Factors associated with the Uptake of Immediate Postpartum Intrauterine Contraceptive Devices(PPIUCD) in Rwanda: A Mixed Methods Study

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Research

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Abstract

Background: Rwanda has a high unmet need for family planning which could be reduced by improving access to postpartum intrauterine contraceptives device (PPIUCD) insertion. The objective of the study was to assess the prevalence and factors associated with the uptake of PPIUCD among postpartum women in Muhima Hospital.

Methods: A concurrent mixed method study was used. Three hundred eight three (383) immediate postpartum mothers, and 10 health services providers were interviewed using structured questionnaire and in-depth interview respectively. Logistics regression was done to assess for factors associated with PPIUCD uptake and thematic analysis was used for qualitative data.

Results: The prevalence for PPIUCD use was 28.1% , women who had normal delivery were more likely to take up PPIUCD (Adjusted Odds Ratio (AOR) 2.623, 95%CI=2.017-6.507 compared to those who had cesarean section; women who received PPIUCD counselling during antenatal period were more likely to use PPIUCD ((AOR 2.072, 95%CI=1.018-4.218) as compared to those who didn't receive any form of counselling ; mothers who received spouse approval were more likely to use PPIUCD (AOR 2.591,95%CI= 1.485-4.492);as compared to those who didn't receive any spousal approval; women who had more than one child were more likely to use PPIUCD (AOR =2.265, 95%CI=1.472-3.163) as compared to prime gravida; Mothers with birth to pregnancy interval less than two years were more likely to use PPIUCD (AOR =2.123, CI =1.477-2.706) as compared to those who had birth to pregnancy interval more than 2 years. From the qualitative, health education of mothers and partners on PPIUCD, training of health care providers and availability of supplies to provide PPIUCD influenced use of PPIUCD.

Conclusion: The acceptability to use for PPIUCD was high in this population. PPIUCD uptake was associated with normal birth, PPIUCD counselling, spousal approval, parity, birth interval, level of education. Health education of mothers and partners on PPIUCD, training of health providers and availability of supplies to provide PPIUCD influenced use PPIUCD.

Plain English Summary

Early Initiation of contraceptive after delivery is important because it provides safe and long-term protection against unintended pregnancy and short birth interval and is suitable and convenient option for women who visit health facility during time for delivery only due to various factors. The study described the uptake for the method among postpartum women 48 hours following delivery and explored health care provider's experience regarding the provision of PPIUD. The investigator approached women who had delivered both vaginal and by cesarean delivery 48 hours after delivery and health care providers who were trained and provide PPIUCD as contraceptive method at Muhima hospital. All women who gave birth from January to march 2019 were asked to participate in study and 383 women who consented to the study were interviewed. The uptake for PPIUCD was 28%. Women who had normal delivery, women who received PPIUCD counselling during antenatal period, mothers who received spouse approval and women who had more than one child were more likely to use PPIUCD. Health education of mothers and partners on PPIUCD, training of health care providers and availability of supplies to provide PPIUCD influenced use of PPIUCD. In conclusion various factors affect the uptake of the method after delivery and training of both midwives and doctors is very important to initiate the service and sustain the provision in the facility.

Background

Postpartum family planning (PPFP) is the prevention of unintended pregnancy and closed pregnancy through the first 12 months following childbirth and is recognized as key life-saving intervention for mothers and their children(1). Globally, it is estimated that 214 million women of reproductive age in low income countries want to avoid pregnancy but are not using a modern contraceptive(2). Data from 27 countries, shows 95% of women who are 0–12 months postpartum want to avoid

pregnancy in the next 24 months; but 70% of them are not using contraception(1)(3). In sub-Saharan countries, postpartum contraceptive intrauterine device (PPIUCD) still represents a small proportion of contraceptive service delivery (4)(5).

The World Health Organization (WHO) recommended that birth to pregnancy interval should be 24 months (6); since short birth intervals are associated with adverse pregnancy outcomes such as induced abortions, miscarriage, preterm births, neonatal and child mortalities, still births and maternal depletion syndrome(7). Research has demonstrated that long-acting methods such as intrauterine devices (IUDs) are a cost effective and sustainable way of reducing unmet need and unintended pregnancy in low resources setting(8).

