

Original Article

Knowledge, Utilisation and Associated Factors of Family Planning in the Extended Postpartum Period, in Karongi District, Rwanda

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Abstract

Background

Postpartum family planning (PPFP) plays a crucial role in maternal and child health. Unintended and mistimed pregnancies are significant global public health issues and are linked to higher rates of maternal, newborn, and child morbidity and mortality. This study assessed the knowledge and utilisation of PPFP and associated factors among women in the extended postpartum period in Karongi district, Rwanda.

Methods

A cross-sectional study was conducted in four health facilities. Data were collected from 413 postpartum mothers using a validated questionnaire administered through face-to-face interviews. Descriptive statistics and logistic regression analysis identified factors associated with PPFP utilisation. Significance was at $P < 0.05$.

Results

Most of the women (63.9%) demonstrated good knowledge of postpartum contraceptives; implants were the most commonly used method (52%). Factors significantly associated with PPFP utilisation included knowledge of contraceptives [AOR=2.8; 95% CI (1.16-6.85)], intentions to have another child [AOR=0.2; 95% CI (0.07,0.65)], Partner support [AOR=7.93; 95% CI (2.52,24.73)], and women's involvement in decision-making [AOR=4.2; 95% CI (1.41,12.71)].

Conclusion

Contraceptive knowledge, reproductive intentions, partner support, and women's involvement in FP decision making have a positive impact on postpartum family planning uptake. Expanding education and awareness campaigns, ensuring husband participation, and empowering women in decision-making could enhance PPFP utilisation.

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Introduction

Unintended and mistimed pregnancies significantly contribute to maternal, newborn, and child morbidity and mortality. [1] Family planning is a crucial intervention that improves health outcomes, reduces maternal and child mortality, lowers total fertility rates, and empowers people.[2,3] The World Health Organization (WHO) recommends a 24-month birth interval to optimise maternal and neonatal health. [4] However, despite the availability of postpartum family planning (PPFP) services, many women in low- and middle-income countries (LMICs) remain at high risk for unplanned pregnancies, leading to complications such as miscarriage, maternal death, preterm birth, and low birth weight. [5]

Globally, in 2021, an estimated 270 million women had unmet contraceptive needs, with a significant proportion residing in LMICs.[6–8] The first year after delivery represents a critical window for addressing contraceptive needs, as women frequently interact with healthcare systems during this time.[9] WHO defines PPF as the prevention of unintended or closely spaced pregnancies within the first 12 months postpartum[10]. However, there is limited understanding of how postpartum women decide to adopt PPF, despite evidence indicating that postpartum women have a greater unmet need for contraception compared to non-postpartum women.[11] The onset of menstruation increases the likelihood of contraceptive use, making postpartum women more likely to use contraception. Sexually active postpartum women are also more likely to use contraception compared to those who abstain.[12] Women seeking to delay or prevent pregnancy often discontinue contraceptive use due to concerns about side effects or misjudging their pregnancy risk, accounting for approximately two-thirds of discontinuation cases.[13] Various studies have found that multiple factors drive contraceptive use among postpartum mothers: 69.8% cited benefits for maternal and child health, 80.2% wanted to

prevent unwanted pregnancies, 74.5% mentioned socioeconomic reasons, and 21.7% received contraceptive advice from health professionals.[4] In Ethiopia, 71.7% of postpartum women valued discussions on family planning with their partners, 85.8% sought more information, 92.5% recognised its importance for women, and 68.9% acknowledged its relevance for families.[4] The primary reasons postpartum mothers avoid contraception are misconceptions regarding their risk of pregnancy; 29.0% believed they are not at risk due to the absence of menstruation, while 22.0% rely on breastfeeding as a natural method of contraception.[14]

Rwanda is experiencing rapid population growth, with density increasing from 415 to 503 inhabitants per square kilometre. [15] Currently, the total fertility rate is 4.1 children per woman.[16] In response, the government has strengthened family planning services, increasing accessibility and diversifying contraceptive options. [17,18] But, Rwandan women, on average, have 4.1 children while they desired only 3.1.[16] Despite high antenatal care (ANC) attendance, 99% of pregnant women have at least one visit and health facility-based deliveries (91%), PPF uptake remains low, gradually increasing between three to seven months postpartum (32% to 55%).[16,19]

Despite its benefits, PPF uptake remains limited in Rwanda, with knowledge gaps regarding how postpartum mothers make family planning decisions. Existing research does not provide a concrete picture of the factors influencing PPF uptake. It primarily highlights knowledge deficits in general without being so specific to postpartum mothers. This study, therefore, aims to examine the knowledge and uptake of family planning among postpartum women at the district level and explore factors associated with their use.

