

Do Indian Women Receive Adequate Information about Contraception?

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Abstract

The high discontinuation rate of reversible contraceptive methods in the past decade has become an important issue for the Indian Family Planning Programme. About one-third of all women who were using reversible methods in the last five years, discontinued their methods within one year. This high level of discontinuation and its substantial contribution to current unmet need for contraception raises the policy concerns about the poor quality of care in family planning in India. This study analyses the recent changes and patterns of information about contraceptive methods in India - an important indicator of the quality of care in family planning. For this purpose, the Method Information Index (MII) is estimated by using the data from the third and fourth rounds of National Family and Health Surveys (NFHS). The MII captures the information received by respondents on three aspects of contraceptive method being used: information received about side effects of the method, what to do if users experience any complication from using the method and information on other methods of contraception. A separate analysis of information about the permanency of sterilisation was also carried out. The logistic regression models were applied to find the independent effects of women's background characteristics and the states and union territories of their residence. The key findings of the paper include: the value of MII nearly doubled from about 16% in 2004-05 to 31% in 2015-16, and the percent of sterilized women who received information about the permanency of the method has also increased from 67% to 80% during this period. While considerable progress has been made in the last decade, there is still plenty of scope for improvement in the information received by contraceptive users to advance a voluntary approach to family planning.

Keywords: Method Information, MII, Quality of care; Contraception; India

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Introduction

The method information index (MII) is included by FP2020, a global partnership to monitor progress toward achieving the goal set for 2020 by the 2012 Family Planning Summit held in London. An earlier analysis by Jain (2017) used the data from NFHS3 for 2005-06 and presented results for MII at the national level and by important characteristics of women. This analysis showed that the value of MII was universally low in all sub-groups and states, except a few sub-groups. A comparable data from NFHS4 for 2015-16 has now become available. The purpose of this study is to document changes in the information received by contraceptive users during the last decade.

Over the years, the family planning programme in India has shown significant achievements. The total fertility rate (TFR) has declined from about six births in the 1960s to 2.2 births in 2015-16 (ORGI, 2015; IIPS and ICF, 2017). A major contributor to this fertility decline has been the high uptake of female sterilization which is also reflected in the method-mix (method-specific percent distribution of contraceptive users) of the country. The method-mix remained skewed toward female sterilization. For example, 51% of women were sterilized among those who initiated their contraception within the five years prior to NFHS-4 (2015-16), followed by condoms (24%), pills (17%), IUDs (7%), and injectables (0.8%). A similar method-mix was also observed in NFHS -3 (2005-2006) among users who initiated the use of a method in the last five years with female sterilisation as the highest accepted method (57%) followed by condoms (21%), pills (13%), IUDs (7%), and injectables (0.4%). This skewed method-mix has also been attributed to the limited availability of method choices in the country (Srinivasan, 2017).

The change in method-mix also indicates that the use of reversible contraceptive methods has increased slightly during the last decade, which is encouraging. At the same time, reversible contraceptive methods are associated with high discontinuation. Additionally, about one fourth (27%) of those who had an unmet need for family planning in 2005-06 had used a method in the past. Persistence of high discontinuation rate, *i.e.* past users will account for one-tenth (10%) of ever users to unmet need in the future (Jain *et al.*, 2013). Given this substantial contribution of past users to unmet need, it is important to focus on improving the continuity of contraceptive use, irrespective of the method used. A focus on improving the quality of care is one way to ensure that the users of reversible methods do not fall back into the unmet need category.

Information exchanged between the service provider and contraceptive user is one of the six elements of the quality of care framework in family planning (Bruce, 1990; Jain, 1989). Previous studies suggest that good quality of care and better information exchanged between

providers and clients at the first interaction (actual or perceived) improve the subsequent contraceptive use and thereby reduce unwanted childbearing (Koenig *et al.*, 1997; RamaRao *et al.*, 2003; Sanogo *et al.*, 2003; Jain *et al.*, 2012). However, based on an analysis of the NFHS-3 data, Jain (2017) observed that except for few exceptions, the information received by the users on three items—about side effects, how to manage the side effects and other contraceptive methods — was poor across the different socioeconomic groups and the states of India in 2005-06.

This study aims to document change in the magnitude and patterns of the information received by the users in India during the last decade by presenting changes in the MII between 2005-06 and 2015-16. The specific objectives of the current study are - first, to show the changes in the magnitude and pattern of information about the contraceptive methods received by the users in India; second, to identify the socioeconomic, demographic and regional correlates of the information received; and third, to assess the relative contributions of the independent factors in change of information received by the users.

