Original Article

Comparing the Complications of the Intrauterine Device Insertion in The Postpartum and Interval Periods at the Jos University Teaching Hospital

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Abstract

Background: An unmet need for family planning exists among women, particularly in the postpartum period. The use of the intrauterine device in the postpartum period holds promise for meeting this unmet need for family planning. It is, however, an emerging form of contraception, and concerns regarding its complications, as opposed to the interval insertion, which is the usual period for insertion, may affect its uptake. This study aimed to evaluate the complications of postpartum intrauterine device (IUD) insertion and to compare them with those of interval insertion at the Jos University Teaching Hospital (JUTH), Plateau State, Nigeria. **Methodology:** This prospective parallel cohort study included 174 women who received CuT380A IUDs. Of these, 87 underwent postpartum insertion, and 87 received interval insertion. Follow-up occurred at two-, six-, and twenty-six-week post-IUD insertion, focusing on outcomes like abnormal uterine bleeding (AUB), pelvic pain, expulsion, missing strings, abnormal vaginal discharge, discontinuation, and continuation rates. **Results:** At two weeks postpartum, complete expulsion (8.1%) and missing IUD strings (33.7%) were more common in the postpartum IUD (PPIUD) group as compared with the interval group, where there was no complete expulsion and missing IUD strings were 4.7% ($p = 0.002$ and <0.001, respectively). However, at that same visit, abnormal vaginal discharge (10.5%) was more frequent in the interval group as compared with the postpartum group (2.3%) ($p=0.029$). At six-week postpartum, AUB (15.5%) and abnormal vaginal discharge (15.5%) were more common in the interval group as compared with AUB (5.4%) and abnormal vaginal discharge (5.4%) in the postpartum group. ($p=0.041$ in both instances). However, at 26 weeks, there were no significant differences in complication rates between the groups. Continuation rates at the end of the study were 75% for PPIUD and 86.7% for the interval group ($p= 0.054$). **Conclusion:** While both groups experienced early complications, long-term complications were comparable. Thus, PPIUD insertion should be encouraged as a viable contraceptive option for women during the postpartum period, supporting the promotion of long-acting reversible contraceptives.

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INTRODUCTION

There exists an unmet need for family planning among women. As such, many unplanned or unintended pregnancies have resulted in high-risk pregnancies and sometimes terminations or attempted terminations with disastrous outcomes. In the US, about 45% of all pregnancies are unintended. [1] This may be higher in the developing world and has increased the overall rate of maternal mortality, especially in the developing world where abortion laws are restrictive, with pregnancy termination only permitted where the life of the woman is in danger or increased danger due to the pregnancy.[2]

Contraception has been documented to help women prevent unwanted or unplanned pregnancies. It also helps women to space childbirth adequately to improve maternal and foetal outcomes and, as a consequence, reduce maternal mortality. [3]

Women's greatest need for contraception is seen immediately following delivery, but many women, however, leave the hospital without this need being met. A Turkish study showed that 98% of postpartum women and 88% of post-abortal women were willing to use a contraceptive method immediately after termination of pregnancy,[4] but greater than 70% of these women left the health facilities without receiving a contraceptive method.[4] Many women also do not return for postnatal visits, especially in developing countries, for reasons such as distance from the health facility, financial constraints or lack of support from family; some feel it is unnecessary, amongst others.[1,5] In the US, an estimated 10-40% of women do not return for postnatal visits. The value is much higher in the developing world. [6]

Pregnancy occurring within the first year after delivery is termed a short inter-pregnancy interval.[6] Short inter-pregnancy intervals and unintended pregnancies have been associated with increased maternal morbidity and mortality due to the increased obstetric complications associated with such pregnancies. They are also associated with poor perinatal outcomes, including preterm births, birth of small for gestational age babies, malnutrition, and higher rates of perinatal, infant and under-5 mortality. Spontaneous abortions are also more likely. [7] The WHO recommends waiting at least 24 months after childbirth before attempting another pregnancy to reduce these risks and improve maternal and foetal outcomes. [7] Hence, concerted efforts are necessary to prevent unintended pregnancies.

