	1.64
South	66.30	59.21	68.77	1.97	1.45	2.20
East	42.79	42.98	54.24	0.75	0.75	1.19
West	65.67	58.96	63.37	1.91	1.44	1.73
Central	41.21	42.61	54.60	0.70	0.74	1.20
North-East	32.27	36.26	43.51	0.48	0.57	0.77

Source: Authors

Table 4 shows the use of specific modern contraceptive methods by currently married, sexually active, non-pregnant women along with the corresponding odds at the three rounds of NFHS.

Table 4: Proportion (per cent) of currently married, sexually active, non-pregnant women using selected modern contraceptive methods in India

Method	Proportion (per cent) of currently married, sexually active, non-pregnant women using selected modern contraceptive methods			Odds of using selected modern contraceptive methods		
	NFHS-3	NFHS-4	NFHS-5	NFHS-3	NFHS-4	NFHS-5
Female sterilisation	40.46	38.85	40.72	0.68	0.64	0.69
Male sterilisation	1.10	0.29	0.33	0.01	0.00	0.00
Oral Pill	3.11	3.92	4.60	0.03	0.04	0.05
IUD	1.86	1.63	2.20	0.02	0.02	0.02
Injections	0.10	0.19	0.58	0.00	0.00	0.01
Diaphragm	0.00	0.00	0.01	0.00	0.00	0.00
Condom	5.63	6.01	10.02	0.06	0.06	0.11
Female condom	0.00	0.03	0.03	0.00	0.00	0.00
Foam or jelly	0.02	0.00	0.00	0.00	0.00	0.00

Source: Authors

Results of the bivariate logistic regression analysis are presented in table 5. In some cases, the adjusted odds ratios have decreased over time whereas in other cases, they have increased. For example, the rural-urban odds ratio has decreased over time and has become statistically insignificant. This means that the use of selected modern contraceptive methods in the urban areas relative to that in the rural areas has decreased and there appears little difference in the use in the two population groups during 2019-2021 as compared to 2005-2006. The reason is that the odds of using selected modern contraceptive methods increased more rapidly than the odds of using selected modern contraceptive methods in the urban areas as may be seen from table 3. Similarly, the odds ratio of the use of selected modern contraceptive methods in Hindu women and women of other religions relative to the use in Muslim women decreased over time because the odds

of using selected modern contraceptive methods increased more rapidly in Muslim women as compared to Hindu women and women of other religions. The odds ratio of use of selected modern contraceptive methods in women aged 30-34 years relative to that in women aged 25-29 years decreased over time but increase in women of other ages because the odds of using selected modern contraceptive methods increased more rapidly in women of other ages as compared to women aged 25-29 years. In case of other explanatory variables also, the odds ratio of the use of selected modern contraceptive methods relative to the reference group has decreased over time. This means that the differences in the use of selected modern contraceptive methods across different population groups have decreased over time.

The trend in the odds ratio of the use of selected modern contraceptive methods in different zones of the country relative to the use in the North zone has been different. The odds ratio of the use of selected modern contraceptive methods has decreased in the South Zone and the West zone but increased in other zones. the odds ratios of other zones have increased over time. In the south zone the odds of using selected modern contraceptive methods increased over time but the increase was slower than the increase in the odds of using selected modern contraceptive methods in the North Zone and so the odds ratio decreased. In case of the West zone, on the other hand, the odds of using selected modern contraceptive methods decreased over time whereas the odds of using selected modern contraceptive methods in the North zone increased and therefore odds ratio decreased. In other zones of the country, the increase in the odds of using selected modern contraceptive methods has been more rapid than the increase in the odds of using selected modern contraceptive methods in the North (reference) zone and so the odds ratio increased.

