Family Planning Methods Use in Madhya Pradesh, India: Evidence from National Family Health Survey

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Abstract

In this paper, we analyse trend in the use of different family planning methods and determinants of the use of different family planning methods in Madhya Pradesh, India using the data available through the National Family Health Survey. Bivariate analysis and multinomial logistic regression have been used to analyse the determinants of the use of different family planning methods. The analysis shows that the prevalence of family planning in the state has increased from 50 per cent to 72 per cent in the state and terminal family planning methods are the most commonly used in the state. The prevalence of female sterilisation is 53 per cent in the state according to the latest round of the National Family Health Survey.

Introduction

India was the first country in the world to adopt population policy and launch official family planning programme in 1952. During its early years, the programme focussed on the health rationale of family planning. Family planning as a strategy for population stabilisation received attention only after 1971 population census (Chaurasia, 2008). This strategy resulted in an increase in the proportion of couples effectively protected from 12.4 per cent during 1971-72 to 47 per cent during 1995-96 but remained stagnant during 1995-96 through 2003-04 and decreased to 40 per cent during 2010-11. After the launch of the National Rural Health Mission in 2005, the official family planning programme has been subsumed in the reproductive and child health component of the Mission (Chaurasia, 2013).

Universal adoption of small family norms still remains a distant dream in India. During 2007-08, only about 54 per cent of the currently married women aged 15–49 years or their husband were using a family planning method to regulate their fertility (Government of India, 2010) and the contraceptive prevalence rate appears to have stagnated after 2004 (United Nation, 2012). From 1965 to 2009, family planning use in the country has more than tripled from 13 per cent in 1970 to 48 per cent in 2009 while

the total fertility rate has more than halved from 5.7 in 1966 to 2.4 live births per woman of reproductive age in 2012, It is estimated that India adds up to 1,000,000 people to its population in every 20 days (Pati, 2003; Rengel, 2000; Bongaarts et al, 2012; Ramu, 2006; Adlakha, 1997; WHO, 2009). Extensive family planning has become a priority in an effort to reduce the projected population of two billion by the end of the twenty-first century. Women in India are not being fully educated on contraception usage (Jain, 2016). Contraceptive usage has been rising gradually in India. In 1970, 13 per cent of married women used modern contraceptive methods, which rose to 35 per cent by 1997 and 48 per cent by 2009 (Rengel, 2000). Awareness of contraception is near-universal among married women in India (Ramesh et al, 2006). In 2009, 48.4 per cent of currently married women of reproductive age were using a family planning method. About three-fourth of these women were sterilised, which is by far the most prevalent birth-control method in India (Parappil et al, 2015). It is important to note that sterilisation is a common practice in India. It is common to use temporary medical facilities like specially organised camps to undergo sterilisation. Comparative studies have indicated that increased female literacy is correlated strongly with a decline in fertility (Robey, 1990). Studies have indicated that female literacy levels are an independent strong predictor of the use of family planning even when women do not otherwise have economic independence (Dharmalingam and Morgan, 1996). Successful implementation of sexual and reproductive programmes, basically, depends on the fulfilment of the reproductive rights and choices of individuals (United Nations, 2014).

Family planning is crucial for achieving Sustainable Development Goals as articulated in the United Nations 2030 Agenda for Sustainable Development (United Nations, 2015). Family planning has direct impact on the health of the women and is an important indicator for tracking progress in improving women health. Family planning use in high fertility states in India like Madhya Pradesh is known to be heavily skewed towards terminal methods, which means that family planning is practised primarily to limit births rather than to ensure proper spacing between successive births or between marriage and first birth. It is well-known that to prevent unwanted births or to ensure spacing between successive births, efforts need to be made to improve the access and quality of family planning services.