Data and Methods

Data and Sample Selection

Data were used from the third and fourth rounds of NFHS of India conducted during 2005-06 and 2015-16 respectively. In NFHS-3, altogether 124,385 women at the reproductive age group (15-49 years) were interviewed from 109,041 households across the 28 states and one union territories of India. Out of 87,925 currently married women, about 49% (43,299) women were currently using any modern methods of contraception at the time of the survey. Out of these, the present study includes 12,624 (weighted n=13,254) women who were using one of the four methods of contraception at the time of survey (*viz.* pill, IUD, injectables, and sterilisation) and who initiated the method being used during five years (0-59 months) prior to the survey. In NFHS-4, from 601,509 households, total 699,686 women aged 15-49 years were interviewed covering twenty-nine states and seven union territories of India. From the 499,627 currently married women, around 44% (221,297) women were using any modern method of contraception at the time of interview. This study includes 60,662 (weighted n=63,849) women who were using one of the four contraceptive methods and had initiated the contraceptive method during five years prior to the survey. For the analysis of the information about the permanency of sterilisation, only 8,436 (weighted n=9,961) and 38,841 (weighted n=44,052) women for NFHS-3 and NFHS-4 respectively who were sterilised at the time of the survey were selected. These

sterilised women were also asked whether they were informed about the permanency of sterilisation at the time of initiation of this method.

Method Information Index (MII)

An MII is created by compiling the responses of contraceptive users to three questions related to the information they reported receiving at the time of initiation of the contraceptive method currently being used and initiated within five years prior to the survey: side effects of the method, how to manage side effects, and told about other methods (FP2020, 2015; Jain, 2017). All three items are coded as binary variables (yes=1, else=0), and added to create a variable ‘Sum’. The value of Sum may vary from the 0 to 3. A value of 3 indicating that the users received information on all three items, 0 indicating that they did not receive any information, and 1 or 2 indicating partial information. The Sum variable was coded in a binary variable (3=1; else=0) and was transformed into MII as the percent with a value of 1. The MII represent the percent of current users who reported yes to all three questions, *i.e.*, they reported receiving ‘complete information’. As more than one third currently married women are sterilised, a separate analysis for the sterilised women has been carried out about whether they were told that the method is permanent (hereafter termed as the permanency of sterilization). All the estimates have been calculated by setting the survey design (*svyset*) and using national women’s weight.

Correlates of Information Received by the Users

A number of socioeconomic and demographic characteristics of women have been considered as the correlates of the MII particularly - contraceptive methods (pill, IUD, injectables and female sterilisation), sources of methods (public, private and others), place of residence (rural and urban), household wealth quintiles, women’s level of education (no education, primary, secondary and higher) and five years age groups. The duration between initiation of current contraceptive methods and the date of the interview (in years) was controlled in the multivariate analysis for recall bias. As the analysis for permanency of sterilisation is restricted among the sterilised women, the types of methods were excluded from this analysis of sterilised women.

Statistical Analyses

Two outcome variables are included: MII and permanency of sterilization. For each, two logistic regression analyses were conducted for two surveys: NFHS-3 and NFHS-4. A number of socio-economic and demographic characteristics mentioned above were included as correlates. The state

of residence was also included as one of the correlates. The state which has equal or nearest percentage to the national average were identified as the reference category for each of the models of specific outcome variables in respective survey periods. However, only results from the large states and union territories are presented in the tables excluding the states whose sample size are small (<50) in NFHS-3. Andhra Pradesh and Telangana were merged for NFHS-4 to compare the estimates with NFHS-3. The adjusted odds ratios, adjusted values of MII, and the adjusted percent of women receiving information about the permanency of sterilisation for NFHS-3 and NFHS-4 were estimated by background characteristics and the states. The adjusted percentage is estimated by using the probability predicted from the logistic regression models and multiplying it by hundred. The change in MII and information about the permanency of sterilisation between the two survey periods were estimated, and the significance levels of change at 95% confidence level was calculated from their change in confidence interval between the periods (Altman and Bland, 2011). To estimate the contributions of the socioeconomic and demographic factors in the change of MII and information about the permanency of sterilisation, Blinder-Oaxaca decomposition models were employed (Blinder 1973; Oaxaca, 1973). The logit function is applied to the decomposition model because the outcome variables are dichotomous. All the independent variables were categorised into binary forms particularly advantageous and disadvantageous groups for the decomposition analyses.