The study or the dependent variable in the present analysis is the sum of the proportion of currently married, sexually active, non-pregnant women of reproductive age using selected modern contraceptive methods. This means that the difference in the study or the dependent variable across different population groups is the sum of the difference in the use of different modern contraceptive methods included in the present analysis across population groups. This also means that there may be a situation where the direction of the difference in the use of one or more than one contraceptive method is opposite to the direction of the difference in the use of other contraceptive methods. For example, the urban-rural difference in the proportion of currently married, sexually active, non-pregnant women using selected modern contraceptive methods was 10 per cent points in 2005-2006 which decreased to 2 per cent points during 2019-2021 (Table 6). In 2005-2006, the direction of the urban-rural difference in female sterilisation was opposite to the direction of the difference in other contraceptive methods. On the other hand, the direction of the urban-rural difference in the use of female sterilisation, male sterilisation, oral pill and injections is found to be opposite to the direction of urban-rural difference in other contraceptive methods. The urban-rural difference in the use of female sterilization has been negative and increased by around 3 per cent points between 2005-2006 and 2019-2021 whereas the urban-rural difference in the use of IUD and condom has been positive and decreased between 2005-2006 and 2019-2021. It may be seen from the table that the direction of the urban-rural difference in the use of some contraceptive methods has not been the same in 2005-2006 and 2019-2021.

Table 5: Results of the bivariate logistic regression analysis of the use of selected modern contraceptive methods in different rounds of NFHS.

Predictor variables	NFHS-3			NFHS-4			NFHS-5		
	Adjusted OR	p		Adjusted OR	p		Adjusted OR	p	
Place of Residence									
Rural	Ref								
Urban	1.06	0.006	(1.02, 1.10)	1.00	0.636	(0.98, 1.01)	1.00	0.897	(0.99, 1.02)
Age-Group									
25-29	Ref								
15-19	0.39	0.000	(0.35, 0.44)	0.75	0.560	(0.71, 0.80)	0.94	0.000	(0.89, 0.99)
20-24	0.65	0.000	(0.62, 0.69)	0.75	0.000	(0.73, 0.77)	0.82	0.003	(0.80, 0.84)
30-34	1.36	0.000	(1.30, 1.43)	1.34	0.000	(1.32, 1.37)	1.27	0.000	(1.25, 1.30)
35-39	1.30	0.000	(1.24, 1.37)	1.46	0.000	(1.43, 1.49)	1.43	0.000	(1.40, 1.46)
40-44	1.04	0.194	(0.98, 1.10)	1.37	0.000	(1.34, 1.40)	1.32	0.000	(1.29, 1.35)
45-49	0.92	0.004	(0.86, 0.97)	1.18	0.000	(1.15, 1.21)	1.18	0.000	(1.15, 1.21)
Religion									
Muslims	Ref								
Hindu	2.27	0.000	(2.16, 2.40)	1.69	0.000	(1.66, 1.73)	1.70	0.000	(1.67, 1.74)
Others	1.90	0.000	(1.74, 2.07)	1.86	0.000	(1.80, 1.93)	1.32	0.000	(1.27, 1.37)
Caste									
SC/ST	Ref								
OBC	0.95	0.020	(0.92, 0.99)	0.90	0.000	(0.88, 0.91)	0.94	0.000	(0.93, 0.96)
Others	1.19	0.000	(1.13, 1.24)	1.08	0.000	(1.06, 1.10)	1.00	0.888	(0.98, 1.02)
Women's Education level									
No Education	Ref								
Primary	1.24	0.000	(1.18, 1.31)	1.12	0.000	(1.09, 1.14)	1.09	0.000	(1.07, 1.12)
Secondary	1.02	0.346	(0.98, 1.07)	0.92	0.000	(0.91, 0.94)	0.95	0.000	(0.93, 0.97)
Above Secondary	1.22	0.000	(1.12, 1.32)	0.83	0.000	(0.81, 0.86)	0.84	0.000	(0.81, 0.86)
Wealth Quintile									

