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A Cross-Sectional Study on Knowledge and Use of Contraception in Damoh District, Madhya Pradesh, India

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Abstract

Ensuring universal access to sexual and reproductive health (SRH) is one of the 17 Sustainable Development Goals (SDGs) to be achieved by 2030, adopted by the United Nations. Women's improved reproductive health is positively associated with their knowledge and adoption of contraceptives. Contraception is crucial in determining the family size, birth interval, and women's health and falls under SDG3 and SDG5. This study aimed to highlight the knowledge and use of contraceptives in the Damoh district located in Madhya Pradesh, India. We utilised primary data collected through a personal survey using a structured Interview Schedule from eight sampling units in the district. For this, we employed descriptive statistics and regression techniques for the analysis. Results reveal that a substantial share of women had knowledge of at least a single method of contraception. However, female sterilisation and pills were the most commonly known methods for women. Nonetheless, the knowledge of contraception was not found to be reflected in the adoption as nearly one-third of all women were not using any method of contraception. Further, the level of adoption of different contraceptive methods varied across socio-demographic backgrounds. Therefore, emphasis on information, education and communication (IEC) initiatives may lead to an increase in the adoption of modern contraceptives.

Keywords: Women's Status; Knowledge and Use of Contraception; Permanent and Temporary Methods; Sustainable Development Goals (SDG3 and SDG5); Madhya Pradesh; India

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Introduction

Contraception, commonly known as birth control or family planning, serves the vital purpose of averting unwanted pregnancies by intervening in the natural processes of ovulation, fertilisation, and implantation (Cleland, 2012). Family planning is crucial in empowering women to shape their families according to their preferences, allowing them to achieve their desired number of children while also determining the optimal spacing between births, which is primarily accomplished through the use of various contraceptive methods (Kiani et al., 2018; Minkin & Wright, 2003; Prata et al., 2017; Sedgh et al., 2014; Tiwari et al., 2022). The significance of contraceptive use emerged prominently, delivering a myriad of benefits to women, families, and society at large and enabling the delay and spacing between pregnancies among high-risk women, thus contributing to the reduction of maternal deaths (Fortney, 1987; Utomo et al., 2021). The array of available birth control methods is diverse, exhibiting distinct mechanisms of action and varying effectiveness in preventing pregnancies (WHO, 2005). The Cairo (1994) and Beijing (1995) conferences marked a transformative shift in development discourse, establishing a global consensus that prioritised reproductive health and rights as integral components not only for raising reproductive health outcomes but also for achieving broader advancements in health, education, and economic spheres (Canning & Schultz, 2012; Goodkind et al., 2018). Recognising the significance of providing access to preferred contraceptive methods for women, the World Health Organization (WHO) emphasises the health of both mothers and children and the overall well-being of society (Rodriguez et al., 2014; WHO, 2010).

Furthermore, pursuing universal access to sexual and reproductive health and reproductive rights is a key objective in the United Nations' Sustainable Development Goals (SDGs), Target 5.6 (UN, 2015; Blumenberg et al., 2020). According to an estimate by the United Nations (UN,2019), 900 million girls and women aged 15–49 years worldwide used contraception, of which 842 million used modern contraception. The increase in the utilisation of contraceptives in developing nations has resulted in a remarkable 34% reduction in maternal deaths (WHO, 2023). This substantial decline in maternal deaths is primarily attributed to the effective mitigation of unintended pregnancies. Moreover, contraceptive use is also responsible for the decrease in infant mortality by preventing closely spaced and ill-timed pregnancies, acknowledged as contributors to such mortality rates (Clayton & Butler, 2009; Musa et al., 2016).

India launched the government-sponsored national family planning programme in 1952 (Ledbetter, 1984). The Family planning policies in India were initially targeted at controlling population growth by applying a clinical approach through female sterilisation. This led to an explicit promotion of sterilisation, targeting exclusively women. Later, this approach has been shifted to the Cafeteria approach[1] to advance women's reproductive rights and choices (Chatterjee & Riley, 2001; Maru, 1986). India's 'Vision FP 2020', introduced in 2014 (MoHFW, 2014), not only encourages sterilisation and offers financial compensation for both the individual undergoing the procedure and the healthcare provider but also broadens the range of options by including reversible modern contraceptive methods. For this time, the national Family Planning programme was launched with three novel contraceptive methods that were all offered at no cost: an injectable contraceptive, a weekly non-hormonal tablet and progesterone-only pills for lactating mothers. Mission Parivar Vikas, launched in 2016, aimed for improved access to contraceptives and FP services in high fertility districts spreading over seven high-focus states

[1] Cafeteria approach was introduced in India as a "basket of choices" of family planning methods which mainly included five official methods — female sterilisation, male sterilisation, intrauterine contraceptive device (IUCD), oral contraceptives, and condoms (Pachauri, 2014).

of Assam, Bihar, Chhattisgarh, Madhya Pradesh, Rajasthan, Jharkhand, and Uttar Pradesh. (MoHFW, 2016). It has been observed through studies that despite serious efforts towards the increased use of contraception in India, the use has been limited. As per the latest NFHS-5, the use of any contraceptive method among reproductive-aged women (15-49 years) was found to be 66.7%, whereas the use of any modern method was found to be 56.5%. (IIPS & ICF, 2022).

Contraceptive use is found to vary across socio-economic and demographic characteristics. There are many factors that can cause couples, especially women, to use contraceptives. Women's education has a very positive association with the adoption of contraception (Chaurasia, 2014; Kansal et al., 2005;), as women with better education, they are less hesitant as compared to uneducated women; know the benefits of smaller families, and the ways to keep spacing between births. Likewise, husband's education level is also positively associated with contraceptive use (Pandey & Singh, 2015; Panda et al., 2023). Husband's education becomes important even when women are uneducated or less educated; they may convince their spouses and may make a joint decision on contraceptive use. Besides, husbands have higher exposure to the awareness and accessibility to contraceptives than women. Women's age at marriage is positively associated with the awareness of contraception (Kohan et al., 2014). Women with increased age get more exposure to interact with women within and outside the family on family planning methods. Women with better economic status have higher awareness and conducive conditions to the use of contraceptives (Ewerling et al., 2021). Additionally, having better economic conditions in the family, women also want fewer children (Patidar, 2018). Mass media exposure is crucial in shaping family planning decisions as it strengthens the attitudes of couples towards contraceptive use through the dissemination of information about family planning and clearing the doubts about various methods (Ghosh et al., 2021). Furthermore, women's autonomy is a very important factor which empowers women to decide on the number, time and spacing of births as well as empower women to choose the appropriate method of contraception (Saraswati & Mukherjee, 2012; Singh et al., 2018). Social interaction delves into the dynamics of social networks and their impact on individuals' reproductive decisions, offering insights into the role of interpersonal relationships in shaping family planning attitudes (Pathak, 2015). Studies reveal that adoption of contraception largely depends upon the number of living children (Kaur et al., 2023; Patidar & Singh, 2014;). Contraceptive use is found to vary across different social categories (Ghosh et al., 2021; Pandey & Singh, 2015) and by place of residence (Kaur et al., 2023).

