

Acceptance, safety and efficacy of postpartum intrauterine contraceptive device

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ABSTRACT

Background: Postpartum intrauterine contraceptive device (PPIUCD) is safe method of contraception, but with low acceptability rate. Factors that govern acceptability needs to be addressed for increasing its rate. This study was done to assess the acceptance, efficiency, and complications of PPIUCD in tertiary centre of Jharkhand, India. **Methods:** This prospective study included antenatal women >34 weeks of gestational age who attended antenatal women in the department of Obstetrics and Gynaecology between 1st January 2020 to 1st September 2020. Details related to age, parity, education, awareness of PPIUCD, reasons for acceptance/refusal of PPIUCD were recorded. The types of insertion were postplacental, postcaesarean, and postabortal. Postinsertion counselling was done for PPIUCD, and women were followed-up at 6 weeks and 10 weeks for assessing complications. **Results:** The overall acceptance rate was 36.23% ($n = 100$). The main reasons for rejecting the use of PPIUCD included fear of pain, bleeding, and other complications (59.09%) and COVID-19 (10.23%). In majority (80%), type of insertion was postplacental with postcaesarean in 18% and postabortal in 2%. Complications were present in 14% women that included abdominal pain (8%), heavy menstrual bleeding (6%), infection (4%), thread not visible (1%), and IUCD not located by USG or X-ray (1%). At 6 months, expulsion occurred in 2 women. There was no significant association of age ($P = 0.312$), religion ($P = 1$), tribal/non-tribal ($P = 1$), education level ($P = 0.628$), and type of insertion ($P = 0.356$) with complications. At 1 year of follow up, none of the women conceived again showing the efficacy to be 100% as a contraceptive. **Conclusion:** In spite of limited awareness, PPIUCD proved to be an effective and safe method of long-acting reversible contraception. However, it had low rate of acceptability. PPIUCD was related to lesser complications as expulsion occurred in only 2 women at 6 months. Factors such as age, religion, tribal/non-tribal, education level, and type of insertion were not associated with acceptability rate. PPIUCD was 100% effective as a contraceptive.

Keywords: Complications, contraception, efficacy, PPIUCD

Introduction

India is the world's second most populous country. India's population is expected to reach 1.53 billion by 2030, with a growth rate of 1.2%. This population growth, which is impeding our country's development, can be addressed by giving individuals with adequate contraception treatments. In

India, over 65% of women in their first year after giving birth have an unmet necessity family planning services. In India, 27% of all the births take place within 24 months of the previous one. Complications such as anaemia, abortion, preterm labour, PROM, PPH, low birth weight babies, and maternal mortality are more likely in women who conceive within 24 months of their previous birth.^[1]

In India, women have been using intrauterine contraceptive devices (IUCD) for decades to space their pregnancies. For women in India with competing needs, returning to a healthcare setting for family planning services following birth is difficult.

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Several difficulties are overcome when family planning services are availed following childbirth.^[2] This indicates why an effective type of contraception is required during the postpartum period.

For women seeking a highly effective as well as long-acting reversible contraceptive (LARC) that can be started during the immediate postpartum period, PPIUCD is the only method. PPIUCD is reported to be safe in postpartum lactating women. CuT380 is used as PPIUCD because it is very effective (>99%) and has an incidence of 0.6–0.8 pregnancies per 100 women in the first year of use. It is effective up to 10 years.^[3]

The insertion of a PPIUCD has advantages, such as convenience for postpartum women, takes less time, and fewer visits to the health institution. It is safe, and the service provider knows the woman is not pregnant at the moment of insertion. Another benefit of PPIUCD is the low risk of perforation due to the thick uterine wall.^[4]

As women are possibly to have amenorrhea, lesser perception of adverse effects like bleeding, cramping particularly in lactating women. Another advantage is no impact on breast milk, and the significant benefit is that woman receives an effective method of contraception prior to discharge.^[5]

However, in a developing country, acceptability is still a challenge that could be due to a lack of knowledge, lack of trained providers, misperceptions, or fears of issues with IUCD insertion. The refusal of the male partner and religious beliefs plays a role in the use of PPIUCD.^[6] Factors that govern acceptability needs to be addressed so that appropriate awareness can be done to curb them and increase the acceptability because acceptance determines the continued utilization of the chosen contraceptive method.