PPIUCD is one of the contraceptive method which is safe and highly effective reliable and inexpensive, non-hormonal, reversible and long acting contraceptive(9). The medical eligibility criteria WHO recommended it can be initiated during the immediate postpartum period and it cannot interfere with breastfeeding (10, 11). The PPIUCD has shown that when it is initiated after delivery it can improve maternal and newborn health by preventing obstetrics complications such as maternal and newborn mortality and other health related complications associated with closed spaced pregnancy (12). Immediate post-partum period is an ideal time for PPIUCD when women are highly motivated to accept family planning methods (13) (14). The immediate postpartum period is a great opportunity for PPIUCD services providers to introduce the method especially in setting where women meet with health care providers is difficult due to geographical barrier (15). Lack of provision for PPIUCD can contribute to the occurrence of unintended pregnancies because most of the women do not return for postnatal services(12). The early initiation and provision of postpartum family planning method (PPIUCD) during immediate postpartum period protect women from unintended pregnancy as majority of women either resume early sexual activity or have early return to fertility(1)(10).

Rwanda Demographics Health survey showed the women who attend ANC stand at 98% and delivery at facility 91% and family planning in Rwanda is free of charges(16)(17) despite this, there is high unmet of postpartum family planning at 19% of women with short birth to pregnancy interval, consequently women don't achieve their fertility preference which further indicates the need for strengthening PPFP/PPIUD at health facility level (16). There is need to reach all postpartum women with unmet need for family planning

PPIUCD service were introduced in Rwanda in 2012 but little is known about the prevalence and factors associated with use of postpartum family planning / PPIUD particularly among women in immediate postpartum period within 48 hours. Understanding the factors associated with immediate postpartum IUD use will provide information that can help policy makers and other stakeholders to improve service delivery of PPIUD.

Methods

Study area and period

The study was conducted at Muhima hospital, Department of Obstetrics and gynecology which is located in Nyarugenge District sector, Kigali city. Muhima is a 128-bed hospital specializing in gynecology and neonatology. This hospital oversees eight functional health centers. Muhima is the training site for all medical schools and schools of nursing and midwifery in Rwanda.

Muhima District Hospital was chosen because it has a high number of deliveries and it is also one of the hospitals where the implementation of PPIUD was initiated. It has an average of more than 500 deliveries monthly.

The Study designs

Mixed-method concurrent design was employed to determine the use of PPIUCD and its associated factors. The cross-sectional design involved the use of an interviewer-administered questionnaire which was conducted among women who are in the immediate postpartum period. (Immediate postpartum was defined as women who have given have given birth10

minutes after birth up to 48 hours of delivery). In addition, in depth-interviews was conducted among health care providers at Muhima hospital to share their experiences about PPIUD service delivery.

Study participants and sampling procedures

The study population consisted of women who were in the immediate postpartum care within 48 hours after delivery before discharge at Muhima district hospital and Midwives who were working in the labor suite, immediate postpartum ward and family planning department who were actively involved in the provision of PPIUCD.

The study used a consecutive sampling method to select the eligible participants who were within 48 hours after delivery. The participants were approached in the labor ward or postpartum ward where they were invited to take part in the study. The files of women who had delivered were checked to ensure that they had fulfilled the inclusion criteria of the study. The participants were informed about the study including providing adequate information regarding the purpose, procedure, benefits, and risks of the study. The potential participants consented before they were interviewed for the study. Women who accepted to be inserted an IUD were considered to have used PPIUCD, while women who declined to use IUD were considered to have not used the PPIUCD. The associated factors for use or non-use of PPIUCD were determined.

Sample size determination

The sample size was powered to determine the prevalence for PPIUD. The sample size was calculated using a prevalence of 48% for contraceptive prevalence, 95% confidence interval and an error margin of 5%. A total of 383 mothers were recruited for this study.

The sample size for factors associated was calculated using α = Type 1 error 5%., Z = the standard normal statistic corresponding to 1.96; β = Type II error as 20%; Odds = 3.1. The odds were derived from literature; Percent of exposed with outcome = 14; Risk/Prevalence ratio = 2.8; Risk/Prevalence difference = 9; Assuming power of 80%, type 1 error of 5%, type II error of 20%, and odds of 3.10, the sample size of the study was estimated at 374 women. The study adopted the sample size of 383 to increase the statistical power of the study. Therefore, a sample size of 383 women was used in this study.

Variables measurements

Data were collected through face to face interviewer administered questionnaire, mixed method were applied to collect data. The data collected include Social demographic factors;(age, level of education, marital status religious beliefs) knowledge about PPIUCD; Social cultural factors:, (myths cultural norms, partner, support, peer influence) social economic factors; (poverty, source of income, occupation), Reproductive factors: (parity, number of living children desired, mode of delivery, fertility desire, side effects of methods), Service delivery related factors; (availability for suppliers and IUCD, health care worker knowledge and skills, access to health facility, knowledge for health care providers, quality of care delivered to the women, Family planning information and counselling during antenatal care).The prevalence for participant who used PPIUCD was measured. The tools were piloted and pretested before starting data collection to assess appropriateness, content clarity and comprehensiveness of the questions and time taken to fill the questionnaires.

