Clinical Epidemiology and Global Health 21 (2023) 101263

Contents lists available at ScienceDirect

Clinical Epidemiology and Global Health

journal homepage: www.elsevier.com/locate/cegh

Original article

Quality of female sterilization counseling in India: A method information index analysis

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ARTICLE INFO

Keywords:
Sterilization
Counseling
Method information index
India

ABSTRACT

Problem considered: This study assesses the Method Information Index (MII) for sterilization use and its correlates in India.

Methods: National Family Health Survey-5 data (2019–21) was considered for analysis. The sample of women aged 15–49 who adopted sterilization in the last five years preceding the survey (n = 42,480) was included. Binary logistic regression was conducted to examine the adjusted association of socioeconomic and demographic characteristics with MII. Stata (v16.0) was used for the analysis with a 5% significance level.

Results: Compared to women who undergone sterilization in a government hospital, the women who had sterilization in a Camp/Mobile clinic/other public facility, Primary health centre/Sub-centre/Urban health post/Government dispensary, and Community Health Centre had respectively, 36% (OR = 0.64, CI = 0.56–0.73), 15% (OR = 0.85, CI = 0.79–0.90) and 14% (OR = 0.86, CI = 0.82–0.91) lower odds of receiving method information.

Conclusion: The MII for sterilization was found inadequate, with less than half of the sterilized women being informed about (a) other methods, (b) possible side effects, and (c) side-effects management before adopting the method. Sterilization counseling is positively associated with higher education, exposure to FP messages, social backwardness, urban residence, and services from a government hospital. Regular sensitization of health providers, especially in the lower order health facilities, on the importance of reproductive rights and informed choice seems pertinent. Improved sterilization counseling will also address women's reproductive health and rights and help attain SDG 3.

1. Introduction

Female sterilization consisting of three-fourths of the modern contraceptive method users in 2019–21 continues to lead the Indian family planning program. Socioeconomic conditions[1] and the ongoing family planning program[2] largely determine the hegemony of sterilization. However, the quality of female sterilization services has been far from satisfactory[3,4] and has inadequately informed choices.[5,6] Most women seek sterilization services from public health facilities.[7] Nevertheless, the quality of sterilization care is often poorer in public health facilities[8] and is linked with facility readiness and the socioeconomic characteristics of the clients.[9] Sterilization acceptance is again not uniform and negatively skewed towards the socioeconomically weaker women.[2,10,11] Moreover, women from socioeconomically weaker sections usually have lower health care autonomy,[7] which rationalizes regular assessment of the quality of sterilization services in the country.

Informed choice is considered a fundamental human right[12] and enhances women's confidence and commitment to contraceptive use. Appropriate counseling with instructions women can understand ensures their right to information and reproductive self-determination.[13] Target 3.7 of the Sustainable Development Goals (SDGs) also demands universal access to sexual and reproductive healthcare services, including family planning, information and education, and the integration of reproductive health into national strategies and programs by 2030.[14] This commitment requires monitoring key family planning indicators, including the percentages of women making an informed contraceptive choice.

The Method Information Index (MII) was adopted as an indicator of

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https://doi.org/10.1016/j.cegh.2023.101263
Received 2 September 2022; Received in revised form 31 January 2023; Accepted 9 March 2023
Available online 15 March 2023

informed choice by the Family Planning 2020 initiative[15] and is increasingly used to address the concepts of counseling and informed choice.[16,17] The MII can be considered as one way to measure the "information given to clients" component of the well-established quality of care framework of Judith Bruce.[18] The MII summarizes the adequacy of information provided by the service provider to the women when receiving family planning (FP) services. It serves as a proxy for the quality of counseling and reflects the extent to which women are informed about side effects and alternate methods. The client's perspective is helpful for service providers and programmers to understand the user's perception of service quality,[19] though prone to measurement error and might differ from the provider's perspective.[20] This study assesses the MII for sterilization use and its correlates among women in India.