Worldwide, 225 million women need contraception and an estimated 220 million need modern contraception but are unable to access it for various reasons. [7] About 214 million women of reproductive age in low-income countries want to avoid pregnancy but are not using any modern form of contraception.[3] The unmet need for modern contraception is about 61%, [8] but the uptake of modern contraception is generally low, especially in Sub-Saharan Africa. It was 32% in Tanzania in 2015, 24% in 2006, and even lower in Nigeria, at just about 12%, according to the 2018 Nigerian Demographic and Health Survey. [9]

The reasons that have been ascribed for this low uptake include poor access to contraception and limited choice, fear of side effects, poor quality of family planning services, cultural and religious biases and economic barriers, amongst others. [10] The use of family planning can avert nearly a third of maternal deaths and up to 10% of child mortality when couples space their children greater than 2 years apart. [11] Reducing maternal mortality by increasing the rate of modern contraceptive use is a relatively simpler, more cost-effective option with more rapid results.[7] The intrauterine device is a long-acting reversible, low-cost contraceptive and a very effective method of facilitating birth spacing, particularly in low- and middle-income countries where women do not regularly visit health facilities. [3] It is a non-hormonal method that can be safely used by all women regardless of their breastfeeding status during this period. [11]

The IUDs currently available in the West African sub-region are the copper T380A (Cu T380A; the more commonly used one) and the levonorgestrel (LNG) intrauterine system (IUS). [12] The Cu T380A postpartum intrauterine device (PPIUD) is the insertion of the device into the fundus of the uterus within the first 48 hours of delivery. [13] It is post-placental when it is inserted within 10minutes of placental expulsion or immediate when it is inserted between 10 minutes and 48 hours of delivery. [6,12] The American College of Obstetricians and Gynaecologists (ACOG) states that the best practice for postpartum IUD insertion is to place the IUD in the delivery room, within 10 minutes of placental delivery in vaginal and caesarean births. [6] It is a relatively easy procedure at this time and does not require any extra intervention. [7]

IUD insertion in the postpartum period offers a unique opportunity to meet this unmet need and enhance modern contraception uptake. The PPIUD has several benefits: it increases the contraceptive prevalence rate since there is no fear of ongoing pregnancy, involves less pain, and is easy to insert. Additionally, having the woman and the provider in the same setting reduces time and costs of seeking interval IUD services. PPIUD does not interfere with breastfeeding, hypertension or obesity, carries a lower risk of perforation due to the thick postpartum myometrium and is immediately reversible. [3,5,6,14,13] Any bleeding from the insertion will be disguised by lochia, and it is a good alternative for tubal ligation for women who have completed family size. [15] Overall, it presents a convenient and effective option for postpartum contraception.

This use of PPIUD is, however, an emerging form of contraception [5,] and though concerns regarding complications of postpartum IUD insertion compared to the interval insertion have raised questions that may affect its uptake in previous studies, the benefits of providing highly effective contraception immediately after delivery, especially in our country where many women have limited access to medical care, outweigh its disadvantages. [15] With an increase in institutional delivery and also the low rate of return for postnatal care and thus, missed opportunities for contraception, the postpartum insertions may be preferable. Delivery may be the only time when a healthy woman comes in contact with a health care provider, and the chances of returning for contraception are unlikely.[16] In Sub-Saharan African countries including Nigeria, IUDs, despite their efficacy, are underutilised. The use of IUCD, relative to other methods, has reportedly

stagnated or declined, with uptake as low as 10.2%, [17] while higher rates of 28.7% have been reported in Jos.[18] Its insertion in the postpartum period can improve its uptake and generally the contraceptive prevalence rate. In addition to these, very few local studies have been conducted that have dealt exhaustively with the complications associated with PPIUD and compared them with those of interval insertion, which has thus prompted this research. The objective of our study is to compare the complications of IUD insertion during the postpartum and interval periods at the Jos University Teaching Hospital, Jos, Nigeria.

MATERIALS AND METHOD

This study was conducted at the Jos University Teaching Hospital in Jos, Nigeria, between January and December 2021. It was a hospital-based prospective parallel cohort study. The study population was made up of 2 cohorts of consenting women (87 each) who wanted to use the IUD. The first group consisted of women within 48 hours postpartum (exposed group), and the second group consisted of women who were at least 6 weeks postpartum (unexposed group). These women were recruited from the antenatal and family planning clinics, in labour ward in early labour and the postnatal ward.

