Global Journal of Medicine & Public Health

Intrauterine device (IUD) counselling and insertion practices at different levels of the healthcare delivery system in Indore, India

Dhruvendra Pandey [1], *Smriti Pandey** [2]

ABSTRACT

Introduction

The intrauterine device (IUD) is the world's most widely used spacing method of reversible birth control. It is easily available and has many advantages but is still underused in many settings. This study principally aims to assess the quality of services regarding IUD insertion and client support.

Methods

A cross-sectional study was conducted over four months. The study enrolled 36 healthcare workers at the three levels of healthcare delivery (primary, secondary and tertiary) in the Indore district of Madhya Pradesh, India. These healthcare workers were assessed on their counselling competence and IUD insertion skills. An observation checklist was prepared and used for assessment. A Chi square test was applied to the results to test for statistical significance.

Results

The staff member most likely to carry out IUD insertions was an Auxiliary Nurse Midwife (ANM), a female health worker. In primary healthcare centres 69% of clients were offered appropriate privacy during the counselling and insertion process, 53% in the secondary healthcare centres, but none were in tertiary centres. None of the centres provided sufficiently detailed information about IUD to their clients. At primary level centres 87.5% of clients received inadequate screening. Post-insertion counselling was not carried out adequately in any of the centres. Only 7% of insertions were carried out adequately according to the standard method at the primary level, 27% at the secondary levels, and none at the tertiary level centres.

Conclusion

Counselling standards and appropriate insertion technique processes were not met at any level of healthcare. This was especially true in the cases of loading the IUD, sounding (measuring) the uterus, and insertion using the withdrawal technique (the uterus is opened with a tool called a sound which is then withdrawn).

Keywords: Contraception, Copper T, Counselling, Healthcare delivery system, Intrauterine devices (IUD).

GJMEDPH 2021; Vol. 10, issue 2 | OPEN ACCESS

1Dhruvendra Pandey, Associate Professor, Department of Community Medicine, Government Medical College, Ratlam (Madhya Pradhesh), India. 2***Corresponding author** Smriti Pandey, Assistant Professor, Department of Pathology, Government Medical College, Ratlam (Madhya Pradhesh), India. pandit.dhruvo6@gmail.com.

Conflict of Interest—none | Funding—none

© 2021 The Authors | Open Access article under CC BY-NC-ND 4.0

BACKGROUND

The global population has exploded in the last 200 years, and how to address this is a pressing issue in developed as well as developing countries. In developing countries, unmet needs for family planning, exacerbated by a shortage of family planning services, fuels population growth.[1,2] The intrauterine device (IUD) (also called as intrauterine contraceptive device IUCD) is the world's most widely used reversible method of birth control.[3] In India, only 1.8% of married women of reproductive age use IUDs, and only 6.0% all couples (including unmarried ones) are currently protected by this method (effectively protected 5.7%). This rises to 6.9% (effectively protected 6.6 %) in Madhya Pradesh.[4]

There are many advantages associated with IUD use. Less than 1 in 125 users become pregnant in the first year of use. The IUD is long-acting, does not interfere with intercourse, is immediately reversible, can be used during lactation and menopause, has no adverse reaction with other medication and is convenient for users. The main advantage with the IUD is that it can be inserted easily by healthcare assistants at nearly any clinic or peripheral healthcare centre without the need for a highly trained medical professional.[5-7] Nonetheless, the use of IUD is not free from adverse effects, and many clients do seek early removal. Most side effects occur within a month of IUD insertion and most of women who have adverse effects have a previous history of irregular menstruation or vaginal discharge.[5,8] One of the main reasons why IUD is underutilized in India is that many health service providers and potential clients lack accurate, up-to-date information about this method of birth control. As a result, the advantages are often understated and the disadvantages tend to be overexaggerated. Misconceptions are prevalent in the community and among healthcare providers, including that the IUD is painful to insert, and that it can cause infections or infertility.[5-8] The present work was undertaken to assess counselling skills and IUD insertion process carried out by healthcare providers (HCP) at a selected group of health centres in the Indore district of Madhya Pradesh.