2. Data and methods

2.1. Data

The study used data from the fifth round of the National Family Health Survey (NFHS), 2019–21. The NFHS-5 is a nationally representative survey of 636699 households that provides information for various monitoring and impact evaluation indicators of health, nutrition, and women's empowerment, including the family planning method used. The NFHS-5 is a stratified two-stage sample with a 98% response rate. The primary sampling units, i.e., the survey villages in rural areas and census enumeration blocks in urban areas, were selected using probability proportional to size (PPS) sampling. Trained research investigators gathered the data using computer-assisted personal interviewing (CAPI). Verbal/written informed consent was obtained from the participants. Only those respondents who gave voluntary consent were interviewed. The published survey report provides a more detailed description of the survey design, questionnaire, quality control measures, and survey management information.[7] The present analysis was conducted for women aged 15–49 who adopted sterilization in the last five years preceding the survey (n = 42,480).

2.2. Outcome variable

The outcome variable of this study is the MII for female sterilization. The MII consists of three questions: 1. Were you informed about other methods? 2. Were you informed about side effects? 3. Were you told what to do if you experienced side effects? The reported value is the percentage of women who responded "yes" to all three questions.

2.3. Predictor variables

The predictor variables considered for the analysis were: source of sterilization (government hospital, community health centers (CHC), primary health center-PHC/sub-center-SC/urban health post-UHP/government dispensary, camp/mobile clinic/other public facilities, private hospital, other private facilities), age of the women in years (15–24, 25–29, 30–34, 35–39, 40–44, 45–49), years of schooling (no schooling, up to nine years, ten and more years), number of surviving son (Nil, at least have one son), social group (scheduled caste-SC, scheduled tribe-ST, other backward classes-OBC, Non-SC/ST/OBC), religion (Hindu, Muslim, Others), number of household members (<5, ≥ 5) wealth quintile (poorest, poorer, middle, richer, richest), place of residence (urban, rural) and region (north, central, east, northeast, west, south). In India, public sector healthcare facilities are organised into three levels: primary (Subcentres, PHCs, UHP), secondary (CHCs, taluka hospitals), and tertiary (District hospital, medical colleges and teaching hospitals). They differ in terms of staff composition and service delivery; thus we have categorized them accordingly for this analysis.

2.4. Statistical analysis

Bivariate analysis was used to assess the socioeconomic and demographic differentials in the MII for female sterilization. Binary logistic regression was conducted to examine the adjusted association of socioeconomic and demographic characteristics with MII. The predictor variables included in the regression analysis were finalized after checking multicollinearity through Variance Inflation Factor (VIF) method (Table 1). Sample weights were used to adjust the non-response. Stata (V 16) was used for analyses, and the results were reported at a five percent significance level with two-tailed alternate hypothesis.

3. Results

3.1. Socioeconomic and demographic differentials in MII for female sterilization

Of the total sterilized women, nearly two-thirds (65%) were told about other possible methods of contraception, about three-fifths (59%) were told about its side effects, and about a half (51%) were told about side-effect management before accepting the method (Table 2). Only 46% of the sterilization acceptors were informed about all three indicators mentioned above. Half of the women receiving sterilization from a government hospital were informed about all three indicators. The corresponding figures were 46%, 45%, 44%, 39%, and 38%, respectively, for those who received the method from a PHC/SC/UHP/Government dispensary, private hospital, CHC, Camp/Mobile clinic/other public facilities, and Other private facilities, respectively. The MII was 47% for the women aged 25–39 years, 44% for women aged 15–24 years, 42% for those aged 40–44 years, and 33% for women aged 45–49 years. With increasing years of schooling, the method information had increased, i.e., from 40% for women with no schooling to 51% for women with ten or more years of schooling. A higher percentage of the women (51%) exposed to family planning messages were informed about the method than their counterparts without mass media exposure (38%).

