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Determinants and perception of postpartum intrauterine contraceptive device services in Maharashtra, India

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ABSTRACT

Undesired and unintended pregnancies increase unwanted births or induced abortions, consequently increasing maternal morbidity and mortality. Postpartum insertion of the intra uterine contraceptive device (PPIUCD) is an effective method for population control. The researchers conducted the study to assess the determinants of PPIUCD services by identifying beneficiaries and healthcare workers' perceptions. We conducted this study in Maharashtra state, India having five geographical divisions and 36 districts. The researchers visited 10 primary health centers and three community health Centers from five districts, randomly selecting one from each division. We interviewed 45 women who had undergone insertion one day to one year prior and 17 health care workers. About one-third of women received counseling during pregnancy. The medical officers obtained the consents mostly during delivery. They inserted about 85% of devices within one hour of delivery. About 38% of women had at least one complication. Lower abdominal pain (22.22%), irregular bleeding (20.00%), the expulsion of CuT (13.33%), pain during periods (13.33%) were common. The removal rate was 6.67%. The complication rates observed in the present study are comparable to the hospital studies. Thus, the study reassures that the services in small institutions are very safe, and governments can fearlessly implement the program.

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1. INTRODUCTION

Most women do not desire a pregnancy immediately after delivery but are not sure about the method of contraception to be used in the postpartum period. This uncertainty results in unintended and undesired pregnancies, increasing induced abortion, and consequently maternal morbidity and mortality [1]. Thus, insertion of postpartum intra-uterine contraceptive devices (PPIUCD) immediately after delivery is one of the current practices for controlling the population. It is a safe and effective method and helps to prevent unintended and closely spaced pregnancy [2]–[4]. Varying complication rates depend on the type of institution and service provider; however, trained nurses and midwives can improve access to PPIUCD [5]. The quality of services and perceptions about it determines the acceptance. The services provided in the peripheral health centers are often not considered comparable to higher centers. The beneficiaries' perception is essential to identify the gaps in the services and help improve the services. The authors conducted the present study at primary health centers (PHCs)/community health centers (CHCs), where the graduate medical officers implemented the PPIUCD program as the obstetricians are not available at PHCs [6].

The objectives were to assess the determinants of use of PPIUCD and perceptions about PPIUCD for both the beneficiaries and health care workers involved in inserting the devices. Dissemination of evidence of satisfactory services to the beneficiaries and service providers will undoubtedly improve acceptance and quality of the program.

2. RESEARCH METHOD

2.1. Study design

It was a cross-sectional descriptive study. It was conducted by visiting various various institutions namely PHCs and CHCs. The data was obtained by intrviewieng various beneficiaries and doctors, nurses and LHVs.

2.2. Setting

We conducted the study in Maharashtra state, India. The authors randomly selected one district from five geographical divisions and out of 36 districts. The authors constituted five teams, each consisting of one faculty and a second or third-year post-graduate student from the community medicine department. The state family welfare officers trained the teams, particularly about government guidelines. Each faculty obtained the operation schedule of one district. The director health services instructed all district health officers and civil surgeons to extend full cooperation to the visiting teams. The teams visited selected institutions in November and December 2018.

2.3. Participants

All women who underwent postpartum intrauterine device (IUD) insertion in the selected institutions in the preceding year were eligible. We grouped them into three categories; the women who have undergone insertion less than 48 hours prior, one to four months earlier, and four months to one year prior. The institution in-charges were requested to call three to four women for interviews and, if possible, plan one insertion in the presence of the visiting team. The teams spent an entire day in the visited institution to collect data. Wherever possible, the team first observed the process of insertion of PPIUCD. The team first interviewed the invited beneficiaries; then, the women underwent insertion in their presence. Lastly, the teams also interviewed doctors/lady health visitors/nurses who usually insert PPIUCD.

2.4. Variables

Age, place of residence, education, occupation, religion, socio-economic status, obstetric history, counseling details, their opinion about the number of children desired, prior use of family planning methods, consent details, insertion details, retention of IUD, and any complaints/complications were main variables. We considered the complaints/complications as a proxy of the quality. The authors sought perceptions of health care workers (HCWs) about the ideal counseling period, common problems faced during counseling, common complaints for which women sought advice. The team also collected information about logistics available in health institutions and the labor room during the inspection with the in-charge.