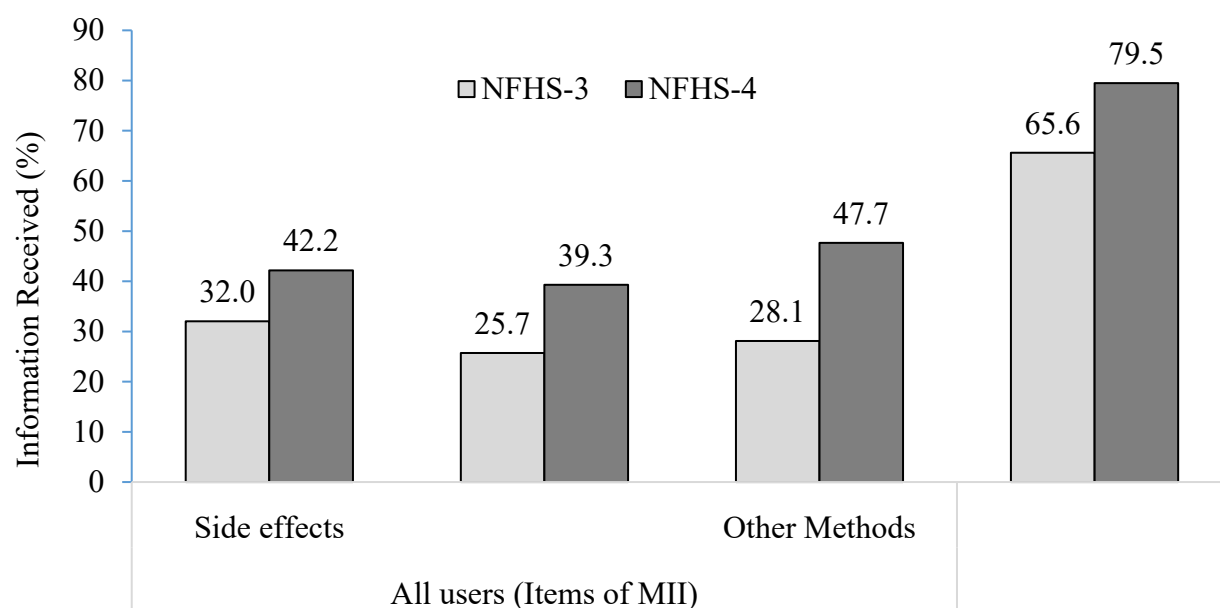
Results

The findings from this study are presented in four parts. The first section presents national-level estimates of MII and information about the permanency of sterilization, the second and the third sections present correlates of MII and information about the permanency of sterilisation, and the fourth section presents the relative contribution of the socioeconomic and demographic factors in explaining the observed changes in MII.

Information Received by the Users at the National Level

Figure 1 presents the percentage of users who were informed about each item of MII separately for 2005-06 and 2015-16. There is a significant improvement in each of the MII related items during the last decade along with the information about the permanency of sterilisation. However, the increase in the percentage of users receiving information on other methods was much higher than increase in other items about side effects.

Figure 1: Percentage of contraceptive users received information about three items of MII and permanency of sterilisation in India, 2005-06 to 2015-16



Note: The permanency of sterilisation is only asked to those women who are currently sterilised

Table 1: Method information index in India, 2005-06 to 2015-16

Information received by users	n (weighted)		Index		
	NFHS-3	NFHS-4	NFHS-3	NFHS-4	Change
Index values					
0	7,685	27,588	58.0	43.2	-14.8
1	1,803	9,859	13.6	15.4	1.8
2	1,675	6,519	12.6	10.2	-2.4
3 (MII)	2,093	19,883	15.8	31.1	15.4
Total	13,254	63,849	100	100	—
Permanency of sterilisation					
Not informed	3,423	9,020	34.4	20.5	-13.9
Informed	6,538	35,032	65.6	79.5	13.9
Total	9,961	44,052	100	100	—

Note: All the estimates are weighted with national women weight; Index values are the response of the weighted average from the information related three questions; All the changes from NFHS-3 to NFHS-4 are significant at 99% confidence level

Table 1 shows the adjusted percentage of users who received information from three questions (MII) for all users and the permanency of sterilisation for sterilised women at the national level. About 31% of all users received the information from all the three questions in 2015-16, while the same was almost half (16%) in 2005-06. Among the sterilised women, almost 80% of them were informed about the permanency of sterilisation in 2015-16, the share of the users was about

66% a decade ago. During the last decade, the contraceptive users with no information have declined by about 15% points from 58% in 2005-06 to 43% in 2015-16.

Correlates of MII

MII by users' characteristics: Table 2 shows the adjusted odds ratios (AORs), adjusted values of MII for the survey periods 2005-06 and 2015-16, and the magnitude of change in MII between the two survey periods. The pattern of relationships shown by AORs and adjusted values of MII are same, these patterns are also same for both surveys, and the value of adjusted MII increased between the two surveys for almost all sub-groups of the population.

In 2015-16, the value of MII was highest for IUD users followed by pill, injectables and female sterilisation (see column 4 and 5). In comparison to pill users, IUD users were 27% more likely to receive full information (AOR=1.27), and women who were sterilized were 36% less likely to receive full information (AOR=0.64). The difference between pill users and injectable users was not significant statistically. The users who received the methods from private sources are more likely to receive information about the contraceptive methods than those who obtain from the public sources for both the survey periods; but the difference between the two was not significant statistically. The women living in rural areas were 8% less likely to receive full information in comparison to urban users (AOR=0.92). The gap between rural and urban users has narrowed between the two surveys. The likelihood of receiving information increases with improving economic status of the households in 2015-16. The income gap in MII has increased between the two surveys. The percentage of receiving full information is increased with the level of education. However, the information gap has decreased between the two surveys. There is no significant difference in adjusted values of MII by age and the pattern is not clear with the duration between initiation of contraception and the date of interview.