A non-probability convenience sampling technique was used. Participants were recruited consecutively as they presented to the clinics and the labour ward, based on their availability and willingness to take part in the study. The inclusion criteria for recruitment into the study were: consenting women aged 18-49 years in the immediate postpartum period (within 10 minutes of placental delivery to 48 hours after vaginal delivery, including CS), and women at least 6 weeks postpartum. The exclusion criteria were: prolonged PROM, with features of chorioamnionitis, endometritis, abnormal vaginal discharge, unresolved or untreated PPH, uterine pathologies that distort the uterine cavity and cervical cancer. All the women signed informed consent forms at the time of recruitment.

Sample size calculation was done using the standard formula for comparing two population proportions:

$$n = P1\{1-P1\} + P2\{1-P2\} \times 2\{Z\alpha + Z\beta\}^2 / (P1-P2)^2$$

and a sample size of 174 was obtained with an attrition rate of 20%. $Z\alpha$= value of the standard normal distribution corresponding to a significance level of alpha (1.96 for a two-sided test at the 0.05) Z^{β}= value of the standard normal distribution corresponding to the desired level of power (0.84 for a power of 80%).

Using the values of P1 and P2 quoted from previous studies as P1= proportion of women that are post-partum IUD users (0.41%) [8], P2=proportion of women that are interval IUD users (0.132%) [19]

All women enrolled in the study had CuT380A inserted by trained doctors and nurses in accordance with standard National Guidelines. Postpartum insertions used the preloaded postpartum IUD, and Kelly's forceps and Ring forceps were used during Caesarean section, while the interval insertions utilised the introducer with a 'no-touch' technique and withdrawal method. Fundal placement was ensured for all insertions. Follow-ups occurred at 2-, 6-, and 26-weeks post-IUD insertion, focusing on outcomes of abnormal uterine bleeding (AUB), pelvic pain, expulsion, missing strings, abnormal vaginal discharge, discontinuation, and continuation rates. Data were collected using interviewer-administered semi-structured questionnaires and included basic socio-demographic information, their parity, their knowledge of the different types of family planning, the complications they experienced, continuation after the period of study and their willingness to recommend the IUD.

The data on complications were collected at each follow-up visit, and those who did not attend in person were reached by phone. Women not attending follow-ups or unreachable were classified as 'lost to follow-up' and excluded from the analysis. Data entry was performed using Epi Info version 7, followed by cleaning and analysis in SPSS (version 23.0), and the results were presented in tables. Descriptive statistics summarised socio-demographics and other characteristics in tables, and chi-square tests assessed the differences between the cohorts. Comparisons and associations between the complications for interval and postpartum insertions were done using Pearson's chi-square, adjusted chi-square, and relative risk. For all tests performed, a 95% confidence interval was used, and results were considered statistically significant for $p < 0.05$.

Ethical approval was granted by the Jos University Teaching Hospital, and written informed consent was obtained from the participants prior to IUD insertion. [JUTH/DCS/IREC/127/XXXI/2188]

RESULTS

A total of 174 women were enrolled for this study and had the Cu T380A inserted at either the postpartum or interval period. However, two women could not be reached at their first follow-up visit, another two at their second follow-up visit, and three at their third follow-up visit. The socio-demographic and reproductive characteristics of the two groups of women are shown in Table 1. Although the two groups were not matched, the significance test applied to the descriptive and obstetric characteristics of the women showed no statistically significant difference between the two groups. The mean ages ± standard deviation (SD) of the participants were 33.24±5.28 (SD) years and 33.71±6.53 (SD) years for the PPIUD and interval

Table 1: Socio- demographic and reproductive profile of the women

Characteristics	Postpartum	Interval Period		
	Frequency (%)	Frequency (%)	χ2	p-value
Age (years)				
≤20	1 (1.1)	3 (3.4)	2.383*	0.497
21-30	24 (27.6)	27 (31.0)		
31-40	55 (63.2)	47 (54.0)		
41-50	7 (8.0)	10 (11.5)		
Mean age ±SD	33.24±5.28	33.71±6.53		0.518(t test)
Religion				
Christian	58 (66.7)	54 (62.1)	0.401	0.527
Muslim	29 (33.3)	33 (37.9)		
Educational Status				
None	0 (0.0)	1 (1.1)	2.619*	0.454
Primary	4 (4. 6)	7 (8.0)		
Secondary	25 (28.7)	27 (31.0)		
Tertiary	58 (66.7)	52 (59.8)		
Occupation				
Self-employed	30 (34.5)	32 (36.8)	0.268	0.966
Civil Servant	29 (33.3)	30 (34.5)		
Housewife	22 (25.3)	20 (23.0)		
Student	6 (6.9)	5 (5.7)		
Marital Status				
Single	1 (1.1)	0 (0.0)	1.392*	0.283
Married	86 (98.9)	87 (100.0)		
Parity				
<5	61 (70.1)	64 (73.6)	0.256	0.613
≥5	26 (29.9)	23 (26.4)		