METHODS AND MATERIALS

A cross-sectional study was conducted over 4 months from June to September 2014, at primary, secondary and tertiary levels of the healthcare system in Indore district, Madhya Pradesh, India. Indore district contains four blocks in which there are four (secondary care level) community health centres in the urban areas, one District Hospital Indore for the rural community, and 25 primary healthcare centres. Government Medical College & Hospital, Indore, a tertiary level healthcare centre, was also selected for the study. At secondary level, District Hospital Indore and the four community health centres (CHC) where IUD insertion takes place were selected to participate in the study. Two primary healthcare centres (PHCs) were selected for each CHC, which included the PHC that had made and most and the least IUD insertions, assessed based on previous year IUD insertion performance records available at district headquarter, out of those available for selection.

IUD insertion takes place in all the centres (Medical College & Hospital, District Hospital, CHCs and PHCs) daily. The number of IUD insertions done on the day of observation in a particular centre was considered to be the sample size for evaluating the counselling skills and skills of IUD insertion for that particular centre. The minimum number of IUD insertions for CHC and PHC was 2 per day, and for District Hospital and Medical College hospital there were at least five. A female healthcare worker present at each centre accompanied the investigator during the process of observation. All clients who came on the day of observation for IUD insertion and gave informed consent were included in the study. The study was approved by the Institutional Review Board of MGM Medical College, Indore (Madhya Pradesh).

In total 36 healthcare workers were observed for their counselling skills: 16 from primary centres, 15 clients from secondary centres and 5 from tertiary centres. An observational checklist was developed using the IUD reference manuals for medical officers[9] and nursing personal[3] developed by the Ministry of Health and Family Welfare, Government of India. Changes

were made to the original checklist based on pre-testing and local needs. There were two parts to the observation checklist: the first part contained questions regarding demography of clients, and the second part contained a checklist for the counselling process. In the second part of the checklist, observations were rated using a three-point rating scale: 0 for not observed/not done, 1 for not done according to standards and 2 for done according to standards. Passive observation was undertaken to evaluate the exact process carried out at a particular centre, so that the investigator did not interrupt the process. Data was entered in Microsoft Office Excel worksheets and analyzed using appropriate statistical software. Chi square test was applied to compare responses obtained from clients at different levels and $p<0.05$ was considered statistically significant.

RESULTS

The study observed the counselling and IUD insertion delivered to 36 clients. Of these, 27 (75%) came from the rural area and 9 (25%) from the urban area. Most (n=31, 86%) were aged between 21 and 30 years, two were under 20, and three were between 31 and 40. Most (n=30) had completed at least High School level education; 5 were graduates and 5 were illiterate. (See Table 1). 48% clients from the rural area were educated up to secondary school level, in comparison to only 33% from the urban area. This finding was not checked for statistical significance.

The majority of the (75%) clients were unemployed or housewives. Just under half (47%) belonged to the lower socioeconomic class according Modified Kuppuswamy Classification.[10,11] Only 20% were from upper-middle or upper socioeconomic classes. This is comparable to a study by Kittur et. al[12] carried out in Hubli, India, in which most participants belonged to the 21–30 age group and had a similar level of education; and is also comparable to a study by Alam et. al,[8] which recorded that most IUD clients were poor, uneducated, rural women. Such women were often dependent on their husbands for information and lacked access to print media, radio or TV. Most of the women (94%) had two or fewer children and 86% of the women had children under two years of age.

Female healthcare workers performed 61% of the insertions, of which 60% were carried out by auxiliary nurse midwives (ANM) and 8% by female health assistants (Table 2). Table 2 also shows the clients' menstrual history, age of menarche and menstrual regularity/irregularity.