Methodology

Study design and Area

A health facility-based cross-sectional study was conducted in 4 public health centres, namely Rubengera, Mukungu, Mubuga, and Mugonero. These health centres provide maternal and other health services to the community in the Karongi district, Western Province of Rwanda. Karongi district has a population of 373,869 people, 195,452 females, approximately 95,771 women in the reproductive age group.

Population, Sample calculation, and Sampling process

The study targeted women in the first 12 months following childbirth in the Karongi district, Western Province of Rwanda. Approximately 10,367 women deliver in Karongi health facilities annually; We obtained data from Rwanda's Health Management Information System (HMIS), which compiles routine facility-based service statistics reported monthly by health centres and hospitals.[20] therefore, this estimate constituted the target population for the current study. The sample size of this study was 385 women, calculated using the Yamane formula: $n = N / (1 + N(e)^2)$ with a Margin of error (e)=0.05 and based on an estimated target population of 10,367 women. A non-response rate of 7% was added, making the total 413 participants. [21]

In this study, the health facilities and participants were simple randomly selected. The sample size was proportionately assigned to the four randomly selected health centres according to the number of women who had delivered at each (Rubengera: 129, Mukungu: 128, Mubuga: 99, and Mugonero: 57). The simple random sampling method applied in the selection of the participants used the health centres exhaustive lists of women who had come for vaccination within a year prior to the interview date.

Inclusion Criteria

The study included women of reproductive

age (18-49 years) who had delivered babies within twelve months and had participated in vaccination appointments for their children.

Exclusion Criteria

Women with a critical condition that lasted for more than 42 days, which is a recovery phase, and during which they are medically fragile.[8,22]

Data Collection

Data were collected in a period of 2 months from September to October 2024 using a structured questionnaire through face-to-face interviews at a health centre. The questionnaire-programmed Kobo Collect application was administered to postpartum mothers. The questionnaire and consent documents were developed in English, translated into Kinyarwanda, and then back-translated into English to ensure consistency. The questionnaire was adapted from the Rwanda demographic and health survey and related kinds of literature. [10,16,23]

Data analysis

The collected data were exported to Excel and then into SPSS software version 25. Categorical data were summarized into frequencies and percentages. Participants' knowledge level was categorized into "good and poor knowledge." Good knowledge was defined as correctly answering more than or equal to the mean score of the total knowledge assessment questions (7 out of 9) in Table 2.[14] Logistic regression analysis was carried out to identify the factors associated with PFP utilization. All explanatory variables significantly associated with the outcome variable with a p-value < 0.05 in the univariable analyses were entered into the multivariable logistic regression model. Crude and adjusted odds ratios with their 95% confidence interval (CI) were determined, and a statistically significant association was asserted based on a p-value less than 0.05.

Ethical considerations

The ethical review board of Mount Kenya University gave ethical clearance for this study, with approval reference number MKU/ETHICS/23/01/2024(1). Before going to the health centres, permission was sought and granted from Kibuye Referral Hospital. Participation was voluntary and informed consent was sought from participants prior to initiating data collection. Participants were kept anonymous throughout data collection and analysis.

Results

Socio-demographic Characteristics of Participants

The study involved 413 postpartum mothers, with a 100% response rate. A slight majority were aged below 30 years and the overall age ranged from 19 to 47 years with the mean of 29.1 (\pm 6.0). Table 1 outlines the demographic characteristics of the mothers. Of the mothers, only a third had a secondary education level or above, and 26.4% had a monthly family income of 30,000 Rwandan francs or more. More than half of the participants were followers of the protestant religion, and almost all of the study participants lived in rural areas. Most of the mothers lived with a partner, and 64.4% were farmers.

In this study, 65.8% of the mothers were multiparous, and all mothers had attended at least once ANC visit, but only 42.1% had any PNC visit. The average number of living children per woman was 2.5, with a minimum of one and a maximum of nine children. Among the participants, 13.6% have had an abortion before. The majority of the current births were planned, with 8.7% of pregnancies not planned. Regarding reproductive intention, almost two-thirds (63.9%) of the respondents wanted to have another child. Less than half of the respondents (42.1%) attended postnatal care, and 90.8% received family planning counseling at postnatal care sessions.