During the last decade, overall, a significant increase in MII (15%) was registered in India, which varied from 8% to 20% points across almost all the background characteristics of the users (see column 6 of Table 2). It has been observed that the progress in receiving the information is higher among those who are using the reversible methods (such as pill, IUD and injectables) and living in rural areas as compared to those who are currently sterilised and urban areas respectively. The change in MII is also substantially higher among the younger women (15-24 years) than the older women.

Table 2: The adjusted odds ratios (AORs) and adjusted method information index (MII) for all users by their characteristics in India

Characteristics	AOR		Adjusted MII (%)		
	NFHS-3	NFHS-4	NFHS-3	NFHS-4	Change
Methods					
Pill	1.00	1.00	18.6	39.0	20.5***
IUD	1.55***	1.27***	32.4***	48.4***	16.0***
Injectables	1.15	0.95	17.2	33.7	16.5***
Female sterilisation	0.62***	0.64***	13.1***	26.5***	13.4***
Source of methods					
Public	1.00	1.00	14.3	29.4	15.2***
Private	0.91	0.96	18.5	34.1	15.6***
Others	1.47*	0.72***	24.4*	34.1***	9.7***
Place of residence					
Urban	1.00	1.00	21.7	34.9	13.3***
Rural	0.75***	0.92**	12.9***	29.5**	16.5***
Wealth quintiles					
Poorest	1.00	1.00	11.9	24.5	12.7***
Poorer	0.91	1.19***	11.2	29.9***	18.7***
Middle	1.06	1.31***	14.2	31.3***	17.1***
Richer	1.08	1.33***	16.2	32.9***	16.7***
Richest	1.33***	1.61***	24.7*	38.5***	13.8***
Women's education					
No education	1.00	1.00	11.2	25.0	13.8***
Primary	1.05	0.96	14.0	28.1	14.1***
Secondary	1.28**	1.07**	19.0**	34.2**	15.2***
Higher	1.55***	1.00	30.1***	37.8	7.7***
Current age					
15-19	1.00	1.00	14.0	34.8	20.8***
20-24	1.00	1.14	14.1	33.5	19.4***
25-29	1.12	1.13	15.9	32.0	16.1***
30-34	1.27	1.03	17.1	30.2	13.1***
35-39	1.11	0.96	15.7	28.9	13.3***
40-44	1.18	0.89	16.5	26.6	10.1***
45-49	1.98	0.75*	24.6	22.7*	-1.9
Duration between contraceptive initiation and interview (years)					
0-1	1.00	1.00	17.4	32.0	14.6***
1-2	1.04	1.09**	16.7	32.8**	16.1***
2-3	1.04	1.05	16.8	31.0	14.2***
3-4	0.86	1.08**	14.1	30.4*	16.3***
4-5	0.80*	1.06*	12.7*	28.8*	16.1***
Total	—	—	15.8	31.1	15.4***

Note: All the estimates are weighted with national women weight; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Significance levels of change has been estimated from the differences in the confidence intervals between the survey periods; The adjusted values are adjusted for all the background characteristics and the states and union territories listed in the Table 3; The first categories of the background characteristics were considered as reference in the adjusted models.

State level patterns and changes in the MII: Table 3 shows the adjusted odds ratios (AORs) and adjusted values of MII by major states and union territories of India for the periods 2005-06 and 2015-16 and change in the adjusted values of MII during the last ten years. As a whole, about 31% of the users received information about all the three methods related items ranging from 18% in Bihar to 64% in Punjab in 2015-16 (see column 5). The MII is considerably higher in the states such as Tamil Nadu (61%), Punjab (64%), Haryana (49%), Odisha (45%), Assam (43%), West Bengal (38%) and Chhattisgarh (39%) than the national average. Also, these states made significant progress in MII (19%-46%) during the last decade (see column 6). On the other hand, Andhra Pradesh (14%), Maharashtra (19%), Delhi (26%), Jammu & Kashmir (21%), Himachal Pradesh (20%), Jharkhand (24%), Gujarat (27%), Madhya Pradesh (25%), Rajasthan (26%) performed poorly in 2015-16 and slowly progressed in the last decade as well. Even a few states and union territories such as Delhi, Himachal Pradesh, and Madhya Pradesh experienced negative to insignificant progress during the same period. Among the lower performing states in 2005-06, the MII is improved considerably, mainly in Uttar Pradesh and Odisha, while Andhra Pradesh, Bihar, Himachal Pradesh, Maharashtra, and Jammu & Kashmir had slower improvement than the national average. These findings reiterate the need to look at the quality of care and information provided to users closely given states of Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir and Gujarat are amongst those who have consistently displayed favourable demographic indicators in relation to several other states in the country.