Data collection

Data were collected in February to March 2019. A face to face questionnaire was used to collect data from the postpartum mother using the local language. In-depth interviews were conducted with the midwives until saturation was reached. Interviews were held with both visual and auditory privacy. Data were collected by two trained research assistants who has been trained. The lead author of the study supervised all data collection to ensure quality control and assisted in taking notes. All study participants were encouraged to openly discuss their opinions. No personal information in the form, names or other identifying data was obtained.

Quantitative Data analysis

The outcome variables in this analysis is a binary variable for postpartum intrauterine contraceptive use, proportions were used to summarize participants who used PPIUCD. PPIUCD use is defined as any participant who chose IUD as postpartum family planning. Those women not choose to use IUD as postpartum contraceptive were classified as non-user. The prevalence of PPIUCD use was determined by dividing the number of women who had accepted to use PPIUCD by the total number of all postpartum women who participated in the study.

To determine the factors associated with the use of PPIUCD, chi-square tests and binary logistics regression were used. The bivariate analyses were conducted to determine the independent variables that were significantly associated with PPIUCD use. The significant variables were of value less than $p < .05$ at the 95% confidence interval. Then variables which were $p < 0.2$ were subjected to multivariate analyses in the binary logistic model to obtain the adjusted odds ratios of the statistically significant variables.

Qualitative Data analysis

The interview was recorded and transcribed verbatim in Kinyarwanda, after validating the transcription, the typed narratives were then translated into English and verified the accuracy. Analysis of the data was conducted by the primary author and included several iterative steps. Using thematic contents analysis, the transcripts were reviewed several times, and set of codes were developed to describe groups of words, or categories with similar meanings. the transcripts were then coded and managed using ATLAS.ti version 7. The grouped categories were refined and used to generate themes emerging from the data. Direct quotations from midwives are presented in italics to highlight key findings.

Ethical review and approval

Ethical review and approval were obtained from the Higher Degrees and Research Ethics Committee of the College of Health Sciences at Makerere University **#SHSREC REF NO: 2018-045** and Research Ethics Committee of the College of Medicine and Health Sciences University of Rwanda **No 404/CMHS IRB/2018**. The administrative clearance and permissions were obtained from Muhima hospital ethical committee. Written informed consent was obtained from the mothers and the midwives. Participation was voluntary and all the interviews were conducted in private settings to ensure participant's confidentiality.

Results

Social demographic characteristics

The mean age of study participants was 28.6 years (SD ± 4.3 years). More than one-half (58.7%) of the respondents had tertiary level of education and 10.4% had no formal education (Illiterate). Nearly one-half (47.5%) of the participants were catholic, 82% were legally married and more than one-third (37%) were employed (37%). More than three-quarters (77.5%) of the women were living in urban areas (Table 4.1).

Knowledge and Use of PPIUCD

Majority of the women 324 (84.6%) reported that they had ever heard about the PPIUCD. The reasons for using PPIUCD included the associated less side effects (14.1%), non-interference with breastfeeding (10.2%) and being a long acting method (9.7%). Some of the women did not use the method due to fear of the sides effects (10%), inadequate knowledge on the method (12%), and partner's disapproval (10%) for the method. A significant number of women were informed on PPIUCD used during antenatal care (39.9%), while others got the information during family planning services (37.1%). Majority of women 239 (62.4%) were para 2–5; and those who had normal delivery 62.9% and cesarean section, the proportion using postpartum IUCD among women who were attending Muhima Hospital was determined to be 28.1% (Table 4.2.)

Factors Associated with Postpartum IUD Use

The women who had normal delivery were three times more likely use of PPIUCD (AOR = 3.623, 95%CI{2.017–6.507}) compared to cesarean delivery ; participants who have PPIUCD counselling were two times more likely to use PPIUCD (AOR 2.072, 95%CI{1.018–4.218}) compared with counterpart, women who got the Spouse approval were two times more likely using PPIUCD (AOR 2.583,95%CI {1.485–4.492}) compared with women who did not get approval; participants who have P2-P4 were two times more likely to use PPIUCD (AOR = 2.265, 95%CI{1.472–3.163}); pregnancy interval was significantly associated with use of PPIUCD (AOR = 2.123,95%CI{1.477–2.706}); The level of education was associated, women with higher level of education was significantly associated (AOR 2.591, 95%CI{1.329–3.062}

In-depth Interviews(IDI)

In this study, midwives were providing the PPIUCD and they were supported by the Ministry of Health through training and supply for the methods at health facility level, the investigator wanted to understand the midwives' experiences and perceptions regarding the PPIUCD provision. A total of 10 in-depth interview was conducted with the midwives who work on labor suite, immediate postpartum ward, antenatal and family planning service. From the analysis the following themes were emerged:

