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Utilization of postpartum family planning and associated factors among postpartum women attending five healthcare facilities in a rural district in Northern Uganda

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Abstract

Background: Postpartum women worldwide, despite wishing to delay or avoid pregnancies, often resume sexual activity without family planning, contributing to 121 million unintended pregnancies annually, particularly in sub-Saharan Africa. Postpartum family planning (PPFP) can prevent 71% of unintended pregnancies and reduce maternal and neonatal morbidity and mortality. However, uptake in Uganda is low, at 35%, and data on its use are scarce. Sociocultural barriers, limited access to quality healthcare, and systemic inequities further hinder uptake.

Objective: To assess the level of utilization of PPFP and the contributing factors among postpartum women attending health facilities in a rural district of Northern Uganda.

Methods: A descriptive cross-sectional study was conducted among 483 women within 12-month postpartum, recruited from 5 randomly selected health facilities between October and November 2022. Quantitative data were collected using interviewer-administered questionnaires. Data were analyzed using STATA version 17.0, with descriptive statistics and multivariate logistic regression performed at a 95% confidence interval (CI) to identify predictors of PPFP utilization.

Results: The utilization of PPFP was 41.61% (95% CI: 37.17–46.15). Independent predictors or contributing factors to PPFP utilization included education level (primary—adjusted prevalence ratio (APR): 0.753; 95% CI: 0.641–0.883; $p = <0.001$), partner's age (APR: 1.203; 95% CI: 1.004–1.443; $p = 0.05$), parity (APR: 0.755; 95% CI: 0.635–0.897; $p = 0.001$), uncertainty about timing for next pregnancy (APR: 1.994; 95% CI: 1.09–3.646; $p = 0.03$), and advice from friends about PPFP methods (APR: 1.358; 95% CI: 1.171–1.575; $p = <0.001$).

Plain language summary

Millions of unintended pregnancies occur annually, leading to increased maternal, newborn, and child deaths. Family planning is crucial for achieving the Sustainable Development Goal, but the greatest unmet need is among post-delivery women. In sub-Saharan Africa and Uganda, particularly in rural districts, the use of family planning after delivery is poorly understood, potentially hindering efforts to improve care based on the root causes of the problem. The research team interviewed post-delivery women within 12 months after delivery visiting 5 healthcare facilities across Alebtong District over a 3-month period to better understand the use of family planning and what kind of issues are influencing the use so

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as to identify ways to increase and improve use. Postpartum family planning usage is low, with 41.61% reported. Factors contributing to this include primary education level, partner age, undecided conceiving parity, and advice from friends about the methods. The Ugandan Ministry of Health should enhance access to family planning services through health facilities and community outreach, focus on multisectoral approaches to increase awareness and knowledge among women. Collaborate with other reproductive health stakeholders and continuous supply of family planning methods at all health facilities levels is crucial for easy usage.

Keywords
postpartum family planning, utilization, postpartum women, Alebtong District, Northern Uganda, predictors and contributing facto

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Introduction

Globally, more than 90% of postpartum women wish to delay or avoid future pregnancies. However, many resume sexual activity without using any family planning (FP) method, increasing the risk of unintended pregnancies.[1] In 2015–2019, an estimated 121 million unintended pregnancies occur annually worldwide among women aged 15–49 years.[2] This rate is significantly higher in sub-Saharan Africa, where 62 out of every 1000 pregnancies are unintended[3] and are closely linked to higher rates of maternal, infant, and child mortality.[4] Family planning is a crucial public health program that can significantly reduce the adverse outcomes, it is a key metric for assessing the implementation of Sustainable Development Goal (SDG) 3.7.[5] Scaling up FP services is crucial for achieving SDG 3.7, ensuring universal access to sexual and reproductive healthcare services, and preventing maternal, infant, and child deaths globally.[6]

FP is defined as the ability of an individual and couple to attain their desired number of children in a family, the age interval between children, and the timing of their births through the use of family planning methods and treatment of infertility.[7] Postpartum family planning (PPFP) specifically focuses on preventing unintended and closely spaced pregnancies within the first 12-month postpartum,[8,9]. It can be provided as: immediate postpartum (IPPFP): within 48 h; early postpartum: within 48 h up to 6 weeks; and extended postpartum: 6 weeks to 1 year after delivery.[9] PPFP has the potential to reduce 71% of unwanted pregnancies: abolishing 53 million unintended pregnancies, 22 million unplanned births, 25 million induced abortions, and 7 million miscarriages.[10]

The postpartum period, particularly the extended postpartum period (the first 12 months after childbirth), is a crucial window for FP interventions. It provides an opportunity to address the unmet need for contraception, prevent closely spaced pregnancies, and improve maternal and neonatal health outcomes. World Health Organization (WHO) recommends a minimum birth spacing of 2 years to reduce maternal and neonatal complications.[11] However, evidence indicates that 47% of pregnancies occur within a short birth interval of less than 2 years after the preceding birth. Most modern contraceptive methods, including long-acting reversible contraceptives such as implants and intrauterine devices, can be safely initiated during the postpartum period.[10,12]

However, while the immediate post-delivery period provides an opportunity to offer FP services, research shows that women's contraceptive needs evolve over the first year postpartum, necessitating sustained access beyond the immediate period. Many women face barriers such as transportation costs, childcare responsibilities, and work commitments, leading to low postpartum clinic attendance.[13,14]

The return of fertility is unpredictable, and postpartum women can become pregnant before their first menstrual cycle resumes.[15] Even those attending follow-up visits may have already conceived before receiving FP counseling. As a result, postpartum women have higher unmet FP needs, which significantly contributes to unintended pregnancies and maternal mortality.[16,17]

PPFP plays a crucial role in reducing maternal and newborn mortality and morbidity by promoting healthy birth spacing.[18,19] Closely spaced pregnancies are associated with increased risks of: maternal complications such as spontaneous abortion, postpartum hemorrhage, anemia, and pregnancy-related mortality, neonatal risks such as preterm delivery, low birth weight, increased disease susceptibility, and malnutrition.