2.5. Sample size

The estimated sample size was 42, considering a 43.78% rate of complications [7], with a 95% confidence limit and allowable difference of 15%. Thus 45 beneficiaries from the selected institutions were included. Also, few interviews of the doctors, nurses and (LHV) were conducted.

2.6. Data sources, measurement

Authors prepared and validated three formats. First for the interaction with PPIUCD beneficiaries Second for interaction with HCWs who insert PPIUCD. Third for observations on insertion facilities in the institution and labor room.

2.7. Statistical methods

All the data collected was entered into excel. We used statistical product and service solutions (SPSS) version 25. The tables show data as proportions. Also, percentages were calculated.

2.8. Ethics statement

The authors obtained approval from the institutional ethics committee drugs controller general of india (DCGI Reg. No. ECR 518/Inst/ MH/2014/RR-17), REF: BVDUMC/IEC/36, Date:09/10/2018. The enrollment started only after the required permisisons were obtained. The consent of the paticipants was obtained for publication of the anonimised data.

3. RESULTS AND DISCUSSION

The authors visited 10 PHCs and three CHCs. Figure 1 shows the district-wise details. All the women had a vaginal delivery and knew about PPIUCD insertion in them. No woman expressed any discomfort during the insertion of PPIUCD. The teams interviewed a total of 45 women beneficiaries and 17 HCWs. Table 1 reveals the age and socio-economic information of interviewed 45 beneficiaries. Apart from complaints/complications, which we considered as a core indicator, the age of the women, their parity, their choice of contraception methods are indirect indicators of the quality of PPIUCD services.

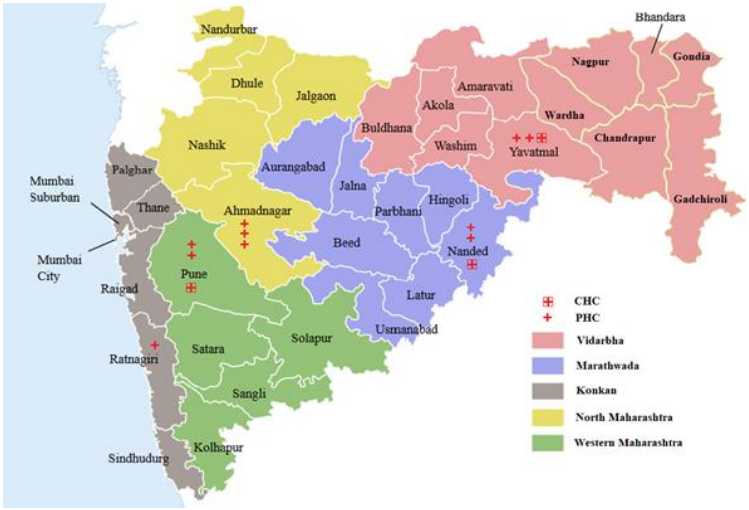

Figure 1. Districts and institutions visited for quality assessment

Table1. Socio-demographic characteristics of the women in Maharashtra

Characteristics	Total n=45	%
Age group (years)		
15-19 years	12	26.67
20-24 years	23	51.11
25-29 years	6	13.33
30-34 years	4	8.89
Area of residence		
Urban	3	6.67
Rural	39	86.66
Semi-urban	3	6.67
Education of the women		
Graduation or higher qualifications	2	4.44
12th standard or post SSC diploma	4	8.89
Up to secondary school certificate	7	15.56
Up to middle school	9	20.00
Up to primary school	13	28.89
Illiterate	10	22.22
Occupation of the women		
Homemaker	13	28.89
Job (government/private)	2	4.44
Self-employed or farming	8	17.78
Others*	22	48.89
Religion		
Hindu	41	91.11
Muslim	4	8.89
Socio-economic-stratification as per modified prasad's classification**(May 2016)		
Class I	1	2.22
Class II	5	11.11
Class III	10	22.22
Class IV	9	20.00
Class V	5	11.11
Did not disclose	15	33.34

*Others include teacher, anganwadi worker, maid, tailor, and laborer;

**per capita income in Indian Rupees (INR) per month in class I= 6,277 & above; class II= 3,139-6,276; class III= 1,883-3,138; class IV=942-1,882; class V=Less than 942

3.1. Age

Age group distribution shows that more than three-fourths of women were below 25 years. It is implicit that all the beneficiaries of PPIUCD are in the reproductive age group, most of them in the age group of 20 to 30, where age-specific fertility is high. The mean age of the women accepting intrauterine contraceptive device (IUCD) ranges from about 25 to 30 years, similar to other studies[8]–[11]. The present study also observed a high proportion of women aged 20 to 30 like many other studies [7], [11]–[17], the proportion of women belonging to this age group might be as high as 91.76% [18].