Table 3 shows how well clients were treated at the care centres and the quality of the advice they received from the healthcare workers, including if they were offered alternate methods of birth control. At primary care level, 50% of the clients were greeted in a friendly and respectful manner (according to the standards) but this percentage decreased to 13% in secondary level and at tertiary level dropped to zero Table 3). This was statistically significant ($p=0.03$).

In primary care centres, 69% of counselling sessions were carried out in a private area within the centre (according to standard protocols, all processes including counselling should be carried out in a way that maintains client privacy) but in the secondary centres this dropped to 53% and to zero in tertiary centres. This difference was significant ($p=0.027$).

In most of the centres, healthcare providers sufficiently explained the different contraceptive methods available and helped clients to choose an appropriate method (81% in primary healthcare centres, 60% in secondary and 60% in tertiary centres) but none of the centres provided sufficiently detailed information about IUDs to their clients.

Table 4 shows counselling given to clients with particular regard to the IUD, including whether they were given it to hold, information they received on likely side effects, and advice on costs, how long it will last, and their likely chances of getting pregnant. Information given on the likelihood of pregnancy was reasonably high: 69% in primary care centres, 66% in secondary care, and 80% in tertiary care centres.

At primary care centres, only 12.5% of clients were properly screened (Table 5) but this improved considerably in secondary and tertiary centres, to 87% and 100% respectively. None of the healthcare

workers at any level discussed properly what to do if the client experienced any side effects or problems, however. There was a statistically significant difference (p=0.029) found between healthcare centres at different levels in providing follow-up visit instructions, with primary care centres scoring lowest (0%), then secondary centres (33%) and tertiary centres recording the best score (40%). Post-insertion counselling was inadequate in most of the centres. There was a statistically significant (p<0.001) difference found between the healthcare centres in screening clients to make sure they had no existing medical conditions that could cause problems and a statistically significant (p<0.001) difference between the healthcare centres with regard to recording information on contraindicated medical conditions.

At all the centres, healthcare providers taught the clients how and when to check for strings appropriately, in sharp contrast to Ambedkar et. al[13] who found only 6.6% clients were properly informed. However, 50% of counselling sessions at primary care level did not discuss (according to standards) what to do if the women experienced side effects or problems, and similar levels were recorded at secondary (47%) and tertiary care (40%) level centres. A previous study by Erfanian et al[13] found that 4.3% midwifery students did not assess clients' knowledge of side effects.

There was statistically significant (p=0.03) difference found between the healthcare centres in providing follow-up visit instructions according to standards (0% in primary centres, 33% in secondary centres and 40% in tertiary). Erfanian et al[14] found that 94.6% of students provided inadequate follow-up instructions.

A statistically significant difference was found between the centres with regard to those whose staff performed palpation of the abdomen and checks for supra-pubic and pubic tenderness (Table 6). At the primary care level only 37% of clients received palpation according to the standard but this increased to 100% in secondary and tertiary centres. At primary level, 56% clients were given insufficient information (according to standard) on how the procedure was carried out and they were not encouraged to ask questions; the figure was 40% of clients in secondary centres and 60% of clients in tertiary centres.

How well the IUD insertion process was carried out between healthcare levels differed significantly. At primary level, none of the insertions were carried out inside the sterile package according to standards (Table 7). This was also the case in tertiary centres, though in the secondary centres 27% insertions were done according to standard. Healthcare providers reported that they had tried many times to load the IUD without touching it, but were unable to. Erfanian et al[14] found that 8.2% of midwifery students did not check the package for expiry date and 91.1% of them took no action if the package was damaged.

In 56% of the observations, clients at primary care level centres underwent sounding of the uterus (where the uterus is opened using a tool called a sound) according to standards, in comparison to 67% at the secondary care level and 60% at tertiary care level (Table 7). Erfanian et al,[14] found that 98.2% of midwifery students could not detect the position of uterus and depth of uterine cavity competently.

