Sikdar and Bansod *BMC Public Health* (2025) 25:3191
https://doi.org/10.1186/s12889-025-24270-2

BMC Public Health

RESEARCH Open Access

Wealth differentials and contraceptive choices among women in India: insights from NFHS-5 (2019-21)

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Abstract

Introduction Wealth status plays a crucial role in shaping contraceptive choices among women in India. This study aims to investigate the impact of wealth quintiles on current contraceptive use and identify the factors contributing to differentials in contraceptive choices.

Methodology Using data from National Family Health Survey-5 (2019–2021), current contraceptive use was categorised into non-users, traditional method users, permanent method users, and reversible modern method users. Multinomial logistic regression analysis was applied to investigate the association between wealth status and contraceptive method use while controlling for potential socio-economic factors. In addition, Wagstaff's concentration index was used to assess wealth inequality in each contraceptive method.

Results The results indicate that 37.8% of women from the poorest quintiles do not use contraceptives, compared to 30.6% in the richest quintile. The use of reversible modern methods increases from 15.9% among the poorest to 25.0% among the richest. Women in the richest wealth quintiles were significantly more likely to use reversible modern methods (RRR = 1.61; 95% CI: 1.55–1.68) than in the poorest quintiles. Permanent method uses peaks in the middle wealth quintile (42.6%) and decreases in the richest quintile (33.7%). Regional disparities also exist, with higher use of permanent methods in southern and western India, while reversible methods were more common in northeastern and northern regions. The concentration index revealed a pro-rich pattern for reversible methods (CI = 0.092), while traditional and non-use were concentrated among poorer women.

Discussions The findings suggested that wealth status significantly influenced contraceptive method use among currently married women in India. Reversible modern methods were more commonly used by wealthier women, whereas poorer women were more likely to rely on permanent methods or remain non-users. These differentials indicated persistent inequities in access to a diverse contraceptive method mix. These findings highlighted the need for targeted policy measures to improve availability of reversible methods in underserved areas, strengthening provider training to support informed choice, and addressing demand-side barriers through community support were essential to advanced reproductive health equity and help to meet the SDG 3.7 target in India.

Keywords Contraceptive choice, Wealth quintile, Wealth disparity, India, National family health survey

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Introduction

Access to safe and effective contraception services and use has been a crucial concern for women's reproductive health and overall well-being. It assists couples in having the number of children they want, prevents unintended pregnancies, unsafe abortions, and Sexually Transmitted Infections (STIs) like Human Immunodeficiency Virus (HIV), lowers maternal and infant mortality, and thus improves women's overall well-being and autonomy [1]. It was also reported that improving the use of effective contraception helped to reduce the burden of reproductive ill health by lowering the mortality and morbidity associated with unwanted pregnancies [2, 3]. Access to such methods was declared a fundamental human right by the International Conference on Population and Development (ICPD) in 1994, a forum in which countries pledged to work toward the goal of universal access to reproductive health services, including access to effective contraception [4, 5]. Following the ICPD agenda, the Sustainable Development Goals (SDGs) also underscored the significance of reproductive autonomy and access to family planning services. Both SDG 3 (good health and well-being) and SDG 5 (Gender Equality) highlighted the need for ensuring universal access to contraception as a means to reduce maternal mortality, prevent unintended pregnancies, and promote gender equality [6]. Correspondingly, a global rise in Contraceptive Prevalence Rate (CPR) among married or in-union women of reproductive age (15–49 years) was observed from 55.0 to 63.0% between 1990 and 2011. However, the prevalence and incidence were not equal, and disparities existed across different regions of the globe [7]. Considering a country like India, although it was the first nation in the world to implement the national-level government-sponsored family planning programme (FPP) in 1952, a significant portion of the population had still been deprived of access to basic contraceptive methods [1, 8]. In India, modern contraceptive use increased from 48.8% (NFHS-4) to 56.0% (NFHS-5) among married women [9]. Though a small segment has enjoyed all the basic needs, including contraceptive methods, education, and health, whereas a significant segment has faced difficulties in accessing them [10, 11].

Furthermore, there were two sorts of contraception: traditional and modern methods. FPP favored modern methods over traditional methods because the latter showed a higher failure rate and less scientific validation [5]. However, there is limited accessibility to modern contraceptives across the population. In most of the developing countries, including India, a larger population could not afford modern contraceptive methods due to their lower socio-economic conditions [12, 13]. While previous studies documented socio-economic disparities in contraceptive access [14, 15]. Our study revealed how these varied method-specifically across districts. Large-scale surveys of several countries revealed a significant coverage gap in family planning based on wealth disparities [15–17]. A study by Dias and Oliveria (2015), based on Mozambique, mentioned a strong association between contraceptive use and wealth quintile [18]. Several studies mentioned a considerable gap across the wealth quintile [12, 19, 20]. India had been experiencing an increase in the current use of modern contraceptive methods by currently married women from 48.8% in 2005-06 to 56.0% in 2019-21; however, the differences in using modern contraceptives were still seen across the wealth quintile [11, 21, 22]. Further, among these currently married women using modern contraceptive methods, around 38.0% of the contribution was from female sterilization, which is a permanent method, often limits method diversity and hinders the cafeteria approach, which advocates for informed choice through access to a full range of contraceptive options [11, 23].