3.2. Education

Acceptance of PPIUCD and knowledge of PPIUCD are directly proportional to education. Studies from North India report higher proportions of illiterate women were beneficiaries of PPIUCD [8], [11], [14], [16]. The educational status differs widely as per the place of study. In the current study, maximum women were educated up to primary school.

3.3. Occupation

Similar to the present study. The majority of the women are homemakers in other studies as well [7], [11], [18]. Only in one study, about 40% of women had small businesses [17].

3.4. Socio-economic class

About 40 to 70% of women belong to the lower social class [7], [9]. A study observed higher acceptance among women having an income of less than ₹ 5,000 [14]. In the current study, most of the women had a per capita income of less than ₹ 3,138. Various studies found profound geographical variation in women's education, occupation, and socioeconomic status.

3.5. Obstetrics and family planning history

More than 50% of women wanted children after two to five years. Only 37.78% of women were aware of various contraceptive methods. About one-fourth of women were aware of condoms followed by oral contraceptive pills (6.68%), and 2.22% each about IUCD, postpartum tubectomy, and no-scalpel vasectomy. About one-fourth of women admitted use of condoms. Table 2 shows their obstetrics and family planning history.

Table 2. Obstetric and family planning history of the clients in Maharashtra

Parameters	Total n=45	Percentage
Number of living children		
1	1	1
2	2	2
3	3	3
≥4	≥4	≥4
Future desire for children		
After one year	4	8.89
After two year or more	24	53.33
Do not want	12	26.67
Not sure	5	11.11
Women who used family planning method in the past	17*	37.78
*Type of family planning method used in the past (n=17)		
Condoms	11	24.44
Oral contraceptive pills	3	6.68
PPIUCD	1	2.22
IUCD	1	2.22
Natural methods	1	2.22
Non-users	28	62.22

3.6. Obstetrics and family planning history

First-para women are most likely beneficiaries and their range may be 30.60% to 67.17% [7], [9]–[13], [17], [19]–[21]. The women mostly use coitus interruptus [11] one-third use depot-medroxyprogesterone acetate [17] and a varied range use IUCD [8], [11]. More than 50% of women wanted children after two to five years[11], [17], [22]. Only 37.78% of women were aware of various contraceptive methods. About one-fourth of women were aware of condoms followed by oral contraceptive pills (6.68%), and 2.22% each about IUCD, postpartum tubectomy, and no-scalpel vasectomy. About one-fourth of women admitted use of condoms. Awareness about family planning methods has a wide range from 44.8% to 90.0% [11], [23]. Although accepted PPIUCD, 7.03% of women desired permanent methods [11].

3.7. Follow-up

The authors interviewed two women who have undergone PPIUCD insertion in the previous 48 hours (4.44%), 19 women (42.22%) who have undergone insertion one to four months back, and 24 women (52.34%) who have undergone insertion four months to one year before. Two (10.52%) out of 19 women having a history of insertion within one to four months, and three (12.50%) out of 24 women inserted IUCD between four months to one year had already removed it. Most studies followed women up to 6 weeks and some studies up to six months [9], [13]–[16], [18], [20]. The proportion of women coming for follow-up gradually declines from two-thirds to half [20], [24]. Only a few studies followed women for more than six months [25]–[27].

3.8. Counselling, consent, and timings of insertion

About one-third of women received PPIUCD counseling during pregnancy. Nurses, doctors, and accredited social health activists (ASHAs) were the counselors. ASHAs motivated most of the women. About 80% of women recalled that health care workers inserted IUCD within one hour of delivery; in 4.44% of women, they inserted after some hours, and the rest were unsure about the time interval between delivery and insertion. Thirty-two women (71.11%) remembered that the HCWs took their consent during delivery and others said it was later. Among the consents obtained during delivery, 28 were from the women; in two cases, both the woman and family member consented; the husband or family member gave consent in two cases. Acceptance is usually higher among vaginally delivered than cesarean delivered. Earlier, the counseling more is the acceptance [14]. Acceptance varies from about 5 to 30% [21], [24]. The health care workers in the current study counseled most of the women in pregnancy.