Few of the centres inserted the IUDs using the withdrawal technique according to standard (Table 7); the only ones that did were in the rural District Hospital (n=4). The doctor working at this hospital had worked as resource person in IUD training and so was able to follow the correct method; this is a very specific example however and is unlikely to be the case in every such centre. The difference between the care levels was statistically significant (p=0.04). Erfanian et al[13] found that 64.3% of students performed unsatisfactorily in a similar procedure; 53.6% did not push on the insertion tube until slight resistance is felt, as should be performed.

On a more positive note, all of the healthcare workers in all the centres washed their hands with soap and water at the beginning and end of the process, though there was less compliance with putting on new or sterile gloves for each new client.

Table 1 Demographic and parity-related variable distribution

Variables	Age group	Number of clients (n=36)	Percentage
Age group	Less than 20 years	2	6
	21 to 30 years	31	86
	31 to 40 years	3	8
Education status	Illiterate	5	14
	Primary	7	19
	Secondary (8th)	4	11
	High school	10	28
	Higher secondary	5	14
	Graduate	5	14
Occupation status	Semiprofessional	2	5.5
	Clerical Shop owner farmer	5	14
	Unskilled worker	2	5.5
	Unemployed or housewife	27	75
Socio economic status	Upper Lower Socioeconomic	17	47
	Lower Middle Socioeconomic	12	33
	Upper Middle Socioeconomic	6	17
	Upper Socioeconomic	1	3
Number of pregnancies	2 or less than 2	31	86
	More than 2	5	14
Number of living children	2 or less than 2	34	94
	More than 2	2	6
Age of youngest living child	2 or less than 2 years	31	86
	More than 2 years	5	14
History of abortion	Present	8	22
	Absent	28	78

Table 2 Menstrual history and insertion related variable distribution

Variables	Age group	Number of clients (n=36)	Percentage
Age of menarche	< 12 Years	2	5.5
	12 - 15 Years	24	66.5
	> 15 years	10	28
Regularity	Regular	20	56
	Irregular	16	44
Bleeding	Light/Spotting	16	44
	Moderate	16	44
	Heavy	4	11
Pain	With Pain	20	56
	Without Pain	16	44
Healthcare provider	Doctor	10	28
	Health Worker Female (ANM)	22	61
	Staff Nurses	1	3
	Health Assistant Female (LHV)	3	8
Type of IUD insertion	Interval Insertion	21	58
	Post Abortion	8	22
	Postpartum	7	19

Table 3 Observation of counselling process among clients at various level health centres (n=36)

Initial Interview (Private Area)	Primary level (n= 16)			Secondary (n= 15)			Tertiary (n= 5)			P value
	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2(%)	0 (%)	1 (%)	2 (%)	
Greets client in friendly and respectful manner.	1 (6)	7 (44)	8 (50)	5 (33)	8 (54)	2 (13)	3 (60)	2 (40)	0	0.030 *
Ensures necessary privacy	0	5 (31)	11 (69)	0	7 (47)	8 (53)	0	5 (100)	0	0.027 *
Obtains biographical information.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Provides general information about family planning.	2 (13)	13 (81)	1 (6)	1 (7)	9 (60)	5 (33)	0	3 (60)	2 (40)	0.313
Asks client about her reproductive goals (space or limit births?).	0	4 (25)	12 (75)	0	4 (27)	11 (73)	0	1 (20)	4 (80)	0.957
Gives information about contraceptive choices available and the risks/benefits.	1 (6)	8 (50)	7 (44)	0	8 (53)	7 (47)	0	3 (60)	2 (40)	0.850
Helps the client begin to choose an appropriate method.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA

Table 4 Observation counselling process among clients at various level health centres (n=36)