Globally, FP has significantly reduced maternal mortality, an analysis of 172 countries found that FP methods averted 44.3% of maternal deaths; without FP, maternal mortality would have been 1.8 times higher.[10] In Uganda, where the maternal mortality ratio is 269 per 100,000 live births, PPFP has the potential to reduce maternal and infant morbidity and mortality; however despite its benefits, PPFP utilization remains low in sub-Saharan Africa,

at 37.41% among women of reproductive age. In Uganda, only 35% of postpartum women actively use contraceptives,[14] including both short- and long-acting methods deemed safe and effective by the Ministry of Health.[20] The Ugandan government aimed to increase contraceptive use to 50% and reduce the unmet FP need to 10% by 2020.[21] However, the contraceptive nonuse rate remains at 28%.[22,23]

The WHO recommends initiating contraception within 6-week postpartum, yet many women fail to adopt FP due to sociocultural and structural barriers, including: breastfeeding practices and misconceptions about fertility return, cultural beliefs and fear of side effects, limited healthcare access, transportation costs, and financial constraints, partner opposition and low decision-making autonomy.[11,24] Women frequently interact with healthcare systems during antenatal care, delivery, postnatal care, and infant immunization visits, presenting opportunities for integrating FP counseling into routine maternal and child healthcare services.[25]

To strengthen FP services, Uganda has established five strategic priorities for 2025: Increase the modern contraceptive prevalence rate from 30.4% to 39.6% and reduce unmet FP needs from 17% to 15%, allocate 10% of maternal and child health resources to adolescent reproductive health services, secure 50% of domestic reproductive health funding for FP commodities, implement DHIS2/Health Information System integration for data-driven FP decision-making, and improve FP counseling quality, increasing the Method Information Index Plus from 42% to 60%.[26,27] These strategies align with Uganda's commitments to international agreements, including the 2012 London Summit on Family Planning, 2014 Uganda National FP Conference, and 2019 ICPD Summit. The government also provides $5 million annually to support reproductive health commodities and distribution systems.[27]

Studies across Uganda reveal significant regional variations in PPFP uptake. At Hoima Regional Referral Hospital, only 27.5% of women aged 15–49 reported using PPFP services, with higher education levels and perceived healthcare quality influencing utilization.[28,29] Other studies indicate an even lower uptake of 10%, despite high ANC attendance and facility-based deliveries. The key determinants of PPFP use in Uganda include: maternal age and education level, socioeconomic status and employment, place of residence (urban versus rural), and health system factors, including service quality and availability of contraceptive commodities.[30–32] Multiple barriers impede uptake, such as fear of side effects, partner opposition, and misconceptions about breastfeeding and contraception. Additional factors influencing contraceptive nonuse include place of residence, quality of services, alcohol consumption, income levels, and age at first sexual intercourse.[13,14,17]

Family planning is a cost-effective strategy for achieving Vision 2040 development objectives, reducing poverty, enhancing gender equity, mitigating HIV transmission, and reducing adolescent pregnancy and infant mortality rates. Uganda's universal healthcare policy and government funding fail to meet over 20% of the population's needs for family planning services, with rural women lagging behind urban ones and married women showing higher utilization. The lack of a robust commercial sector strains the system's resources, and the wealth gap is particularly stark, with contraceptive use among women in the lowest wealth quintile (22.5%) being nearly half that of women in the upper quintiles (>40%).[33,34]

However, limited data exist on PPFP uptake in Northern Uganda, particularly in Alebtong District. Alebtong has a high fertility rate (6.6–7.5 children per woman) and low FP utilization according to the Uganda Demographic Health Survey 2016.[35–37] Understanding the barriers to PPFP uptake in this region is critical for improving service delivery and optimizing resource allocation. Given the lack of studies on PPFP utilization and predictors in Alebtong District, this study aimed to assess the utilization of PPFP and its determinants among postpartum women attending five public health facilities. The findings will inform targeted interventions to increase FP uptake and improve maternal and child health outcomes.

Materials and methods

Study design and setting

A facility-based analytical cross-sectional study was conducted in five high-volume simple randomly sampled public health facilities in Alebtong District, Northern Uganda from October 2022 to December 2022 and reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[38] The district is located about 387 km north of Kampala the capital city of Uganda. It is a rural district in Northern Uganda, with an estimated population of 283076 inhabitants, of this about 144,236 are females, it has a high population growth rate of 2.3% (third highest in Lango Subregion). It has a high fertility rate of (6.6–7.5 children) with very low registered FP users in the country with PPFP being the least utilized according to the Uganda Demographic Health Survey 2016. The FP register system quantifies the family planning users in Uganda, it is derived from health facility registers that document annual contraceptive method distribution and it is a proxy measure for national family planning utilization. The first 12-month approach captures variations in uptake and barriers, notably its crucial for family planning interventions as it allows women to meet contraception needs and better health outcomes.[25] There is one level IV health center and seven level III health centers in the district that are authorized to provide PPFP services.[39] Outpatient treatment, maternity services, child health services, HIV/AIDS management, family planning, basic laboratory tests, health

education, and referrals to higher-level care are all offered by level III healthcare facilities. In addition to providing comprehensive outpatient and inpatient care, level IV medical facilities also act as referral centers for lower-level clinics and provide surgical, maternity, emergency, laboratory, HIV/AIDS, family planning, and health education services. PPFP services are offered in level III and higher health centers in Uganda.[40] Medical professionals such as midwives, nurses, and doctors work in family planning clinics, young child clinics, and wards to provide PPFP services to women. The number of service providers in these facilities is expected to be as high as 1:2000, and cases can be a as high as 200 per month in these facilities.