Predictor variables	NFHS-3			NFHS-4			NFHS-5		
	Adjusted OR	p		Adjusted OR	p		Adjusted OR	p	
Poor	Ref								
Middle	1.21	0.000	(1.16, 1.27)	1.10	0.000	(1.08, 1.12)	1.03	0.001	(1.01, 1.05)
Rich	1.34	0.000	(1.27, 1.41)	1.13	0.000	(1.11, 1.16)	1.03	0.003	(1.01, 1.05)
Parity of Women									
1	Ref								
0	0.16	0.000	(0.14, 0.18)	0.19	0.000	(0.18, 0.20)	0.26	0.000	(0.25, 0.27)
2	4.74	0.000	(4.50, 5.00)	3.53	0.000	(3.46, 3.59)	3.02	0.000	(2.97, 3.08)
3 and more than 3	6.29	0.000	(5.94, 6.65)	3.65	0.000	(3.58, 3.73)	3.15	0.000	(3.08, 3.21)
Media Exposure									
Rare	Ref								
Frequent	1.18	0.000	(1.11, 1.24)	1.37	0.000	(1.33, 1.41)	1.21	0.000	(1.18, 1.23)
Regular	1.54	0.000	(1.47, 1.62)	1.71	0.000	(1.67, 1.74)	1.42	0.000	(1.30, 1.45)
Family planning Awareness									
No	Ref								
Yes	1.16	0.000	(1.11, 1.21)	1.17	0.000	(1.15, 1.18)	1.25	0.00	(1.23, 1.26)
Administrative Zones									
North	Ref								
South	2.01	0.000	(1.90, 2.13)	1.01	0.245	(0.99, 1.04)	1.40	0.000	(1.37, 1.43)
East	0.76	0.000	(0.72, 0.80)	0.61	0.000	(0.60, 0.63)	0.80	0.000	(0.79, 0.82)
West	1.73	0.000	(1.63, 1.84)	1.03	0.023	(1.00, 1.06)	1.10	0.000	(1.07, 1.12)
Central	0.59	0.000	(0.56, 0.62)	0.52	0.000	(0.51, 0.54)	0.71	0.000	(0.70, 0.73)
North-East	0.37	0.000	(0.34, 0.41)	0.42	0.000	(0.40, 0.44)	0.51	0.000	(0.49, 0.53)

Source: Authors

Remarks: Figures in brackets are 95 per cent confidence intervals.

Among different states/Union Territories of the country, the odds of using selected modern contraceptive methods by currently married, sexually active, non-pregnant women of reproductive age in 2005-2006 was the highest in Himachal Pradesh whereas it was the highest in Andhra Pradesh in 2019-2021. On the other hand, the ratio of the odds of contraceptive use in 2019-2021 to the odds of contraceptive use in 2005-2006 was the highest in Goa but the lowest in Mizoram which shows considerable inequality in the increase in the use of selected modern contraceptive methods during 2005-2021. One reason is that the odds of contraceptive use varied widely across states in 2005-2006 because of variation in the background characteristics of currently married, sexually active, non-pregnant women of reproductive age across the states and Union Territories.

Table 6: Urban-rural difference in the use of selected contraceptive methods in India.

	Proportion (per cent) of currently married, sexually active, non-pregnant women using selected modern contraceptive methods					
	2005-2006			2019-2021		
	Urban	Rural	Difference	Urban	Rural	Difference
Female sterilisation	40.2	40.6	-0.4	38.3	41.8	-3.6
Male sterilisation	1.1	1.1	0.0	0.3	0.4	-0.1
Oral Pill	4.0	2.7	1.3	4.0	4.9	-0.8
IUD	3.4	1.2	2.3	2.8	1.9	0.9
Injections	0.1	0.1	0.0	0.4	0.7	-0.2
Diaphragm	0.0	0.0	0.0	0.0	0.0	0.0
Condom	10.3	3.5	6.9	14.2	8.1	6.1
Female condom	0.0	0.0	0.0	0.0	0.0	0.0
Foam or jelly	0.1	0.0	0.0	0.0	0.0	0.0
All methods	59.2	49.1	10.1	60.1	57.8	2.4

Source: Authors

Discussion

The use of contraceptive methods can affect fertility level in any society over the period and thus can influence the size and the growth of the population. Because of this very reason, contraceptive use is recognised as one of the proximate determinants of fertility (Davis and Blake, 1956; Bongaarts, 1978). The increased use of contraceptive methods in India is argued to be one of the factors behind the decrease in the total fertility rate in India below the replacement level (Government of India, 2022). At the same time, estimates and projections made by United Nations suggest that the momentum gained from high fertility levels in the past suggest that population of the country will continue to increase in the near future despite achievement of below replacement fertility (United Nation, 2022). These observations suggest that use of contraceptive methods will be very much relevant to population transition in India at least in the near future. It is in the above context that the present study was focused to understand the trend and predictors of modern method of contraceptive with other co-variate in the study among women aged 15-49 years in India.