This study is important in understanding the level and pattern of contraceptive knowledge and use through research which enables the targeted efforts to improve education, access, and family planning services. These efforts might lead to an enhanced level of reproductive health outcomes and overall well-being of women, children and societies. This study begins with an introduction, followed by the level of contraceptive prevalence in Madhya Pradesh, objectives of the study, discussion of the study area, and material and methods employed. Following these, the study provides a detailed outline of results and discussions and ends with a brief conclusion.

Contraceptive Prevalence in Madhya Pradesh

The utilisation of family planning methods among women of reproductive age in Madhya Pradesh illustrates the diverse demand for family planning services within the state (Figure 1). According to the recent National Family Health Survey (NFHS-5), the Contraceptive Prevalence Rate (CPR) among women of reproductive age, either using modern methods themselves or through their partners, stands at 72.1%, higher than the CPR in India (IIPS & ICF, 2022). There has been a notable improvement from 2015-16 to 2019-21, with CPR increasing from 51.9% to 72.1% (IIPS & ICF, 2022). However, despite ongoing efforts to promote the adoption of contraceptives in Madhya

Pradesh, significant challenges persist particularly sociocultural factors, which are showing the varying levels of adoption of contraception and constraints of women's autonomy in making reproductive health choices (Tiwari et al., 2022).

Objectives

Based on the extensive review of literature on contraceptive prevalence in India, we found that the prevalence of contraceptive use has been analysed at the national and state-level. Additionally, the studies made at the district level have also inadequately demonstrated the impact of socio-economic empowerment on the use of contraceptives. Moreover, there has been no study at the district level in Damoh district on contraceptive use. Therefore, this study was undertaken to ascertain the level of knowledge and use of contraceptives across the selected socio-demographic variables. The study follows two primary research questions. First, what is the current level of knowledge and use of contraceptives among women; second, how does the prevalence of contraceptive knowledge and use vary across socio-demographic factors?

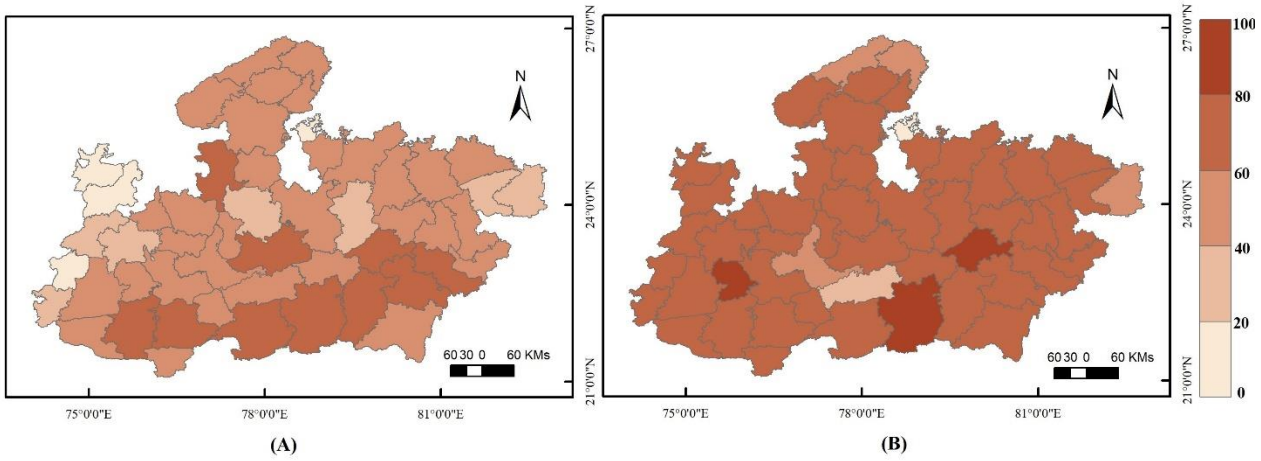

Figure 1: District-level Contraceptive Prevalence Rate (CPR) among women of reproductive age (or their partner) in Madhya Pradesh (A) 2015-16; (B) 2019-21
Source: National Family Health Survey (NFHS). The maps have been prepared on ArcGIS, using the shape-file retrieved from Bhuvan, https://bhuvan.nrsc.gov.in/

Study Area

Damoh district, located in the north central part of Madhya Pradesh, is a part of Bundelkhand region (Figure 2). It is the easternmost part of the Vindhyan plateau, consisting of the Sonar River valley in the centre of the district, having a southwest to northeast longitudinal course with hilly uplands on either side. The district is divided into three physiographic sub-divisions: Vindhyan range, Vindhyan scarps and Bundelkhand uplands. The Vindhyan scarp covers the entire Sonar Valley and the southern plateau, excluding the main line of hills belonging to the Vindhyan range. The district comprises seven Community Development Blocks (CBDs): Batiyagarh, Damoh, Hatta, Jabera, Patera, Pathariya and Tendukhera. As per the 2011 census, Damoh had a population of 12,64,219, with a sex ratio of 910 females per 1000 males, comprising 19.49% Scheduled Caste (SC) and 13.15% Scheduled Tribe (ST) population. The total literacy rate in the district was 69.73%, with around a 20% gender gap between males (79.27%) and females (59.22%). The selection of the Damoh district for the study was based on its close approximation to the state's average contraceptive prevalence rate (CPR). As per the latest 5th round of NFHS (2019-21), Damoh district records CPR of 72.9% among women of reproductive age, mirroring the statewide average of 71.7%.