Study population and timing

All women of reproductive age (15–49 years) within 12-month postpartum receiving postnatal care, immunization, or other maternal and child health services during the data collection period from the selected health facilities were eligible to participate in the study. Cis-gender female, provided written informed consent to participate in the study. Postpartum status was verified by checking the date of delivery on the immunization cards women who were more than 12 months prior to recruitment were excluded for fear of inaccurate recall while those who were very ill or in critical condition, and mentally incapacitated to comprehend the study objectives were excluded from this study for ethical reasons.

Sample size determination

The sample size of 483 was calculated using the modified Kish-Leslie formula (1965) for a single population, with the prevalence of PPFP estimated at 30% from a previous study.[23] $n = \text{deff} * z^2 pq / d^2$; where n is the required sample size, p is the proportion of women using PPFP contraceptives, assumed to be 30%,[19] q is the complementary probability of p (calculated as $1-p$, or 0.202), d is the precision of 0.05, z is the standard normal value of z at 95% confidence interval (CI), and deff is the design effect (1.5 considered).

Sampling techniques and procedures

Five health facilities were randomly sampled (one level IV facility, and four level III facilities), and consecutive sampling was used to obtain the participants in the study in which every subject meeting the inclusion criteria was selected until the required sample size was achieved. This sampling technique was used to realize the required sample size because it facilitated a consistent and unbiased selection process, capturing a comprehensive range of postpartum women.

Recruitment of participants

The ward-in charges (ward managers) helped the research assistants to identify and recruit the eligible study participants at the health facilities while some of the participants were directly identified by the research assistants at the health facilities. The research assistants were two pre-internship midwives (midwives who had completed their Bachelor of Science in Midwifery degree and were awaiting placement in public health facilities for clinical practice by the Ministry of Health) who were trained in the study protocol. Upon identifying the eligible prospective participants, the research assistants explained the purpose, benefits, and risks of participating in the study to the prospective participants. A written informed consent was signed at the health facility and prospective participants were recruited into the study.

Data collection procedures

Face-to-face interviews were conducted by two pre-internship midwives using a pretested structured questionnaire (Supplemental Appendix 1). The questionnaire comprised three sub-sections namely, (i) sociodemographic characteristics, knowledge of PPFP, and (ii) health-related, sociocultural and community factors on PPFP utilization. Utilization of PPFP services was the outcome variable and was assessed using a Yes and No answer. The weekly average client loads for the level IV and level III facilities were obtained from registry books, and the sample size for each facility was proportionally allocated based on this data. The questionnaire was developed in English and translated into the local dialect. It collected information on sociodemographic factors (age, religion, marital status, education, income, and partner characteristics), knowledge of PPFP method, health-related, sociocultural, and community factors (parity, pregnancy outcomes, desired family size, and birth intervals), and PPFP. The surveys were conducted in private rooms in either English or the local dialect and lasted for 20–30 min.

Variables

The dependent variable for the study was the utilization of PPFP. This was self-reported measure based on whether a respondent had used PPFP within the 12-month postpartum period with a Yes or No response, and measured as a proportion. The independent variables included sociodemographic factors, individual factors, and health-facility-associated factors relating to PPFP use.

Operational definitions

In this study, postpartum is defined as the time period from birth up to 12 months. PPFP is the prevention of unintended and closely spaced pregnancies through the first 12 months following childbirth. Utilization of PPFP is

having used one of the various modern PPFP methods within the 12-month postpartum period.

Statistical analysis

Every questionnaire was checked for completeness at the end of each interview. A data entry with checks created in investigator was created in SPSS version 26.0 to ensure no missing and out-of-range values are entered within the dataset. Data were exported and analyzed using STATA version 17. For descriptive analysis, data were summarized in simple frequencies and proportions. At the bivariate level, associations between the utilization of PPFP and the independent variables were determined through univariate logistic regression, and results were presented in a cross-tabulation with frequencies, percentages corresponding to 95% CIs, and *p*-values. Variables with associations at p<0.2, along with those identified as plausible in the literature, were further analyzed using multivariate modified Poisson regression with robust variance estimation, following a careful assessment of underlying assumptions, to identify predictors of PPFP utilization. The back-elimination method was used to build the final model with only variables statistically adjusted to significant associations ($p < 0.05$). Adjusted prevalence ratio (APR), corresponding 95% CIs, and *p*-values of <0.05 were reported.

Ethical statement

The study received ethical approval from the Gulu University Research Ethics Committee (approval number: GUREC-2022-341). Verbal informed consent was obtained from all participants before the start of the study. Participants were informed of their right to withdraw from the study at any time, and their participation was voluntary. All data collected were kept confidential and anonymous. Ethical principles articulated in the Declaration of Helsinki were observed throughout the study. Study participants who required specific sexual and reproductive health services were counseled and referred to the appropriate service point.