*Adjusted Chi square (Likelihood ratio)

Table 2: Comparison of immediate complications of IUD insertion at postpartum and Interval periods at 2 weeks follow up visit

Complication	Postpartum n=86 (%)	Interval n=86 (%)	χ2	p-value	Relative risk	(Confidence interval)
AUB	5(5.8)	9(10.5)	1.244	0.265	0.55	0.19 – 1.56
Pelvic Pain	6(7.0)	11(12.8)	1.632	0.201	0.55	0.22 – 1.37
Partial Expulsion	4(4.7)	1(1.2)	1.981*	0.159	4.00	0.58 – 27.46
Complete Expulsion	7(8.1)	0(0.0)	10.001*	0.002	15.00	2.70 – 83.20
Missing Strings	29(33.7)	4(4.7)	23.436	<0.001	7.17	3.02 – 17.01
Abnormal Vaginal Discharge	2(2.3)	9(10.5)	4.759	0.029	0.22	0.06 – 0.86
Discontinuation	11(1.8)	0(0.0)	11.752	0.001	11.7	2.72 - 50.35

*Adjusted Chi square (Likelihood ratio)

Table 3: Comparison of immediate complications of IUD insertion in the postpartum and Interval periods at 6-week follow-up visit

Complication	Postpartum n=74 (%)	Interval n=84 (%)	χ2	p-value	Relative risk	Confidence interval (CI)
AUB	4 (5.4)	13 (15.5)	4.156	0.041	0.35	0.13 - 0.96
Pelvic Pain	9 (12.2)	17 (20.2)	1.866	0.172	0.60	0.29 – 1.25
Partial Expulsion	2 (2.7)	0 (0.0)	3.063*	0.080	5.7	0.81 – 40.10
Missing Strings	22 (29.7)	5 (6.0)	15.699	<0.001	5.00	2.24 -11.18
Abnormal Vaginal Discharge	4 (5.4)	13 (15.5)	4.156	0.041	0.35	0.13 – 0.96
Discontinuation	3 (4.1)	2 (2.4)	0.360*	0.549	1.71	0.31 – 9.43

*Adjusted Chi square (Likelihood ratio)

Table 4: Comparison of immediate complications of IUD insertion in the postpartum and Interval periods at 26 weeks follow up visit

Complication	Postpartum n=69 (%)	Interval n=78 (%)	χ2	p value	Relative risk	Confidence Interval (CI)
AUB	14(20.3)	15(18.8)	0.056	0.813	1.06	0.67 – 1.67
Pelvic Pain	14(20.3)	18(21.3)	0.021	0.886	0.95	0.50 – 1.82
Partial Expulsion	2(2.9)	0(0.0)	3.111*	0.078	5.78	0.82 – 40.77
Complete Expulsion	0(0.0)	1(1.3)	1.250*	0.264	0.39	0.07 – 2.01
Missing Strings	12(17.4)	6(7.5)	3.423	0.065	2.32	0.95 – 5.68
Abnormal Vaginal Discharge	6(8.7)	11(13.8)	0.936	0.333	0.63	0.25 – 1.59
Discontinuation	3(4.3)	7(8.8)	1.186*	0.276	0.49	0.14 – 1.75

*Adjusted Chi square (Likelihood ratio)

groups, respectively, with the majority being within the age range of 31-40 years. All but one of the women were married. Details of religion, marital status, educational status, occupation, number of pregnancies, and parity are presented in Table 1.

Discontinuation and continuation

A total of 7 patients (4.02%) were lost to follow-up during the study period: 3 from the PPIUD group and 4 from the interval group. The total discontinuation rate in the PPIUD group at the end of this study period was 21.4%, primarily due to expulsions, which occurred in 15 of the 18 women (21.4%) who discontinued the IUD. The interval group had a total discontinuation rate of 12.04%. This was primarily from complications of abnormal bleeding, pelvic pain, abnormal vaginal discharge, and only 2 of the 10 women who discontinued the IUD in the interval group were as a result of expulsion. A summary of the results of immediate complications associated with the postpartum and interval insertion of the IUD at 2 weeks post-insertion, respectively, were reported in Table 2.