Literature suggested the benefits of the reversible method over the other modern, specifically permanent methods. Unlike permanent method, reversible method allowed individuals to discontinue use when they decided to conceive. This flexibility was crucial for people who were unsure about their future reproductive intentions or who desired more children later. The ability to reverse contraception without long-term consequences was a significant advantage [24–27]. Although permanent methods had historically been promoted for women who were certain about limiting childbearing, however evidence from India and middle-income countries raised critical concerns regarding their safety, adequacy of counselling, and the extent to which informed choice was ensured, particularly in the case of female sterilization [28, 29]. Recently, researchers focused on the use of reversible methods, which were crucial for improving reproductive and maternal health outcomes, especially among lower-income populations [30–32]. Reversible methods also offered diverse needs for women throughout their reproductive lifespan, potentially leading to higher satisfaction and continued use [2, 33–35]. Although the focus on using the reversible method was important, there was a dearth of studies on it, particularly in India, which is known for its vast area, diverse living style, and economic inequality. Furthermore, since modern contraceptive use distinctly varies by state and wealth quintile, one might also expect a distinct pattern in using the reversible method in India at the district level and wealth quintile.

Although the use of current modern contraception had increased in India, the method mix continues to be dominated by permanent methods. Previous studies using NFHS-4 data provided important insights into wealth-related patterns in contraceptive use, often focusing on modern method uptake or unmet need among specific

subgroups [36, 37]. However, limited attention had been given to how specific methods - reversible, permanent, and traditional varied across wealth quintiles and districts. To bridge this gap, the present study used recent NFHS-5 data (2019-21) to examine how contraceptive method use varied by wealth status across districts. In this study, contraceptive choices were used to describe the method currently used, while acknowledging that the use may have been shaped by both structural, programmatic, and socio-economic factors. It focused on the types of methods used: reversible, permanent, and traditional. This helped to provide a clearer understanding of how family planning choices varied by socio-economic status and across different regions. Additionally, it helped to increase the use of the reversible method over other methods and uphold the 'cafeteria approach' envisioned by the ICDP in India.

Methods

Data

We used the latest round of National Family and Household Survey (NFHS-5) (2019-21) data. NFHS is a nationally representative large-scale survey that has provided information through five consecutive surveys, spanning from 1992 to 1993 to 2019–2021. The detailed datasets are anonymized and available in the public domain at (https://dhsprogram.com/data/available-datasets.cfm). In the latest round of NFHS-5, approximately 724,115 women aged 15–45 from 636,699 households were covered. The survey achieved a 97% response rate by employing a multi-stage stratified sampling technique. A multistage stratified sampling method was employed, with two stages for urban areas and three stages for rural areas. It used 2011 census data for the sampling frame to select the Primary Sampling Unit (PSU) in rural areas, and Census Enumeration Blocks (CEBs) in urban areas, and at last final, PSU and CEB were selected using probability proportional to size (PPS). Data collection followed all ethical guidelines. Approval was granted by the Institutional Review Board (IRB) of the IIPS and ICF Institutional Review Board. It provides reliable information about women's reproductive histories, as well as demographic, social, and economic characteristics [11]. Since the present study focused on contraceptive use, we only included currently married, fecund women (whose husbands were non-sterilized), who were sexually active and living in the household. Furthermore, the "not de jure population" was excluded from the subsample because the household wealth association cannot be established for them. In this study, women who had never been in a union, or were divorced, or separated, were excluded from analysis. Therefore, the analytical study sample was reduced from 724,115 to 512,408 currently married women.

Variables

Dependent variables

Current contraceptive use was considered as the dependent variable. Respondents were asked about whether they were doing something or using any method to delay or avoid pregnancy. If yes, they were asked which method they used: rhythm, abstinence, withdrawal, Intrauterine Contraceptive Device (IUCD), injectables, pills, condoms, Standard Days Method (SDM), Lactation Amenorrhea Method (LAM), Foam, emergency contraception, other modern methods, female sterilization, and male sterilization. Based on this information, we categorised the study women into four categories: non-users, traditional method users, permanent method users, and reversible method users. Traditional methods included rhythm, abstinence, and withdrawal methods; permanent methods included male/female sterilization; and reversible modern methods included IUCD, injectables, pills, condoms, SDM, LAM, foam, emergency contraception, and other modern methods [38].

Independent variables

Wealth quintile was considered the main explanatory factor. We used the pre-constructed national wealth index from NFHS-5 [9], which followed DHS methodology to divide the population into five equal groups, each comprising 20% of the de jure. The index served as a proxy for measuring long-term standard of living, and was based on household ownership of consumer goods, dwelling characteristics, type of drinking water source, toilet facilities, and other socio-economic status-related characteristics. These asset variables were assigned weights using principal component analysis (PCA), and the resulting wealth scores were used to rank the population and assign them to national wealth quintile. Eventually, all the values were converted into 5th percentile values as 0%–20% named as "poorest," 21%–40% as "poorer," 41%–60% as "middle," 61%–80% as "richer," and 81–100% as "richest" [9].

We also considered a respondent's current age (categorized into seven categories), place of residence (rural, urban), region (North, East, Northeast, Central, West, and South), social group (Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), and Other), religion (Hindu, Islam, Christian, others), level of education (no education, primary, secondary, higher), respondent's current working status (not working, working), respondent's age at first marriage (< 18 years, > 18), family planning (FP) media exposure (no, yes) and ideal number of children (0–2, ≥ 3) as potential factors for contraception practice in India. Furthermore, we divided the country into 707 districts to understand the pattern of contraceptive use in India.