Results

Participants

Of the 483 anticipated participants, 483 (response proportion 100%) were eligible and were enrolled in the study.

Sociodemographic characteristics of postpartum women attending healthcare facilities in Alebtong District, Northern Uganda

Overall, 483 postpartum women with the majority (51.2%, $n = 247$) aged between 18 and 24 years were included in the final analysis. The majority of the participants were married (91.1%, $n = 440$). In terms of religion, most of the participants were Anglicans (42.7%, $n = 206$), while only a small proportion identified as Seventh-Day Adventists. Most of the participants had completed the primary level of education (67.7%, $n = 327$). When it comes to occupation, most (70.6, $n = 341$) of the participants reported that they were peasant farmers. In terms of income, most (65.4%, $n = 316$) had a monthly income of less than 50,000 Ugandan shillings (14 USD). Regarding the partner's age and education, the majority were aged between 25 and 34 (58.8%, $n = 284$), and had completed primary-level education (64.4%, $n = 311$), respectively. Table 1 summarizes the baseline characteristics of the study participants.

Table 1. Sociodemographic characteristics of postpartum women attending health facilities in Alebtong District.

Sociodemographic	Frequency (*N*)	Percentage (%)
Mother's age		
18–24	247	51.2
25–34	189	39.1
35–45	47	9.7
Religion		
Anglican	206	42.7
Catholic	161	33.3
Seventh Day Adventist	15	3.1
Muslim	19	3.9
Others	82	17.0
Marital status		
Married	440	91.1
Not married	43	8.9
Education level		
No formal education	79	16.4
Completed primary	327	67.7
Completed secondary	61	12.6
Post-secondary	16	3.3
Monthly income (Ugandan shillings)		
<50,000	316	65.4
50,000–100,000	152	31.5
>100,000	15	3.1
Partner's age		
18–24	87	18.0
25–34	284	58.8
>34	112	23.2
Partner's education		
No formal education	28	5.8
Completed primary	311	64.4
Completed secondary	110	22.8
Occupation		
Peasant farmer	341	70.6
Businesswoman	133	27.5
Formal employment	9	1.9

Individual and health-related characteristics of postpartum women in Alebtong District, Uganda

Regarding partners having another spouse and parity, a majority (82.2%, *n*=397) did not have another spouse, and 46.0%, *n*=222 already had between two and four deliveries. In terms of living children and number of pregnancies lost, 43.9%, *n*=212 had between three and four children alive, and a majority (80.5%, *n*=389) had never experienced any pregnancy losses. Regarding the mode of last delivery and place, 88.0%, *n*=425 had a vaginal delivery without difficulties, and mostly facility-based deliveries (91.7%, *n*=443). More than half desired to have at least two or more children (67.3%, *n*=325). Regarding sensitization about IPPFP during antenatal, the majority reported that they were sensitized (74.3%, *n*=359), and most had ever used a family planning method before (76.6%, *n*=370). In terms of the timing of contraception, most (28.8%, *n*=139) preferred it at 6 months, and only a few preferred it within 48 h (2.1%, *n*=10). The most preferred method of family planning was the injectables (41.4%, *n*=200), and the least preferred were the permanent methods, that is, bilateral tubal ligation and vasectomy (0.8%, *n*=4). Regarding receiving advice from a friend/family member about family planning, over half (57.6%, *n*=278) reported that they did so. The husbands were the main decision-makers in the choice of family planning (44.9%, *n*=217). The majority were within 2–5 km from the health facility (55.9%, *n*=270). In terms of the availability of family planning methods at the facility and the attitude of the health workers toward them, 90.3%, *n*=436, reported that the methods were available, and the majority (81.8%, *n*=395) described the health workers as welcoming. Table 2 summarizes the individual and health-related characteristics.

Table 2. Individual and health-related characteristics of postpartum women attending health facilities in Alebtong District.

Factor	Frequency (*N*)	Percentage (%)
Partner has another spouse		
Yes	86	17.8
No	397	82.2
Parity		
1	186	38.5
2–4	222	46.0
>4	75	15.5
Number of children alive		
1–2	195	40.4
3–4	212	43.9
>4	76	15.7
Number of pregnancies lost		
1	81	16.8
2 and above	13	2.7
Never	389	80.5
Mode of last delivery		
Cesarean section	34	7.0
Spontaneous Vaginal Delivery (SVD) with difficulties	24	5.0
SVD without difficult	425	88.0
Place of delivery		
Facility delivery	443	91.7
Home delivery	40	8.3
The desired number of children		
1–2	158	32.7
>2	325	67.3
Sensitized about IPPFP during ANC		
Yes	359	74.3
No	124	25.7
Ever used any FP method		
Yes	370	76.6
No	113	23.4
Preferred timing of contraception		
Within 48 h	10	2.1
At 6 weeks	41	8.5
At 6 months	139	28.8
At 1 year	136	28.2
At 2 years	69	14.3
Undecided	88	18.2
Most preferred method of FP		
Pills	13	2.7
Injectables	200	41.4
Interval IUD	22	4.6
Implants	121	25.1
Bilateral Tubal Ligation (BTL)/ vasectomy	4	0.8
Barrier methods	7	1.4
Not Applicable	116	24.0
Advise by friend/family member		
Yes	278	57.6
No	205	42.4

(Continued)

Utilization of PPFP among postpartum women attending health facilities in Alebtong District

In this study, 201 out of 483 postpartum women ever used PPFP 41.6% (95% CI 37.17–46.15; Figure 1).