In this paper we examine the trend in family planning use in Madhya Pradesh and analyse the determinants of the use of different family planning methods. The paper examines cross-sectional patterns in the prevalence of different methods of family planning which have been categorised into two categories – terminal methods, and non-terminal methods. The paper also examines the likelihood of using a terminal family planning method and a non-terminal family planning method after taking into consideration a number of social, demographic and other characteristics of currently married women of reproductive age in Madhya Pradesh. The findings of the analysis suggest the there is a need of increased investment in the health and education of children in Madhya Pradesh. Investment in the health and education of children, it may be argued, is ultimately an investment in the future of Madhya Pradesh.

Data and Methods

The study is based on the data available from third (2005-2006), fourth (2015-2016) and fifth (2019-2021 rounds of the National Family Health Survey (NFHS). The NFHS provides information on population, health, nutrition and family welfare for both men and women at national and state level including information on the use of different family planning methods. In the fifth round of the survey, 43,522 households were surveyed in which 48,410 women, and 7,025 men were covered and 46,829 currently married women in the reproductive age group (15-49 years) were interviewed in the state. The survey covered all districts of the state as they existed at the time of the survey.

Bivariate analysis has been carried out to estimate the prevalence of different family planning methods among currently married women of reproductive age by selected individual characteristics of the respondents. Multinomial logistic regression has been used to examine the likelihood of using a family planning method by currently married women of reproductive age or their husband. For the purpose of regression analysis, different family planning methods were categorised into two categories – terminal family planning methods and non-terminal family planning methods. Terminal family planning methods included female and male sterilisation. All other family planning methods were categorised as non-terminal family planning methods. The explanatory variables included in the regression analysis included place of residence, religion, caste, age, education, wealth-index and working status of currently married women of reproductive age.

Suppose there are $r + 1$ possible outcomes for the dependent variable, 0, 1… r, with $r > 1$. The multinomial regression analysis involves picking one of the outcomes as the reference outcome and conduct r pairwise logistic regression analysis between the reference outcome and other outcomes. In the present analysis, currently married women of reproductive age are classified into three categories: 1) women or their husband not using any family planning method and are given a value 0; 2) women or their husband using a terminal family planning method and are given a value 1; 3) women or their husband using a non-terminal method and are given a value 2. The binary logistic regression model for the outcome h, $h=1$, and 2, is defined by

$$logit(p_{ih}) = ln\frac{p_{ih}}{p_{io}} = b_{0h} + b_{1h}x_{i1} + b_{2h}x_{i2} + \cdots + b_{kh}x_{ik} = \sum_{j=0}^{k} b_{jh}x_{ij}$$

where p represents the possible outcomes and b are the regression coefficient of k explanatory variables. The log-likelihood statistic for multinomial logistic regression is given by

$$LL = ln\ L = \sum_{i=1}^{n}. \sum_{h=0}^{r} y_{jh}\ ln\ p_{ih}$$

The dependent variable used in the analysis has three values 0, 1, and 2. The independent variables include birth order, residence, religion, social class, woman's age, education, wealth index and work status.

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Results

Table 1 shows that the proportion of women or their husband not using any family planning method increased from 40 per cent in 2005 to 50 per cent in 2015 but decreased to 29 per cent in 2019 in Madhya-Pradesh. This means that there was a decrease in the use of family planning methods between 2005-2006 and 2015-2016 but the use increased after 2014-2015. The decrease was the most marked in the use of female sterilisation between 2005-2006 and 2015-2016 but the increase in the use of female sterilisation has also been the most marked between 2015-2016 and 2019-2021. A similar pattern is observed in the use of male sterilisation rates, but the use of male sterilisation is substantially lower than the use of female sterilisation.

Among the non-terminal family planning methods, condom is the most commonly used family planning method and its use increased in use from 4.75 per cent to 7.34 per cent between 2015-2016 and 2019-2021. The use of all the non-terminal methods has also increase between 2014-2015 and 2019-2021 in the state as may be seen from the table. However, the use of all non-terminal family planning methods in the state decreased between 2005-2006 and 2015-2016.

Table 1. Use of different family planning methods by currently married women of reproductive age or by their husband in Madhya Pradesh, 2005-2021.