Statistical analysis

We conducted both bivariate and multivariate analyses to examine the relationship between wealth status and contraceptive method use among women in India. The bivariate analysis explored associations between contraceptive choices and socio-economic characteristics using the chi-square test to assess the statistical significance. For multivariate analysis, we employed multinomial logistic regression to account for the categorical nature of the outcome variable, which included four categories: non-user, traditional user, permanent user, and reversible modern user. Model 1 included only the wealth quintile and contraceptive method choice. Model 2 further adjusted for background characteristics such as levels of education, religion, social groups, place of residence, mass media exposure, and region. Additionally, model 3 included demographic variables, including the women's age, age at first marriage, age at first birth, and number of children ever born. To assess socio-economic inequality in contraceptive use, we used Wagstaff's concentration index (CI) for each category of contraceptive method [39, 40]. The CI quantifies the extent to which contraceptive use is unequally distributed across the wealth distribution. A positive value indicates pro-rich inequality (higher use among wealthier women), while a negative value indicates pro-poor inequality.

$$C = \frac{2}{\mu}.\mathrm{Cov}(y, R)$$

Where y is binary variable indicating use of contraceptive method, μ is the mean of y, R is the fractional rank of individuals in the wealth distribution (poorest to richest), and Cov (y, R) is the covariance between y and R. Since the outcome variables are binary and bounded between 0 and 1, we applied Wagstaff normalization to ensure that the index lies between −1 and +1 and allows for consistent comparison across outcomes and groups. The normalized concentration index is calculated as.

$$C* = \frac{\mathrm{c}}{1 - \mu}$$

Finally, to understand the pattern of different contraceptive use at the district level, we prepared a geographical map using the Arc GIS, version 10.8 [41]. All the statistical analyses are carried out using the STATA statistical package, version 17 [42].

Results

Table 1 illustrated the use of contraceptive methods across different demographic and socio-economic backgrounds of women in India. It showed a substantial percentage of women were non-users and used the permanent methods across various demographic and socio-economic backgrounds. However, considering the use of the reversible method, a significant gap was observed. The highest percentage of women was found among the following group: ages 25–29 age group (24.78%), age at Marriage above 18 years (20.83%), age at first birth above 18 years (20.19%), those with higher education (28.74%), from forward social category (22.94%), exposed to mass media (19.12%), with 1–2 children ever born (22.52%), urban resident (21.97%), and residing in the northeastern geographical region (33.84%).

Figure 1 depicted the use of contraceptive methods across different wealth quintiles in India. It showed that the percentage of non-users decreases with increasing wealth, from 37.8% among the poorest to 30.6% among the richest. A relatively stable percentage of traditional methods was observed across wealth categories, ranging from 9.3 to 11.5%. A considerable gap was observed for use of reversible modern methods, showing a substantial increase with wealth, rising from 15.9% in the poorest group to 25.0% in the richest. Conversely, the use of permanent methods peaks in the middle wealth category at 42.6% and was highest among the middle-income group, then declines to 33.7% among the richest.

Figure 2 presented a composite map comprising four district-level distribution of contraceptive method uses among women in India. The map revealed the percentage of women who were non-users, traditional method users, reversible modern method users, and permanent method users, with considerable regional disparities.

The spatial distribution of contraceptive method use showed notable regional variation at the district level. Permanent method use was heavily concentrated in southern and central regions, particularly in states such as Andhra Pradesh, Telangana, Tamil Nadu, and parts of Karnataka and Chhattisgarh. In contrast, a higher prevalence of reversible modern methods such as pills and condoms was more prevalent in the western, northern, and northeastern regions, including the states of West Bengal, Odisha, Maharashtra, and Himachal Pradesh. Additionally, non-users and traditional method users were not explicitly concentrated, although slightly higher levels were observed in certain parts of the central and northeastern regions and were dispersed throughout the country.

Furthermore, multinomial logistic regression presented in Table 2 showed a significant association between wealth status and the use of reversible modern contraceptives. Model 1 revealed that women in the richest wealth quintiles (RRR = 1.99; CI = 1.95–2.04, $p < 0.001$) were more likely to use reversible techniques than the

Table 1 Use of different contraceptive methods among women aged 15–49 by background characteristics in India, NFHS-5 (2019–21)

Background characteristics	Non-User	Traditional method	Reversible modern method	Permanent method	Sample	*p*-Value
Age groups in years						< 0.001
15–19	71.87	9.38	18.36	0.39	15,407	
20–24	57.46	10.72	23.92	7.90	71,584	
25–29	39.11	11.48	24.78	24.63	102,257	
30–34	26.42	11.24	22.32	40.02	93,946	
35–39	21.11	10.76	17.34	50.78	90,684	
40–44	22.78	9.84	11.24	56.14	73,706	
45–49	27.91	6.88	6.49	58.72	73,768	
Age at first marriage						< 0.001
< 18	28.59	9.42	14.53	47.46	198,387	
> 18	36.59	10.86	20.83	31.73	314,021	
Age at first birth						< 0.001
< 18	23.27	8.07	13.70	54.96	82,626	
> 18	29.39	11.41	20.19	39.01	383,608	
Level of education						< 0.001
No education	29.89	9.97	11.23	48.90	142,885	
primary	28.63	9.47	15.47	46.44	72,119	
secondary	34.62	10.47	20.29	34.62	239,274	
higher	40.77	11.02	28.74	19.46	67,074	
Social groups						< 0.001
SC	33.00	9.99	16.89	40.12	112,610	
ST	35.60	9.31	14.09	41.00	47,852	
OBC	33.57	9.83	15.91	40.69	224,682	
Others	31.77	11.98	22.94	33.31	110,447	
Religion						< 0.001
Hindu	32.13	9.90	17.06	40.92	427,114	
Muslim	39.79	12.84	25.43	21.93	68,631	
Christian	38.23	7.32	12.23	42.22	11,391	
Others	32.82	11.25	23.50	32.43	14,217	
Mass media exposure						< 0.001
No	37.70	11.53	15.48	35.29	132,875	
Yes	31.86	9.86	19.12	39.16	379,533	
Children ever born						< 0.001
None	83.25	5.24	11.13	0.39	46,174	
(1–2)	31.66	11.05	22.53	34.76	268,487	
(≥ 3)	23.12	10.37	13.64	52.86	197,747	
Place of residence						< 0.001
Urban	30.74	10.74	21.97	36.55	163,395	
Rural	34.45	10.05	16.53	38.98	357,957	
Region						< 0.001
North	28.76	12.40	25.38	33.46	102,094	
East	33.98	14.29	19.51	32.22	87,731	
Northeast	40.68	16.24	33.84	9.24	70,596	
Central	34.76	13.95	22.58	28.71	117,128	
West	34.10	5.49	15.49	44.91	52,592	
South	31.94	2.29	6.23	59.55	82,267	
Total	175,652	56,785	99,284	180,687	512,408	