Among the social groups, the women from the ST community (50%) had the highest percentage with method information, followed by OBC (48%), SC (47%), and Non-SC/ST/OBC (43%). With increasing wealth status, the method information had also increased. For example- 41% of the sterilization acceptors from the poorest households were informed about all three indicators, and the percentages increased to 52% for the women from households of the richest category. Every second sterilization user from the urban area was informed about the method compared with 45% of their rural counterparts. Fifty-four percent of the women from the central and north-eastern regions were informed about the method. The corresponding figures were 50% for women from the southern region, 44% for the north, 43% for the west, and 38% for those from the eastern region. The method information varied considerably

Table 1
Variance Inflation Factor (VIF) for the predictor variables.

Variables	VIF	1/VIF
Wealth index	1.61	0.620114
Year of schooling	1.44	0.695811
Place of residence	1.26	0.794301
Age	1.15	0.869848
Exposed to FP messages	1.13	0.881769
Region	1.12	0.894347
Social group	1.10	0.911196
Number of household members	1.07	0.932109
Number of living son	1.04	0.960865
Religion	1.02	0.97766
Mean VIF	**1.19**	

Table 2
Percentage[a] of women aged 15–49 who undergone sterilization during last five years preceding the survey by method information index and background characteristics, India, 2019-21.

Background Characteristics	Total Number of women	Told about other methods	Told about side effects	Told about side-effect management	Method Information Index (MII)
Source of sterilization					
Government hospital	15,308	68.3	62.8	55.2	50.2
CHC	11,087	63.3	56.8	47.9	43.8
PHC/SC/ UHP/ Government dispensary	5211	64.0	57.9	50.6	45.9
Camp/Mobile clinic/other public facility	1057	64.9	54.2	44.6	38.7
Private hospital	8715	64.6	57.2	49.6	44.9
Other private facilities	776	58.2	52.6	43.9	37.7
Age (years)					
15–24	5589	63.7	57.0	49.0	44.2
25–29	16,939	66.1	59.4	51.5	46.7
30–34	11,883	66.6	59.2	51.6	47.2
35–39	5633	64.2	60.2	51.8	46.7
40–44	1661	58.4	55.0	45.3	41.5
45–49	774	45.9	45.9	39.1	33.2
Years of schooling					
None	10,492	59.6	54.0	45.3	40.5
<10 years of schooling	17,291	64.5	58.2	50.2	45.2
10+ years of schooling	14,697	69.4	62.7	55.4	51.1
Number of living son					
No	3923	65.9	58.8	51.8	48.1
At least one	38557	64.9	58.7	50.7	45.9
Exposed to FP messages					
No	16,168	56.3	50.6	43	37.6
Yes	26312	70.4	63.7	55.5	51.3
Religion					
Hindu	37,196	65.3	58.9	50.8	46.1
Others	5284	62.7	57.3	50.2	45.7
Social group					
Non-SC/ST/ OBC	7649	61.8	55.6	47.6	42.8
SC	10,355	64.6	57.6	49.4	44.6
ST	4471	65.7	62.4	55.9	50.2
OBC	19,625	66.6	60	52	47.6
Don't know	380	48.7	39.4	29.4	26.4
Number of household members					
<5	11,740	64.8	59	51.5	46.8
5+	30,740	65.1	58.6	50.5	45.8
Wealth quintile					
Poorest	9600	60.4	55.7	46.8	41.4
Poorer	9322	61.8	55.6	47.6	42.8
Middle	9440	67.3	59.3	52	48
Richer	8289	67.6	61	53.7	49.1
Richest	5829	70.2	64.3	56.3	51.8
Type of place of residence					
Urban	11,459	68	62	54.2	49.8
Rural	31,021	63.9	57.5	49.5	44.7
Region					
South	12,902	68.1	59.4	53.7	50.1
North	4551	65.8	61	49.4	44.2
Central	7657	72.8	68.6	58.5	54.3
East	10,431	57.6	50.7	42.8	37.7
Northeast	433	68.6	65.8	58.1	53.9
West	6505	60.9	56.3	49.2	42.8
Total	**42480**	**65**	**58.7**	**50.8**	**46.1**

[a] Using sampling weight.

among states and Union Territories (UT) of India (Fig. 1). Among the bigger states, 73% of the sterilization users from Tamil Nadu were informed about the method compared to a mere 20% of the users from Andhra Pradesh. Half of the sterilization acceptors in 18 out of 36 state/ UTs were not informed about all three indicators of MII.