Thus, this study was done to assess the acceptance, efficiency and safety of PPIUCD in the state hospital of Jharkhand, India. The study results are important for the family physicians as they will guide them to practically use and counsel the patients for the use of PPIUCD. This shall cover the gap that lays between the use of PPIUCD between a developing and developed country.

Methods

This prospective study included antenatal women >34 weeks of gestational age who attended antenatal women in the department of Obstetrics and Gynaecology, of tertiary care hospital of Jharkhand, India between 1st January 2020 to 1st September 2020. Institutional ethics committee approval was taken. The participants were selected according to MEC (Medical eligibility criteria, 5th edition, 2015)^[7] for PPIUCD insertion. After applying inclusion/exclusion criteria, women were enrolled and informed consent was taken.

Inclusion criteria: The pregnant women (18–40 years of age) who were without any uterine anomaly and evidence of genital/

pelvic infection/cancerous conditions, and provided consent for PPIUCD insertion were included.

Exclusion criteria: The women between 48 hours and 6 weeks of postpartum; with prolonged rupture of membrane (>48 hours), chorioamnionitis, unresolved postpartum haemorrhage, distorted uterine cavity; and those with intrapartum fever, AIDS, and genital tuberculosis were excluded.

Details related to age, parity, education, awareness of PPIUCD, reasons and persons motivating for acceptance of PPIUCD were recorded. Counselling of women, who refused for PPIUCD, was done for other methods of contraception.

Post placental insertion: After active management of the third stage of labour in vaginally delivered women, bimanual examination was done to ensure that the uterine cavity was empty as well as with appropriate tone. Sim's speculum was used to retract posterior vaginal wall after cleaning it through antiseptic solution. The ring forceps was used to hold anterior lip of cervix. IUCD was pulled from sterile package and no touch technique was used for grasping with Kelly's forceps. The ring forceps applied a gentle traction on cervical anterior lip following which the IUCD was inserted into the lower uterine cavity. Uterus was pushed superiorly while placing left hand on abdomen. When Kelly's forceps reached fundus, it was opened to release IUCD, and then forceps was removed. Woman was asked to rest for 5 minutes.^[8]

Intra-caesarean insertion: IUCD was passed through uterine incision by holding it between middle and index finger of right hand. Hand was withdrawn slowly after placing IUCD at fundus. IUCD strings were guided towards cervix taking care not to include strings during uterine closure.^[8]

Postinsertion counselling was done, and women were asked for follow-up at 6 weeks and 10 weeks, or any time if she had any complaint. A card was given to the patients, mentioning the following particulars: type of IUCD inserted; date of IUCD insertion, month and years, when IUCD is needed to be removed or replaced; and date of postpartum follow-up visit.

The reassessment of cases was done immediately after insertion, and at follow-ups of 6 weeks, 10 weeks and 1 year. During follow-up, she was asked if she was satisfied with method or had any complaint. If women felt that IUCD expelled spontaneously, then another chance for reinsertion was offered. Clinical assessment for anaemia was done. Speculum examination was done on 1st visit to examine visibility of the strings, and cut only if the patient was uncomfortable with the excess length. If any pathological discharge was noticed, it was noted and treated accordingly.

On follow-up, women were examined for complications such as pain, infection, and bleeding. Treatment was provided

with NSAIDs and antibiotics. The pelvic ultrasound was done in women who had missing strings for confirming its position.

Statistical analysis

The final data was compiled and represented in the form of number (*n*) and percentage (%) for categorical variables and in the form of mean with standard deviation (mean ± SD) and median with interquartile range (25th to 75th percentiles) for quantitative variables. Kolmogorov–Smirnov test was used to determine the data normality and nonparametric test was employed when the data was found not to be normally distributed. Chi square test was used for determining the association between qualitative variables, while the quantitative and not normally distributed data was associated by using Mann–Whitney Test.