Traditional methods = Rhythm, Abstinence, Withdrawal; Permanent Methods = Male/Female sterilization; Reversible modern method = IUCD, injectables, pills, condoms, SDM, LAM, Foam, Emergency contraception, other modern methods

Significant association between independent variables and family planning methods (Chi-square test, p<0.001)

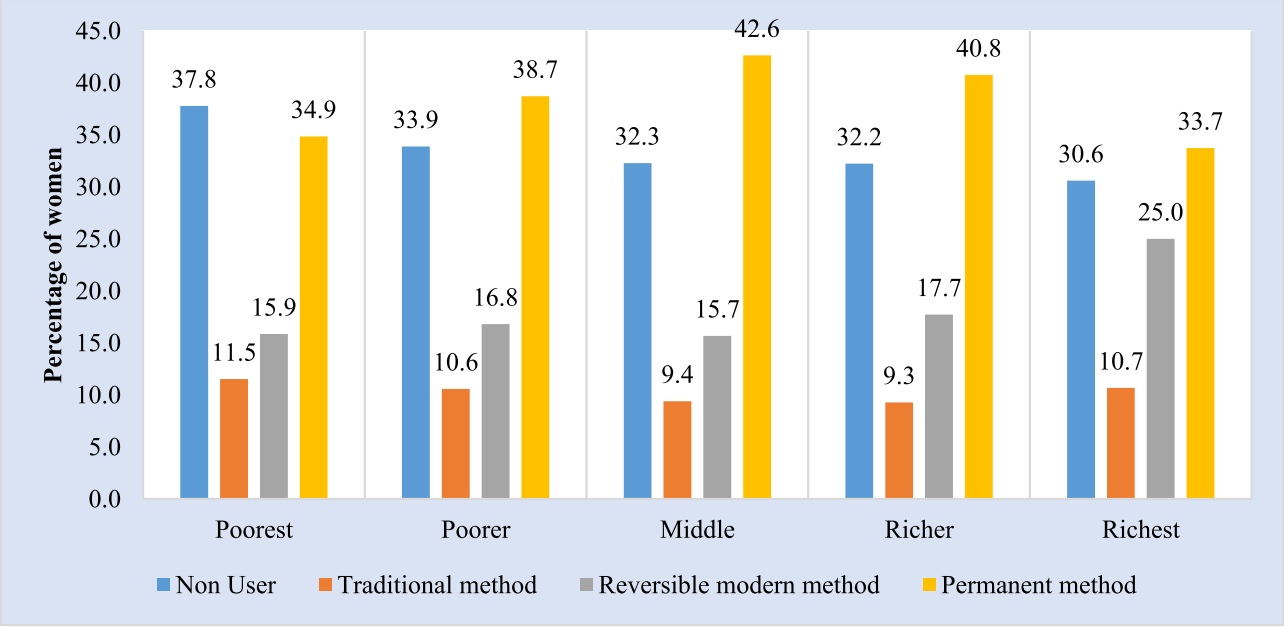

Fig. 1 Use of contraceptive methods among women aged 15-49 by wealth index in India, (NFHS-5) 2019-21

women in the poorest quintiles. A wealth gradient was also observed for permanent methods, peaking in the middle quintiles (RRR = 1.43; CI = 1.40–1.46, $p < 0.001$). In contrast, the use of traditional methods showed a weaker and less consistent association with wealth.

However, in Table 3, where model 2 showed when social groups, religion, levels of education, use of mass media, region, and place of residence were used as controls, the relative risk of currently using reversible contraceptives among the richest wealth quintile was still found to substantial (RRR = 1.54, CI = 1.48–159). The association between wealth and permanent method use also persisted, particularly among middle and richer quintiles, while traditional method uses showed weaker and inconsistent patterns. When additional variables like age, age at first birth, age at first Marriage, and number of children ever born were added to the regression model 3, the relative risk ratio of reversible contraceptives in the richest wealth quintile was still more than in other wealth quintile groups (RRR = 1.61, CI = 1.55–1.68). Further, women in the north-eastern region were more likely to use reversible contraceptive methods than those in the northern region (RRR = 1.16, CI = 1.12–1.21).

Table 4 presents the concentration indices (CI) measuring g wealth-related inequality in contraceptive method use. The CI for reversible methods was 0.092, indicating a pro-rich distribution that concentrated among wealthier women. In contrast, traditional method (CI = −0.023) and non-use (CI = −0.041) showed a pro-poor pattern, suggesting higher prevalence among women from lower wealth quintiles. Furthermore, permanent method CI was 0.002, indicating relatively equal use across wealth groups.