Data and Methods

Sample Size

This study is based on primary data collected from eight primary sampling units (PSUs), of which seven are the villages, one each from seven Community Development Blocks (CBDs) and one from an urban area, that is, Damoh City. The data collection was made during September 2022 to January 2023. The sample size was determined by using Cochran's sample size determination method.

$$n_0 = \frac{Z^2 pq}{e^2}$$

The final sample size for the analysis was 680 women aged 15-49. Further, we selected 85 samples from each of the eight PSUs. The selection of PSU was made by considering the proportion of the SC and ST population to the total population and female literacy rate, which were almost representative of the district proportion of the SC and ST population and female literacy.

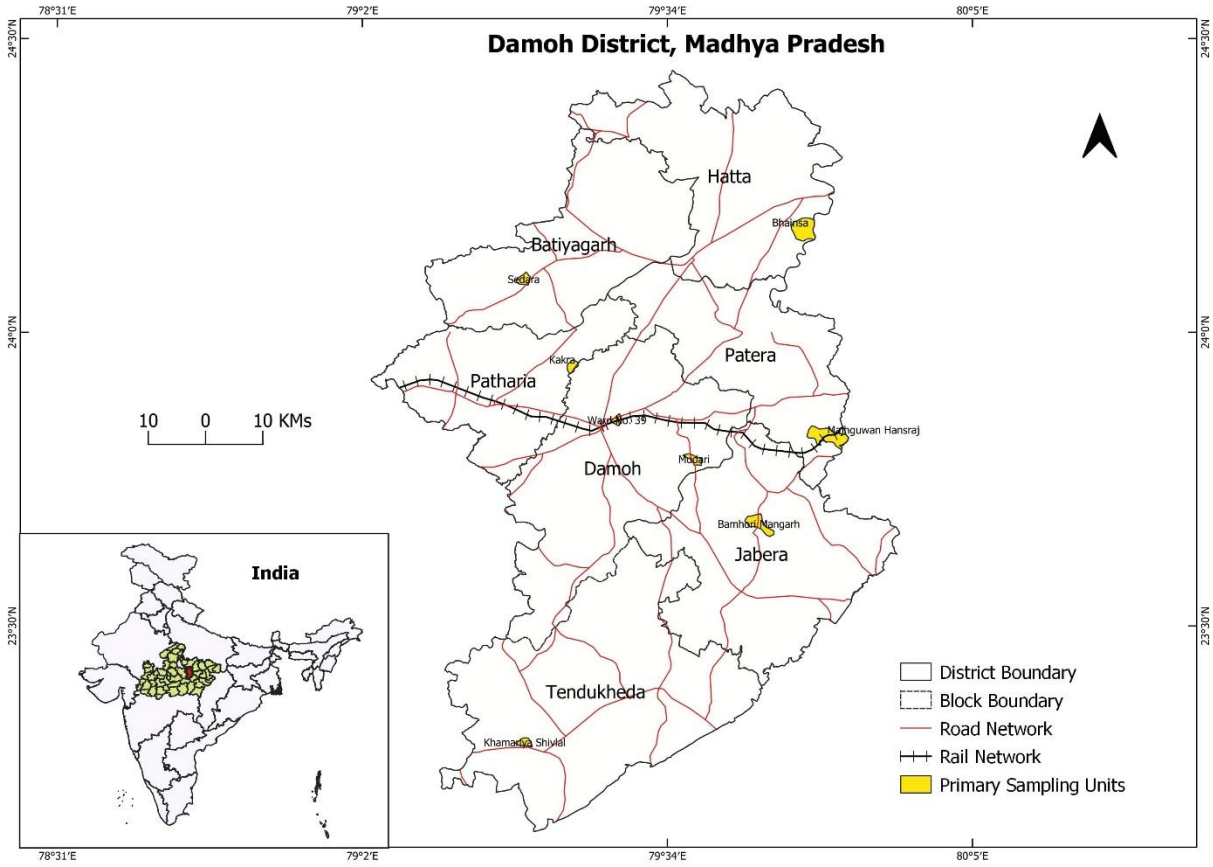

Figure 2: Location Map of the Study Area
Source: Prepared on ArcGIS, using the Shape-file, which has been retrieved from Bhuvan, https://bhuvan.nrsc.gov.in/

Explanatory Variables

The explanatory variables used for this study were place of residence (Rural and Urban), social category (Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), and Others), age at marriage (14 & below, 15-19, 20-24, 25 & above), education (no education, primary, secondary, and above secondary), husband's education (no education, primary, secondary, and above secondary), wealth status (poorest, poorer, middle, richer, richest), women's autonomy (low, medium,

high), mass media exposure (Low, Medium, High), social interaction (low, medium, high), and total children ever born (1 & below, 2, 3 & above). Wealth status is a composite measure of a household's living standard and was calculated using data on a household's ownership of selected assets and amenities and facilities available in the housing premises. It was calculated using Principal Component Analysis (PCA). The mass media exposure index was calculated based on the information regarding five media exposures: ' watching television', 'reading newspapers/magazines', 'going to the theatre to watch cinema', 'using the the internet', and 'having social media account'. The frequencies of exposure to each mass media were recorded as 'not at all', 'less than once a week', 'at least once a week' and 'almost every day'. Based on the frequency distribution of these responses, we have developed a mass media exposure index and categorised it into three groups: low, medium and high. Women's autonomy index was calculated through six indicators on the decision-making status of women, namely, 'health care for herself', 'major household purchase', 'purchase of daily household needs', 'visit to family or relatives', 'casting vote in election', and 'use of contraception'. The frequencies for these indicators were recorded as 'mainly by herself', 'mainly by husband', 'jointly (by husband and wife both)', and 'by others'. Based on these responses, the composite index for women's autonomy was created into three groups: low, medium and high. Social interaction index was also calculated to explain the level of interaction of women with their husbands, sisters, mothers-in-law, sister in laws and friends, ASHA/ANM/Anganwadi workers and others on various issues viz. 'number of children,' 'gender of children', 'birth interval', 'methods of spacing', 'access of contraception', 'way of using contraception', and the 'problems due to the use of family planning'. The social interaction index was categorised as low, medium and high.