In this study, the most preferred method among postpartum women were the injectables (41%, 200), and least preferred were the permanent family planning methods bilateral tubal ligation and vasectomy (0.83%, 4).

In this study, the most preferred timing for initiating a family planning method after delivery among postpartum women was at 6-month postpartum (28.78%, 139), and least preferred timing was immediately within 48 h (2.07%, 10).

Factors associated with PPFP use among women in Alebtong District, Northern Uganda

Bivariable analysis revealed several factors significantly associated with PPFP use. Maternal characteristics including

Table 2. (Continued)

Factor	Frequency (*N*)	Percentage (%)
Who decides of FP choice		
Husband	217	44.9
Myself	49	10.1
Both of us	208	43.1
Healthcare provider	9	1.9
Distance to nearest health facility (km)		
2–5	270	55.9
6–10	154	31.9
>10	59	12.2
Availability of FP methods		
Yes	436	90.3
No	47	9.7
Health worker's attitude at the facility		
Welcoming	395	81.8
Unwelcoming	8	1.7
NA	80	16.6

FP: family planning; IPPFP: immediate postpartum family planning; IUD: intrauterine device.

age ($p<0.001$), education level ($p=0.03$), and parity ($p<0.001$) showed strong associations. Partner-related factors such as age ($p=0.003$) and polygamy status ($p=0.004$) also emerged as significant. Reproductive history, specifically the number of living children ($p<0.001$), played a role. Health system factors, including PPFP sensitization during antenatal care ($p<0.001$), availability of family planning methods ($p<0.001$), and healthcare workers' attitudes ($p<0.001$), were significant predictors. Additionally, prior use of any family planning method ($p<0.001$), method preferences ($p<0.001$), and peer advice ($p=0.01$) were associated with PPFP use. Tables 3 and 4 provide a comprehensive summary of these factors and their associations with PPFP utilization among postpartum women in Alebtong District, Northern Uganda.

Predictors of PPFP utilization among women attending health facilities in Alebtong District, Northern Uganda

Multivariate modified Poisson regression analysis disclosed several factors influencing PPFP utilization. Maternal age, PPFP awareness during antenatal care, and availability of family planning methods at health facilities were significant predictors. Women with primary (APR: 0.753; 95% CI: 0.641–0.883; $p<0.001$) and secondary education (APR: 0.719; 95% CI: 0.554–0.934) were less likely to use PPFP methods compared to those without formal education. Women with partners aged 25–34 years showed higher PPFP utilization (APR: 1.203; 95% CI: 1.004–1.443; $p=0.05$) than those with younger partners. Parity also played a role, with women having two to four children less likely to use PPFP (APR: 0.755; 95% CI: 0.635–0.897; $p=0.001$) compared to those with one child. Undecided pregnancy intentions positively influenced PPFP use (APR: 1.994; 95% CI: 1.09–3.646; $p=0.03$), as did receiving advice from friends (APR: 1.358; 95% CI: 1.171–1.575; $p<0.001$). Other sociodemographic, individual, and health-related factors, including healthcare workers' attitudes and prior family planning use, were not significantly associated with PPFP utilization (Table 5).

Discussion

PPFP initiation within 12 months after childbirth is crucial for safe motherhood, reducing unintended pregnancies, ensuring appropriate birth spacing, and reducing morbidity and mortality risks.[41] The postpartum period presents a high risk of conception due to the early return of fertility, underlining the importance of PPFP.[42] This study aimed to determine the utilization and associated factors of PPFP among postpartum women in Alebtong District, Northern Uganda. In this predominantly rural setting, we found that approximately 5 in 12 postpartum women reported using PPFP, with a utilization rate of 41.6%.

Our findings are consistent with but also diverge from other studies, regional variations are noted: the rate of 41.6% is higher than the national PPFP coverage of 35% in Uganda, possibly attributed to the fact that we used an extended postpartum period. However it is a little lower than the 44% utilization reported in a similar study conducted in Arba Minch town, South Ethiopia.[22,28] Additionally, a study in rural India, Kailali district found a lower utilization rate of 32.8%.[43] Much lower prevalence has been reported in Uganda (10%) and Ethiopia (20.7%).[31,44] In a systematic review, to assess PPFP use and its determinants among women in LMICs of SSA, a pooled prevalence of 37.41% was reported, while research in urban Ethiopia, Addis Ababa reported a higher uptake of 71.8%.[45] These clearly indicate that there are persistent disparities in access to and uptake of PPFP services. This emphasizes the need for targeted strategies to enhance access and uptake of postpartum contraceptive use, particularly in underserved areas.

Despite this relatively higher rate, PPFP uptake remains suboptimal, likely due to sociocultural barriers, economic constraints, and limitations of the facility-based service delivery model.[41,46,47] Additionally, research in Ethiopia's Tigray region emphasized the importance of immediate PPFP counseling. All these highlight the necessity for targeted, culturally sensitive interventions to address the unique challenges faced by postpartum women. Plans should include community-based PPFP programs integrated with other maternal and child health services that consider the local sociocultural contexts.[48,49] The study shows that the utilization rate of PPFP in the region is higher than the national average possibly because of the focus on an extended postpartum period; however, it