Continuation rates at the end of the study were 75% in the PPIUD group and 86.7% in the interval group (p=0.054). Willingness to recommend the IUD was high in both groups: 95.4% for PPIUD and 97.7% for the interval group (p=0.406).

DISCUSSION

Effective contraception like the IUD during the early postpartum period can enhance modern contraceptive uptake and improve health outcomes for women and children. [20] IUDs, though effective, are not without side effects, which often prompt users to request removal; these side effects include pain, bleeding, infection, etc. [17] This study compares complications when an IUD is inserted in the postpartum period as against the interval period, which has been the usual time of its insertion. The mean age of women in this study is 33.24 ± 5.28 (SD) years for the PPIUD group and 33.71 ± 6.53 (SD) years for the interval group. This is similar to a study in Port Harcourt by Nonye-Enyidah et al., in which the mean age of the women was 33.66 ± 5.53 (SD) years.[21] Most of these women were aged 31-40 years, which is similar to findings by Igwebueze in Enugu.[13] This may signify the age range when most women in our setting are actively within their reproductive career and are thus seeking some form of birth control measures.

In this study, the IUD expulsion rate was higher in the postpartum group than in the interval group, and this accounted for most of the discontinuations in the postpartum group. It has been suggested that PPIUD could lead to excessive lochia, although there is paucity of research in this area; hypothetically, if it is excessive or prolonged, it could lead to IUD expulsion much the same way as excessive uterine bleeding does.

It has been observed that the critical period of IUD expulsion coincides with the early postpartum period of 4 to 6 weeks during which lochia discharge is ongoing and uterine involution is taking place. [22] This was the case in the study, in which most expulsions occurred in the early postpartum period. The decrease in the total (partial and complete) expulsion rate in the postpartum group, from 12.8% at the first follow-up visit to 2.9% at the end of the study period, was similar to findings reported by Rahaman et al. in an Indian study. [23] While the cumulative expulsion rate (i.e., for both complete and partial) of 15.5% at the 6th week follow-up visit was much higher than the rate of 2.5% reported by Igwebueze in Enugu, Nigeria [13] and 8% by Eluwa et al. [8]

A very low partial expulsion rate at 2 weeks of 1.2% in the interval group in this study was comparable to findings by Eroglu et al in a study done in Turkey where the partial expulsion rate was 1.5%[4] but much lower than findings of 6% in an earlier study done by Anyaka et al in Jos. [24] The finding of higher expulsion rate in the postpartum group relative to the interval group is corroborated by Eroglu et al [4] and Supriya et al[16] but contrasted with findings from an Indian study by Lucksom et al where expulsion rate was much higher in the interval group than the postpartum group.[15]

The high expulsion rate in this study may also be due to the possibility that the insertions were done by staff who were still on the learning curve, since it was in a teaching hospital setting with an ongoing residency training program and postpartum IUD insertion was not part of the hospital's routine services at the time of this study. Spontaneous expulsions of the IUD have been thought to be due to uterine remodelling, even though low IUD insertion could also be a factor, which would be unlikely in this study because longer instruments for insertion were used.[5]

The rate of pelvic/lower back pain increased over the period of study in the postpartum group and was 18.8% at the 26th week follow-up. This is comparable to other studies with rates of 13.54% reported by Sharma et al. [25] and 20% by Rahaman et al. [26]; it was much lower than the findings of 43.80% reported by Kittur et al. [27] The occurrence of pelvic/lower back pain in the interval group was more common in this study (22.1% at the 26th week) than the rates of 7.7% reported by Nonye-Enyidah et al. in Port Harcourt [28] and 7.4% in Jos. [24] It was a reason for discontinuing the method among this cohort of women. Pelvic pain in the postpartum group may have been due to uterine contractions during involution; therefore, it was more acceptable to the women, while pain in the interval group may have been due to uterine rhythmic contraction in an attempt to expel the IUD and may have accounted for the increased complaints from the women. Although pelvic pain rates were higher in the interval group during the follow-ups, no statistically significant differences were found between the two groups.