The values were considered to be significantly associated if the *P* value was less than 0.05. The complete statistical analysis was done using “Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, ver 21.0”.

Results

Of 276 pregnant women who were delivered during the study period, 100 women accepted the insertion of PPIUCD. Thus, the overall acceptance rate in our study was 36.23%. The reasons for rejecting the use of PPIUCD included COVID-19 (10.23%); fear of pain, bleeding and other complications (59.09%); Family pressure (7.39%); Using other methods (20.45%), and no specific reason (2.84%). The study flow is shown in Figure 1.

The mean age of the participants was 23.18 ± 3.4 years. 72.00% of study subjects were G2–G3 followed by primigravida (18.00%). Majority (70%) of study subjects were non-tribal, and only 30% were tribal. Majority (60.00%) of study subjects belonged to lower followed by upper lower (32.00%), and lower middle class (8.00%). Most of the participants (77.00%) were Hindu followed by Muslim (14.00%). The education level of

majority (43.00%) of study subjects was up to 10th standard; 5% were illiterates [Table 1].

In present study, in majority (80.00%) of study subjects, type of insertion was postplacental followed by postcaesarean (18.00%). Type of insertion was postabortal in only 2 out of 100 study subjects (2.00%) [Figure 2].

Complications were noted in 14 cases (14%) which included Abdominal pain (8%), heavy menstrual bleeding (6%), infection (4%), thread not visible (1%) and IUCD not located

Table 1: Baseline demographic variables

Demographic characteristics	Mean±SD/ <i>n</i> (%)
Age (years)	28.4±6.8
Parity	
Primi	18 (18%)
G2–G3	72 (72%)
G4	72 (72%)
Booked/unbooked	
Non-booked/Tribal	18 (18%)
Booked/Non-tribal	72 (72%)
Socio-economic class	
Upper lower	32 (32%)
lower middle	68 (68%)
Lower	72 (72%)
Religion	
Hindu	77 (77%)
Christian	23 (23%)
Muslim	72 (72%)
Tribal/non-tribal	
Tribal	18 (18%)
Non-tribal	72 (72%)
Education	
Illiterate	32 (32%)
Upto 7 th	68 (68%)
Upto 10 th	72 (72%)
Upto 12 th	72 (72%)
Graduate	72 (72%)

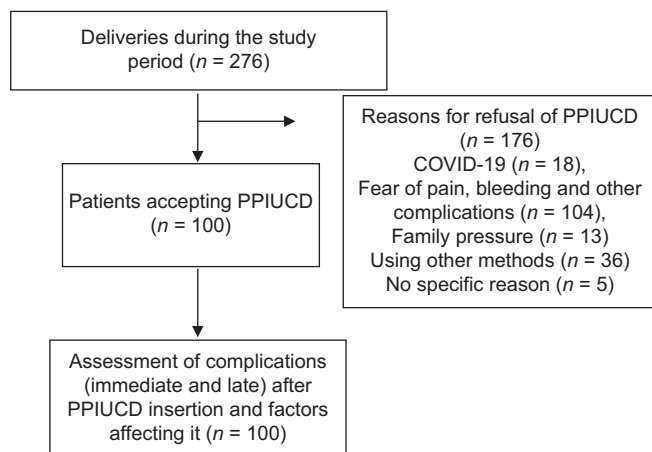


Figure 1: Study flow

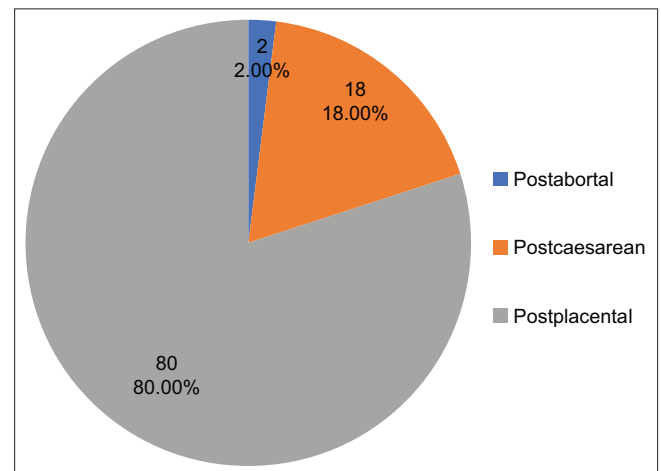


Figure 2: Distribution of type of insertion of study subjects

by USG or X-ray (1%) [Figure 3]. Due to the complications, the women got PPIUCD removed.