3.2. Determinants of female sterilization counseling

Table 3 presents the adjusted odds ratio of MII for female sterilization. Compared to women who undergone sterilization in a government hospital, the women who had sterilization in Other private facilities, Camp/Mobile clinic/other public facility, Private hospital, PHC/SC/ UHP/Government dispensary, and CHC had respectively 37% (OR = 0.63, CI = 0.54–0.73), 36% (OR = 0.64, CI = 0.56–0.73), 24% (OR = 0.76, CI = 0.72–0.80), 15% (OR = 0.85, CI = 0.79–0.90) and 14% (OR = 0.86, CI = 0.82–0.91) lower odds of receiving method information … With increasing years of schooling, women had higher odds (OR = 1.10, CI = 1.06–1.13) of receiving method information. Women not exposed to family planning messages had 62% (OR = 0.62, CI = 0.60–0.65) lower odds of receiving method information than those exposed. Compared to Non-SC/ST/OBC women, ST, OBC and SC women had respectively 55% (OR = 1.55, CI = 1.43–1.68), 20% (OR = 1.20, CI = 1.13–1.27) and 14% (OR = 1.14, CI = 1.07–1.21) more chance of receiving method information. The likelihood of receiving method information was 16% (OR = 1.16, CI = 1.06–1.28) higher among women from the richest household compared to their counterparts from the poorest households. Rural women were less likely (OR = 0.94, CI = 0.89–0.98) to receive the method information than their urban counterparts. Compared to southern region, women of central and north-eastern region had respectively 35% (OR = 1.34, CI = 1.26–1.43) and 32% (OR = 1.31, CI = 1.07–1.60) higher odds whereas women from the east and west region both had 23% (OR = 0.77, CI = 0.73–0.83) and northern region had 13% (OR = 0.87, CI = 0.81–0.94) lower odds of receiving method information.

4. Discussion

The MII for sterilization is inadequate, with less than half of the sterilized women being informed about (a) other methods, (b) possible side effects, and (c) side-effects management before adopting the method. Sterilization counseling is positively associated with higher education, exposure to FP messages, social backwardness, urban residence, and services from a government hospital. The result conforms with earlier studies that, although the most adopted method, informed choice is inadequate along with wide variation in the provision of information.[6,21,22]

Among the public health facilities, the quality of sterilization counseling deteriorates among the lower order facilities, and the women sterilized in camps/mobile clinics are least likely to receive method information. This result conforms to an earlier study.[23] It prompts the need for improving service delivery in the health facilities at the bottom level to reinforce the credibility of the public health care delivery system. The study found that educated women had higher odds of a high score on the index, indicating that not enough health care providers spend time informing non-literate women about different aspects of sterilization. This agrees with a past study that reveals the quality of sterilization counseling varies and that there are specific groups of more affected women.[22] Another study also found higher chances of educated women having informed choices than their uneducated counterparts in India and abroad.[24] In conformity to an earlier study that found targeted family planning messages/interventions enhance informed method choice,[25] this study reveals that women exposed to FP messages have received better sterilization counseling.

The study found that sterilization counseling is better among socially backward communities. Women from backward communities typically have less control over their healthcare[7] and are more likely to be less