Discussion

The current study aimed to understand the pattern of using contraceptive methods, including non-users, traditional, permanent, and reversible modern methods, and their association with the wealth quintile in India using recent round of NFHS data (2019–2021). Findings indicated that a lower uptake of reversible modern contraceptive methods among women from poorer wealth quintiles compared to those from richer wealth quintiles, suggesting a socio-economic gradient in contraceptive choices. Regression results also reflected a similar pattern, even after controlling for the demographic and social characteristics of the women, indicating a clear wealth-based disparity in contraceptive method choice. As illustrated in Fig. 1, wealthier groups favored reversible modern methods, which were more commonly used by women in the richest wealth quintiles, while permanent methods were most prevalent among those in the middle-income group. The preference for reversible modern methods among wealthier women may reflect greater access to private healthcare providers, higher education, and autonomy to delay or space pregnancies. Contrary to middle-income groups more reliance on permanent methods could come from cost-effectiveness after achieving their desired family size, further reinforced by India's historical focus on sterilisation in public health programs [43, 44]. These findings underscore the need for policy interventions to address inequities in contraceptive access by expanding subsidised reversible methods through public health facilities in rural and low-income districts and retraining providers to reduce bias toward sterilisation [45, 46]. Previous studies based on

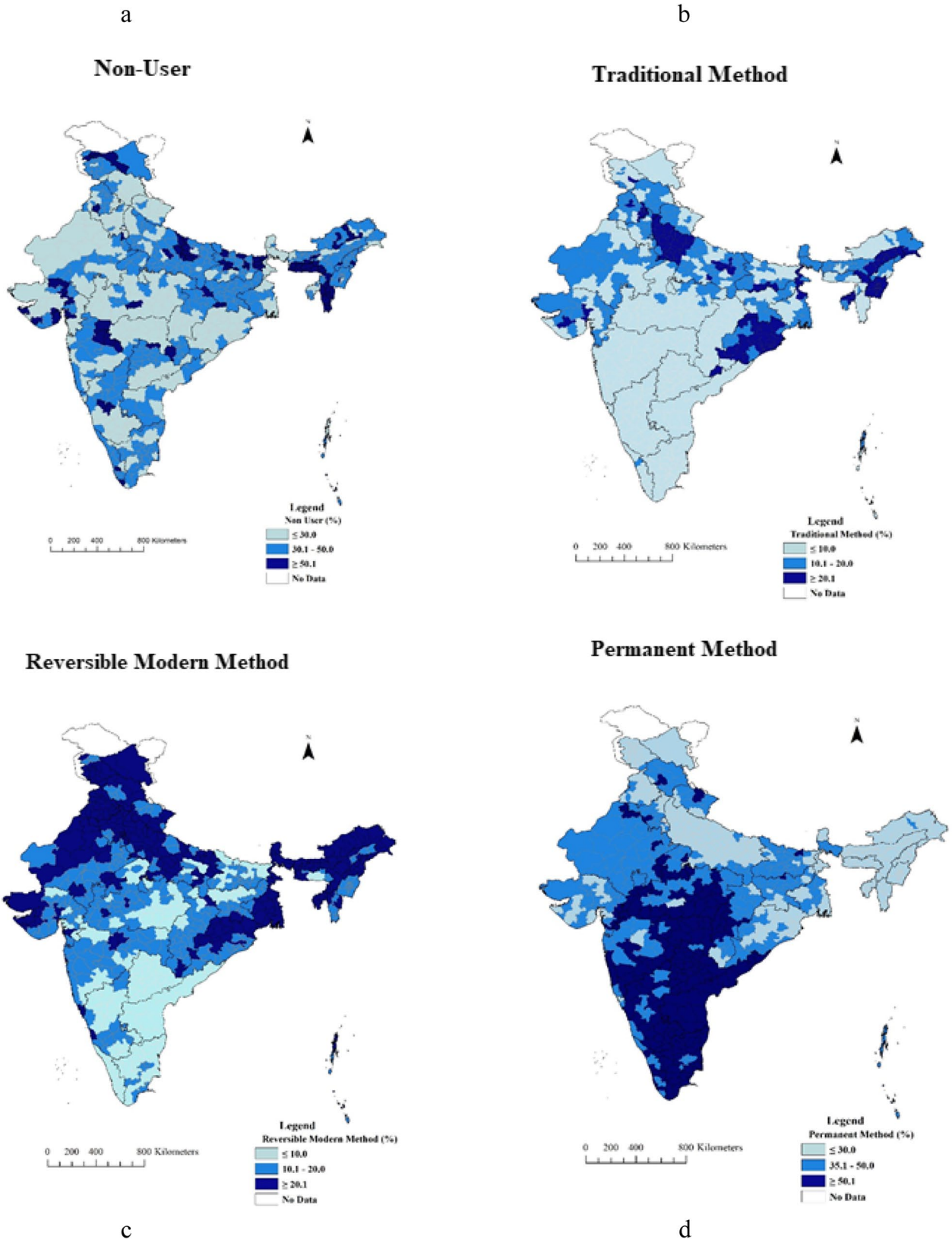

Fig. 2 District-level distribution of contraceptive method use among women in India aged 15-49, NFHS-5 (2019-21)

Table 2 Shows the multinomial logistic regression of the relationship between the current use of contraceptive methods and wealth quintiles among women aged 15–49, india, NFHS-5 (2019-21)

Model 1						
	Non-user vs. Traditional methods		Non-user vs. Reversible modern methods		Non-user vs. Permanent methods	
	URRR	95% CI	URRR	95% CI	URRR	95% CI
Wealth Index						
Poorest	1	[1.00,1.00]	1	[1.00,1.00]	1	[1.00,1.00]
poorer	1.01	[0.99,1.04]	1.20***	[1.18,1.23]	1.23***	[1.20,1.25]
middle	0.92***	[0.90,0.95]	1.20***	[1.17,1.23]	1.43***	[1.40,1.46]
richer	0.92***	[0.89,0.95]	1.34***	[1.31,1.38]	1.38***	[1.35,1.41]
richest	1.18***	[1.15,1.22]	1.99***	[1.95,2.04]	1.20***	[1.17,1.22]

*$p \leq 0.05$

**$p \leq 0.01$

***$p \leq 0.001$

other countries and India highlighted the wealth quintile as a strong indicator in relation to contraceptive use, and similar patterns were reflected in findings concerning the reversible method [3, 47–49].