Method specific counselling if client choose IUD	Primary level (n= 16)			Secondary (n= 15)			Tertiary (n= 5)			P value
	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	
Provides detailed information about the IUD.	0	16 (100)	0	0	13 (87)	2 (13)	0	5 (100)	0	0.227
Shows where and how the IUD is used.	13 (81)	3 (19)	0	12 (80)	3 (20.0)	0	0	5 (100)	0	0.557
Gives the client a sample IUD to hold.	13 (81)	3 (19)	0	12 (80)	3 (20.0)	0	5 (100)	0	0	0.557
Explain that Cu T 380 A is supplied free of cost by Govt.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Explains how it works and its effectiveness.	12 (75)	4 (25)	0	11 (73)	4 (27)	0	4 (80)	1 (20)	0	0.957
Explains possible side effects, other health problems.	0	9 (56)	7 (44)	0	7 (47)	8 (53)	0	2 (40)	3 (60)	0.772
Explains that IUD lasts for 12 years.	2 (12.5)	12 (75)	2 (12.5)	0	9 (60)	6 (40.0)	1 (20.0)	2 (40)	2 (40)	0.230
Explains chance of pregnancy when IUD is removed	0	5 (33)	11 (69)	0	5 (33)	10 (66)	0	1 (20)	4 (80)	0.852

Statistically Significant. 0=Not Done/ Not Observed, 1=Not done to standards, 2=Done according to standards. NA=Not Applicable

Table 5 Observation counselling process among clients at various level health centres (n=36)

Pre-insertion counselling (Examination /Procedure Area)	Primary Level (n= 16)			Secondary (n= 15)			Tertiary (n= 5)			P value
	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	
Completes Client Assessment Checklist.	0	14 (87.5)	2 (12.5)	0	2 (13)	13 (87)	0	0	5 (100)	0.000 *
Reviews the Client Assessment Checklist.	0	14 (87.5)	2 (12.5)	0	12 (80)	3 (20)	0	5 (100)	0	0.522
Informs client about required physical and pelvic examinations.	0	16 (100)	0	0	15 (100)	0	0	5 (100)	0	NA
Checks that client is within 12 days of her last menstrual period.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Teaches client how and when to check for strings.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Discusses what to do if the client experiences any side effects or problems.	0	8 (50)	8 (50)	0	7 (47)	8 (53)	0	2 (40)	3 (60)	0.925
Provides follow-up visit instructions.	0	16 (100)	0	0	10 (67)	5 (33)	0	3 (60)	2 (40)	0.029 *
Assures the client that she can return for advice, medical attention, and to have IUD removed.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Answers the client's questions.	0	6 (38)	10 (62)	0	6 (40)	9 (60)	0	3 (60)	2 (20)	0.663
Counsel the client for at least 15 minutes before sending her home.	10 (62)	6 (38)	0	6 (40)	9 (60)	0	2 (40)	3 (60)	0	0.407

**Statistically Significant, Chi square test was applied, NA= Not Applicable*

Table 6 Observation of skills of HCP for IUD Insertion among clients at different healthcare levels (n=36)

Pre-Insertion Tasks	Primary level (n= 16)			Secondary (n= 15)			Tertiary (n= 5)			P value
	0(%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	
Washes hands then asks client if she has emptied her bladder and to lie in lithotomy position	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Palpates abdomen, checks for suprapubic or pelvic tenderness and adnexal abnormalities.	0	6 (37)	10 (63)	0	0	15 (100)	0	0	5 (100)	0.011 *
Tells the client what is going to be done and encourages her to ask questions.	0	9 (56)	7 (44)	0	6 (40)	9 (60)	0	3 (60)	2 (40)	0.592
Puts new disposable or sterile gloves on both hands.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Performs speculum examination.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Removes gloves and properly disposes then washes hands and dries with clean cloth or air dries.	16 (100)	0	0	15 (100)	0	0	5 (100)	0	0	NA
Loads TCu 380A inside the sterile package.	10 (63)	5 (31)	1 (6)	0	11 (73)	4 (27)	0	5 (100)	0	0.001 *
Puts new gloves on both hands.	16 (100)	0	0	15 (100)	0	0	5 (100)	0	0	NA
Inserts vaginal speculum.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Washes hands then asks the client if she has emptied her bladder and lie in lithotomy position	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA

**Statistically Significant, Chi square test was applied, 0=Not Done/ Not Observed, 1=Not done to standards, 2=Done according to standards. NA=Not Applicable*

Table 7 Observation of skills for HCP for IUD insertion among clients at different levels of care (n=36)

Pre-Insertion Tasks	Primary level (n= 16)			Secondary level (n= 15)			Tertiary level (n= 5)			P value
	0(%)	1 (%)	2 (%)	0(%)	1 (%)	2 (%)	0 (%)	1 (%)	2 (%)	
Measure uterine length using uterine sound	0	7 (44)	9 (56)	0	5 (33)	10 (67)	0	2 (40)	3 (60)	0.837
Sets blue depth gauge on the loaded IUD inserter to the depth on the sound.	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Inserts the IUD using the withdrawal technique.	0	16 (100)	0	0	11 (73)	4 (27)	0	5 (100)	0	0.043*
Cuts strings and removes tenaculum and vaginal speculum	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA
Places used instruments in chlorine solution for decontamination.	14 (88)	2 (12)	0	13 (87)	0	2 (13)	0	5 (100)	0	0.250
Disposes of waste materials according to guidelines in respective color-coded baskets	0	12 (75)	4 (25)	0	12 (80)	3 (20.	0	5 (100)	0	0.466
Washes hands with soap and water and completes the client record	0	0	16 (100)	0	0	15 (100)	0	0	5 (100)	NA

Chi square test was applied, *Statistically significant, ND/NO – Not done/ not observed, NDAS – Not done according to standards, DAS – Done according to standards. NA= Not Applicable.

DISCUSSION

The findings of this study suggest that the information regarding family planning methods given in most healthcare centres in Indore, India is inadequate. The situation was worst in primary care centres, which gave sufficient information in only 6% of cases but remained low in secondary (33% of clients given sufficient information) and tertiary level centres (40%). Erfanian et al[14] also found that counselling on contraceptive methods in India was poor.

This lack of adequate information is relevant as Alam et. al[8] found that the first three months after IUD insertion are a critical period, as women will either manage their side effects or have the IUD removed. Women who had problems before IUD insertion, or who had problems with other methods, were much more likely to experience side effects after IUD insertion and to discontinue use[8]. This period is therefore a crucial time for providing good follow-up and reassurance to women that bleeding problems will likely not continue and should not be feared. The centres scored better with regard to asking clients about their reproductive goals. This was carried out according to standards in 75% of primary health centres, 73% of secondary level centres and 80% of tertiary centres, which is much better than was found in a study by Harper et. al[15] in which 40% percent of providers did not offer IUDs to contraceptive patients and 36% infrequently provided counselling. In our study, 44% of clients at primary care centres, 47% at the secondary care levels and 40% at tertiary care level were given information about the contraceptive choices available and the associated risks/benefits. In most of the centres, the staff referred clients to the different methods available and helped the client to choose a method appropriate to them. Other studies

conclude that high rates of discontinuing with IUDs are often due to lack of knowledge about usage and benefits and counselling should forward clients to methods of family planning they may prefer, rather than imposing any one method on them.[16,17]

Limitations of the study

Due to time constraints, no sub-health centres were observed in the study. These are an important focal point for IUD insertion and should be covered in future studies. Each centre was visited for observation of counselling and insertion process on one day only. The number of observations was small, and not everything could be observed on a single day's visit.