Health educations of the mothers and their partners on PPIUCD

Health care providers suggested that health education of women and their husband during antenatal care was important in increasing the acceptability and the use of PPIUCD. The midwives asserted that women come with wrong cultural beliefs which hinders the use of PPIUCD among postpartum women, through educating the couple during antenatal care corrected the myths and misconception regarding PPIUCD use and gave adequate time for women and their partners to decide earlier and make informed choice on using PPIUCD before the delivery. This was evidenced in one of the quotes by health care providers below:

"The counselling start from antenatal care, during labor and after delivery, we teach mothers about family planning, and we emphasize a lot on family planning after delivery. Most of women are not aware about immediate postpartum family planning, we focus on it a lot during antenatal care and give to women the time to think about it and they come to deliver when they have already made their choice, it is also the right time for us ,,, as we have a lot of time to discuss with women, we told them that they can get the method PPIUCD within 48 hours before discharge, we explain about all side effects for the methods and let them make choice, but most of the time we emphasize a lot on methods depending on mother preference and the methods that can fit the mother". IDI 3

Training health care providers on PPIUCD

Training on PPIUCD services increases the confidence and competence among health care providers to provide the methods. The majority of participants reported that they had been trained on post-partum family planning.

". At the beginning for PPIUD implementation I was not comfortable and having fear for providing the method due to different side effects that can occur like perforation of uterus, expulsion …, but now because of competence from the training we got, I provide the methods with confidence and it has improved the quality care service delivery." IDI 3

The effective training for health care provider, increase the quality of provision:

"The training has effect, me as midwife I have been trained and provide PPIUD counselling, but those who have not yet trained, it's hard for them to give, because they don't want to provide the method they are not conversant with, and affect the acceptability and use of method to women, the facility facilitates us in terms of the regular training provision but there is need to increase training". (IDI 2).

Perception of a health providers influences their behavior

The midwives perceived that the use of PPIUCD was the suitable and preferred family planning method for women in the immediate postpartum period. The midwives perceived that the method was less painful for the women and that it required

no additional need for frequent re-visits by the client after insertion to the hospital.

"I teach the mother about all methods we have, I do hear her preference, and I advise her depending on her preference, I respect mother choice when I am about to provide the method .I encourage women to use the PPIUCD because it is safe and less painful insertion considering with interval PPIUD method and will not require women to comeback frequently at hospital and this is the right time when women is still in facility, motivated with health care providers and her husband to think about her next pregnancy spacing and make informed choice ".(IDI 1.).

Myth and misconception of a method affected its use

According to the midwives, women were hesitant to use the method because of the mistaken belief that it might interfere with sexual intercourse. This was captured in the following quote below:

"When we approach women during counselling on PPIUCD, they used to have doubt on methods whether it will work, different rumors and myth from their friends and relatives about PPIUD, have confusion whether her husband will be comfortable during sexual intercourse, and because they are not familial with using method immediately after delivery as they were routinely used to injectable and pills after six weeks or before based on this myth" (IDI 5).

Availability and supply of commodities

Availability and supply of commodities increases the consumption of a service. The midwives recognized that regular supply of the PPIUCD to ensure that no woman would miss getting the method because of stock out.

"The hospital administration ensures that all the training materials and the PPIUCD methods are available in the hospital. We have a high number of deliveries here at Muhima hospital, and there is a high demand for the method before discharge as women got counselling from ANC. The administration supports us in all ways to help us deliver the PPIUCD methods to women. They provide regular supply for the methods in labor and family planning services to make sure no woman can miss the opportunity for PPIUD insertion" (IDI 7).

Table 1

Social demographic characteristics

Variable	Frequencies (%)
Age in years (Mean age X = 28.9, SD±4.3 18–24 25–34 35–40	94(24.5) 194(50.7) 95(24.8)
Occupation Unemployed Employed Student	125(32.6) 143(37) 115(30)
Education level No formal education Primary Tertiary	40(10.4) 115(30) 225(58.7)
Religious beliefs Catholic Protestant Muslim	182(47.5) 68(34.7) 133(17.8)
Marital status Single Married	75(19.6) 307(80.2)
Place of residence Urban Rural	297(77.5) 86(22.5)