Dependent Variable

The significant dependent variable used for this study was 'use of any method of contraception'. Additionally, we also tried to ascertain the level of knowledge about all the contraceptive methods (including male and female sterilisation, contraceptive pills, injectables, male condoms, female condoms, diaphragms, spermicidal agents, emergency contraception, and Intra Uterine Devices (IUD), and withdrawal; and the use of contraceptives in four categories: not using any method, using temporary method, using permanent methods, and using any technique.

Analysis

First, descriptive statistics highlighted the knowledge and use of all the contraceptive methods across selected socio-demographic characteristics. Further, binary logistic regression was applied to examine the impact of various independent variables on contraceptive use. The 95% confidence intervals (CI) were also reported in the result tables. All statistical analyses were made using SPSS 21.

The equation for logistic regression was:

$$l_n\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_n X_n$$

Where $X_1, X_2, X_3, \ldots X_n$ were the explanatory variables and $\beta_1, \beta_2, \beta_3, \ldots \beta_n$ were regression coefficients.

Results

Knowledge of Contraceptive Methods by Socio-Demographic Backgrounds

Table 1 presents the level of knowledge of contraception by selected socio-demographic characteristics. Nearly 93% of women knew about some methods of contraception. Female sterilisation (92.5%) was the most commonly known method of contraception among women, followed by pills (80.4%), male sterilisation (76.9%), injectables (65%), male condoms (45.6%), IUCD (31.2). In comparison, female condoms (4.7%) and withdrawal (4.3%) were the least known methods. The knowledge of contraceptive methods varied across socio-demographic characteristics. Our research findings further revealed that younger women (below 25 years) had better knowledge of all methods than their older women counterparts (above 34 years). Female sterilisation was a very common method of contraception, yet nearly 14% of women above 34 years showed their unawareness about it. Findings demonstrated the differences in the knowledge of contraception across the residences as women from urban areas showed greater awareness towards all modern methods than rural women (Table 1). Knowledge of contraception was found to vary across social categories. Women belonging to ST and SC communities reported good knowledge of female sterilisation and pills; however, lesser than Others and OBC groups. However, their knowledge was feeble in the case of other spacing methods. Notably, the knowledge about female condoms and withdrawal methods was found to be entirely unknown to women of the SC community (Table 1). Age at marriage was found to have a direct association with the knowledge of contraception, as women who married at an early age reported poor knowledge of modern contraception (Table 1). Women whose marriage occurred after 24 years of age reported good knowledge of almost all methods, followed by women who married between the ages of 20-24 years. Women's education was also found to have a positive association with their knowledge level. Women who were educated above secondary education conveyed nearly 100% knowledge of female and male sterilisation as well as pills and good knowledge of all other methods, too. Likewise, women having secondary education also had good knowledge of all the methods. However, women without any education were found to be worst at bearing the knowledge of almost all the methods. Notably, methods like female condoms and withdrawal were only known to women who studied above the secondary level (Table 1).

Similarly, the husband's education is significant for the knowledge of women through spousal interaction on contraceptive methods. Women whose husbands were educated above the secondary and higher levels reported a better understanding of all methods than those of the women who were uneducated and(or) primary school educated (Table 1). Correspondingly, wealthier respondents demonstrated greater awareness towards all contraceptive methods, and the knowledge of these methods declined with decreasing levels of wealth status (Table 1). Highly autonomous women exhibited better awareness of contraceptives compared to women with low levels of autonomy. Mass media exposure and social interaction were proved to be other important factors of knowledge of contraception, wherein a higher level of media exposure and higher interaction established better awareness towards contraceptives in comparison to lower levels of these factors.

Interestingly, women with two or less number of children were reported to have 100% knowledge about male and female sterilizations and pills (Table 1). Pathariya Block depicted the highest knowledge of any method of contraception, while Tendukheda showed the least among the CDBs. However, Damoh Block performed the best among all CBDs in terms of male and female condoms and withdrawal methods (Figure 3). These findings underscored the intricate relations between socio-demographic factors and knowledge of contraceptives, providing valuable insights into the nuanced dynamics within the studied population.

Table 1: Knowledge of Various Contraceptive Methods by Socio-Demographic Characteristics