Table 3: The adjusted odds ratios (AORs) and adjusted method information index (MII) for all users across the states of residence in India

States	AOR		Adjusted MII (%)		
	NFHS-3	NFHS-4	NFHS-3	NFHS-4	Change
Andhra Pradesh	0.46***	0.39***	6.3***	14.3***	8.0***
Assam	1.59**	1.50***	24.0**	43.4***	19.4***
Bihar	0.47***	0.63***	6.6***	18.3***	11.7***
Chhattisgarh	1.29	1.49***	16.2	38.8***	22.6***
Delhi	1.90**	0.49***	39.4**	25.5***	-13.9***
Gujarat	1.31*	0.73***	22.9*	26.5***	3.6***
Haryana	1.46*	1.70***	22.9*	49.0***	26.2***
Himachal Pradesh	2.63***	0.52***	32.3***	20.2***	-12.1***
Jammu & Kashmir	0.37*	0.52***	7.5*	21.3***	13.8***
Jharkhand	0.62*	0.82*	9.6*	24.3*	14.7***
Karnataka	1.00	0.81**	15.8	26.3**	10.5***
Kerala	1.25	1.00	21.9	32.9	11.0***

Madhya Pradesh	2.42***	0.85*	25.5***	24.9*	-0.6**
Maharashtra	0.56***	0.49***	11.2***	19.1***	7.9***
Odisha	0.37***	1.92***	6.6***	44.7***	38.1***
Punjab	0.91	2.81**	18.3	64.0**	45.8***
Rajasthan	0.85	0.84*	12.9	26.4*	13.5***
Tamil Nadu	3.68***	3.30***	39.4***	61.0***	21.7***
Uttar Pradesh	0.56***	0.89	9.5***	27.5	18.0***
Uttarakhand	0.91	0.77	14.9	27.7	12.8***
West Bengal	0.89	1.25**	13.7	37.9**	24.2***
India	—	—	15.8	31.1	15.4***

Note: All the estimates are weighted with national women weight; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Significance levels of change has been estimated from the differences in the confidence intervals between the survey periods; The adjusted values are adjusted for all the background characteristics along with all states and union territories; Karnataka and Kerala are the reference categories for NFHS-3 and 4 respectively

Correlates of the Information about Permanency of Sterilisation

Permanency of sterilisation by users' characteristics: Table 4 presents the adjusted odds ratios (AORs), adjusted percentage of information about the permanency of sterilisation received by the sterilised women in India for 2005-06 and 2015-16, and changes during the last ten years by the background characteristics. The adjusted percentages of the information received by the users are higher among those whose sources of methods is from the private sector and are living in better economic households as compared to those from public sectors and the poorest economic households respectively (see column 4 and 5). The adjusted percentage of receiving information is about 80% in 2015-16 ranging from 78% (uneducated women) to 83% (users in 15-19 age group) across different socioeconomic and demographic characteristics, which was 67% in 2005-06 varied between 59% (45-49 age group) and 77% (higher level of education).

Interesting to note that the differentials across the socioeconomic groups have considerably been narrowed over the last decade. Significant progress in MII (14%) is observed during the last ten years ranging from 5% (higher level of education) to 18% (15-19 age group) across different background characteristics of the users (see column 6 of Table 3). It is noticed that the progress in receiving the information about the permanency of sterilisation is higher among those who are undereducated, receiving services from public sources, and living in rural areas and poor households than their counterparts respectively. These findings suggest that the socioeconomically disadvantaged sterilised women are making greater progress in receiving the information about the permanency of sterilisation compared to their opposite groups.

Table 4: The adjusted odds ratios (AORs) and adjusted percentage of the information received among the sterilised women about the permanency of sterilization by their characteristics in India

Background characteristics	AOR		Permanency of sterilisation (%)		
	NFHS-3	NFHS-4	NFHS-3	NFHS-4	Change
Source of methods					
Public	1.00	1.00	64.0	79.8	15.8***
Private	1.31***	0.87	71.9***	78.9***	7.0***
Others	1.03	0.55	65.4	69.7***	4.3***
Place of residence					
Urban	1.00	1.00	69.2	80.2	11.0***
Rural	0.97	1.06	64.2	79.2	15.0***
Wealth quintiles					
Poorest	1.00	1.00	60.0	77.7	17.6***
Poorer	1.25**	1.18	64.8**	79.4***	14.6***
Middle	1.26**	1.22	66.3**	79.2***	12.9***
Richer	1.29**	1.34	66.5**	80.3***	13.8***
Richest	1.47***	1.51	71.6***	81.7***	10.1***
Women's education					
No education	1.00	1.00	62.0	77.6	15.6***
Primary	1.11	1.04	68.7	79.6	10.9***
Secondary	1.01	1.04	67.7	80.3	12.7***
Higher	1.37*	1.07	77.2*	82.2	5.0***
Current age					
15-19	1.00	1.00	58.7	76.7	18.1***
20-24	1.16	1.04	64.6	78.8	14.2***
25-29	1.24	1.07	67.6	79.8	12.2***
30-34	1.12	1.05	64.9	80.0	15.1***
35-39	1.09	1.04	64.4	79.6	15.2***
40-44	0.95	0.96	60.6	77.9	17.4***
45-49	0.87	0.96	55.5	77.5	22.1***
Duration between contraceptive initiation and interview (years)					
0-1	1.00	1.00	63.9	80.0	16.2***
1-2	1.23**	0.94	68.1**	79.5	11.4***
2-3	1.03	0.93	64.7	79.1	14.5***
3-4	1.14	0.97	66.4	79.8	13.4***
4-5	1.04	0.92	64.9	79.2*	14.3***
Total	—	—	65.6	79.5	13.9***