Table 7: Variation in the odds of using selected modern contraceptive methods across states/Union Territories of India, 2005-2021.

State	Odds of using selected modern contraceptive methods			Odds ratio		
	2005-2006	2015-2016	2019-2021	2015-2016/ 2005-2006	2019-2021/ 2015-2016	2019-2021/ 2005-2006
Jammu & Kashmir	0.85	0.99	1.39	1.16	1.41	1.64
Himachal Pradesh	2.98	1.20	1.95	0.40	1.63	0.66
Punjab	1.45	2.34	1.10	1.61	0.47	0.76
Chandigarh	-	1.54	1.36	-	0.88	-
Uttarakhand	1.51	1.12	1.56	0.74	1.40	1.03
Haryana	1.69	1.79	1.77	1.06	0.99	1.05
Delhi	1.50	1.07	1.51	0.71	1.42	1.01
Rajasthan	0.92	1.34	1.90	1.46	1.42	2.08
Uttar Pradesh	0.47	0.53	0.90	1.12	1.70	1.90
Bihar	0.49	0.35	0.94	0.72	2.69	1.94
Sikkim	1.11	0.92	1.29	0.84	1.39	1.17
Arunachal Pradesh	0.66	0.40	1.01	0.61	2.52	1.53
Nagaland	0.33	0.29	0.99	0.86	3.45	2.98
Manipur	0.35	0.16	0.25	0.46	1.54	0.71
Mizoram	1.84	0.61	0.49	0.33	0.81	0.27
Tripura	0.91	0.82	1.09	0.89	1.33	1.19
Meghalaya	0.25	0.30	0.33	1.21	1.12	1.35
Assam	0.43	0.63	0.85	1.46	1.35	1.96
West Bengal	1.14	1.57	1.74	1.37	1.11	1.52
Jharkhand	0.52	0.66	1.10	1.26	1.67	2.10
Odisha	0.90	0.92	1.05	1.02	1.14	1.16
Chhattisgarh	1.12	1.40	1.86	1.24	1.33	1.66
Madhya Pradesh	1.33	1.14	2.25	0.86	1.97	1.69
Gujrat	1.52	0.83	1.29	0.55	1.56	0.85
Maharashtra	2.20	1.96	2.01	0.89	1.03	0.91
Andhra Pradesh	2.31	2.65	2.81	1.14	1.06	1.21
Karnataka	1.99	1.22	2.50	0.61	2.05	1.26
Goa	0.69	0.32	2.13	0.46	6.71	3.08
Kerala	1.64	1.17	1.25	0.71	1.08	0.76
Tamil Nadu	1.69	1.22	2.13	0.73	1.74	1.26
Telangana	-	1.49	2.29	-	1.54	-
Ladakh	-	0.00	1.15	-	-	-
Total	1.10	1.04	1.47	0.95	1.41	1.34

Source: Authors

In India, virtually all births are confined within the institution of marriage. Unlike the western society, births, outside the institution of marriage do not have acceptance in the Indian society. The present analysis shows that there is a substantial proportion of women of reproductive age who are not exposed to the risk of pregnancy because of various

reasons. A woman of reproductive age may not be exposed to the risk of pregnancy even if she is married because she may not be sexually active or because she is pregnant. It is, therefore, more pertinent, to analyse the trend and predictors of contraceptive use in currently married, sexually active, non-pregnant women of reproductive age rather than in all currently married women of reproductive age. The present analysis has, therefore, focused on the use of selected modern contraceptive methods among currently married, sexually active, non-pregnant women instead of the use of contraceptive methods in all currently married women of reproductive age as is the tradition. Our analysis has expectedly revealed higher use of modern contraceptive methods among currently married, sexually active, non-pregnant women of reproductive age.