Socio-demographic Characteristics	Any Method	Knowledge of Contraceptive Methods							
		Permanent Methods		Temporary Methods					
		Female Sterilisation	Male Sterilisation	Male Condom	IUCD	Pills	Injectables	Female Condom	Withdrawal
Age Group									
24 & below	100.0	100.0	96.2	52.8	24.5	88.7	62.3	3.8	9.4
25-34	96.2	95.6	83.1	49.2	35.2	85.8	73.8	4.9	6.3
35 & above	88.1	86.6	64.4	39.1	26.8	71.3	53.3	4.6	0.4
Place of Residence									
Rural	92.6	91.6	75.3	43.0	25.4	79.2	61.0	3.4	2.2
Urban	98.8	98.8	88.2	63.5	71.8	89.4	92.9	14.1	18.8
Social Category									
SCs	91.7	89.2	61.7	40.8	18.3	75.0	56.7	0.0	0.0
STs	83.8	80.0	48.8	26.3	15.0	58.8	37.5	1.3	2.5
OBCs	94.4	94.4	83.3	48.0	30.5	83.6	67.1	5.0	4.0
Others	99.0	99.0	93.2	57.3	61.2	92.2	88.3	11.7	11.7
Age at Marriage									
14 & below	78.8	75.8	36.4	15.2	6.1	39.4	15.2	0.0	0.0
15-19	90.9	89.7	68.5	30.5	13.4	73.3	52.0	0.5	1.0
20-24	100.0	100.0	98.5	77.1	65.2	99.5	96.0	10.0	9.5
25 & above	100.0	100.0	96.3	81.5	85.2	100.0	96.3	37.0	22.2
Respondent's Education									
No Education	56.6	48.7	22.4	13.2	2.6	35.5	15.8	0.0	0.0
Primary	92.0	92.0	46.7	38.0	3.3	61.3	32.7	0.7	0.0
Secondary	100.0	100.0	88.2	25.0	18.4	83.6	63.8	0.0	0.0
Above secondary	100.0	100.0	100.0	67.9	58.6	99.7	94.0	10.3	9.6
Husband's Education									
No Education	67.3	59.2	24.5	18.4	6.1	51.0	16.3	0.0	0.0
Primary	79.3	77.6	42.2	16.4	5.2	48.3	23.3	0.9	0.9
Secondary	97.4	97.4	75.2	35.3	8.5	75.2	56.9	0.7	1.3
Above Secondary	99.7	99.7	95.9	63.0	52.5	97.0	88.4	8.3	7.2
Wealth Status									
Poorest	77.8	74.1	37.0	14.1	0.7	47.4	13.3	0.0	0.0
Poorer	90.5	89.8	65.0	29.9	4.4	67.9	44.5	0.7	0.0
Middle	98.3	98.3	82.5	40.0	15.8	87.5	68.3	0.0	0.8
Richer	100.0	100.0	98.0	66.9	64.2	98.0	96.7	13.9	11.9
Richest	100.0	100.0	100.0	73.7	65.0	100.0	98.5	7.3	7.3
Women's Autonomy									
Low	75.7	73.4	36.7	14.2	1.8	47.9	17.2	0.0	0.0
Medium	99.0	98.3	84.1	37.6	12.9	85.8	68.5	0.3	1.7
High	100.0	100.0	100.0	82.1	80.2	100.0	99.1	14.6	11.3
Mass Media Exposure									
Low	78.4	76.0	40.7	17.4	3.6	50.9	23.4	0.0	0.6
Medium	97.3	96.7	82.8	41.4	21.1	85.5	68.0	1.8	0.9
High	100.0	100.0	99.5	79.1	74.7	98.4	97.8	14.3	13.7
Social Interaction									
Low	80.0	77.2	41.4	15.3	2.8	49.3	20.5	0.0	0.0
Medium	99.2	99.2	86.9	42.6	19.0	90.7	71.7	2.1	1.7
High	100.0	100.0	100.0	77.2	70.6	99.1	100.0	11.8	11.0
Total Children Ever Born									
1 & below	100.0	100.0	100.0	84.2	71.1	100.0	89.5	26.3	76.3
2	100.0	100.0	100.0	77.2	66.7	100.0	97.0	9.3	0.0
3 & above	88.9	87.4	61.2	23.5	6.7	67.2	44.0	26.3	0.0
Total	93.4	92.5	76.9	45.6	31.2	80.4	65.0	4.7	4.3

Source: Based on Personal Field Survey, 2022-23

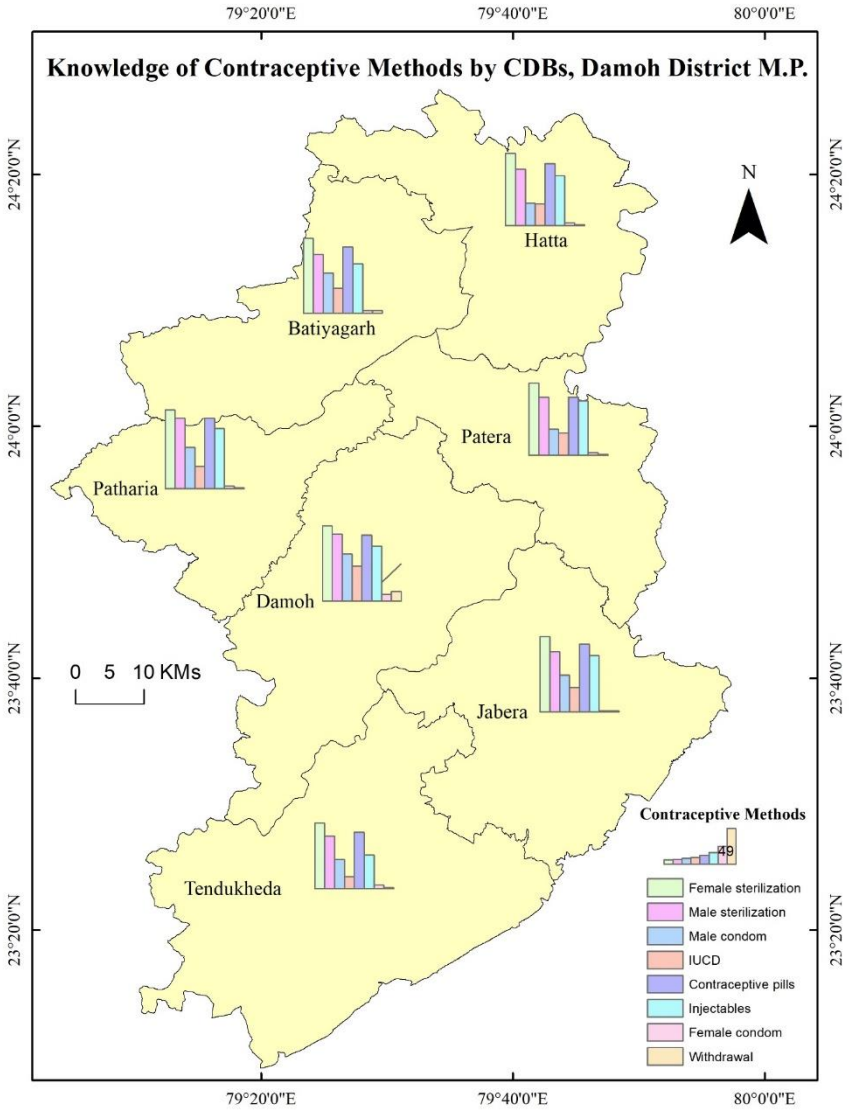

Figure 3: Knowledge of Contraceptive Methods by CDBs
Source: Prepared on ArcGIS, using the shape-file which has been retrieved from Bhuvan, https://bhuvan.nrsc.gov.in/

Contraceptive Use by Socio-Demographic Background

Table 2 portrays a comprehensive picture of the use of contraceptives across socio-demographic characteristics. Results demonstrate that nearly 70% of women were using any method of contraception, comprising close to 63% of use of permanent and 7% of temporary methods. The use of any method of contraception was highest among women aged 25-34 years, followed by women aged 35 and above years. Nonetheless, the highest percentage, 17%, of women accepted using temporary methods, compared to 9.6% of women aged 25-30 years and 0.4% of women aged 35 years and above. Women from urban areas had nearly 86% adoption level of any method of contraception compared to 68% of rural women. Likewise, 15.3% of women from urban areas responded to using temporary methods, against merely 5.2% of rural women. Women from different social groups conveyed varying levels of contraceptive use. 91.3% of women from the 'Others' category social group reported using any methods of contraception, followed by OBCs (78.9%), SCs (59.2%) and STs (45%). Women from ST and SC communities showed reluctance in the use of both the temporary and permanent methods (Table 2). Age at marriage is found to be an essential determinant of contraceptive prevalence as women whose marriage held at 14 years and at

lower ages were very poor at the use of contraception (37.5%), while 100% of women who married at age 25 and after were using either method of contraception. The use of temporary methods was also very high (29.6%) among women who entered a union beyond 24 years. Contraceptive use also varied with the educational level of women. Women with above secondary education (89.7%) had a higher prevalence of contraception than secondary (64.4%), primary (50%) and uneducated (28.9%) counterparts. Uneducated women had abysmal adoption levels for both the permanent and spacing methods.