Use of family planning methods	2005-2006	2015-2016	2019-2021
Not using any method	39.53	49.94	28.45
Using terminal Method			
Female sterilisation	43.73	41.50	52.64
Male sterilisation	1.56	0.41	0.68
Using non-terminal methods			
Condom	8.15	4.75	7.34
Rhythm/periodic abstinence	1.95	1.03	3.96
Withdrawal	1.06	0.47	2.21
Pill	2.52	1.24	1.90
IUD	1.18	0.49	0.97
Injections	0.04	0.08	0.36
Others	0.28	0.09	1.50
Using any family planning method	60.47	50.06	71.56

Source: Government of India (2008; 2017; 2021).

Table 2 presents bivariate analysis of the use of terminal family planning methods and non-terminal family planning methods by selected characteristics of currently married women of reproductive age or by their husband. The table shows that the use of both terminal methods of family planning and non-terminal methods of family planning varies widely by the selected characteristics of currently married women of reproductive age. The prevalence of both terminal methods and non-terminal of family planning decreased in 2015-2016 compared to 2005-2006 but increased during the period 2019-2021.

Table 2: Use of terminal and non-terminal methods of family planning by currently married women of reproductive age (15-49 years) or by their husband in Madhya Pradesh, 2005-2021.

Background characteristics	2005-2006		2015-2016		2019-2021	
	Terminal Methods	Non-Terminal Methods	Terminal Methods	Non-Terminal Methods	Terminal Methods	Non-Terminal Methods
Birth order						
1	2.79	30.54	4.43	15.77	8.61	38.06
2	41.38	27.17	45.31	10.46	61.08	19.59
3 & above	65.81	7.79	59.63	4.94	72.22	11.46
Place of residence						
Rural	42.50	24.40	34.30	15.41	41.42	28.79
Urban	48.09	5.97	44.86	5.34	56.31	15.57
Religion						
Hindu	46.61	13.45	43.10	7.33	54.31	17.49
Muslim	31.99	26.95	27.19	17.36	33.53	32.14
Caste						
Schedule Castes	46.58	10.64	43.15	6.54	53.37	16.81
Schedule Tribes	43.83	4.72	43.85	3.23	58.15	13.92
Other Backward Classes	48.88	13.15	42.94	8.92	53.65	18.85
Others	40.18	26.98	36.18	15.23	45.10	25.13
Age of woman						
<25 years	8.25	15.19	9.23	9.94	9.98	28.67
25-35 years	46.69	20.36	42.09	10.62	49.11	23.39
≥35 years	66.25	10.14	58.91	5.01	74.40	9.56
Education of woman						
No education	53.96	5.33	52.40	3.09	71.41	8.57
Primary	45.94	11.86	46.84	5.87	63.40	13.45
Secondary	37.89	22.38	29.65	12.98	39.28	24.49
Higher	24.43	46.58	19.15	24.53	19.29	41.46
Wealth-Index						
Low	46.85	4.48	45.35	3.61	57.98	13.66
Middle	46.70	10.16	42.74	8.56	53.25	18.16
High	43.61	25.71	35.79	15.44	43.93	27.52
Work status of woman						
Not Working	37.51	19.79	35.77	11.03	44.99	21.02
Working	53.35	10.39	56.23	6.41	69.25	11.95
All	45.30	15.17	41.90	8.16	53.32	18.22

Source: Authors calculations based on the data available from third, fourth and fifth rounds of the National Family Health Survey (Government of India, 2008; 2017; 2021).

There is a noticeable difference in the use of different family planning methods among currently married women of reproductive age from 2005-06 to 2019-21 by the characteristics of women. The use of terminal methods of family planning is very high in women having at least two births compared to women having 1 birth only. An important observation of table 2 is that the use of terminal methods of family planning has increased consistently since 2005-2006, although the use remains low. On the other hand, the use of these methods decreased in 2015-2016 relative to 2005-2006 in woman having 3 or more children. By contrast, the use of non-terminal methods decreases with the increase in the number of children. On the other hand, the per centages for non-terminal methods decrease as birth order increases.