In the long term, at 1 year, 2 women found it expelled by itself. There was no significant association of age ($P = 0.312$), religion ($P = 1$), tribal/non-tribal ($P = 1$), education level ($P = 0.628$), and type of insertion ($P = 0.356$) with complications. [Table 2].

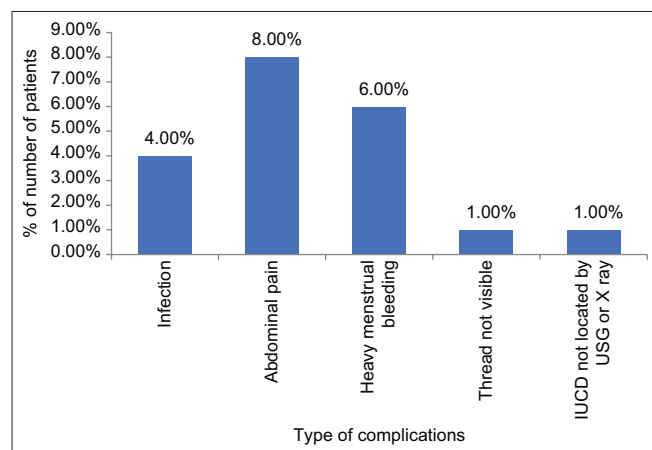


Figure 3: Distribution of type of complications due to IUCD in the study subjects

Table 2: Association of factors with complications

Demographic factors	Without complications (n=86)	Complications (n=14)	P
Age (years)			
18-29	2 (16.67%)	5 (19.23%)	0.987
30-39	0 (0%)	1 (3.85%)	
>39	0 (0%)	2 (7.69%)	
Parity	10 (83.33%)	18 (69.23%)	0.893 [§]
Primi	2 (16.67%)	5 (19.23%)	
G2–G3	0 (0%)	1 (3.85%)	
G4	0 (0%)	2 (7.69%)	
Socio-economic class			
Upper lower	6 (50%)	14 (53.85%)	1 [§]
lower middle	1 (8.33%)	1 (3.85%)	
Lower	5 (41.67%)	11 (42.31%)	
Religion			
Hindu	12 (100%)	23 (88.46%)	0.538 [§]
Christian	0 (0%)	3 (11.54%)	
Muslim	0 (0%)	3 (11.54%)	
Tribal/non-tribal			0.893 [§]
Tribal	2 (16.67%)	5 (19.23%)	
Non-tribal	0 (0%)	1 (3.85%)	
Education			
Illiterate	6 (50%)	14 (53.85%)	1 [§]
Upto 7 th	1 (8.33%)	1 (3.85%)	
Upto 10 th	5 (41.67%)	11 (42.31%)	
Upto 12 th	5 (41.67%)	11 (42.31%)	
Graduate	5 (41.67%)	11 (42.31%)	
Type of insertion			
Postabortal	1 (50%)	1 (50%)	0.356 [§]
Postcaesarean	16 (88.89%)	2 (11.11%)	
Postplacental	69 (86.25%)	11 (13.75%)	

[§]Fisher Exact test

At 1 year of follow up, none of the women conceived again showing the efficacy to be 100% as a contraceptive.