Table 1. Socio-demographic characteristics of participants

Characteristics	N=413 (%)
Age	
<30 years old	238 (57.6)
\geq 30 years	175 (42.4)
Marital status	
Living with a partner	301 (72.9)
Not living with a partner	112 (27.1)
Religion	
Catholic	84 (20.3)
ADEPR	72 (17.4)
Protestant	248 (60.0)
Others	9 (2.2)
Mother Education	
Primary and Lower secondary and higher	277 (67.1)
	136 (32.9)
Occupation	
Farming	266 (64.4)
Other activities	147 (35.6)
Place of residence	
Urban	32 (7.7)
Rural	381 (92.7)
Monthly income	
<30,000 RWF	304 (73.6)
\geq 30,000 RWF	109 (26.4)
Number of ANC visits	
<4	127 (30.8)
\geq 4	286 (69.2)
Received family planning information in ANC	
Yes	385 (93.2)
No	28 (6.8)

Knowledge and utilization of postpartum family planning

The preponderant study participants had heard about postpartum contraception. The health personnel were the most frequently cited as source of contraceptive information. The women who knew the best time to start postpartum contraception were the most predominant. Most of respondents understood the importance of postpartum family planning, and 99.3% knew where to find PFP services.

The majority of the participants had good knowledge regarding postpartum contraceptive use (Table 2).

Women were asked whether they knew about any contraceptives; 77.5%, 62.2% and 57.6% of the respondents knew of injectable, implant, and pill methods, respectively (Figure 1).

Table 2. Knowledge of postpartum family planning

Variables	N=413 (%)
Knowledge score	
Good	264(63.9)
Poor	
Do you know what Family planning is? ^a	
Yes	149(36.1)
No	366 (88.6)
Have you ever heard of PFP?^a	
Yes	47 (11.4)
No	
If yes, what were the sources of information?	
Healthcare Provider	373 (98.9)
CHWs	179 (47.5)
Mass media	45 (11.9)
Others sources (family member and local leaders)	65 (17.3)
Do you know any PFP method?^a	
Yes	377 (91.3)
No	36 (8.7)
Do you know any Side effects of PFP?^a	
Yes	341 (82.6)
No	72 (17.4)
Do you know the time to start PFP?^a	
Yes	348 (84.3)
No	65 (15.7)
Do you know how soon a woman gets pregnant after delivery?^a	
Yes	262 (63.4)
No	151 (36.6)
Is it possible to get pregnant before resuming menses?^a	
Yes	291 (70.5)
No	122 (29.5)
Do you know where PFP services can be found?^a	
Yes	410 (99.3)
No	3 (0.7)
Where can PFP services be found?	
Health Centres	373 (91.0)
Hospitals	172 (42.0)
FP clinics	41 (10.0)
Community by CHWs	77 (18.8)
Health Posts	52 (12.7)
Do you know the importance of PFP?^a	
Yes	370 (89.6)
No	43 (10.4)

Note: ^a Variables that were scored to assess knowledge

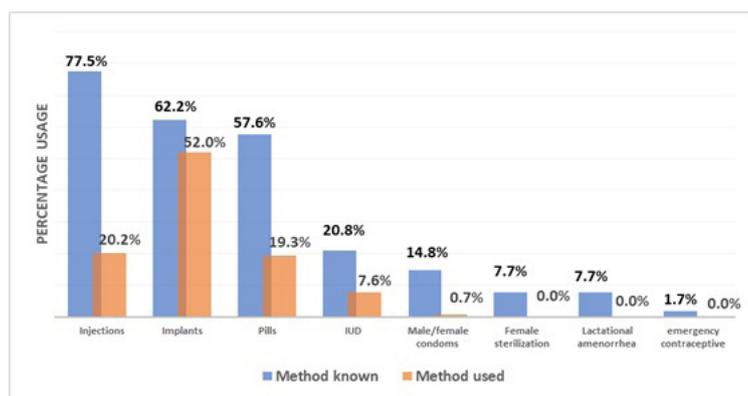


Figure 1. Family planning methods the participants knew and used

Most of the study participants (93%) were involved in decision-making about using FP. For the women living with partners, the majority (97.6%) discussed FP with their husbands, and 88.4% stated that their husbands supported them in using FP.