The pattern of use of family planning methods is different in rural and urban areas. In the rural areas, the use of non-terminal methods is higher as compared to the urban areas, but the use of terminal methods is higher in the urban areas relative to the rural areas. The same is the case with religion and caste. The use of terminal methods is higher in the Hindu women, but the use of non-terminal methods is higher in the Muslim women. Similarly, the use of terminal methods is the lowest in Other Castes which constitute the upper castes of the society whereas use of non-terminal methods is the highest in this caste group. In case of education and wealth index also, a similar pattern may be seen from the table. The use of terminal methods decreases with the increase in the education of women and in their living standard as reflected through the wealth index but the use of non-terminal methods increases. In case of the work status of the woman also, the use of terminal methods of family planning is higher in working women as compared to non-working women but the use of non-terminal methods is higher in non-working women as compared to working women.

Tables 3, 4, and 5 present results of the multinomial regression analysis for the period 2019-2021. When women not using any family planning method are compared with women using terminal methods of family planning, the relative probability of use is higher in women with at least two children as compared to women having one child; in rural women compared to urban women; in Hindu women compared to Muslim women; in older women compared to younger women; and in working women compared to non-working women. However, the relative probability of using a terminal method of family planning is found to be lower in women having higher education compared to women having no education. On the other hand, the standard of living of women as captured through the wealth index does not appear to have any effect on the use of terminal methods of family planning as compared to no use of family methods as the probability of the use of terminal methods of family planning in women with medium and high standard of living has not been found to be significantly different from the probability of using a terminal method of family planning in women with low standard of living with reference to the women not using any family planning method. It appears that the variation in the use of terminal methods of family planning by standard of living is actually a reflection of the variation in the use of terminal methods of family planning by such characteristics of women as education and working status.

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Table 3: Probability of the use of terminal methods of family planning relative to no use of any family planning method in Madhya Pradesh, 2019-21. Results of the multinomial logistic regression.

Individual Characteristics	Relative probability of use	'p'	95% C.I.	
			Lower	Upper
Not using any method vs. using terminal methods				
Birth Order				
1	Ref			
2	13.66	0.00	9.99	18.68
3 & above	11.53	0.00	8.39	15.84
Place of Residence				
Urban	Ref			
Rural	1.45	0.00	1.15	1.83
Religion				
Hindu	Ref			
Muslim	0.42	0.00	0.29	0.61
Age of the Women				
< 25 years	Ref			
25-35 years	5.03	0.00	3.76	6.73
≥35 years	10.16	0.00	7.43	13.89
Education of women				
No education	Ref			
Primary	1.16	0.20	0.91	1.48
Secondary	0.82	0.07	0.66	1.01
Higher	0.37	0.00	0.24	0.56
Wealth index				
Low	Ref			
Medium	1.12	0.33	0.88	1.41
High	1.15	0.23	0.91	1.46
Working status of women				
Not working	Ref			
Working	2.10	0.00	1.75	2.52

Source: Authors

The effect of the characteristics of women on the use of non-terminal methods relative to no use of method is however different (Table 4). For example, the relative probability of the use of non-terminal methods is statistically significant in women having two children but not in women having 3 and more children. The relative probability of use is statistically significantly higher only in women aged 25-35 years, in women having at least secondary level education, in women with high standard of living index.

Table 4: Probability of the use of non-terminal methods of family planning relative to no use of any family planning method in Madhya Pradesh, 2019-21. Results of the multinomial logistic regression.