Table 2

Reproductive actors and source of knowledge

Variable	Frequency (%)
Parity 1 2–4 > 5	91(23.8) 239(62.4) 53(13.8)
Mode of delivery Normal delivery Cesarean section	241(62.9) 142(37.1)
Ever heard PPIUCD Yes No	324(84.6) 59(15.4)
Reason to use PPIUCD Long acting Child spacing Does not interfere with breastfeeding No hormonal related sides effects Fewer routine visits Preference of other methods	37(9.6) 15(3.9) 39(10.2) 56(14.1) 14(3.7) 225(58.7)
Reason for don't to use PPIUCD. Don't want contraceptives Satisfied with previous method Afraid of sides effects Husband disapproval No knowledge about PPIUCD Preference of other methods	30(8.2) 24(6.3) 76(20) 31(10) 38(12) 152(39.7)
Sources of knowledge Media Antenatal clinic Family planning clinic Friends	19(4.9) 153(39.9) 142(37.1) 69(17.8)
Preferred other method Contraceptives pills Male condom Implant Injectable	14(4.4) 19(5.0) 75(19.9) 31(8.1)

Table 3
Multivariate Logistic Regression Examining Factors Associated with uptake of Postpartum Intrauterine Contraceptive Device Use

Variable	C.O.R**. (95% CI) p -value		A.O.R***. (95% CI)	p- Value
Parity				
P1	1		1	
P2-p4	3.450(1.868–6.370)	0.001*	2.265(1.472–3.163)	0.004 *
P4	5.260(2.472–11.194)	0.001*	1.284(0.138–0.584)	0.001*
Mode of delivery				
Cesarean section	1		1	1
Normal delivery	0.285(0.166–0.489)	0.001*	2.623(2.017–6.507)	0.001*
Pregnancy interval				
> 24 months	1		1	1
12-24months	1.115(0.662–1.877)	0.682	1.517(1.293–3.115)	0.101
6–12 months	1.934(1.086–3.445)	0.025*	2.123(1.477–2.706)	0.001*
PPIUCD counselling				
Yes	1.733(1.919–3.265)	0.001*	2.072(1.018–4.218)	0.001*
No	1		1	
Age				
35–40	4.740(2.393–9.387)	0.001*	3.560 (1.660–7.632)	0.001
25–34	2.737(1.6304.596)	0.001*	2.515 (1.401–4.515)	0.002
15–24	1		1	
Level of education				
No formal education	1		1	
Primary	1.281(0.776–2.116)	0.333	1.691(0.941–3.037)	0.079
Tertiary	1.281(0.776–2.116)	0.333	2.583(1.329–3.062)	0.045*
Spouse approval				
Yes No	0.388 (0.237–0.638) 1	0.001*	2.591(1.485–4.492) 1	0.001*

*p < 0.05: significant variables; **COR: crude odds ratios ***AOR: Adjusted odds ratios

Discussion

The findings of the study showed that the uptake of PPIUCD was associated with normal birth, PPIUCD counselling, spousal approval, parity, birth interval, level of education. Health education of mothers and partners on PPIUCD, training of health care providers and availability of supplies to provide PPIUCD influenced use PPIUCD.

Overall the prevalence rate of 28.1% for the use PPIUCD in this study was generally higher than other study done in Ethiopia 12.4%, in India 12.6%, Texas in 13.5% Brunson et al., ;Gonie et al.,; Rajasthan et al.,(18)(12)(14) and this prevalence was in line with with findings from Tanzania which found 27% (19) and was attributed on the fact that the health care providers from Tanzania setting were trained to provide PPIUCD and enhance women knowledge during ANC. The high prevalence rate in Rwanda could be attributed to the fact that Muhima Hospital is one of the piloting health facility for PPIUCD implementation in Rwanda and Ministry of health has put many resources such training of health care providers, supplying the methods in the facility which might have increased the use of the PPIUCD in the facility. This shows that if there is commitment from government, there is a sustainability of any outcome.

The level of education influences health behavioral, in this study, it was observed that the use of immediate PPIUCD increased with the level of education. Women who are educated are empowered to decide fertility control and can better understand the health information offered to them regarding the use of PPIUCD, Additional women who are educated were more likely to visit a health facility and receive counselling for different methods available in the health facility. This is in line also with a study done in Ethiopia where women with formal education were more likely to use PPIUCD compared with counterparts (12) .

Counselling for mothers during prenatal visits increase the awareness for mothers regarding the PPIUCD. In this study, counselling the couple during antenatal was significantly associated with the use of PPIUCD, which was consistent with the various studies done in West central Africa and Ethiopia (20)(21). The role of counselling was also confirmed in the in-depth interviews, where midwives noted that counselling during antenatal care increased the demand and utilization of PPIUCD as is the convenience and suitable time for counselling. The antenatal counselling also allows the client to have enough time to discuss with the family methods and also to have access information from health care providers which enables them to make an informed decision before the time of delivery as women may have more information on benefits of initiating postpartum contraceptives utilizations on timely manner and this can increase their intention to use immediately after delivery.