Table 3. Utilization of PPFp among participants

Variable	N=413 (%)
Usage PPFp	
Yes	342 (82.8)
No	71 (17.2)
Reason for not using PPFp (N=71)	
wanted to have another child soon	22 (31.0)
afraid of side effects	22 (31.0)
She doesn't want	12 (16.9)
She is not sexually Active	8 (11.3)
Breastfeeding	6 (8.5)
waiting for menstruation to resume	5 (7.0)
unavailability of the method of choice	5 (7.0)
Her partner disapproved of it	4 (5.6)
Her religion doesn't accept FP	3 (4.2)
Availability of needed method (N=233)	
Yes	224 (96.1)
No	9 (3.9)
Waiting time is too long (N=364)	
Yes	93 (25.5)
No	271 (74.5)
Pay for PPFp services (N=385)	
Yes	60 (15.6)
No	325 (84.4)
Accept or reject PPFp affects the quality of service (N=326)	
Yes	38 (11.7)
No	288 (88.3)
Discussing with Partner about PPFp (N=301)	
Yes	296 (97.6)
No	5 (2.4)
Partner View on PPFp (N=301)	
Agree	266 (88.4)
Disagree	35 (11.6)
PPFP uses Final Decision	
Women involved	384 (93.0)
Women not involved	29 (7.0)

Among the women who did not utilize PPFp, the main reasons for not utilizing PPFp were to have more children and fear of side effects (31.0%). The most commonly used FP method was implants 52.0%, followed by injectables (20.2%), and progesterone-only pills 19.3% (Figure 1). Table 3 outlines the utilization of PPFp. Eight out of ten women utilized modern PPFp methods during the extended postpartum period. Among current FP methods users, knowing the importance (57.9%) is the leading reason for use, followed by not having a negative effect (33%), while 11.7% and 1.5% were a choice of health providers and others, respectively.

Factors associated with postpartum contraceptive use

In univariable analyses factors that were found to be significantly associated with postpartum contraceptive use among women in the extended postpartum period were mother's occupation [COR=0.50;95% CI=0.29–0.84; p=0.008], ANC attendance [COR=0.44;95% CI=0.23–0.85; p=0.013], and information on PFP during ANC attendance [COR=4.14;95% CI=1.86–9.20; p<0.001], were significantly associated with PFP use; however, they lost their significance after controlling for the confounders. In the multivariable analysis, good knowledge of PFP, not wanting another child, partner support, the use of PFP, and women's involvement in the PFP use decision making were independently statistically significantly associated PFP (Table 4).

PNC attendance and information given during PNC attendance did not influence PFP use.

Women with good knowledge were three times more likely to use contraceptives postpartum than those with poor knowledge [AOR=2.8; 95% CI=1.16-6.85; p=0.022]. Whether a woman wanted more children or not was also a strong predictor of PFP use. A woman who wanted more children was 5 times less likely to use any contraceptive compared with those who did not want more children [AOR=0.2; 95% CI=0.07-0.65; p=0.007]. The odds of using PFP were 7.9 times higher in women with partner support compared to those whose partners did not support them [AOR=7.93; 95% CI=2.52-24.73; p<0.001], and a woman being involved in PFP decision making also increases the odds of use [AOR=4.2; 95% CI=1.41-12.71; P=0.01].

Table 4. Multivariable analysis output of factors independently associated with contraceptive use among postpartum women

Variable ^a	COR (95% CI)	P value	AOR (95% CI)	P value
Occupation				
Not farmers	1		1	
Farmers	0.50(0.29-0.84)	0.008	1.97(0.80-4.85)	0.138
ANC Attendance				
Less than 4 visits	1		1	
At least 4 Visits	0.44(0.23-0.85)	0.013	0.27(0.71-1.07)	0.063
Receiving family planning information during ANC visits				
No	1		1	
Yes	4.14(1.86-9.20)	<0.001	1.6(0.12-21.09)	0.725
Partner supports the use of PFP				
No	1		1	
Yes	17.26(8.10-3.80)	<0.001	7.9(2.52-24.73)	<0.001
Women Involved in PFP Decision Making				
No	1		1	
Yes	11.69(5.35-2.45)	<0.001	4.2(1.41-12.71)	0.010
Wanted another Child				
Yes	1		1	
No	2.59(1.20-5.58)	0.012	0.2(0.07-0.65)	0.007
Knowledge of PFP				
Poor knowledge	1		1	
Good knowledge	4.60(2.67-7.9)	<0.001	2.8(1.16-6.85)	0.022
Attend PNC	1.42(0.83-2.41)	0.195		
Receiving any FP message during PNC Visit	0.83(0.17-3.93)	0.824		

Abbreviations: COR = Crude Odds Ratio, AOR=Adjusted Odds Ratio, CI = Confidence Interval. **Note:** ^a Only variables that were significantly associated with the use of family planning in univariable analyses are reported in this Table.

Discussion

This study found that most of the women demonstrated good knowledge of postpartum contraceptives. The most mentioned source of family planning information was health personnel, and knowing the importance of family planning is the leading reason for use, while the main reason for not utilizing PPFp was to have more children and fear of side effects. This study revealed that PPFp utilisation was higher at 82.5%; the most commonly known and used methods are injectables and implants, respectively. Factors significantly associated with PPFp utilisation included knowledge of contraceptives, a partner who supports the use of PPFp and women's involvement in decision-making.