Similarly, spouse educational attainment showed comparable outcomes of the use of contraceptives (Table 2). 68.1% of women of the poorest wealth status declined to use any methods, which decreased with every higher ladder of wealth status (Table 2). Women with higher levels of mass media exposure (91.2%) had higher levels of use of any methods of contraception compared to medium (73.1%) and low (40.7%). Likewise, increasing levels of women's autonomy and social interaction also led to an increase in the use of any method of contraception (Table 2). The use of temporary methods was found to decline with the decrease in women's autonomy and social interaction (Table 2). A total number of children born to women is found to have played a crucial role. That said, 55.3% of women with one or no children conveyed to use temporary methods of contraception, which drastically declined to 7.6% for women with two children and 1.5% for women with three or more children. Interestingly, 87.8% of women with two children took the terminal method of contraception, which was higher than women with three or more children (Table 2). Following the level of knowledge, the Pathariya Block demonstrated the highest use of contraceptives, followed by the Damoh and Jabera Blocks. In contrast, the Tendukheda Block displayed the lowest use of contraception (Figure 4).

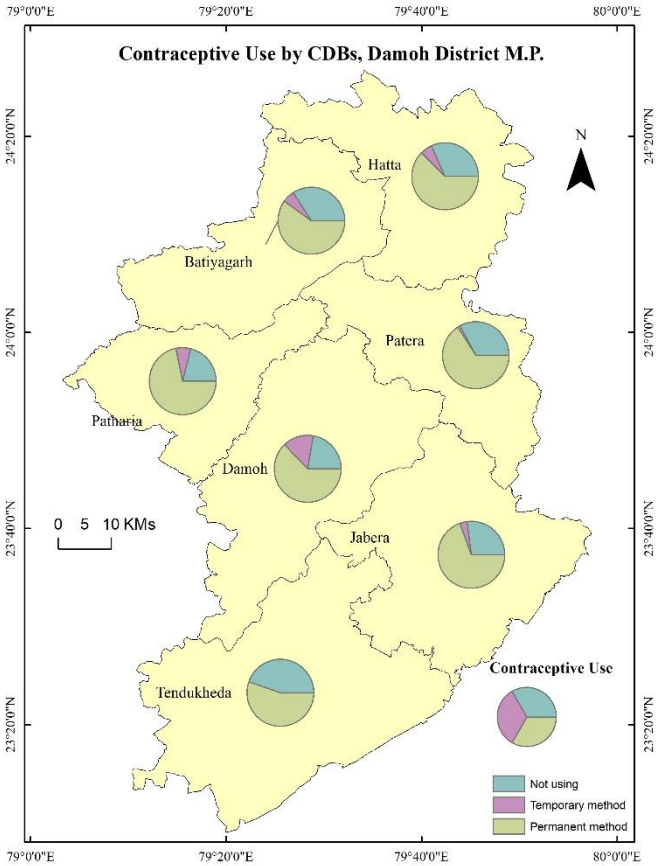

Figure: 4 Contraceptive Use by CDBs
Source: Prepared on ArcGIS, using the shape-file retrieved from Bhuvan, https://bhuvan.nrsc.gov.in/

Table 2: Use of Contraceptives by Socio-Demographic Characteristics

Socio-Demographic Characteristics	Adoption of Contraceptive Methods (In %)			Not Using (In %)	P Value
	Any Method	Temporary Method	Permanent Method		
Age Group					**P<0.001**
24 & below	52.8	17.0	35.8	47.2	
25-34	79.5	9.6	69.9	20.5	
35 & above	61.3	0.4	60.9	38.7	
Place of Residence					**P<0.001**
Rural	67.9	5.2	62.7	32.1	
Urban	85.9	15.3	70.6	14.1	
Social Category					**P<0.001**
SCs	59.2	1.7	57.5	40.8	
STs	45.0	3.8	41.2	55.0	
OBCs	78.9	5.4	67.7	27.1	
Others	91.3	17.5	73.8	8.7	
Age at Marriage					**P<0.001**
14 & below	37.5	0.0	37.5	62.5	
15-19	59.7	3.6	56.1	40.3	
20-24	93.1	10.0	83.1	7.0	
25 & above	100.0	29.6	70.4	0.0	
Respondent's Education					**P<0.001**
No Education	28.9	1.3	27.6	71.1	
Primary	50.0	1.3	48.7	50.0	
Secondary	64.4	6.6	63.8	28.9	
>Secondary	89.7	9.9	79.8	10.3	
Husband's Education					**P<0.001**
No Education	30.6	2.0	28.6	69.4	
Primary	30.2	0.9	29.3	69.8	
Secondary	66.0	4.0	62.7	33.3	
>Secondary	89.3	9.7	79.6	10.5	
Wealth status					**P<0.001**
Poorest	31.9	1.5	30.4	68.1	
Poorer	56.9	2.9	54.0	43.1	
Middle	70.8	4.1	66.7	28.3	
Richer	92.7	15.9	76.8	7.3	
Richest	94.2	5.8	88.3	5.8	
Mass Media Exposure					**P<0.001**
Low	40.7	1.8	38.9	59.3	
Medium	73.1	4.5	68.6	26.9	
High	91.2	13.7	76.9	8.8	
Women's Autonomy					**P<0.001**
Low	31.4	1.8	29.6	68.6	
Medium	75.9	5.4	70.5	24.1	
High	93.9	11.3	81.6	6.1	
Social interaction					**P<0.001**
Low	30.3	2.4	30.7	67.0	
Medium	80.6	6.3	74.3	19.4	
High	94.3	10.9	83.3	5.7	
Total Children Ever Born					**P<0.001**
1 & below	73.7	55.3	18.4	26.3	
2	95.4	7.6	87.8	4.6	
3 & above	55.1	1.5	53.6	44.9	
Total	70.4	6.6	63.5	29.9	