Individual characteristics	Relative probability of use	'p'	95% C.I.	
Not using any method vs. using non-terminal methods				
Birth Order				
1	Ref			
2	1.42	0.00	1.12	1.80
3+	1.21	0.16	0.92	1.58
Place of Residence				
Urban	Ref			
Rural	0.88	0.33	0.68	1.13
Religion				
Hindu	Ref			
Muslim	1.07	0.70	0.74	1.55
Age of the Women				
<25 years	Ref			
25-35 years	1.42	0.00	1.11	1.82
≥35	1.10	0.51	0.81	1.50
Education of women				
No education	Ref			
Primary	1.14	0.41	0.82	1.58
Secondary	1.72	0.00	1.32	2.25
Higher	2.12	0.00	1.43	3.15
Wealth index				
Low	Ref			
Medium	1.01	0.93	0.76	1.33
High	1.57	0.00	1.20	2.04
Working status of women				
Not Working	Ref			
Working	1.17	0.13	0.94	1.46

Source: Authors

Finally, comparing women using non-terminal methods with women using terminal methods of family planning reveals the method-specific dynamics of family planning use in the state (Table 5). The relative probability of use of terminal methods is statistically significantly higher in women having at least two children compared to women having one child, in rural women compared to urban women, in Hindu women compared to Muslim women, in older women compared to younger women, in women having education less than secondary level compared to women having at least secondary level education, in women with high standard of living compared to women with low and medium standard of living, and in working women compared to non-

working women. The probability of use of terminal family planning methods has not been found to be statistically different from the probability of use of non-terminal family planning methods in women having primary level education when compared with women having no education. Tables 3 through 5 reflect the dynamics of family planning use in the state and reveal the preferences and choices of currently married women of reproductive age regarding the use of terminal and non-terminal methods of family planning that have both policy and programme implications as far as promotion of family planning is concerned.

Table 5: Probability of the use of terminal methods of family planning relative to the use of non-terminal family planning methods in Madhya Pradesh, 2019-21. Results of the multinomial logistic regression.

Individual characteristics	Relative probability of use	'p'	95% C.I.	
Using non-terminal methods vs. using terminal methods				
Birth Order				
1	Ref			
2	9.69	0.00	6.88	13.65
3+	9.93	0.00	6.97	14.14
Place of Residence				
Urban	Ref			
Rural	1.63	0.00	1.27	2.10
Religion				
Hindu	Ref			
Muslim	0.38	0.00	0.25	0.57
Age of the Women				
<25 years	Ref			
25-35 years	3.23	0.00	2.31	4.50
≥35	8.45	0.00	5.87	12.17
Education or women				
No education	Ref			
Primary	1.08	0.62	0.79	1.47
Secondary	0.49	0.00	0.37	0.63
Higher	0.17	0.00	0.11	0.27
Wealth index				
Low	Ref			
Medium	1.04	0.75	0.78	1.38
High	0.73	0.02	0.56	0.96
Working status of women				
Not working	Ref			
Working	1.74	0.00	1.41	2.15

Source: Authors

Discussions and Conclusions

The variation in the use of family planning methods by different groups of women in Madhya Pradesh reflects the varied demand for family planning services in the state. Family planning use is very low in women having no child and low in women having only one child but is quite substantial in women having at least two children. This pattern of family planning use suggests that the dominating perception across currently married women of reproductive age group in the state is to produce the desired number of children quickly with little spacing between successive births and then opt for terminal methods of family planning to stop childbearing by adopting a terminal method of family planning, especially female sterilisation. The evidence available from the National Family Health Survey suggests that the use of family planning methods in the state decreased during 2015-2016 relative to 2005-2006 but increased during 2019-2021 and the use of terminal methods of family planning is more common than the use of non-terminal methods. Among different non-terminal methods of family planning, the use of condom and rhythm/periodic abstinence appears to be more common in the state. The use of non-terminal methods in the state is low presumably because these methods have high failure rates and high discontinuation rates. The high failure rate of non-terminal methods is commonly attributed to improper knowledge and inconsistency in the use of these methods (Russo and Nelson, 2006).

The present analysis also suggests that the number of children a woman has, place of residence, religion, age of woman and her education, standard of living and work status have important bearings on the use of family planning methods both terminal and non-terminal family planning methods in Madhya-Pradesh. The family planning use is directly related to the number of children a woman has. This is expected because use of family planning methods, especially when the family planning use is dominated by terminal family planning methods is used only when the desired family planning size is achieved. This is the case in Madhya Pradesh as the low use of non-terminal methods of family planning indicates that family planning is practised in the state primarily for birth limitation and not for birth spacing.