The findings of the present analysis underline the need to build support among youth and their families for delaying marriage, to enforce existing laws on the minimum age at marriage and to encourage school, health and other authorities to support young women in negotiating with their parents to delay marriage (Santhya et al, 2010). Women from younger age group had lower odds of using selected modern contraceptive methods which clearly indicates that every woman prefers to have at-least one or two children. The analysis also reveals that the use of selected modern contraceptive methods is higher in the urban areas as compared to the rural areas. This may be attributed to the higher autonomy to the women, higher level of education, better knowledge of different modern contraceptive methods, and preference for smaller families.

The findings of the present analysis are in line with other studies that suggest that long-standing heterogeneity of India associated with religion and the caste system is still relevant in contraceptive choices. Hindu women and women of other religions always have upper hand in using modern contraceptive methods as compared to Muslim women (Singh et al, 2021). Old customs and traditions in different groups and communities form the basis for this gap in the use of modern contraceptive methods. Although, the use of a modern contraceptive method in Scheduled Castes/Tribes appears to have increased as compared to the use of modern contraceptive method in Other Backward Classes, yet use of modern contraceptive methods is still lower than the use in Other social classes which are also termed as Upper social classes.

The present analysis suggests that women with higher educational achievements have lower probability of using a modern contraceptive method as compared to women with lower educational achievement or women with no education. This observation is justified because the contraceptive method mix in India remains very highly skewed towards female sterilisation which is a permanent contraceptive method (Government of India, 2017; Government of India, 2020; Singh et al, 2021). Women with higher educational achievement have better knowledge about different modern contraceptive methods and have regular exposure to mass media and are more aware about family planning messages. This is usually not the case with women with no education. This finding suggests educating women about the effectiveness of different contraceptive methods and motivating them for the adoption of modern methods (Ghosh et al, 2021; Singh et al, 2021).

The analysis also reveals rich-poor gap in the use of modern contraceptive methods, although this gap has decreased over time. Rich women have better access to different modern contraceptive methods as compared to their poor counterparts

(Government of India, 1967; Mohanty and Pathak, 2009). On the other hand, the number of living children has always been a decisive factor in the use of modern contraceptive methods. There exists direct relationship between the probability of using a modern contraceptive method and the number of living children which is in line with other studies not only in India but also in other countries of the world (Achana et al, 2015; Kumar et al, 2021).

Regional disparities in the use of modern contraceptive methods are also apparent through the present analysis. The use of modern contraceptive methods was relative higher in the southern region of the country in 2005-2006. However, in 2019-2021, the use of modern contraceptive methods is found to be the highest in the northern region of the country. This observation is in line with the fact that literacy is high in women of the southern region of the country which leads to better employment opportunities and high age at marriage (Singh et al, 2021). However, within each zone, the use of modern contraceptive methods is different in states/Union Territories that constitute the zone.

Strengths and Limitations

One strength of the present study is that it analyses the use of modern contraceptive methods in those women only who are exposed to the risk of a pregnancy – currently married, sexually active, non-pregnant women of reproductive age. It excludes those women of reproductive age who are not married or who are married but not sexually active and women who are pregnant. Including these women in the analysis of the use of modern contraceptive methods makes little sense as these women are not at the risk of a pregnancy and, therefore, have no motivation to use a contraceptive method either modern or traditional. Measuring the prevalence of modern contraceptive methods in terms of currently married women of reproductive age, therefore, underestimates the actual use of modern contraceptive methods in those women who are at risk of a pregnancy. The present analysis shows that use of modern contraceptive methods in women at risk of pregnancy is higher than the use of modern contraceptive methods in all currently married women of reproductive age irrespective of whether they are sexually active or pregnant.

The findings of the present study may, however, be interpreted under some limitations. First, the analysis is based on the response given by women during the household survey. It is well-known that the data available through household surveys is associated with a number of errors including response error, failure of memory to recall exact answers to few of the questions like age and number of pregnancies, and no response to some of the questions asked during the survey. There may be a possibility that a woman or her partner may be using more than one contraceptive method at the time of the survey. In such a situation, the practice is to record only that method which has the higher effectiveness in preventing a birth. This practice, however, leads to an underestimation of the use of contraceptive methods, either modern or traditional. The use of contraceptive methods may also be influenced by the incentive schemes launched by the government for promoting specific contraceptive method. These incentives may influence the use of different contraceptive methods. For example, there is incentive for female sterilisation but not for using condom.