As India along with many countries, moves towards cafeteria approach to effective and quality family planning, one that prioritised informed choice and access to a wide range of contraceptive methods, whereas the findings of this study highlighted a more uneven reality. Reversible modern methods, which were central to expanding contraceptive choice, continued to be used disproportionately by women from the richest wealth groups. This indicated that access to contraceptive choices remained unequal, and the goal of providing equitable choices to everyone had not yet been achieved. One factor that may explained this disparity was the variation in the provision of subsidised contraceptive services across states and districts. While initiatives like Mission Parivar Vikash focused on improving access in selected high-fertility districts, other regions lacked equivalent infrastructure [50]. Studies showed that previous family planning programmes had historically emphasised female sterilisation while reversible modern methods received less attention in public provisioning, particularly in low-resource districts [43, 44, 51]. These disparities in policy implementation and service delivery shaped contraceptive choices among poorer women who were more reliant on subsidised services [27, 52]. Another study by Oliveira and Dias mentioned that economic inequality was one of the essential factors controlling the choice of family planning [19]. This was also evident in India, where women from the poorest groups experienced the same. One potential reason could be the price and accessibility of reversible modern methods. Modern family planning services often impose financial obligations on users, mainly when such services are not free or when service providers are located far from the residences of women who intend to use them. Bongaarts et al. and Tuoane et al. found that free access to family planning services predisposed people to use modern contraceptives [14, 53]. Another study by Sedgh et al. reported that price often hinders the accessibility of contraceptive methods [30]. Hence, the price and accessibility of the reversible method were the two aspects to focus on improving the choice of family planning and health. In addition, reasons could be the cost, fear of side effects, inadequate counseling, and limited awareness among disadvantaged groups [54–57].

Furthermore, the present study also aimed to understand district-level variation in the current use of reversible contraceptive methods. Findings indicated a significant disparity in the usage of various contraceptive methods across districts. Most of the districts in the southern and central regions favored permanent contraceptive methods. In southern states like Tamil Nadu, Kerala, and Andhra Pradesh, the high use of permanent methods, especially female sterilisation was largely due to long-running government programmes like National Population Policy (2000), which promoted sterilisation through camps and financial incentives [58, 59]. Male participation in family planning was also slightly higher in southern states, which helped to increase the acceptance of vasectomy compared to other regions. Conversely, districts in the northern and eastern states like West Bengal, Odisha, and Himachal Pradesh exhibited a higher prevalence of reversible methods, supported by the National Health Mission, which promoted spacing methods through frontline workers [11, 60–62]. These findings indicate a perspicuous geographical pattern, allowing one to see a distinct differentiation in the region made by the districts based on the preferred contraceptive methods.

The variation in contraceptive use in different regions in India can be attributed to the several socio-economic, cultural, and infrastructural factors specific to each region. India is a vast country, and demographic, socio-economic, and cultural factors vary from north to south

Table 3 Shows the relative risk ratio (RRR) with a 95% confidence interval (CI) from a multinomial logistic regression model assessing the various factors associated with current family planning methods for married women in India aged 15-49, NFHS-5 (2019–21)