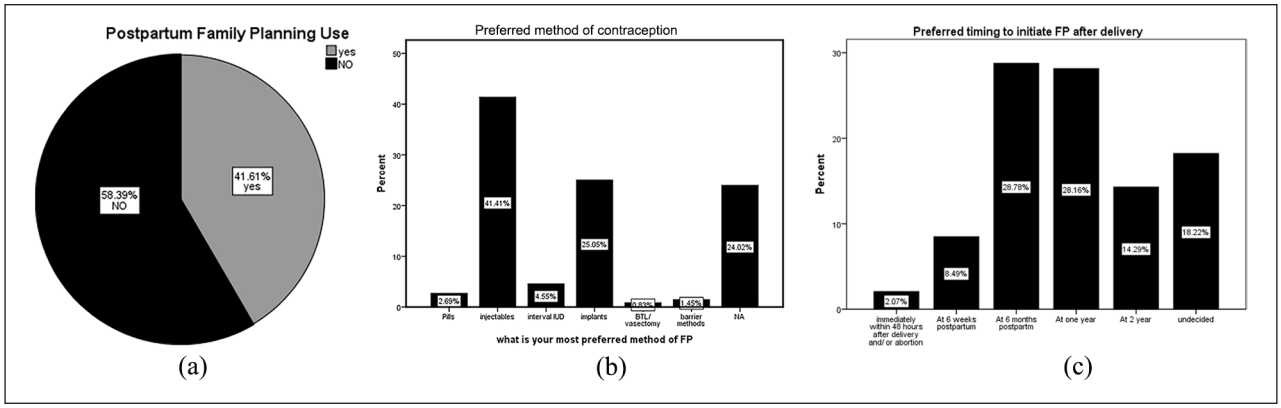


Figure 1. (a) Pie chart showing postpartum family planning use by postpartum women in Alebtong District, Uganda. (b) Bar chart showing preferred postpartum family planning method among postpartum women in Alebtong District, Northern Uganda. (c) Bar chart showing preferred timing of initiation of family planning after delivery among postpartum women in Alebtong District, Northern Uganda.

Table 3. Association of sociodemographic factors with use of PPFP methods.

	Ever used PPFP		
Characteristic	Yes, *n* = 201 (41.6%)	No, *n* = 282 (58.4%)	*p*-value
Mothers age			
18–24	75 (37.3)	172 (70.0)	<0.001
25–34	100 (49.8)	89 (31.6)	
35–45	26 (12.9)	21 (7.5)	
Religion			
Anglican	81 (40.3)	125 (44.3)	0.19[f]
Catholic	72 (35.8)	89 (31.6)	
Seventh-Day Adventist	4 (2.0)	11 (3.9)	
Muslim	12 (6.0)	7 (2.5)	
Others	32 (16.0)	50 (17.7)	
Marital status			
Married	189 (94.0)	251 (89.0)	0.06
Not married	12 (6.0)	31 (11.0)	
Education level			
No formal education	21 (10.5)	58 (20.6)	0.03
Completed primary	146 (72.6)	181 (64.2)	
Completed secondary	28 (14.0)	33 (11.7)	
Post-secondary	6 (3.0)	10 (3.6)	
Monthly income (Ugandan shillings/$)			
<50,000 (14$)	137 (68.2)	179 (63.5)	0.45
50,000–100,000	57 (28.4)	95 (33.7)	
>100,000	7 (3.5)	8 (2.8)	
Partner's age			
18–24	25 (12.4)	62 (22.0)	0.003
25–34	117 (58.2)	167 (59.2)	
>34	59 (29.4)	53 (18.8)	
Partner's education			
No formal education	10 (5.0)	18 (6.4)	0.13
Completed primary	120 (59.7)	191 (67.7)	
Completed secondary	56 (27.9)	54 (19.2)	
Post-secondary	15 (7.5)	19 (6.7)	[a]

PPFP: Postpartum family planning.
[a]Chi-square (χ^2).
[f]Fishers exact test.

Table 4. Association of individual and health-related factors with the use of PPFP methods.

Factor	Ever used PPFP		*p*-value
	Yes, *n* = 201 (41.6%)	No, *n* = 282 (58.4%)	
Partner has another spouse			
Yes	62 (12.0)	62 (22.0)	0.004
No	177 (88.1)	220 (78.0)	
Parity			
1	50 (24.9)	136 (48.2)	<0.001
2–4	112 (55.7)	110 (39.0)	
>4	39 (19.4)	36 (12.8)	
Number of children alive			
1–2	57 (28.4)	138 (48.9)	<0.001
3–4	106 (52.7)	106 (37.6)	
>4	38 (18.9)	38 (13.5)	
Number of pregnancies lost			
1	34 (17.0)	47 (16.7)	0.66
2 and above	7 (3.5)	6 (2.1)	
Never	160 (79.6)	229 (81.2)	
Mode of last delivery			
Cesarean section	18 (9.0)	16 (5.7)	0.19
Spontaneous vaginal delivery with difficulties	7 (3.5)	17 (6.0)	
Spontaneous vaginal delivery without difficult	176 (87.6)	249 (88.3)	
Place of delivery			
Facility delivery	189 (94.0)	254 (90.1)	0.12
Home delivery	12 (6.0)	28 (10.0)	
Occupation			
Peasant farmer	146 (72.6)	195 (69.2)	0.16[f]
Business woman	54 (26.9)	79 (28.0)	
Formal employment	1 (0.5)	8 (2.8)	
Desired number of children			
1–2	57 (28.4)	101 (35.8)	0.09
>2	144 (71.6)	181 (64.2)	
Sensitized about PPFP during ANC			
Yes	196 (97.5)	174 (61.7)	<0.001
No	5 (2.5)	108 (38.3)	
Ever used any FP method			
Yes	195 (97.0)	164 (58.2)	<0.001
No	6 (3.0)	118 (41.8)	
Preferred timing of contraception			
Within 48 h	5 (2.5)	5 (1.8)	<0.001
At 6 weeks	22 (11.0)	19 (6.7)	
At 6 months	76 (37.8)	63 (22.3)	
At 1 year	65 (32.3)	71 (25.2)	
At 2 years	25 (12.4)	44 (15.6)	
Undecided	8 (4.0)	80 (28.4)	
Advise by friend/family member			
Yes	129 (64.2)	149 (52.8)	0.01
No	72 (35.8)	133 (47.2)	
Decider on FP choice			
Husband	81 (40.3)	136 (46.2)	0.16
Myself	21 (10.5)	28 (10.0)	
Both of us	97 (48.3)	111 (40.0)	
Healthcare provider	2 (1.0)	7 (2.5)	