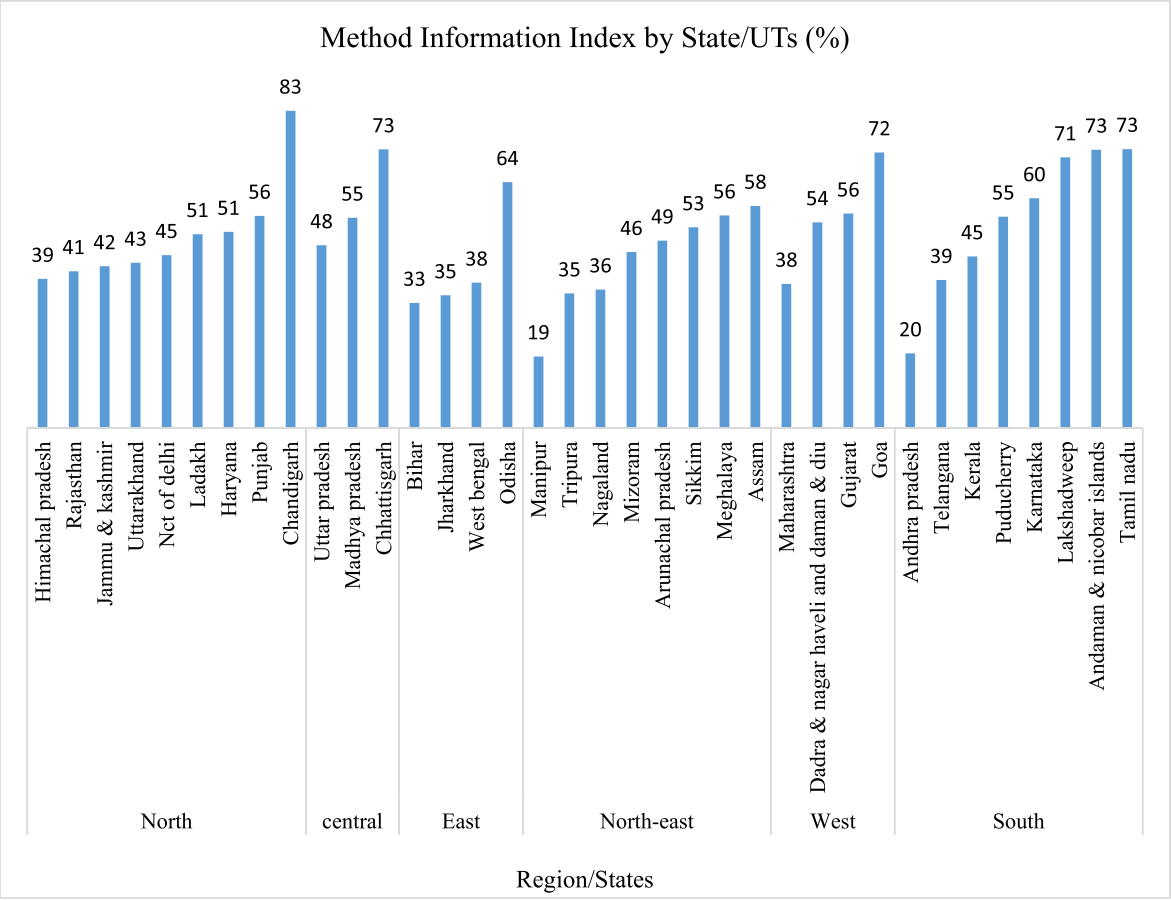

Fig. 1. Method information index by state/Union Territories, India, 2019-21.

educated, which limits their understanding of the service quality and expectations from the service providers; therefore, they reported to have received the method information. Additionally, they are more likely to have obtained the compensation money and undergone sterilization in a public facility, which may have influenced their reporting. The MII was lower for rural women than their urban counterparts. An earlier study also found higher odds of receiving low-quality care in sterilization services among rural women than urban women.[9] Women from the eastern and western regions are found to be least counseled, albeit wide regional variation in the quality of sterilization counseling. According to earlier research, women from the western region have less autonomy in choosing family planning methods,[26] which is primarily up to their spouses.[27] This limits women's access to high-quality counseling. Another study in the eastern state of Odisha also found low adherence to essential procedures at public health facilities during female sterilization service provision, often due to inadequate human resources and infrastructure.[28]

Sterilization without informed choice is associated with post-use health problems[11] and regret, especially for women without a son and child loss. Female sterilization at a young age may result in low condom use, which is crucial for preventing RTI/STI and HIV/AIDS, particularly among young women who continue to be susceptible in traditional settings like India. Women's decision to undergo female sterilization has been proven to be influenced by a lack of knowledge or misinformation about spacing procedures and fewer opportunities to use modern spacing methods.[29] Also, given a choice, most women opt for modern spacing methods.[30] Our results suggest better counseling of potential sterilization acceptors to ensure informed decision-making and to avoid possible post-use concerns.