Background characteristics	Model 2			Model 3		
	Non-user vs. Traditional	Non-user vs. Reversible modern	Non-user vs. Permanent	Non-user vs. Traditional	Non-user vs. Reversible modern	Non-user vs. Permanent
Wealth Index	ARRR			ARRR		
Poorest®						
Poorer	1.05**[1.02,1.08]	1.10***[1.07,1.13]	1.25***[1.22,1.28]	1.04**[1.01,1.08]	1.11***[1.08,1.15]	1.14***[1.11,1.17]
Middle	1.05**[1.02,1.09]	1.11***[1.08,1.14]	1.39***[1.36,1.43]	1.04*[1.01,1.08]	1.15***[1.11,1.18]	1.18***[1.15,1.21]
Richer	1.12***[1.08,1.16]	1.21***[1.18,1.25]	1.48***[1.44,1.53]	1.07***[1.03,1.12]	1.26***[1.22,1.31]	1.12***[1.08,1.15]
Richest	1.36***[1.30,1.42]	1.54***[1.48,1.59]	1.65***[1.60,1.71]	1.26***[1.20,1.32]	1.61***[1.55,1.68]	1.01[0.97.,1.04]
Level of education						
No education®						
Primary	1.01[0.97,1.04]	1.27***[1.23,1.31]	0.84***[0.82,0.86]	1.08***[1.04,1.12]	1.23***[1.20,1.27]	1.19***[1.16,1.22]
Secondary	0.94***[0.92,0.97]	1.36***[1.33,1.40]	0.39***[0.38,0.40]	1.18***[1.14,1.22]	1.40***[1.37,1.44]	0.99 [0.97,1.01]
Higher	0.82***[0.79,0.85]	1.46***[1.41,1.51]	0.13***[0.13,0.13]	1.09***[1.04,1.14]	1.51***[1.45,1.57]	0.49***[0.47,0.51]
Social groups						
SC®						
ST	0.88***[0.85,0.91]	0.92***[0.89,0.95]	1.10***[1.08,1.13]	0.87***[0.84,0.90]	0.93***[0.90,0.96]	1.19***[1.16,1.23]
OBC	1.11***[1.08,1.14]	0.98[0.96,1.00]	1.15***[1.13,1.17]	1.09***[1.05,1.12]	0.97*[0.94,0.99]	1.11***[1.09,1.13]
Others	1.19***[1.15,1.23]	1.08***[1.05,1.11]	1.18***[1.16,1.21]	1.12***[1.08,1.16]	1.07***[1.04,1.11]	1.00[0.97,1.03]
Religion						
Hindu®						
Muslim	0.87***[0.84,0.89]	1.06***[1.03,1.08]	0.32***[0.31,0.32]	0.84***[0.81,0.87]	1.01[0.99,1.04]	0.29***[0.29,0.30]
Christian	0.62***[0.59,0.65]	0.63***[0.60,0.65]	0.72***[0.69,0.75]	0.56***[0.53,0.59]	0.57***[0.55,0.59]	0.57***[0.54,0.59]
Others	0.88***[0.84,0.93]	0.93***[0.90,0.97]	0.75***[0.73,0.78]	0.84***[0.80,0.88]	0.89***[0.86,0.93]	0.69***[0.66,0.72]
Mass media exposure						
No®						
yes	1.18***[1.15,1.21]	1.29***[1.26,1.32]	1.35***[1.32,1.37]	1.20***[1.16,1.23]	1.31***[1.28,1.34]	1.40***[1.37,1.43]
Place of residence						
Urban®						
Rural	0.81***[0.79,0.83]	0.82***[0.80,0.83]	0.99[0.97,1.01]	0.83***[0.81,0.86]	0.82***[0.80,0.84]	1.07***[1.05,1.10]
Region						
North®						
East	1.30***[1.26,1.34]	0.70***[0.68,0.72]	0.88***[0.86,0.90]	1.30***[1.26,1.35]	0.71***[0.69,0.73]	0.80***[0.78,0.82]
Northeast	1.38***[1.33,1.44]	1.20***[1.16,1.24]	0.30***[0.29,0.31]	1.23***[1.18,1.28]	1.16***[1.12,1.21]	0.20***[0.19,0.21]
Central	0.99[0.96,1.02]	0.86***[0.83,0.88]	0.80***[0.78,0.82]	0.96*[0.93,1.00]	0.83***[0.81,0.86]	0.69***[0.67,0. 71]
West	0.49***[0.47,0.52]	0.55***[0.53,0.57]	1.27***[1.24,1.31]	0.46***[0.44,0.48]	0.52***[0.50,0.53]	1.19***[1.15,1.23]
South	0.19***[0.18,0.20]	0.22***[0.22,0.23]	1.83***[1.79,1.88]	0.19***[0.18,0.20]	0.22***[0.21,0.23]	1.92***[1.87,1.98]
Age at first marriage						
< 18®						
> 18				1.02[0.99,1.04]	1.14***[1.11,1.16]	0.69***[0.68,0.71]
Age at first birth						
< 18®						
> 18				1.14***[1.10,1.18]	1.03[1.00,1.06]	0.74***[0.72,0.76]
Children ever born						
(1–2) ®						
(≥ 3)				1.17***[1.14,1.20]	1.10***[1.08,1.13]	1.63***[1.60,1.66]
Age						
15–19®						
20–24				1.23***[1.11,1.35]	1.03[0.96,1.12]	17.68***[12.63,24.75]
25–29				1.64***[1.49,1.81]	1.28***[1.19,1.38]	69.14***[49.45,96.67]
30–34				2.18***[1.98,2.41]	1.58***[1.46,1.70]	150.44***[170.58,210.36]
35–39				2.44***[2.21,2.69]	1.52***[1.41,1.65]	222.77***[159.30,311.54]

Table 3 (continued)

Background characteristics	Model 2			Model 3		
	Non-user vs. Traditional	Non-user vs. Reversible modern	Non-user vs. Permanent	Non-user vs. Traditional	Non-user vs. Reversible modern	Non-user vs. Permanent
40–44				2.04***[1.85,2.26]	0.91*[0.84,0.99]	226.97***[162.27,317.46]
45–49				1.1[0.99,1.21]	0.42***[0.39,0.46]	188.17***[134.53,263.20]

®=Reference Category

*$p \leq 0.05$

**$p \leq 0.01$

***$p \leq 0.001$

Table 4 Concentration index (CI) of contraceptive method use by wealth index among currently married women aged 15–49 in india, NFHS-5 (2019-21)

Contraceptive Method	Concentration Index (CI)	SE	*p*-value
Reversible modern method	0.092	0.002	0.000
Permanent method	–0.002	0.001	0.027
Traditional method	–0.023	0.002	0.000
Non-user	–0.041	0.001	0.000

*$p$undefined ≤ 0.05

**$p \leq 0.01$

***$p \leq 0.001$undefined

and east to west. Regions with stronger adherence to cultural and traditional practices may favor permanent methods, such as sterilisation, which could account for the higher prevalence of these methods in many parts of southern and central India [24, 63, 64]. Furthermore, it could also be that the availability and accessibility of healthcare facilities vary across regions [65, 66]. Better accessibility, such as in urban centers and regions with stronger healthcare infrastructure, always offers a higher usage of reversible methods, as these require more frequent interaction with healthcare providers [67–70]. Findings also reflected that educational attainment had an impact on a higher level of reversible methods. Educational attainment could also be attributed to the regional variation in the use of certain methods. Hence, educational attainment might explain the higher prevalence of reversible methods in the northern and eastern districts [11, 22, 71, 72].

Moreover, the findings significantly indicated that women from lower educational levels, SC and ST categories, Christian religion groups, non-mass media exposure, rural areas, and southern and central regions predominantly preferred to permanent method over reversible methods. This might be due of lower accessibility and affordability [14, 47, 73, 74]. Conversely, the likelihood of using reversible methods increased among Muslim women, possibly due to religious preferences that discourage permanent methods [75, 76]. Additionally, the use of reversible methods declined with increasing age and parity, likely because older women had completed their desired family size and shifted to permanent methods.