Note: All the estimates are weighted with national women weight; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Significance levels of change has been estimated from the differences in the confidence intervals between the survey periods; The adjusted values are adjusted for all the background characteristics and the states and union territories listed in the Table 5; The first categories of the background characteristics were considered as reference in the adjusted models.

Table 5: The adjusted odds ratios (AORs) and adjusted percentage of information received by sterilised women about the permanency of sterilization across the states of residence in India

States	AOR		Permanency of sterilisation (%)		
	NFHS-3	NFHS-4	NFHS-3	NFHS-4	Change
Andhra Pradesh	0.93	0.75***	63.7	74.4***	10.8***
Assam	3.26***	2.39***	85.4***	89.4***	4.1***
Bihar	0.83	1.28**	61.7	81.0**	19.3***
Chhattisgarh	1.17	1.04	66.1	79.6	13.5***
Delhi	2.89**	0.77	85.7**	75.7	-10.0***
Gujarat	0.76*	1.00	58.5*	79.3	20.9***
Haryana	1.28	1.45**	70.5	86.0**	15.5***
Himachal Pradesh	1.18	0.54**	68.6	69.5**	1.0**
Jammu & Kashmir	0.63	0.80	54.1	75.4	21.3***
Jharkhand	1.13	0.71***	66.8	71.0***	4.2***
Karnataka	0.98	0.48***	64.5	65.4***	0.9***
Kerala	0.90	1.10	66.1	82.0	16.0***
Madhya Pradesh	1.36*	0.93**	68.4**	77.2	8.8***
Maharashtra	1.00	0.90	65.6	77.8	12.2***
Odisha	2.08***	2.43***	77.5***	89.7***	12.2***
Punjab	0.94	1.66	63.4	87.6***	24.2***
Rajasthan	0.77*	0.77*	56.9*	74.5**	17.5***
Tamil Nadu	2.47***	3.06***	82.7***	92.4***	9.7***
Uttar Pradesh	0.75**	1.19**	55.7**	80.8*	25.1***
Uttarakhand	1.82*	0.98*	76.1*	79.5	3.4***
West Bengal	1.36**	2.09**	70.3**	88.2***	17.9***
India	—	—	65.6	79.5	13.9***

Note: All the estimates are weighted with national women weight; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Significance levels of change has been estimated from the differences in the confidence intervals between the survey periods; The adjusted values are adjusted for all the background characteristics along with all states and union territories; Maharashtra and Gujarat are the reference categories for NFHS-3 and 4 respectively

State level variations in Permanency of sterilisation: Table 5 presents the adjusted odds ratios (AORs) and the adjusted percentage of sterilised women who received information about the permanency of sterilisation in 2005-06 and 2015-16, and changes between the periods. In 2015-16. Overall 80% of sterilised women were informed about the permanency of sterilisation, it varied from 65% in Karnataka to 93% in Tamil Nadu (see column 5). Next to Tamil Nadu, Odisha (90%), Assam (89%), West Bengal (88%), Punjab (88%), and Haryana (86%) recorded considerable higher information received by the users than the national average. On the other side, along with Karnataka, Himachal Pradesh (69%), Jharkhand (71%), Andhra Pradesh (75%) and Rajasthan (75%) noted substantial lower information about the permanency of sterilisation

than the national average. During the last one decade, Uttar Pradesh (25%), Punjab (24%), Jammu & Kashmir (21%), Bihar (19%), West Bengal (18%), Rajasthan (18%), and Kerala (16%) have had considerable progress in the receiving information permanency of sterilisation (see column 6). A significant negative or a lower change is observed in Delhi (-10%), Karnataka (1%), Himachal Pradesh (1%), Uttarakhand (3%), Jharkhand (4%) and Assam (4%). Among the low performing states in 2005-06, Punjab, Jammu & Kashmir, Uttar Pradesh, Bihar, and Gujarat have made relatively greater progress in receiving the method information. These findings also restate issues of informed choice in these states where the percentage of female sterilisation in the method-mix is considerably higher than many other states of India.

Decomposition Analysis

Table 6 presents the results from the Blinder-Oaxaca decomposition models for the relative contribution of the socioeconomic and demographic variables to the change in MII and information about the permanency of sterilisation between 2005-06 and 2015-16. The change in MII is decomposed into explained and unexplained parts. The explained part is the coefficient effect of the model, which specifies the change in MII between the survey periods due to the differentials in the effect of the determining factors. The unexplained part comprises the endowment and interaction effects. The endowment effect indicates the change in MII between the survey periods because of differences in the distribution of determining factors. The interaction effect is the reciprocity between the endowment effect and coefficient effect.