Discussion

Awareness and removing the stigma about the use of IUCD especially in the postpartum period holds importance since it may help in reducing morbidity and mortality of mother and fetes, which is due to high number of births occurring at short intervals. Thus, PPIUCD would be helpful in India that is presently having population crisis.^[9]

The study showed that acceptance rate in our study was 36.23% which was comparable to other previous studies. In a recent Indian study, the rate of acceptability was 32%.^[1] In a study conducted at central India, the rate was 36%^[10] Higher rates were reported by Ramya *et al.* (68.8%).^[11] The lower rates were reported by Gonic *et al.*^[6] in study conducted at Ethiopia (12.4%). Saroj K *et al.*^[12] found that 21.8% women accepted PPIUCD, whereas 25.32% accepted it in study by Nayak *et al.*^[13] This disparity in acceptance rates could be because of the differences in respondents' awareness level, educational status, religious beliefs, and numerous misconceptions over the use of PPIUCDs in research settings. The acceptance rate also shows the scope of improvement as only one-third of the population is convinced for accepting the use of PPIUCD. This involves the role of family physicians to continually update the visiting patients and the relatives for the use and advantages of PPIUCD. The stigma that it carries in the minds of the people must be overcome by proper guidance and approach and this will allow the acceptance rates to pass 50%.

The reasons for non-insertion of PPIUCD in our study were COVID-19, fear of pain, bleeding and other complications, Family pressure, and use of other methods of contraception, which were similar to other previous studies. Thota *et al.*^[11] reported that using other contraceptive methods was the main reason of refusal (53.92%), followed by fear of pain (23.52%) and fear of heavy menstrual bleeding (9.8%). Gonic *et al.*^[6] found that women refused PPIUCD due to concern and fears of complications in 24.8% women, religious beliefs in 19.8%, and husband refusal in 17.7% women. Refusal by husband (31.8%) and refusal by mother-in-law, sister in-law (14.8%) were the main reasons for refusal in Saroj *et al.*^[12] Similarly, fear of complication (69.96%) was the main reason reported by Sharma A *et al.*^[14] Priya *et al.*^[15] reported that the reason for refusal was belief that insertion of PPIUCD may prevent the conception in future (65%).

Hauck *et al.*^[16] found that lack of knowledge about the method, lack of trained providers and preference of short-acting contraceptive methods, spousal opposing, and fears of complication were the main reasons for not accepting PPIUCD use. Sidhu *et al.*^[17] also found absence of awareness and availability to IUCD, and fear of side effects as the main reasons of refusal. Gebremichael *et al.*^[18] found the factors to be fear of side effects and infertility in future.

This indicates that women in the study settings have a strong concern of complications and religious aversion to the use of PPIUCD. Also, in India, husband and other family members are great influencers for the women's decisions.

The type of IUCD inserted may depend upon an individual choice. In our study, the most common was postplacental (80%) followed by postcaesarean (18.00%). Among other studies, Sudha CP *et al.*^[19] reported that out of 60 participants, postpartum post-placental insertion was done in 30 patients and intra-caesarean insertion of Cu T380A in 30 patients. Overall be it any type of insertion, the efficiency as a contraceptive of PPIUCD was 100% during the period of follow up.

Despite this, few women opted for the removal which was because of certain complications that included abdominal pain, heavy menstrual bleeding, and localized infection. Previous studies also reported complications after PPIUCD insertion. Thota *et al.*^[1] found that PPIUCD was expelled in 15.72% women, pain in 12.5%, and heavy menstrual in 9.37% women. Sudha *et al.*^[19] reported that after PPIUCD insertion, pain was experienced by 8.3%, bleeding in 6.7%, and infection, expulsion, and spotting in one patient each. Muganyizi *et al.*^[20] reported that IUD removals (4.4%), uterine infection was present in 2.7% women, IUD expulsions (2.3%), and 33 (5.5%) with overall method discontinuation. A single case of severe uterine infection was encountered which required admission to the hospital. da Silva Nóbrega AB *et al.*^[21] found that 47.9% women had missing strings in 275 participants at visit 1 (45–90 days) and among 34.2% women at visit 2 (6–9 months). IUD expulsion was present among 8.9% women by visit 2. Vishwakarma *et al.*^[22] found the main complaint at 6-week follow-up were undescended/missed thread (22.2%), bleeding (11.9%), expulsion (2.2%), pain (2%), and local infection (1.3%), and at 6-month follow-up were missed thread (8.6%), bleeding (6%), pain (1.6%), expulsion (1.2%), and local infection (0.7%).