There are several strengths of this study. Firstly, the results are based on large-scale, nationally representative data of NFHS-5 with a robust sampling design; thus, the results are contemporary and relevant. Secondly, the results contribute to the evidence on sterilization counseling and reproductive rights violations. Thirdly, the findings are helpful for customized, targeted efforts to improve the method information among the most deprived/disadvantaged group/area. Regarding limitations, as with any cross-sectional study, causality is impossible to establish for the factors covered. The other limitation is recall bias, which might occur due to memory lapse.

5. Conclusion

The MII for sterilization is inadequate and varies by region and socioeconomic profile of the women in India. Poor counseling is a barrier to informed method choice and might lead to higher post-use health concerns and regret, adversely affecting women's health and welfare. Regular sensitization of health providers, especially in the lower order health facilities, on the importance of reproductive rights and informed choice seems pertinent to enhance the quality of sterilization counseling. Improved sterilization counseling will ensure informed method choice addressing reproductive health and rights of women and help attain SDG 3- ensuring healthy lives and promoting well-being for all.

Sources of funding

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

Table 3
Adjusted odds ratio [a] of method information index by background characteristics of women aged 15–49 who undergone sterilization during last five years preceding the survey, India, 2019-21.

Background Characteristics	Method Information Index	
	Adjusted odds ratio (AOR)	95% CI
Source of sterilization		
Government hospital ®	1	
CHC	0.86***	[0.82–0.91]
PHC/SC/UHP/Government dispensary	0.85***	[0.79–0.90]
Camp/Mobile clinic/other public facility	0.64***	[0.56–0.73]
Private hospital	0.76***	[0.72–0.80]
Other private facilities	0.63***	[0.54–0.73]
Age in years	1 (p = 0.652)	[0.98–1.01]
Years of schooling	1.10***	[1.06–1.13]
Number of living son		
At least one ®	1	
No	1.05 (p = 0.132)	[0.98–1.13]
Exposed to FP messages		
Yes ®	1	
No	0.62***	[0.60–0.65]
Religion		
Hindu ®	1	
Others	1.04 (p = 0.251)	[0.97–1.10]
Social group		
Non-SC/ST/OBC ®	1	
SC	1.14***	[1.07–1.21]
ST	1.55***	[1.43–1.68]
OBC	1.20***	[1.13–1.27]
Don't know	0.54***	[0.42–0.68]
Number of household members	0.99 (p = 0.556)	[0.94–1.03]
Wealth quintile		
Poorest ®	1	
Poorer	0.95 (p = 0.136)	[0.90–1.01]
Middle	1.06 (p = 0.082)	[0.99–1.14]
Richer	1.07 (p = 0.097)	[0.99–1.15]
Richest	1.16**	[1.06–1.28]
Type of place of residence		
Urban ®	1	
Rural	0.94* (p = 0.010)	[0.89–0.98]
Region		
South ®	1	
North	0.87***	[0.81–0.94]
Central	1.34***	[1.26–1.43]
East	0.77***	[0.72–0.82]
Northeast	1.31** (p = 0.008)	[1.07–1.60]
West	0.77***	[0.73–0.83]

*p < 0.05, **p < 0.01, ***p < 0.001, ® "Reference category".
[a] Using sampling weight.

Declaration of competing interest

None.

CRediT authorship contribution statement

Manas Ranjan Pradhan: Conceptualization, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. **Sourav Mondal:** Data curation, Formal analysis, Software, Writing – review & editing. **Prasanna Kumar Mudi:** Data curation, Software, Writing – review & editing.

Acknowledgements

Not applicable.

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