The results show that the socioeconomic and demographic factors contribute about 88% and 89% of the change in MII and information about the permanency of sterilisation respectively during the last decade (coefficient effect). The findings imply that considerable positive change in method information is due to differences in the effects of the background characteristics. The relative contribution in the explained change of MII is largely shared by the state of residence (25%), types of contraceptive methods (23%), place of residence (14%), duration between contraceptive initiation and date of survey (13%), wealth status (11%), current age (7%) and women's education (5%). During the same time, the comparative contribution in the explained change of information about the permanency of sterilisation is mainly shared by sources of methods (47%) and states of residence (27%).

Table 6: Results from the Blinder-Oaxaca decomposition model: Relative contribution of selected indicators in the change of MII and the information about the permanency of sterilisation between 2005-06 and 2015-16

Description of summary	MII (%)	Permanency of Sterilisation (%)
NFHS-3 (2005-06)	15.8***	65.6***
NFHS-4 (2015-16)	31.1***	79.5***
Difference (Change)	15.4***	13.9***
Explained	13.4***	12.3***
Unexplained	1.9***	1.6***
Percent explained of change	87.5	88.8
Percent unexplained of change	12.5	11.2
Details of explained part	Contribution (%)	
Contraceptive methods	22.6**	—
Sources of methods	3.3	47.3***
Place of residence	13.5***	8.8
Wealth status	10.6**	6.1
Women's education	5.1**	4.9
Current age	7.0***	1.2
Duration between contraceptive initiation and interview (years)	12.7***	4.9
State of residence	25.1***	26.7***
Total	100	100

Note: All the estimates are weighted with national women weight; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Discussion

This study presented changes and patterns of information received by the contraceptive users between 2005-06 and 2015-16. Only one in every three users received complete information in 2015-16 as compared to one in six in 2005-06. Four in every five sterilized women were told that sterilisation is permanent in 2015-16 which was about two in every three in 2005-06. During the last decade, though the information received by contraceptive users has made significant progress, India is still lagging behind many developing countries included in the analysis by Jain (2016). Moreover, there remains an enormous scope for improving the information provided to contraceptive users about various methods.

In 2015-16, the MII across the background characteristics of the users remains low. Except for those who were using IUD, had higher education or lived in the richest wealth quintiles, the value of MII was less than 33% for all other sub-groups of users. India's family planning programme has largely been driven by female sterilisation, but the sterilised women

received very little information: only one-fourth received information on all three items of MII, had complete method information, and one-fifth of them were not even informed about the permanency of sterilisation. Even though the national family planning programme emphasises promoting a basket of contraceptive choices for potential users, the information provided to users of female sterilisation remains inadequate. From the quality of care perspective, it is critical that the level of information provided to sterilisation users, in particular, improves rapidly. To add to this, the findings from this study suggest that the method information is lower among those who have taken their contraceptive methods from the public sources particularly for the information about the permanency of sterilisation. In India, about four out of every five female sterilisation takes place in the public health sector (IIPS and ICF, 2017). The two together implies an emphasis on providing services of good quality in public health facilities.

The sterilisation dominated South Indian states had lower values of MII except for Tamil Nadu. The contraceptive users in Kerala received relatively better method information than the national average as well as the South Indian States. Among the North Indian states, the users in Punjab receive the highest levels of method information. As the method-mix is skewed to the female sterilisation which is mostly done from the public health sector, better method information in the selected states may reflect a well-performing public health care system (MoHFW, World Bank and NITI Aayog, 2018). The findings from the decomposition analysis also suggest that the state of residence is the major factor contributing to the change of method information. From a programmatic perspective, this implies that more attention should be given to improving the state-level systems.

A separate analysis of MII by different socioeconomic and demographic groups and the states of residence is carried out for the sterilised women because the differentials in MII by a characteristic may be due to method-mix, other socioeconomic factors and the states of residence. The sterilised women are the least informed among all users. In some states, female sterilisation is the most dominant method, and the reversible methods are negligible, while in some other states, reversible methods are significant. Also, the use of sterilization may be higher among the less educated and economically deprived and users in these sub-groups may receive less method information compared to their counterparts. However, this is unlikely to be the case because the logistic analyses results presented for each sub-group were adjusted for the differences in other characteristics including the method used and state of residence. Nevertheless, we repeated the analysis for sterilized women only and found that the patterns and

changes in MII across the socioeconomic groups and the states of residence among the sterilised women were very similar to those for users of all methods.