3.9. Complaints/complications/removal

When asked about complaints after insertion of PPIUCD, 17 women (37.78%) had at least one complaint. Most women had multiple complaints/complications. Table 3 gives the details. The proportion of women and the types of complaints/complications are concordant with most studies. The common problems were lower abdominal pain, heavy menstrual bleeding, pain during periods, and expulsion. Health care workers explained the common reasons for removal: lower abdominal pain, irregular/excessive bleeding, feeling of needle prick sensation, resistance from family members, and vaginal discharge. Lower abdominal pain is a common complaint and ranges from 0.8 to 15% [12], [15], [16], [18]–[21], [27], [28]. The present study observed a higher rate. Irregular bleeding is also a common problem ranging from 5.7% to 23.5% of cases [1], [7], [13], [21], [24], [25], [27], [29]. Unusual vaginal discharge is reported from 12.5 to 15% of insertee women [1], [24], [29].

Table 3. Complications/complaints after PPIUCD insertion

Complications	Reported by the women (n=45)		Perception of health care workers (n=17)	
	No.	%	No.	%
Lower abdominal pain	10	22.22	10	58.82
Heavy bleeding	9	20.00	9	52.94
Expulsion	6	13.33	6	35.29
Pain during Periods	6	13.33	6	35.29
String problems	2	4.44	0	0
High fever	0	0.00	2	11.76
Husband's complaints	0	0.00	6	35.29

A review study quantified the expulsion rate among post placental insertees to be 13 to 23% [30]. Women with problems are more likely to meet HCWs personally, and hence a higher rate of expulsion or any complication among clinic follow-up than telephonic follow-up is documented [5]. The training, the personnel, and the institution also matter. Expulsion rate of 1.3% to 16.2% is reported from various studies [3], [5], [7], [12], [13], [15]–[17], [19], [20], [24], [25], [27], [29]. A higher expulsion rate at PHC/CHC than medical college or district hospital has been observed [5]. Some studies noted no difference in expulsion rate irrespective of the insertions made by doctors or nurses [5]. Intra-cesarean insertion of PPIUCD has a lower rate of expulsion than during vaginal deliveries [2], [5], and the range may be from 0 to 14 % [30]. Missing or unfelt strings is a common problem and range from 5.3% to 39.3%; our finding is still lower. It is well-known that missing or undescended strings are more common among the intra-cesarean group than vaginal [1], [9]. Infection may manifest as vaginitis or pelvic inflammatory disease in 2 to 2.8% of women [24], [25], [27], [29]. One study observed infection frequently when nurses carry out insertions [5]. The same study also observed that on-the-job training results in lesser infection [5]. Although the women did not make a complaint, the health care workers perceived that few women might have a high fever after insertion,

indicating infection. Perforation and displacement are rare complications to the tune of 0.005 % [25]. Although there are no intra-cesarean insertions in the present study, the type and rate of complications are usually similar between the cesarean and vaginal groups [1], [9].

In the present study, only three women had removed CuT; hence we did not compile the reasons by asking the women; instead, we asked the reasons for removal to the HCWs. However, the removal rate is concordant with other studies showing the range of 2.9 to 13.89% of cases, including the present study [10], [12], [13], [20], [24]–[26], [29]. The reasons for removal among more than 50% of women may not be related to the complications [15]. One-fourth to half of the removals may be due to family pressure/social problems [7], [12], [15], [21]. Women for some reason change their minds and don't want to continue [7], [15] bleeding 8.33% to 43.95% [7], [12], [15], [21] abdominal pain 6.25 to 41.67% [7], [12], [15], [21], infection in the form of vaginitis or PID 0.97 to 16.67% [7], [12], [15], [21], are common reasons of removal. Other reasons which contribute about 5% each include vaginal discharge [21], strings problems [7], [15] and partial expulsion [21]. We found similar reasons. There was no association between the period after insertion and complication rate. Almost 75% of women were satisfied with the PPIUCD. More than 80% of women were willing to recommend PPIUCD to their friends/relatives/colleagues.