This study found that four out of five of the participants were aware of PPFp, and the majority had good knowledge, which was found to be similar to other studies, including those from teaching hospitals in Africa.[4,23] Nonetheless, this level was higher than the study from Ethiopia (58.5%),[14] while another study in Gondar city, Ethiopia, reported a slightly higher knowledge level.[24] The variance may be due to the differences in the socio-demographic characteristics, with urban residence most likely to have prior contraceptive knowledge.

In the current study, PPFp utilization was comparable to the few studies reporting uptake of above 80%, yet they exceeded the rates documented in most studies conducted across sub-Saharan Africa, where prevalence typically ranged between 40% and 60%.[14,25–29] This disparity might be due to Rwandan postpartum women's frequent contacts with the health system from pregnancy through to the 12 months following birth, and thus a target for integrated PPFp service delivery. Most women in Rwanda (91%) deliver in a health facility, which is higher than in other sub-Saharan countries, ranging from 50 to 80%.[16,26,30] The most commonly used FP method was Implants, which is concordant with other studies conducted in Ethiopia,[23]

different from the findings in a study conducted in Kigali city of Rwanda and Uganda, where the choice was intrauterine devices and injectables, respectively.[29] This may be attributed to the demographic differences, where people living in the city can have more access to information and methods compared to the countryside population, where limited contraception selection is offered.[31]

The socio-economic difference in occupation, partner support, antenatal care visits, receiving information in ANC visits, and women's involvement in decision making also played a role in contraceptive use in the postpartum period. This finding is comparable to other findings in literature, which concluded that PPFp utilization has been influenced by factors such as women's involvement, healthcare experiences, and profession.[4,6,13,32–34] Furthermore, the partner involvement either alone or jointly was an indisputable factor in the use of postpartum family planning and improving the quality of maternal health services, as mentioned in studies earlier conducted in Rwanda and elsewhere.[35–37]

Mothers who have good knowledge of modern FP methods are more likely to use modern PPFp methods than those who have poor knowledge of modern FP methods. The possible reason might be that well-informed women are more likely to choose a contraceptive method that suits their individual needs, than the others, who may lack a complete understanding of available options.[4] It is well documented that when males are involved, it also increases the knowledge of their partners.[32] Moreover, like in this study, a previous report from Rwanda showed that pregnant women who attended antenatal care, had excellent knowledge of family planning.[38] This is consistent with studies conducted in Africa and South Asia, which show that a solid understanding of modern family planning methods and receiving counseling on their use right after delivery are strongly associated with the use of modern postpartum family planning methods. [4,29,39,40]

The key reasons for not utilizing PPFp were: wanting to have more children and fear of side effects of modern FP. Studies conducted in sub-Saharan countries showed that women who experience side effects had lower utilization of FP than their counterparts, and fear of the possible side effect was also found to be negatively associated with utilization of FP in developing countries. [4,6,40–42]

Strengths and Limitations of the Study

The strength of this study is that it provides new information on the unmet needs of family planning, knowledge, utilization and explores factors associated with their use among postpartum women. The reliance on self-reported information can introduce the possibility of recall bias, and sensitive questions can lead to social desirability bias, particularly when women are asked to remember events occurring months after delivery. To minimize these risks, we clarified the timeline and reduce leading questions that might distort recall, and confidentiality was assured to encourage accurate responses. Another limitation is that it was purely quantitative and therefore may have missed some insights about behaviour and perception of mothers towards PPFp.

Conclusion

Most study participants demonstrated good knowledge of PPFp, and knowledge, partner support, and women's involvement were independent predictors of utilization. To build on these findings, education and awareness campaigns should be expanded within communities to reinforce the positive impact of PPFp knowledge. At the same time, negative partner attitudes and limited decision-making power for women remain major barriers. Addressing these challenges requires continuous community-based counseling and interventions that actively engage partners while ensuring women's meaningful participation in family planning decisions. In this study, PNC attendance and information given during PNC and ANC visits did not seem to influence PPFp use,

though they may still play some indirect roles. There is therefore a need to investigate further using qualitative methods and establish possible reasons for their lack of association with PPFp. This could point to gaps in how information is delivered or received.

Author's Contribution

Authors PR and AH participated in conceptualizing, data analysis, and drafting the manuscript. The authors DU and HA collected data, reanalyzed, and reviewed the data. And all authors have read and approved final version to be published

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Data Availability

Data are available whenever they are needed for their use.

Competing Interest

There are no conflicts of interest

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