A comparative analysis between the service providers and the health or family planning workers for two items particularly side effects and other methods was also performed (Table 7). In 2015-16, about 53% and 48% currently users who initiated their methods in the preceding five years were not informed about the side effects and other methods respectively from neither service providers nor health or family planning workers. Critically, a mere 7% and 5% users from the health or family planning workers were told about the side effects and the other methods respectively in 2015-16. These findings suggest the need to strengthen the function of health and family planning workers to ensure informed choice among the users thereby ensuring adequate quality of care to more vulnerable groups who are the major benefactors of the public health system.

Table 7: Information received from the contraceptive providers and health or family planning worker in India

Contraceptive provider	Health or family planning workers					
	NFHS-3			NFHS-4		
	No	Yes	Total	No	Yes	Total
Side effects						
No	65.3	2.4	67.7	53.3	4.5	57.8
Yes	32.3	0.0	32.3	42.2	0.0	42.2
Total	97.6	2.4	100	95.6	4.5	100
Other methods						
No	63.6	8.4	72.0	45.7	6.6	52.3
Yes	28.0	0.0	28.0	47.7	0.0	47.7
Total	91.6	8.4	100	93.4	6.6	100
N (weighted)			13,254			63,849

Note: Cell percentages are presented using the national weight

The London Summit on family planning in 2012 strengthened the worldwide commitment and set a goal for adding 120 million users by 2020 (Brown *et al.*, 2014). The London Summit on Family Planning (2012) was a critical milestone in the global discourse around family planning programmes in developing countries. Emphasis on promoting a voluntary approach to family planning and ensuring the quality of care as opposed to a target driven one was a key outcome of the summit. The global initiative of 'FP2020' has included the MII in its core indicators for measuring the progress towards the goal of ensuring the information received by the users (FP2020, 2015). On this line, the Ministry of Health and Family Welfare (MoHFW) of the

Government of India, has promised to deliver the contraceptive methods to an additional 48 million women in India whilst ensuring their reproductive rights and quality of care - documented in the 'India's Vision FP 2020' (Government of India, 2014). Also, the newly launched 'Mission Parivar Vikas' entails several provisional and promotional schemes and focusses on 145 high districts in the states of empowered action groups (Uttar Pradesh, Bihar, Odisha, Chhattisgarh, Jharkhand, Rajasthan and Uttarakhand) and Assam (Government of India, 2016) that still have total fertility rate >3. Though the programme guidelines included improved quality of care processes such as follow-up check-ups for spacing reversible contraceptive methods like IUDs, the guidelines/protocols still lack focus on providing the specific method-related information.

The present study has a few limitations. First, in the NFHS, the information about three items of the methods as mentioned earlier received from the service providers was asked to the respondents, while the information about only two items namely side effects and other methods received from the health or family planning worker were enquired. A comparison of MII for service providers and health or family planning workers is not accomplished in this study. So the inclusion of the question about the information on how to manage side effects from the health or family planning workers in the NFHS questionnaire would help researchers to conduct above-said comparison. Second, this study used retrospective information about the current contraceptive methods received at the time of initiation in the preceding five years of the date of interview from the cross-sectional surveys. The responses of users may be affected by recalling the information which is given to them at the initiation of contraception. Third, the information about other reversible methods than the four studied methods could give a better estimation overall. This data limitation calls for universalisation of asking about the method related questions to all users at the time of interview who used any contraceptives ever. Despite these limitations, this study builds an accurate and scientific perspective of overall information exchanged between contraceptive providers and clients in India *vis a vis* quality of care.

In 2015-16, after a decade of socioeconomic transformation and the implementation of FP2020 policy goals, India has made a promising progress in method information provided to the users but India is still far to achieve the adequate levels. The information about the contraception is required for all the methods especially clinical methods such as sterilisation and IUD. As female sterilisation is the most dominated method in India and the method users receive the lowest information about the methods, the information received by the sterilised women deserves specific recognition. It also asks for state-level emphasis as identified lagged behind states. Besides, the information exchange between health or family planning workers and the

contraceptive users could be a useful alternative towards achieving the universal access to method information to the contraceptive users. The frontline health workers in India such as ASHA, ANM, and Anganwadi workers can use their potentiality for the exchange of information. Thus, the findings of this study could assist the MoHFW of Government of India to achieve the ‘*Vision FP 2020*’ and related SDG addressing the issues of information in the program interventions.

Ethical approval

This analysis is based on the data publically available and did not use any individual identifiers. Thus this work complies with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Conflicts of interest

The authors have no conflict of interest to declare.

Funding Statement and Acknowledgments

This paper was prepared as part of a mentorship program under the RASTA initiative of the Evidence Project of the Population Council. The Evidence Project is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of cooperative agreement number AID-OAA-A-13-00087. The contents of this paper are the sole responsibility of the authors and do not necessarily reflect the views of USAID, the United States Government or the Population Council. The authors wish to acknowledge Dr. Niranjana Saggurti, Dr. Faujdar Ram, Dr. Rajib Acharya, Dr. Arupendra Mozumdar and the anonymous reviewers for their insightful comments on earlier versions of the manuscript. The second author was a consultant to the Population Council when this study was conducted.

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