Male involvement in reproductive health is an essential component in promoting maternal and family health. In this study, women who received approval to use the method from their partners were more likely to use the method than their counterparts. This were similar with the study done in Ethiopia which showed that the higher odds of women who accept the PPIUCD were women who have had discussion with their partners(24) and study in India (22) reported that 42.96% of women declined to use PPIUCD due to partners' non-involvement in decision making. This indicates that the male's involvement in the decisions making process is necessary to increase the use of PPIUCD and prolong the continuation of the method and also it should be explained the importance of male involvement during counselling and decisions making in regard to fertility and reproductive health decisions and the need for involving partners in issues related to health and specifically reproductive health.

To achieve optimal birth spacing and ultimately to improve birth outcomes, there is need to have access to postpartum family planning service after birth. The short birth to pregnancy interval less than two years was significantly associated with use of PPIUCD. These findings were in line with study done in India(26) who got the same findings such as among women with short birth interval were more likely to use PPIUCD, this was also supported by WHO guidelines released that healthy timing and spacing of pregnancies has a positive effect on maternal health and newborn outcomes, when promoted in countries with high birth rates, 32% of all maternal deaths and over 1 million deaths of children under five could be prevented (27).

The number of children have been identified as an important individual characteristics influencing women’s reproductive health behaviors including uptake for postpartum family planning. The Parity was associated with use PPIUCD, women with a higher parity were more likely to use PPIUCD, this simply reflects that women with high parity required long term contraceptives for spacing secondly women who are multipara were more likely to meet the health service provider and

obtained suitable information regarding mode of family planning. The findings were consistent with study done in Ghana which reported high acceptance rate to use PPIUCD among multipara women(28).

The mode of delivery either spontaneous vaginal delivery or cesarean section contribute to PPIUCD insertion, in this study women who delivered normally were more likely to use PPIUCD compared to women who had a caesarian section. The higher utilization of PPIUCD among women with normal delivery could partly be attributed to the fact that during the training sessions a lot of emphasis was put on the midwives and the obstetricians were not trained so they lacked the knowledge and information. There is need to train both Midwives and obstetricians so that the service could be provided by both. In India both midwives and obstetricians were trained and the findings from the study done in India reported that 83% of PPIUD were inserted during normal delivery(29).

The findings from health care providers interview show that various measures need to be considered for effective PPIUCD delivery to the mothers who are in need including ; the training of health services, the availability of the method in facility, providers respects to women, privacy, waiting and counseling time were predictors for PPIUCD use, this shows that the facility need to make regular training and supply of the method at facility level, these predict the use of the PPUCD and increases the provider confidence to counsel and to provide the method and hence it impact the client satisfaction. Similar findings were reported by Melissa et al., shows that the competence of health service provider is linked to client's satisfaction(30).

Conclusion

Over a quarter (28%) of women in post-partum period used PPIUCD. The use of PPIUCD was associated with spousal approval, normal vaginal birth, antenatal counselling for PPIUCD, higher parity, short birth interval, and level of education. Health education of women and partners on PPIUCD, training of health providers, misconceptions regarding PPIUCD use and availability of supplies to provide PPIUCD influenced the use of PPIUCD.

Study Strength And Limitation

- This study used a mixed-method approach that provided complementary findings. The weaknesses inherent in the quantitative or qualitative approach were supplemented by findings from either of the approaches.
- The study has used facility based cross sectional design, the investigator was able to collect data from client at one point in time regarding the uptake for the method, however there were no follow up made to assess the side effects for the method and client satisfaction.

Abbreviations

ACOG: American Congress for Obstetrician and Gynecologist; **ANC**:Antenatal Care; **DHS**:Demographic and Health Survey; **FGDs**:Focus Group Discussions':International Federation for Gynecologist and Obstetricians; **IUDs**:Intrauterine Devices; **LARC**:long-acting reversible contraception; **MOH**:Ministry Of Health; **NISR**:National Institute of statistics of Rwanda; **PPFP**:postpartum Family planning; **PPIUCD**:Post-Partum Intrauterine Contraceptive Devices; **TWFR** (Total Wanted Fertility Rate); **UNFPA**:United Nations Fund for Populations Activities; **USAID**:United State Agency for International Development ;**WHO**:World Health Organization

Declarations

Ethics approval and consent to participate

Ethical review and approval were obtained from the Higher Degrees and Research Ethics Committee of the College of Health Sciences at Makerere University **#SHSREC REF NO: 2018-045** and Research Ethics Committee of the College of Medicine and Health Sciences University of Rwanda **No 404/CMHS IRB/2018**. The administrative clearance and permissions were obtained from Muhima hospital ethical committee. Written informed consent was obtained from the mothers and the midwives. Participation was voluntary and all the interviews were conducted in private settings to ensure participant's confidentiality.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and /or analyzed during the current study are not publicly available due to some privacy reason, but are available from the corresponding author on reasonable request.

Competing interests

The author(s) declare that they have no competing interests.