Source: Based on Personal Field Survey, 2022-2023

Binary Logistic Regression Analysis

Table 3 shows the odds ratio (OR), which reveals the association between socio-demographic characteristics and contraceptive use. Women aged 25-34 years were 3.5 times (OR: 3.464, 95% CI: 1.909-6.287) more likely to use any method of contraception compared to women aged 24 and below age. In comparison, women above 34 years showed a slightly higher likelihood of the use of contraception. Women belonging to urban areas were 2.6 times (OR: 2.659, CI: 1.437-4.919) more likely to use contraceptive methods than women of rural areas. Likewise, in comparison to SC community women, women belonging to the ST community (OR:0.545, CI:1.139-2.689) were less likely to use contraception, while women belonging to OBC (OR:1.750, CI: 1.139-2.689) and 'Others' category social groups (OR: 6.200, 95% CI: 2.936-13.093) were more likely to use contraception. In comparison to women whose marriages were held at a young age (14 and below), women who married between 15-19 years (OR: 2.796, 95% CI: 1.314-5.950), 20-24 years (OR: 3.608, 95% CI: 1.992-4.341), and above 25 years (OR: 3.936, 95% CI: 2.920-6.161) were more likely to use contraception. Further, about women without any education, women with primary education were 2.4 times (OR: 2.390, 95% CI: 1.325-4.312), women with secondary education were 5.7 times (OR: 5.656, 95% CI: 3.090-10.353), women with above secondary education were 8.3 times (OR: 8.255, 95% CI: 6.938-13.487) more likely to use contraceptives. Likewise, the husband's education was also found to affect the likelihood of the use of contraception among women. Husband's increasing level of education had a significantly positive association with the use of contraception among women (Table 3). Furthermore, women belonging to wealth quintiles viz. richest (OR: 2.492, 95% CI: 1.612-4.870), richer (1.649, 95% CI: 0.824-2.370), middle (OR:1.377, CI:1.314-3.034) and poorer (OR: 1.274, CI:0.781-1.813) exhibited higher likelihood to the use of contraception compared to women with the poorest wealth quintiles. Women's autonomy, mass media exposure and social interaction showed a significant increase in the likelihood of the use of contraception among women with higher media exposure, higher autonomy and higher interaction compared to the women who reported low in all three variables (Table 3). Interestingly, women with two children (OR: 7.020, CI: 2.863-17.210) had significantly seven times more likelihood to use contraception compared to women with one or no child. However, women with three or more children showed an insignificantly lower likelihood of the use of contraception (Table 3).

Discussion

Family planning is crucial in enhancing women's well-being by empowering them to enjoy their reproductive rights, achieve social and economic empowerment within households and outside, and experience improved maternal and child health. India, being the most populated country and having a lower level of women's empowerment and poor maternal and child health, is in urgent need to improve awareness, availability, and adoption of contraception. Despite the enactment of state-sponsored family planning programme in 1952, India is yet to achieve the adoption of family planning to its full potential and that depends upon the level of knowledge and ease of accessibility to contraceptives (Rahaman et al., 2022). This study attempted to ascertain the level of knowledge of contraception and examine the determinants of the adoption of contraception. The knowledge of contraception is generally translated into actual use of contraception. By examining with full spectrum, we comprehensively understood the impact of socio-demographic characteristics on the likelihood of the use of contraception. The study revealed, confirming previous studies, that female sterilisation (Panda et al., 2023; Patidar & Singh, 2014) and pills (Haq et al., 2017; Mahato et al., 2020; Patidar, 2018; Sadat-Hashemi et al., 2007) were the most commonly known methods to women. This may be attributed to the higher acceptability of female sterilisation for reducing family size (Bansal et al., 2022) and pills for spacing and delaying pregnancies. Missiriya et al. (2017) argued that female sterilisation needs one-time motivation, while spacing methods necessitate regular motivational attempts.

Financial incentives associated with sterilisation are also one of the alluring factors among women (Panda et al., 2023). However, women were also reported to have good knowledge of male sterilisation and male condoms. However, the knowledge about other methods was found to be very poor.

Table 3: Binary Logistic Regression Depicting Odds Ratio (Unadjusted) for the Use of any Method of Contraceptives

Socio-Demographic Characteristics	Adoption of any contraceptive methods	
	Odds Ratio	95% CI
Age Group		
24 & below	1.000	
25-34	3.464***	1.909-6.287
35 & above	1.414	0.781-2.562
Place of residence		
Rural (Ref.)	1.000	
Urban	2.659**	1.437-4.919
Social Category		
SCs (Ref.)	1.000	
STs	0.545*	0.308-0.967
OBCs	1.750*	1.139-2.689
Others	6.200***	2.936-13.093
Age at Marriage		
14 & below (Ref.)	1.000	
15-19	2.796**	1.314-5.950
20-24	3.608***	1.992-4.341
25 & above	3.936***	2.920-6.161
Respondent's education		
No Education (Ref.)	1.000	
Primary	2.390***	1.325-4.312
Secondary	5.656***	3.090-10.353
>Secondary	8.255***	6.938-13.487
Husband's education		
No Education (Ref.)	1.000	
Primary	0.979	0.474-2.023
Secondary	4.533***	2.264-9.077
>Secondary	7.247***	5.146-10.404
Wealth status		
Poorest (Ref.)	1.000	
Poorer	1.274***	0.781-1.813
Middle	1.377***	1.314-3.034
Richer	1.649***	0.824-2.370
Richest	2.492***	1.612-4.870
Mass Media Exposure		
Low (Ref.)	1.000	
Medium	4.058***	2.738-6.015
High	14.486***	8.051-26.065
Women's autonomy		
Low (Ref.)	1.000	
Medium	7.437***	4.867-11.365
High	30.387***	16.359-56.445
Social interaction		
Low (Ref.)	1.000	
Medium	8.601***	5.594-13.223
High	31.663***	17.182-58.351
Total Children Ever Born		
1 & below (Ref.)	1.000	
2	7.020***	2.863-17.210
3 & above	0.370	0.243-1.044