Conclusions

The present study has attempted to examine important attributes affecting the use of modern contraceptive methods in current married, sexually active, non-pregnant women of reproductive age in India during the period 2005-2006 through 2019-2021. The use of modern contraceptive methods in these women has increased over time but the increase has not been consistent. The use of some modern contraceptive methods appears to have decreased during the period under reference while the use of other methods has increased. Another revealing finding of the study is that the trend in the use of modern contraceptive methods has varied by the demographic and socio-economic characteristics of women. More specifically, the urban-rural difference in the use of modern contraceptive methods has decreased over time and this difference is no longer statistically significant. The paper suggests the method specific analysis of trend and predictors of use.

From the policy and programme perspective, the findings of the present analysis reveal that

- Although use of modern contraceptive methods has increased over time but there are still some grey areas which requires better planning and coverage. Family planning efforts directed towards younger women can be helpful to both the mother and the child.
- Religion remains a dominating factor and hampers rights of women violating sustainable development goal (SDG) -3: good health and well-being, particularly SDG 3.7.1-Related to contraceptive use).
- There is a need to motivate public policy makers for formulation of programmes related to family planning which will positively affect women in the choice of modern contraceptive methods.
- There is a need to focus on the Northeastern region of the country, where the use of modern contraceptive methods is the lowest.
- There is a need of expanding basket of modern contraceptive methods to increase their use.

Disclaimer

The views expressed by Pragya Singh are her own and not that of Government of India.

References

- Achana FS, Bawah AA, Jackson EF, Welaga P, Awine T, Asuo-Mante E, Oduro A, Awoonor-Williams JK, Phillips JF (2015) Spatial and socio-demographic determinants of contraceptive use in the Upper East region of Ghana. *Reproductive Health* 12(29).
- Bongaarts J (1978) A framework for analyzing the proximate determinants of fertility. *Population and Development Review* 4(1): 105-132.

- Davis K, Blake J (1956) Social structure and fertility: an analytic framework. *Economics Development and Cultural Change* 4(3): 211-235.
- Ghosh R, Mozumdar A, Chattopadhyay A, Acharya R (2021) Mass media exposure and use of reversible modern contraceptives among married women in India: an analysis of the NFHS 2015-16 data. *PLoS ONE* 16(7).
- Government of India (2017) *National Family Health Survey (NFHS-4) 2015-16 India*. Mumbai, International Institute for Population Sciences (IIPS) and ICF.
- Government of India (2022) *National Family Health Survey (NFHS-5) India 2019-21*. New Delhi, Ministry of Health and Family Welfare.
- Government of India (2022) *Annual Report 2021-22*. New Delhi, Ministry of Health and Family Welfare.
- Ibarra-Nava I, Choudhry V, Agardh A (2020) Desire to delay the first childbirth among young, married women in India: a cross-sectional study based on national survey data. *BMC Public Health* 20(350).
- Kumar V, Singh KK, Kumar P, Singh P (2021) Does family composition drive future fertility desire and contraceptive use? An evidence based on National Family Health Survey (2015–2016), India. *Children and Youth Services Review* 121 (05860).
- Mohanty SK, Pathak PK (2009) Rich poor gap in utilization of reproductive and child health services in India. *Journal of Biosocial Science* 41(3): 381–398.
- Santhya KG, Ram U, Acharya R, Jejeebhoy SJ, Singh A (2010) Associations between early marriage and young women's marital and reproductive health outcomes: evidence from India. *Perspectives on Sexual and Reproductive Health* 36(3): 132-139.
- Singh P, Singh KK, Singh P (2021) Factors explaining the dominion status of female sterilization in India over the past two decades (1992-2016): a multilevel study. *PLoS ONE*, 16(3).
- Thompson CG, Kim RS, Aloe AM, Becker BJ (2017) Extracting the variance Inflation factor and other multicollinearity diagnostics from typical regression results. *Basic and Applied Social Psychology* 39(2): 81–90.
- United Nations (2022) *World Population Prospects 2022*. New York, Department of Economic and Social Affairs, Population Division.
- United Nations () *World Fertility and Family Planning 2020: Highlights*. New York, Department of Economic and Social Affairs, Population Division.