CONCLUSION

There is an urgent need to address programmatic concerns by improving infrastructure and updating guidelines to include evidence-based practices. More attention must be given to health education at the centres focusing on counselling and communication skills. Periodic performance assessment of service providers should be carried out at all levels. Newer modern IUDs should be made available, as these require less skill to insert and women are less likely to reject them.[18] The study recorded that most women receiving IUDs chose interval insertion (two weeks post-partum rather than six). This shows an increasing trend for interval IUD insertion. Along with it, there is an increasing need for proper counselling and selection of the appropriate birth control method. Most insertions (60%) were carried out by Auxiliary Nurse Midwife (ANM) female health workers. This finding shows that the implementation of effective contraceptive measures depends strongly on the basic level workers, so there is strong need to strengthening the knowledge and skills of these workers.

ACKNOWLEDGEMENT

The author is thankful to all healthcare providers, Block Medical Offers and other staff members for their kind support.

REFERENCES

1. Park K. Demography and Family Planning: Text book of Preventive and Social Medicine. 19th Ed. Jabalpur: M/S Banarasidas Bhanot Publishers; 2007;389-397.
2. WHO; Family Planning available online at http://www.who.int/mediacentre/factsheets/fs351/en/
3. Ministry of Health and Family Welfare. IUCD Reference manual for nursing personnel. Government of India is supported by USAID: 2nd edition. New Delhi: 2007. P1-9.
4. Govt. of India, Family welfare statistics in India, Ministry of health and family welfare, New Delhi 2011.
5. Gray RH., Ramos R., Akin A. Manual for the provision of Intrauterine devices (IUDs) WHO Geneva 1980.
6. Salem, R. "New attention to the IUD: Expanding women's contraceptive options to meet their needs," Population Reports, Series B, No. 7. Feb 2006 Baltimore: Johns Hopkins Bloomberg School of Public Health, The INFO Project
7. Hatcher RA, Rinehart W, Blackburn R, Geller GS, Shelton JD; The Essentials of Contraceptive Technology. Baltimore: The Johns Hopkins School of Public Health, Population Information Program, 1997.
8. Alam ME, Bradley J, Shabnam F: "IUD use and discontinuation in Bangladesh. E&R Study" Engender Health/The ACQUIRE Project, New York; 2007.
9. Ministry of Health and Family Welfare. IUCD Reference manual for Medical Officer. Government of India is supported by USAID: 2nd edition. New Delhi: 2007;1-9.
10. Kuppuswamy B. Manual of Socioeconomic Status (Urban), 1 st ed. Delhi: Manasayan; 1981;6-72.
11. Bairwa M, Rajput M, Sachdeva S. Modified Kuppuswamy's socioeconomic scale: social researcher should include updated income criteria. Ind J Comm Med 2013; 38: 185-6
12. Kittur S, Kabadi YM. Enhancing contraceptive usage by post-placental intrauterine contraceptive devices (PPIUCD) insertion with evaluation of safety, efficacy, and expulsion. Int J Reprod Contracept Obstet Gynecol 2012; 1: 26-32.
13. Ambadekar NN, Rathod KZ, Zodpey SP; Healthcare delivery practices in the rural part of the Yavatmal district regarding IUD insertion. Indian J Public Health, 2010;54 (4):201-204.
14. Erfanian F, Khadivzadeh T; Evaluation of midwifery students' competency in providing intrauterine device services using objective structured clinical examination. Iran J Nurs Midwifery Res. 2011;16(3):191-6.
15. Harper CC, Blum M, et. Al Challenges in translating evidence to practice: the provision of intrauterine contraception Obstet Gynecol. 2008 Jun;111(6):1359-69.
16. Valenkar DH; A study to assess the knowledge, attitude and practices regarding contraceptive methods of family planning in an urban slum community of Mumbai. Bombay Hospital Journal. 2009;51(2):149-154.
17. Khan A, Shaikh BT. An all-time low utilization of intrauterine contraceptive device as a birth spacing method – a qualitative descriptive study in district Rawalpindi, Pakistan. Reprod Health. 2013;10:10.
18. Pandey, D., et al Urban Rural Comparison of Side Effect and Removal of Intrauterine Device. Sch. J. App. Med. Sci., 2015; 3(1E):367-372.