Source: Based on personal field survey, 2022-23

Note: P<0.001*, P<0.01**, P<0.05*, (Ref.): Reference Category**

The use of contraception was reported to be three and a half times higher among women of age 25-34 years compared to women below 25 years. As per the previous study (Forty et al., 2021; Kundu et al., 2022), this age group women were more likely to plan their family size and child spacing, if any. Further, the lower prevalence of contraception among older women (above 34 years) may be attributed to their reduced coital frequency and resultant decreased use of contraception (Forty et al., 2021). Further, the results of this study also portray the line of preceding studies (Oni & Carthy, 1986; Islam et al., 2016; Dagnew et al., 2020; Ghosh et al., 2021; Kaur et al., 2023) that knowledge and use of contraception among women were higher in urban settings as compared to the women in rural areas. This may be due to lower access to contraception among rural women as well as health care (Dagnew et al., 2020) and cultural beliefs (Piet-Pelon et al., 1997) against better access to contraception among urban women (Hussain, 2011). Knowledge and use of contraceptives were found to be lower among socially disadvantaged groups. For instance, women belonging to SCs and STs had lower knowledge of contraceptives as compared to 'Others' and OBCs, as observed in the results of the studies of Ghosh et al. (2021), Tharun & Muniswamy (2022) and Pandey and Singh (2015). The study also explains the significant increase in the adoption of contraceptives when women's age at marriage increases. Evidence from previous studies (Hussain & Bittles, 1999; Kohan et al., 2014; Pandey & Singh, 2015; Mudi and Pradhan, 2023) also reinforces the results and justifies that women with higher age at marriage become more mature and able to communicate with their spouses and make decisions about her contraceptive behaviour. The finding explains that women's and their husbands' educational levels are the strong predictors of the use of contraception, resonating with previous studies (Chaurasia, 2014; Kansal et al., 2005; Patidar & Singh, 2012; Pandey & Singh, 2015). Education empowers women and makes them aware of the significance of planned family formation (Pandey & Singh, 2015; Osborn et al., 2021). Economic empowerment also favours women to have better knowledge and use of contraception, as found in earlier studies (Ewerling et al., 2021; Hossain et al., 2011; Tampah-Naah et al., 2023). A wealth of the family influences sociocultural norms as well as personal attitudes and beliefs towards family. Moreover, women in higher wealth quantiles might have greater exposure to resources and information about family planning (Akinyemi et al., 2022; Nepal et al., 2023). The findings align with previous studies that the knowledge and use of various contraceptive methods among women are directly related to women's social interaction (Alvergne et al., 2011; Anderson et al., 2014; Comfort et al., 2021; Mahfouz et al., 2023). Mass media exposure is also found to have a better association with contraceptive use, showing concordance with earlier studies (Cohen, 2000; Singh et al., 2014; Ghosh et al., 2021; Retherford & Mishra, 1997). Media exposure can raise awareness and dismiss myths and traditional beliefs about contraception (Panda et al., 2023). The study discovered that women who exercised larger autonomy were more likely to adopt contraceptives (Mangimela-Mulundano et al., 2022; Nadeem et al., 2021; Singh et al., 2018; Saraswati & Mukherjee, 2012; Thankian, 2020), regardless of their other backgrounds. The findings are consistent with previous studies in Ghana (Nyarko, 2020), Nigeria (Adebowale et al., 2014), Bangladesh (Islam et al., 2016) and other study areas of India (Narain et al., 2023; Kaur et al., 2023) that women who had two or less number of children were better aware and were more likely to use contraceptives than women with more number of children. This might be due to the need for contraception to delay childbearing, to have spacing between births and to terminate childbearing after two children. Among CDBs, Pathariya and Damoh blocks represented a higher level of knowledge and use of contraception than other blocks. Spatial factors such as remote locations (Babazadeh et al., 2021), inaccessible terrain and forest cover are found to have influenced the practice of contraception in different geographical settings.

This study utilised primary data from a representative sample drawn from seven blocks.

It is the first study in the Damoh district using primary data to shed light on the relationship between various socio-demographic predictors and contraceptive use among women. However, this study relied on self-reported data and thus was subject to recall bias. Nonetheless, the study makes a significant contribution by highlighting the prevalence of contraception and its potential determinants in the study area.

Conclusion

This cross-sectional study sought to investigate the extent of knowledge and use of contraception in Damoh District, Madhya Pradesh, India. The study found that more than 93% of women had awareness about at least a single method of contraception. Female sterilisation and pills were the most commonly known methods, while other spacing methods of contraception were poorly known. More than two-thirds of women (70%) were using any form of contraception, consisting of a meagre share of 6.6% of women who opted for a temporary method of contraception. The research findings provide evidence on the current state of knowledge and usage of contraceptives among different demographics and address the gaps in knowledge, access, and utilisation of contraceptives. The article also highlights the areas with low levels of knowledge and practice of contraception, thus indicating the need for investment in healthcare infrastructure. Policymakers may use this information to spread awareness and expand contraceptive availability in underserved areas by establishing health clinics and mobile health units and help in attaining Sustainable Development Goals, especially SDG 3 and SDG5.

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Ethical Approval

The study was prepared following the norms of Helsinki Statement protocols. Also, this study was approved by Institutional Ethics Committee (Approval No.: DHSGV/IEC/2022/14) of our university. We also confirm that this work is original and has not been published earlier and has not been communicated elsewhere for publication.

Conflict of Interest

We confirm that we do not have any actual and potential conflict of interest either at personal level, or any financial and other relationship with our own institute or any other organisation which may influence the manuscript being submitted to the journal.

Author Contribution Statement

Rahul Mishra **(RM)** and Hemant Patidar **(HP)** made conceptualisation and finalised methodology; **RM:** made data curation and prepared tables and maps; **RM** and **HP:** analysed data and prepared the original draft; **HP:** reviewed and prepared the final draft.

Informed Consent

Both the authors have agreed to submit this manuscript to this journal in the present form and has no objection of any kind.

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Data Availability Statement

The study is based on primary data and have been incorporated within the study in the form of tables.

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