(Continued)

Table 4. (Continued)

Factor	Ever used PPFP		p-value
	Yes, n = 201 (41.6%)	No, n = 282 (58.4%)	
Distance to nearest health facility (km)			
2–5	111 (55.2)	159 (56.4)	0.92
6–10	64 (31.8)	90 (32.0)	
>10	26 (12.9)	33 (11.7)	
Availability of FP methods			
Yes	197 (98.0)	239 (84.8)	<0.001[f]
No	4 (2.0)	43 (15.3)	
Health worker's attitude at the facility			
Welcoming	192 (95.5)	203 (72.0)	<0.001[f]
Unwelcoming	3 (1.5)	5 (1.8)	
Not Applicable	6 (3.0)	74 (26.2)	[a]

PPFP: Postpartum family planning; FP: family planning.
[a]Chi-square (χ^2)
[f]Fisher's exact test.

Table 5. Predictors of postpartum family planning utilization among women attending health facilities in Alebtong District, Northern Uganda.

Utilization of PPFP methods	APR	p-value	95% CI
Education level			
No formal education	1.000		
Completed primary	0.753	<0.001	0.641–0.883
Completed secondary	0.719	0.01	0.554–0.934
Post-secondary	0.898	0.60	0.601–1.342
Partner's age (years)			
<25	1.000		
25–34	1.203	0.05	1.004–1.443
35 and above	1.045	0.79	0.755–1.447
Parity			
1	1.000		
2–4	0.755	0.001	0.635–0.897
5 and above	0.761	0.11	0.542–1.068
Preferred time for PPFP			
Immediately	1.000		
At 6-week postpartum	1.022	0.95	0.512–2.040
At 6-month postpartum	0.996	0.99	0.531–1.867
At 1-year postpartum	1.192	0.58	0.642–2.213
At 2-year postpartum	1.481	0.22	0.796–2.755
Undecided	1.994	0.03	1.09–3.646
Ever been advised by a friend on FP methods			
Yes	1.000		
No	1.358	<0.001	1.171–1.575[a]

APR: adjusted prevalence ratio; PPFP: Postpartum family planning; FP: family planning; CI: confidence interval.
[a]Modified Poisson Regression with robust variance estimation, *Wald tests.*

suggests that further research is needed to identify barriers and facilitators to uptake so as to develop targeted interventions.

Research shows that local contexts greatly affect these patterns, signifying a need for targeted interventions in LMICs.[50] The Ugandan Ministry of Health should disseminate PPFP information across various media and integrate PPFP services with maternal and child health programs.[51–54] Future research should explore effective communication strategies and integrated service models to enhance PPFP utilization among younger women in Uganda.

Our study found out that women with primary and secondary education were less likely to use PPFP methods compared to those without formal education, similar to findings in Kenya and Uganda with higher education levels significantly boosting PPFP utilization.[31,55] Though our study shows a notable association with primary education, most research indicates stronger links at secondary or higher education levels.[56] Additionally, a study in South Ethiopia indicated that higher education, including college attendance, correlates with increased PPFP rates.[57] Education is crucial for awareness and decision-making about family planning. It is paramount that there should be collaboration between Uganda's Ministries of Health and Education to enhance reproductive health education.[28] This indicates a pressing need for a multi-sectoral approach to family planning. The Ugandan Ministry of Health should conduct targeted awareness campaigns, with future research exploring effective strategies and factors influencing awareness and utilization. Future research should explore innovative approaches to providing PPFP services to women who give birth outside health facilities, such as community-based interventions or mobile health units.[51,52]

The study found that women with partners aged 25–34 years use more PPFP than those in other age group. However, there is a lack of studies examining partner's age as a significant factor influencing PPFP use. Despite extensive research on factors like women's age, education, parity, partner support, and communication, the age of the male partner remains under-investigated.[58,59] This suggests a gap in the evidence base and calls for further research to understand how partner's age influences contraceptive decision-making and uptake.

The study found that parity is a significant factor in PPFP uptake, with women with two to four children being less likely to use it. This is consistent with previous research in Ethiopia, where grand multiparous (those with four or more children) women were found to be 1.7 times more likely to use PPFP than those with only one child. In contrast, another study conducted in Southern Ethiopia found that grand multiparous women were 69% less likely to use family planning methods compared to primiparous women. Contraception use was also lower among married women with four or more children, with modern contraceptive use at 27.1% compared to 41.6% among those with zero to one child and 43.6% among those with two to three children.[59,60]. In another study, high parity women were consistently the least likely to use contraception in the postpartum period.[61] These disparities in contraceptive uptake may be influenced by limited access to services, deep-rooted cultural and societal norms, and the belief among multiparous women that their risk of unintended pregnancy is reduced due to age-related declines in fertility.