The analysis suggests that the standard of living does not appear to play an important role in family planning use. The reason appears to be the dominance of terminal family planning methods in family planning use. Terminal methods of family planning are generally not preferred by women with high standard of living. On the other hand, education of women plays an important role in the use of terminal methods but the educational status of currently married women in the reproductive age group in the state appears to be quite low.

From the policy and programme perspective, the present analysis may help in understanding the gap between the use of terminal methods of family planning and the use of non-terminal methods of family planning that appears to be quite substantial in Madhya Pradesh and may contribute to improving family planning use in the state.

References

Adlakha A (1997) Population trends: India. Washington DC, US Department of Commerce, Economics and Statistics Administration, Bureau of the Census.

Bongaarts J, Cleland JC, Townsend J. Bertrand JT, Das Gupta M (2012) *Family Planning Programs for the 21st Century: Rationale and Design*. New York, Population Council.

Chaurasia AR, Gulati SC (2008) *India: The State of Population 2007*. New Delhi, Government of India, National Population Commission and New Delhi, Oxford University Press.

Chaurasia AR, Singh R (2013) Forty years of planned family planning efforts in India. in Proceedings of the 2013 IUSSP International Population Conference, Bussan, Republic of Korea.

Dharmalingam A, Philip Morgan S (1996) Women's work, autonomy, and birth control: evidence from two south Indian villages. *Population Studies* 50 (2): 187–201.

Government of India (2008) *National Family Health Survey (NFHS-3) India, 2005-06: Madhya Pradesh*. New Delhi, Ministry of Health and Family Welfare, International Institute for Population Sciences.

Government of India (2010) *District Level Household and Facility Survey (DLHS-3), 2007-08.* New Delhi, Ministry of Health and Family Welfare, International Institute for Population Sciences.

Government of India (2017) *National Family Health Survey (NFHS-4) India, 2015-16: Madhya Pradesh*. New Delhi, Ministry of Health and Family Welfare, International Institute for Population Sciences.

Government of India (2021) *National Family Health Survey (NFHS-5) India, 2019-21: Madhya Pradesh*. New Delhi, Ministry of Health and Family Welfare, International Institute for Population Sciences.

Jain AK (2016) *Information about Methods Received by Contraceptive Users in India*. New York, Population.

Parappil A, Oleksii H, Владимирович ГА, Володимирович ГО, Tetyana A (2015) *Problems of Family Planning in India*.

Pati RN (2003) Socio-Cultural Dimensions of Reproductive Child Health. New Delhi, APH Publishing.

Rai PK, Pareek S, Joshi H, Tiwari S (2018) Indirect method of estimation of total fertility rate and study about births averted due to family planning practices in India: a ridge regression approach. *Journal of Data Science* 16(4): 647-676.

Ramu GN (2006) *Brothers and Sisters in India: A Study of Urban Adult Siblings*. Toronto, University of Toronto Press.

Ramesh BM, Gulati SC, Retherford RD (1996) Contraceptive use in India, 1992-93. National Family Health Survey Subject Reports, Number 2.

Rengel M (2000) *Encyclopaedia of Birth Control*. Phoenix, Arizona, Oryx Press.

Russo JA, Nelson AL (2006) Behavioral methods of contraception. In *The Handbook of Contraception*. Humana Press.

Robey B (1990) How female literacy affects fertility: the case of India. *Asia-Pacific Population & Policy* 15: 1-3.

United Nations (2012) *Update for the MDG Database: Contraceptive Prevalence*. New York, United Nations. Department of Economic and Social Affairs, Population Division.

United Nations (2015) *Safeguarding Our Future. The 2030 Agenda for Sustainable Development*. New York, United Nations.

WHO (2009) *India and Family Planning: An Overview*. Geneva, World Health Organization. Department of Family and Community Health.