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Authors' contributions

KC, SNM, DK, MP, Conceptualized and designed the study, developed the methodology, supervised the data collection, analyzed and interpreted the data and wrote the manuscript. KAC critically edited the manuscript, and all authors read and approved the final manuscript

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References

1. WHO. Postpartum Family Planning. 2013. ISBN 978 92 4 1506496 https://apps.who.int/iris/bitstream/handle/10665/93680/9789241506496_eng.pdf
2. WHO. WHO technical consultation on postpartum and postnatal care. World Heal Organ. 2010;1–56. WHO/MPS/10.03 https://apps.who.int/iris/handle/10665/70432
3. UNFPA. Trends in Contraceptive Use Worldwide. 2015. ISBN 978-92-1-151546-6 https://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf
4. Buhling KJ, Zite NB, Lotke P, Black K. Worldwide use of intrauterine contraception: A review. Elsevier [Internet]. 2014;89(3):162–73. Available from: http://dx.doi.org/10.1016/j.contraception.2013.11.011 https://core.ac.uk/download/pdf/82087457.pdf
5. WHO. Programming strategies for Postpartum Family Planning.2013.ISBN 978 92 4 1506496 https://apps.who.int/iris/bitstream/handle/10665/93680/9789241506496_eng.pdf?sequence
6. WHO. Report of a WHO Technical Consultation on Birth Spacing. 2007; WHO/RHR/07.1 https://apps.who.int/iris/handle/10665/69855
7. Abraha TH, Gebrezgiabher BB, Aregawi BG, Belay DS. Predictors of postpartum contraceptive use in rural Tigray region , northern Ethiopia : a multilevel analysis. 2018;1–10. http:// doi: 10.1186/s12889-018-5941-4. https://www.ncbi.nlm.nih.gov/pubmed/30115045
8. Chakraborty NM, Murphy C, Paudel M, Sharma S. Knowledge and perceptions of the intrauterine device among family planning providers in Nepal: A cross-sectional analysis by cadre and sector. BMC Health Serv Res [Internet]. 2015;15(1):1–14. Available from: https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/s12913-015-0701-y?site=bmchealthservres.biomedcentral.com DOI:10.1186/s12913-015-0701-y
9. WHO. Medical eligibility criteria for contraceptive use. 5th editio.

WHO; 2015. **ISBN**: 978 92 4 154915 8 , https://apps.who.int/iris/bitstream/handle/10665/181468/9789241549158_eng.pdf?sequence=9

10. USAID J. Postpartum Intrauterine Contraceptive Device (PPIUD) Services Learner ' s Handbook. 2010; http://reprolineplus.org/system/files/resources/PPIUD_LRP_Learners_En.pdf
11. WHO. Medical eligibility criteria for contraceptive use Fifth edition 2015 Executive summary. Who. 2015;(July):1–14. **ISBN**: 978 92 4 154915 8 https://apps.who.int/iris/bitstream/handle/10665/181468/9789241549158_eng.pdf?sequence=9
12. Gonie 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 ,. Contracept Reprod Med bmc. 2018;1–8. https://doi.org/10.1186/s40834-018-0071-z

https://contraceptionmedicine.biomedcentral.com/articles/10.1186/s40834-018-0071-z

13. RCOG. Best practice in postpartum family planning. R Coll Obstet. 2015;(1). Best Practice Paper No. 1 June 2015 .https://www.glowm.com/pdf/best-practice-paper-1—postpartum-family-planning.pdf
14. Rajasthan S, Sharma A, Gupta V. A study of awareness and factors affecting acceptance of PPIUCD in. nternational J Reprod ,contraception Obstet Gynecol. 2017;4(8):2706–10. DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20173313 https://www.ijcmph.com/index.php/ijcmph/article/view/1758
15. USAID J. PPIUD Services : Start-Up to Regional Meeting Burkina Faso. 2014;

http://reprolineplus.org/system/files/resources/PPIUD_Burkina_RegMtg_Report.pdf

16. RDHS M 2016. Rwanda [Internet]. 2015. Available from: ISBN: 978-99977-43-09-1

https://dhsprogram.com/publications/publication-fr316-dhs-final-reports.cfm
https://dhsprogram.com/pubs/pdf/FR316/FR316.pdf