Our study findings show that uncertainty or indecision regarding future pregnancy intentions was positively associated with increased use of PPFP. This suggests that women who are unsure about whether or when they want more children may be more likely to adopt contraceptive methods as a precautionary measure. A similar trend was observed in a related study, where the majority of women reported being undecided about their preferred method of postpartum contraception.[61,62] Despite this uncertainty, a different study also showed a relatively low overall intention to use postpartum contraception.[63] This shows a gap between contraceptive need and actual use. The findings provide the need for focused counseling in the postpartum period for women who are conflicted about getting pregnant in the future so as to promote informed choices and increase the use of contraceptives.

Furthermore, our study found that women who received advice from friends were positively influenced to use PPFP. Similarly, in a qualitative study conducted in Istanbul, Turkey, the findings indicate that while women expressed trust in healthcare providers, they placed greater confidence in the contraceptive experiences of friends, neighbors, and relatives. It was reported that they viewed their social networks as a major influence in decision-making, especially regarding side effects, safety, and effectiveness, often considering this information more reliable than other sources.[64] The study points out how important social networks are influencing on how people use contraception, and it suggests that by recognizing their impact could improve uptake among those seeking to avoid pregnancy. Future interventions could leverage social networks, like peer educators or women's groups, to deliver accurate contraceptive education and support.

Our study findings stress the critical need for the Ugandan Ministry of Health to prioritize expanding access to PPFP services at both health facility and community levels. This expansion is crucial for accelerating progress toward SDG 3.7, which aims to ensure universal access to sexual and reproductive healthcare services by 2030, it identifies the need to solve problems such as insufficient funding for healthcare systems, lack of access to quality reproductive care including modern contraception and medically safe abortion that have led to high unwanted pregnancy rates and preventable maternal deaths. Investing in quality healthcare for all, including easy family planning access, helps slow population growth and improves lives. Very high populations facilitate disease transmission and hurt public health, especially in areas like Northern Uganda, where healthcare services are overburdened.[65] There should be targeted interventions such as male partner involvement, community-based PPFP education, and fertility counseling integration during postnatal care.

Study limitations and strength

While providing valuable insights into PPFP service utilization among 483 postpartum women, our study was not without limitations. The reliance on self-reported data may

have introduced social desirability and recall bias in PPFP service utilization reporting and recall bias for obstetric variables and postnatal care attendance, particularly for previous postpartum periods. The study recruited postpartum mothers from health facilities, potentially introducing selection bias. Attending health centers may provide better access to information, stronger health-seeking behavior, and more favorable attitudes toward family planning, making the findings potentially not generalizable to the wider postpartum population. To avoid such the participants were thoroughly explained and encouraged to provide honest responses, and questions were centered on the most recent delivery. The study's strengths lie in its large sample size, robust dataset, and focus on the critical postpartum care period, despite its limitations. The identified factors provide valuable contextual insights and a solid foundation for future interventional studies. This study provides crucial data on PPFP utilization in our setting, potentially guiding targeted interventions to enhance maternal and child health outcomes despite constraints.

Conclusions

The study found a low 41.6% utilization of PPFP among postpartum women attending health facilities in Alebtong District northern Uganda. Postpartum mothers aged 35 years above, who completed a primary level of education, had spontaneous vaginal delivery without difficulties and had prior information on postpartum and immediate PPFP were more likely to utilize PPFP compared to their counterparts. Availability of postpartum and immediate PPFP at health facilities likely resulted in utilization compared to when it was lacking.

Recommendations

This study is cross-sectional, and causal conclusions cannot be drawn; however, based on the findings and review of existing literature, we propose several recommendations to enhance PPFP utilization in Uganda. Primarily, the Ministry of Health should prioritize expanding access to PPFP services at both health facility and community outreach levels, aligning with SDG target 3.7. This expansion should be coupled with a comprehensive communication strategy utilizing diverse media platforms to disseminate PPFP information across all reproductive age categories.[66]

Collaboration with the Ministry of Education is crucial to integrate reproductive health education at all educational levels, potentially addressing the lower PPFP utilization among younger women observed in our study. We advocate for a multisectoral approach, engaging various stakeholders to boost awareness and improve health service delivery. Ensuring a continuous supply of family planning methods at all health facility levels is essential for facilitating easy access and use.[67,68]

Additionally, implementing a digital tracking system for pregnant mothers could help ensure skilled birth attendance care, regardless of location, addressing the lower PPFP utilization among women who deliver before reaching health facilities.[69] Finally, strengthening emergency health units and referral teams for pregnant women could improve tracking of pregnant and postpartum women, potentially increasing their engagement with PPFP services.[70] These evidence-based recommendations, if implemented, could significantly improve PPFP utilization rates in Uganda, contributing to better maternal and child health outcomes.

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Ethical considerations

The research protocol was reviewed and approved by the Gulu University Research and Ethics Committee (GUREC-2022-341). Administrative clearance was obtained from the office of the District Health Officer, Alebtong District, and the participating health facility in charges. The study was performed following the Declaration of Helsinki.

Consent to participate

Written informed consent was obtained from postpartum women aged 18–49 years.

Consent for publication

Not applicable.

Author contributions

Emmanuel Madira: Conceptualization; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Writing – original draft; Writing – review & editing.

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Data availability statement

The datasets used and/or analyzed during the study are available from the corresponding author upon reasonable request.

Supplemental material

Supplemental material for this article is available online.

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