Complications were the primary factor associated with the removal of PPIUCD. Among other studies, the factors responsible for expulsion of PPIUCD were the significant risk factors for PPIUCD expulsion were IUD insertion >10 minutes post-delivery [adjusted risk ratio (aRR): 8.1; 95% confidence interval (CI): 1.26–51.98, $P = 0.027$] and bloody lochia flow of ≥ 15 days (aRR: 8.5, 95% CI: 1.47–48.47, $P = 0.017$).

da Silva Nóbrega AB *et al.*^[21] found that 47.9% women had missing strings in 275 participants at visit 1 (45–90 days) and among 34.2% women at visit 2 (6–9 months). IUD expulsion was present among 8.9% women by visit 2. found that there was an association between type of delivery with missing strings as well as expulsion. In comparison to vaginal delivery, caesarean delivery resulted in increase in risk of missing strings [adjusted relative risk (aRR): 6.21; 95% CI: 4.29 to 8.99] and decreased IUD expulsion risk (aRR: 0.24; 95% CI: 0.13 to 0.43).

Vishwakarma *et al.*^[22] found that at the follow-up of 6 weeks, the main complaint included undescended/missed thread in 22.2% patients followed by bleeding (11.9%); other complaints were expulsion, pain, and local infection. At the follow-up of 6 months, less complaints were found, with the common complaints being missed thread (8.6%) and bleeding (6%); other complaints were pain, expulsion, as well as local infection. The factors significantly associated with increased odds of perforation were breastfeeding (AOR, 4.48; 95% CI, 1.95–10.33; $P < 0.001$) levonorgestrel IUD insertion (AOR, 1.84; 95% CI, 1.12–3.00; $P = 0.02$), multiparity (2 deliveries; AOR, 1.66; 95% CI, 1.09–2.52; $P = 0.02$), caesarean delivery (AOR, 1.68; 95% CI, 1.08–2.60; $P = 0.02$), and BMI 30 (AOR, 1.56; 95% CI, 1.04e2.34; $P = 0.03$).

Limitations

One of the limitations was that the design effect was not considered in calculation of the sample size. Thus, the real findings of the entire district were not reflected due to limited sample size. This study was single centered study and thus cannot be generalized. Another limitation was that only CuT380A IUCD was used in present study, which limits generalization in women using other IUCDs like Levonorgestrel IUDs. Lastly, the study had a short follow up.

Conclusion

In spite of limited awareness and low rate of acceptability, PPIUCD proved to be an effective and safe method of long-acting reversible contraception, which is especially useful in a scenario where women do not return for contraceptive guidance. Also, it can be provided by well-trained health workers in rural areas who also provide antenatal services. PPIUCD was also related to lesser complications as expulsion occurred in only 2 women at 6 months. Factors such as age, religion, tribal/non-tribal, education level, and type of insertion were not associated with acceptability rate. PPIUCD was 100% effective as a contraceptive. The government should develop strategies for raising public awareness of the PPIUCD through various media sources.

Informed consent

Written informed consent was obtained from patients.

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Conflicts of interest

There are no conflicts of interest.

References

1. Thota S, Nasreen MU, Ramadevi S, Himasree M. Study of acceptability for the use of postpartum intrauterine contraceptive device among women attending government general hospital, Guntur. *New Indian J OBGYN* 2022;8. [Epub ahead of print].