3.10. Interactions with health care workers

The authors interviewed six medical officers, and the remaining were nurses. All HCWs except two received PPIUCD insertion training. Most HCWs know that insertion during the postpartum period is easy and convenient. More than 50% opined that the best time of PPIUCD insertion is immediately after the expulsion of the placenta, about 30% preferred insertion within 48 hours, and 17.65% six weeks postpartum. The HCWs gave 21 responses for the usual timing of counseling; 42.86% of options were during pregnancy, 28.57% immediately after delivery, 19.05% during the second/third stage of labor, 9.52% during the first stage of labor. Nine HCWs (52.94%) narrated multiple problems while counseling, which includes refusal by the woman (38.89%), fear of side effects (27.78%), lack of understanding (16.67%), and husband's hesitation (16.67%). Most HCWs (35.29%) obtain consent immediately after delivery, 23.53% get during pregnancy, 17.65% during the second or third stage of labor, 17.65% within 48 hours of delivery, and 5.88% during the first stage of labor. All of them except one told that woman's consent is obtained. But four persons said that they obtain consent from husbands or in-laws, and two answered that consent is taken from any relative accompanying the woman. About two-thirds (64.71%) said that the consent is mainly written (64.71%), and the rest said it might be verbal. Table 3 presents the common complaints/complications perceived by the health workers. All HCWs except one said that women consult the same facility in case of any complaint/ complication. Three HCWs said that women go to other government institutions. An equal number said that women go to a private facility. Table 4 shows the reasons for removal as perceived by them. The answers to the places of removal were multiple, same facility 84.21% and 15.79% private facility. Among health care workers, the knowledge about PPIUCD is usually better among residents from obstetrics and gynecology than nurses [31].

Table 4. Common reason for removal of PPIUCD told by health care workers (n=17)

Sr. no.	Reason	Frequency	%
1	Lower abdominal pain	5	29.41
2	Irregular/excessive bleeding	4	23.53
3	Feeling of needle prick sensation	4	23.53
4	Resistance from any other family member	3	17.65
5	Vaginal discharge	3	17.65
6	Pain during periods	1	5.88
7	Resistance form husband	1	5.88
8	Fear of perforation	1	5.88

The authors observed the trays for IUD insertion in labor rooms and interviewed 12 in-charges of institutions. Kelly's forceps were present in six trays, sponge holding forceps in seven trays, Sim's speculum in seven trays, and sealed CuT in 11 trays. The team found vaginal retractors, sterile cotton swabs, povidone-iodine/chlorhexidine, sterile gloves, Copper T 380 A/275 in the sterile packages, and PPIUCD service delivery register in all institutions. The sterilization equipment, ring forceps or song holding forceps, and long placental forceps (Kelly placental forceps) were present in 11 institutions. PPIUCD follow-up registers were present in five institutions, IEC material visible in the waiting area in four institutions, and eligibility checklist in only three institutions. The authors observed PPIUCD insertion in a woman each in two institutions. While watching actual insertion, we observed that all HCWs wore fresh pairs of gloves for PPIUCD insertion. In one case, the insertion was done immediately after delivery without cleaning the table and cleaning/changing the sheet.

3.11. Strengths and weaknesses

Almost all studies about PPIUCD are from large hospitals, especially in medical college hospitals. Secondly, numerous studies are the fallout of services data and hence are large. After providing services, as a protocol, the doctor requests that the women come for follow-up at six weeks and collect information from them. The present study is unique; it did not include district hospitals or medical college hospitals but PHCs and CHCS. It was a specially planned multisite study covering the entire state. Investigators randomly selected the institutions, ensuring the representativeness of the whole community. We interviewed HCWs also. Several studies did not include views of HCWs who insert PPIUCD. We called women for interviews who have completed varied duration after insertion. We interviewed the women up to one year of insertion. It was a small study involving 13 institutions and 45 beneficiaries. As it included peripheral institutions like PHCs where specialists are unavailable, we could not include intra-cesarean insertions.

4. CONCLUSION

The services provided in the government peripheral health centers are usually not supposed to be comparable to higher centers. The beneficiaries' perception is essential to identify the gaps in the services and help improve the services. The present study was conducted at PHCs/CHCs. The medical officers implement the PPIUCD program as the obstetricians are unavailable at PHCs. The aim was to assess the determinants of use of PPIUCD and perceptions about PPIUCD for both the beneficiaries and health care workers involved in inserting the devices. The results revealed that many women are certainly counseled about the PPIUCD in pregnancy by the health workers**.** The women do not have major complaints. The complication rate and quality of PPIUCD insertion in PHCs and CHCs are comparable to hospital-based studies. The study reassures that the services in small institutions are very safe, and governments can fearlessly implement the program.

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