17. MOH Rwanda. The Government of Rwanda The Ministry of Health. 2014;(April 2014):19.website :http://www.moh.gov.rw http://moh.gov.rw/fileadmin/templates/cdc/NATIONAL_HEALTH_RESEARCH_AGENDA_2014-2018.pdf
18. Brunson MR, Mph DAK, Drph CHO, Weir LF, Mph TAR. a large universal healthcare system. Am J Obstet Gynecol. 2017;217(1):55.e1-55.e9. https://doi.org/10.1016/j.ajog.2017.02.036 https://www.sciencedirect.com/science/article/abs/pii/S0002937817303629
19. Abdulwahab R, Ali M, Sciences A. Acceptability and safety of postpartum intrauterine contraceptive device among parturients at Muhimbili National Hospital , Tanzania. 2012; (November).http://hdl.handle.net/123456789/666http://dspace.muhas.ac.tz:8080/xmlui/handle/123456789/666
20. Tsigue Pleah, a Yolande Hyjazi, b Suzanne Austin, b Abdoulaye Diallo, b Blami Dao, a Rachel Waxman a PK. Increasing Use of Postpartum Family Planning and the Central Africa. 2016;4:140–52. Global Health: Science and Practice August 2016, 4(Supplement 2):S140-S152; https://doi.org/10.9745/GHSP-D-16-00039 https://www.ghspjournal.org/content/ghsp/4/Supplement_2/S140.full.pdf
21. Taye EB, Mekonen DG, Debele TZ. Prevalence of post partum modern family planning utilization and associated factors among postpartum mothers in Debre Tabor. BMC Res Notes [Internet]. 2019;1–7. Available from: https://doi.org/10.1186/s13104-019-4464-0

https://bmcresnotes.biomedcentral.com/track/pdf/10.1186/s13104-019-4464-0

22. Sujnanendra M. Evaluation of Safety , Efficacy , and Expulsion of Post-Placental and Intra-Cesarean Insertion of Intrauterine Contraceptive Devices (PPIUCD). 2014; *J Obstet Gynecol India***64,** 337–343 (2014). https://doi.org/10.1007/s13224-014-0550-3https://link.springer.com/article/10.1007/s13224-014-0550-3#Bib1
23. Valliappan A, Dorairajan G, Chinnakali P. Postpartum Intrauterine Contraceptive Device : Knowledge and Factors Affecting Acceptance among Pregnant / parturient Women Attending a Large Tertiary Health Center in Puducherry , India. 2018;69–74. http://www.ijamhrjournal.org on Monday, May 11, 2020, IP: 41.186.83.24.
24. Wulifan JK, Brenner S, Jahn A, Allegri M De. A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle income countries. BMC Womens Health [Internet]. 2016; Available from: http://dx.doi.org/10.1186/s12905-015-0281-3 https://bmcwomenshealth.biomedcentral.com/track/pdf/10.1186/s12905-015-0281-3
25. Sujnanendra, Mishra. Evaluation of Safety , Efficacy , and Expulsion of Post-Placental and Intra-Cesarean Insertion of Intrauterine Contraceptive Devices (PPIUCD). 2014;64(October):337–43. https://doi.org/10.1007/s13224-014-0550-3

https://link.springer.com/article/10.1007/s13224-014-0550-3

26. Deshpande S, Gadappa S, Yelikar K, Wanjare N, Andurkar S. Awareness , acceptability and clinical outcome of post-placental insertion of intrauterine contraceptive device in Marathwada region , India. 2017;4(2015):77–82. DOI: 10.18231/2394-2754.2017.0016 https://www.innovativepublication.com/journal-article-file/3581
27. WHO. Working together for health. 2006; ISBN 92 4 156317 6 (NLM classification: WA 530.1) ISBN 978 92 4 156317 8 ISSN 1020-3311https:// ISBN apps.who.int/iris/bitstream/handle/10665/43432/9241563176_eng.pdf?sequence=1
28. Apanga PA, A MA, Dam. Factors influencing the uptake of family planning services in the Talensi District, Ghana. PanAfrican Med. 2015;8688:1–9. **DOI:** 10.11604/pamj.2015.20.10.5301, https://www.ajol.info/index.php/pamj/article/view/113975
29. Sumitra Y. Joshi.R AK, Solanki M. Knowledge and attitude practice and acceptance of postpartum intrauterine devices among postpartal women in tertiary care center ,2017 International Journal of Reproduction, Contraception, Obstetrics

and Gynecology *Yadav S et al. Int J Reprod Contracept Obstet Gynecol. 2017 Apr;6(4):1507-1510* DOI:http://dx.doi.org/10.18203/2320-1770.ijrcog20171418 https://www.ijrcog.org/index.php/ijrcog/article/view/1791/2223

30. Chen MJ, Gaffield ME. Use of the World Health Organization ' s Medical Eligibility Criteria for Contraceptive Use Guidance in sub-Saharan African Countries : A Cross-Sectional Study. 2016;4(3):506–10. Global Health: Science and Practice September 2016, 4(3):506-510; https://doi.org/10.9745/GHSP-D-16-00216 https://www.ghspjournal.org/content/ghsp/4/3/506.full.pdf