2. Majhi AK. Importance of PPIUCD in the perspective of present Indian population scenario. *Indian J Perinatol Reprod Biol* 2012;2:5-7.
3. Kapp N, Curtis KM. Intrauterine device insertion during the postpartum period: A systematic review. *Contraception* 2009;80:327-36.
4. Gebremedhin M, Alemayehu A, Yihune M, Dessu S, Melis T, Nurahmed N. Acceptability and factors associated with immediate postpartum intrauterine contraceptive device use among women who gave birth at government hospitals of Gamo Zone, Southern Ethiopia, 2019. *Open Access J Contracept* 2021;12:93-101.
5. Maluchuru S, Aruna V, Prabhavathi N. Post-partum intrauterine device insertion 2 yr experience at a tertiary care center in Guntur Medical College/Govt. General Hospital, Guntur. *IOSR-JDMS* 2015;14:56-61.
6. Goni A, Worku C, Assefa T, Bogale D, Girma A. Acceptability and factors associated with post-partum IUCD use among women who gave birth at bale zone health facilities, Southeast-Ethiopia. *Contracept Reprod Med* 2018;3:16.
7. World Health Organization. Medical eligibility criteria for contraceptive use, 5th edition. 2015. Available from https://apps.who.int/iris/bitstream/handle/10665/172915/WHO_RHR_15.07_eng.pdf?sequence=1. [Last accessed on 2022 Mar].
8. Ministry of Health and Family Welfare, Government of India. Postpartum IUCD Reference Manual, 2010. New Delhi: Family Planning Division, Ministry of Health and Family Welfare, Government of India; 2010.
9. Mishra S. Evaluation of safety, efficacy, and expulsion of post-placental and intra- cesarean insertion of intrauterine contraceptive devices (PPIUCD) *J Obstet Gynaecol* 2014;64:337-43.
10. Kanhere, AV, Pateriya P, Jain M. Acceptability and feasibility of immediate postpartum IUCD insertion in a tertiary care centre in Central India. *Int J Reprod Contracept Obstet Gynecol* 2017;4:179-84.
11. Ramya KS, Meena TS, Mothilal R. A comparative study of PPIUCD acceptance between primiparaous and multiparaous women in a tertiary care hospital in Tamil Nadu. *Int J Reprod Contracept Obstet Gynecol* 2017;6:3569-72.
12. Saroj K, Neha G. Acceptability for the use of postpartum intrauterine contraceptive devices, Zenana Hospital, Jaipur. *Int J Sci Res* 2016;5:401-9.
13. Nayak AK, Jain MK. Experience on awareness, acceptability, safety, efficacy, complications and expulsion of post-partum intrauterine contraceptive device insertion. *Int J Sci Stud* 2017;5:207-12.
14. Sharma A, Gupta V. A study of awareness and factors affecting acceptance of PPIUCD in South-East Rajasthan. *Int J Community Med Public Health* 2017;4:2706-10.
15. Priya S, Tuteja A, Mittal P, Diwan R, Suri J, Kumar A. Exploring reasons behind low acceptance for PPIUCD in postnatal women. *New Indian J Surg* 2011;2:246.
16. Hauck B, Costescu D. Barriers and Misperceptions limiting widespread use of intrauterine contraception. *J Obstet Gynaecol Can* 2015;37:606-16.
17. Sidhu TK, Coonar PP. Contraceptive usage and awareness among postpartum mothers in urban field practice area of a tertiary hospital. *Indian J Comm Health* 2015;27:139-42.
18. Gebremichael H, Haile F, Dessie A, Birhane A, Alemayehu M, Yebo H. Acceptance of long acting contraceptive methods and associated factors among women in Mekelle City, Northern Ethiopia. *Sci J Pub Health* 2014;2:349-55.
19. Sudha CP, Priyanka HK, Nagaiah D. A study to evaluate safety and efficacy of immediate postpartum postplacental IUCD insertion. *Int J Reprod Contracept Obstet Gynecol* 2017;6:2284-8.
20. Muganyizi PS, Kimario G, Ponsian P, Howard K, Sethi M, Makins A. Clinical outcomes of postpartum intrauterine devices inserted by midwives in Tanzania. *Int J Gynaecol Obstet* 2018;143(Suppl 1):38-42.
21. da Silva Nóbrega AB, Pitanguí ACR, Vieira CS. Factors associated with missing strings and expulsion after postplacental insertion of copper T380A intrauterine devices. *Int J Gynaecol Obstet* 2022;157:67-75.
22. Vishwakarma S, Verma V, Singh M, Mittal N. Experience on safety, expulsion, and complication of intracesarean post-partum intrauterine copper device. *Cureus* 2020;12:e10647.