Copper IUDs have been associated with an increase in the amount of menstrual bleeding.[4,] The rate of abnormal bleeding of 5.4% in the PPIUD group at the 6th week follow-up visit was similar to but slightly lower than the rate of 6.19% reported by Kittur et al in India [27] and much lower than the 18% reported by Rahaman et al [26] and 22.5% at 6 weeks in a recent study done by Muganyizi et al. [22] The rate of 18.8% seen at the 26th-week visit was comparable but slightly higher than the finding of 16.66% in a study by Sharma et al. in India. [25] Abnormal uterine bleeding among the interval group at the 26th week visit of 19.2% in the present study was much higher than the rate of 10.4% in an earlier study done in Jos. [24] Changes in bleeding pattern; mostly menorrhagia occurred more frequently in the interval group than in the postpartum cohort throughout the study period. This was statistically significant at the 6-week follow-up visit (p=0.041), but no statistically significant difference occurred between the 2 groups at the end of the follow-up period.

The incidence of missing strings in the PPIUD group was 29.7% at 6-week follow-up, which is similar to the 29.0% rate in a multi-centre study conducted by FIGO across 6 countries [29] and to 24.76% by Kittur et al. at 6 weeks. [27] It was, however, lower than the 38.0% reported by Hooda [30] and much higher than the 9.9% reported by Igwebueze in Enugu [13] at the 6th-week follow-up visit. [13] The incidence of missing strings was much lower in the interval group, at 4.7% at the 2-week

follow-up visit and 7.5% at the 26-week follow-up visit.

In the multi-centre study conducted by FIGO, the result showed that missing threads were 2.88 times more common following insertion after caesarean delivery. The provider must make an additional attempt to straighten the threads after insertion during caesarean delivery, whereas during vaginal insertion the threads should naturally sit at the cervical os. Although laying threads is the standard protocol during caesarean delivery, it is an extra step that providers might forget to perform. [29] Though an attempt was not made to distinguish between trans-caesarean and vaginal IUD insertions in this study, this could have contributed to the overall missing IUD strings rate in the PPIUD group. Missing string was a cause of anxiety for the patients in this study because they thought that the IUD was either displaced or had been expelled and were at risk of unplanned/unwanted pregnancy. Their anxiety was allayed by the speculum examinations or pelvic scans done to ensure its presence and proper position.

The 26-week continuation rate of 75.0% in the PPIUD group is comparable to the continuation rate of 76.5% in a study by Igwebueze in Enugu [13], but lower than the 81.25% at 26 weeks reported by Sharma et al. [25] and the 87.6% at 6 months reported by Lucksom et al.[15] The continuation rate of 86.7% in the interval group in this study was higher than the continuation rate of 71% reported by Nonye-Enyidah et al. [28], who also reported a much higher discontinuation rate of 29% [28] compared with 12.04% in this study. This discontinuation rate of 12.04% in the interval group is comparable to the 12.1% reported by Ayogu [31] in Abuja, Nigeria, but much lower than the 29.6% reported by Igwe in Abakaliki, Nigeria. [20]

Despite the initially high discontinuation rate in the PPIUD group, 75% of these women continued on a highly effective method of contraception at 26 weeks despite the complications some of them experienced, and there was no statistically significant difference in the continuation rates between the two groups (p= 0.054). This finding is similar to a study by Supriya et al. [16], which found no statistically significant difference in 6-month continuation rates between the postpartum and interval cohorts. [16] The high continuation rates in both groups suggest the desire of these women to meet their needs for contraception, and they may have acknowledged that the benefits of continued use outweigh the disadvantages.

The study was not without its limitations, as it was hospital-based and the findings may not be generalizable to the general population. Also, the symptoms of pelvic pain, AUB and abnormal vaginal discharge should be interpreted with caution because they could be physiological processes in the puerperium.

CONCLUSION

In conclusion, complications associated with IUD use occurred in both groups and were statistically significant early in the follow-up period. Overall, these complications were comparable and not statistically significant in the long term. The continuation rates were also comparable between the two groups. This suggests that the PPIUD can be a promising approach to increasing uptake of modern contraception and addressing the unmet need for family planning of women. The PPIUD should therefore be encouraged. Improvement in the skills of health personnel is required to reduce the expulsion rate, which was found to be high in this study.

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