The concentration index highlighted clear socio-economic disparities in contraceptive method use. Reversible modern methods were more common among wealthier women, consistent with previous studies indicating that higher socio-economic status was associated with better access and greater autonomy in contraceptive decisions [27, 38]. In contrast, more reliance on traditional methods and non-use among poorer women reflects continued barriers such as limited awareness, inadequate counselling, and access constraints [36]. On the other hand, near-equal distribution of permanent methods may reflect the historical predominance of sterilization across wealth groups [29, 44]. These findings emphasize the urgency of targeted interventions like Mission Parivar Vikas [50] to improve equitable access to reversible methods, particularly for disadvantaged populations.

Previous research consistently highlighted the underutilisation of reversible contraceptive methods within public settings, primarily due to provider bias toward sterilisation and limited counseling on temporary options. While factors like quality of care, side effects, out-of-pocket expenditure, and knowledge gaps influenced contraceptive choices, provider-side barriers were equally significant [45, 57, 77, 78]. The longstanding focus of family planning programmes in India on sterilisation, shaped both the delivery of services and presentation of contraceptive options to women, often limiting exposure to reversible methods [79]. Addressing these challenges required improving the quality of care through provider training, improved counseling practices, and expanded outreach efforts, particularly aimed at women from disadvantaged backgrounds [80, 81]. There was a clear need for policies that increased the availability and promotion of a diverse contraceptive method mix, especially in underserved regions. Additionally, addressing misconceptions and supporting informed choice required ongoing efforts to engage communities and improve education [82].

However, this study had some limitations. First, the present study relied on the cross-sectional information rather than longitudinal; therefore, we restricted to our study to associations rather than cause-and-effect relationships. Second, the data relied on self-reported responses and may be subject to recall or reporting biases, particularly in sensitive areas such as contraceptive use. Additionally, NFHS does not provide detailed information on the quality of counseling or service availability, which may also influence women's contraceptive choices, but were beyond the scope of this analysis. While we examined wealth-based differentials in method use, this study did not directly measure access, autonomy, or other dimensions of equity. These findings should therefore be interpreted in the context of ongoing discussions in the field about how disparities in access, autonomy, and service quality are defined and measured within family planning programs.

Despite the limitations, the present study has several strengths. It uses nationally representative data with a large-scale sample size, with district-level analysis, allowing detailed insights into socio-economic and regional differences in contraceptive use. By analysing permanent, reversible, and traditional methods separately, the study contributes to a more comprehensive understanding of family planning preferences, highlighting areas where equitable access and informed choice remain challenges in the reproductive health landscape.

Conclusion

In conclusion, the study identified significant differences in contraceptive use patterns across India. Wealth-based differences showed that reversible methods were more accessible to affluent women, while middle-income groups disproportionately relied on permanent methods. Geographically, southern states exhibited stronger preferences for sterilisation compared to northern and north-eastern regions, where reversible methods were more common. These variations highlighted persistent inequities in reproductive healthcare access.

To address these gaps, several policy measures emerged as crucial, as the government, in collaboration with local organisations, NGOs, and clubs, needed to prioritise actions like expanding subsidised access to reversible methods in high-sterilisation districts like Andhra Pradesh and Tamil Nadu, and implement community-based education programmes to address misconceptions about modern temporary methods and strengthening contraceptive counselling within primary health services. Particular attention was required for vulnerable populations where these disparities were more pronounced. Such interventions would not only have improved method choice but also advanced commitment of India to SDG 3.7 and the ICPD principle of informed reproductive choice. By making accessible to all women regardless of wealth quintiles, India could be closer to achieving equitable family planning outcomes.

Policy suggestion

The study identified pronounced wealth-related differentials in contraceptive method use in India. Wealthier women frequently used reversible methods, while permanent and traditional methods were predominant among poorer groups. These patterns suggest the need for policy attention toward improving equitable access to a broader contraceptive method mix across wealth quintiles and geographic regions.

This study suggested developing targeted policies to improve contraceptive access and affordability for poorer populations in India. To strengthen the availability of reversible methods, particularly in public settings, should be prioritised with low uptake. Introducing dedicated spacing method at public health facilities and expanding outreach through community health workers could help address the existing imbalance. Financial incentives for ASHAs, ANMs, and ICDS workers to promote balanced method mix, and integrating reversible methods more prominently into state-level family planning strategies can enhance uptake. Furthermore, it is essential to integrate family planning services within the existing healthcare system and ensure that women from all wealth quintiles receive adequate support and information. Targeted awareness campaigns through community-based and local media platforms can help to dismiss misconceptions and support informed contraceptive choice. These measures aim to empower women to make informed decisions about contraception. It ultimately enhances reproductive health outcomes.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-025-24270-2.

Supplementary Material 1.

Acknowledgements

This paper was accepted for oral presentation at the 11th Annual International Conference on Demography and Population Studies (2023) in Athens, Greece. A revised version was also selected for presentation at the Population Association of America (PAA) Annual Meeting (2024) in Columbus, USA. We sincerely thank the anonymous reviewers for their thoughtful feedback and valuable suggestions, which significantly improved this work.

Authors' contributions

R.S: Conceptualisation, methodology, writing- Original draft; D.W.B: Conceptualisation, Writing- Review and editing. All authors have read and approved the final manuscript.

Funding

This study did not receive any specific grant from funding agencies in public, commercial, or not-for-profit sectors.

Data availability
The dataset used in this article is available only upon request on the DHS website at, https://dhsprogram.com/data/dataset/India_Standard-DHS_2020.cfm? flag=1.

Declarations

Ethics approval and consent to participate
This is a secondary analysis of a nationally representative survey dataset NFHS-5 (2019–21), which is in the public domain. Ethical approval was not deemed necessary. However, all methods were carried out in compliance with relevant guidelines.

Competing interests
The authors declare no competing interests.

Consent for publication
Not applicable.

Received: 25 December 2024 / Accepted: 1 August 2025
Published online: 30 September 2025

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