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Contraceptive experience and factors associated with desire for postpartum family planning among pregnant women of the nkongsamba health district, Littoral Region, Cameroon

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Abstract

Background The postpartum period remains a very important period during which contraceptive needs can be met and a significant reduction of maternal and foetal morbi-mortality achieved. This study aimed to evaluate past contraceptive experience and identify factors associated with the desire for postpartum family planning among women in late pregnancy.

Methods We conducted a cross-sectional survey from September 2020 to December 2021 in four major health facilities of the Nkongsamba Health District, Cameroon, and consecutively included all pregnant women in late pregnancy, who came for antenatal follow-up in these health facilities. Data were collected using a semi-structured interviewer-administered questionnaire. Multivariable logistic regression was used to estimate adjusted odds ratios (AORs) for the factors associated with desire for postpartum family planning. Two-tailed p-values < 0.05 were considered statistically significant.

Results Among the 1074 participants, 41.71% [95% CI: 38.78–44.70] reported a future desire for modern postpartum contraception. The self-reported prevalence of use of modern contraception in the past in the study population was 48.87% [95%CI: 45.86–51.88]. Only 17.64% [95%CI: 14.59–21.16] of women had adopted a modern contraceptive method other than the barrier methods in the past. Among pregnant women who had used modern contraception in the past, 11.50% [95%CI: 9.02–14.55] reported to have had their modern contraceptive experience with long-acting reversible contraceptives (LARCs). The prevalence of unintended pregnancy (current pregnancy) was 40.04% [37.15-43.00], with 11.55% being unwanted, and 28.49% mistimed. Compared to their respective counterparts, participants ≤ 30 years old (AOR = 0.71[0.52–0.99]), with monthly revenue below 100 thousand FCFA (AOR = 0.45[0.32–0.62]), who were single (AOR = 0.38[0.27–0.54]), had lower odds for desire of postpartum family planning. In contrast,

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women who were Christians (AOR = 2.13[1.27–3.58]), with a history of use of modern contraception before conception (AOR = 2.80[2.02–3.90]), and had a current unintended term pregnancy had higher odds of desiring postpartum contraception (AOR = 2.91[2.13–3.99]).

Conclusion The desire for postpartum family planning is still low among pregnant women. This desire for postpartum family planning depends on sociodemographic factors and past contraceptive practices.

Keywords Postpartum, Family planning, Factors, Cameroon

Background

Even though reported to have dropped significantly over the years, the prevalence of unintended pregnancy in Sub-Saharan Africa remains relatively high, varying between 10.8 and 54.5% [1]. In 2013, it was estimated that up to 40% of pregnancies among Cameroonian women were unintended [2]. About 30% of pregnancy-related deaths occur from unintended pregnancies. While half of these unintended pregnancies end as abortions, the other half is usually carried on to ages of viability and subsequent delivery [2]. According to the report of the 2018 National Demographic and Health Survey in Cameroon, 22% of pregnancies within the past 5 years were unintended [3]. Among sex workers in Cameroon, 57.6% reported a history of unintended pregnancy [4], while among urban adolescent and young adults, 76.9% had experienced an unintended pregnancy in the past [5]. Unintended pregnancy is associated with heavy maternal, neonatal and child morbidity and mortality.

It directly leads to high rates of induced abortions, of which a majority are unsafe [6]. Unintended births are associated with no preconception care, late initiation of antenatal care, maternal stress and poor mental health, poor drug use [7], premature delivery and low birth weight, poor breastfeeding practices, inadequate childhood vaccination [8], decreased mother-to-child bonding [9], child neglect and abuse [10, 11] all with the potential of leading to adverse maternofoetal and child outcomes. It is a major cause of school dropouts, psychological stress, and suicide among adolescents [12]. In addition, it has been described to affect infant health and well-being, hamper family welfare, leads to unexpected expenditures [2], and even child maltreatment [10]. It leads to higher rates of pregnancy complications like pre-eclampsia, eclampsia, and postpartum haemorrhage [13].

The World Health Organisation recommends that the gap between the last birth and the subsequent pregnancy be at least two years to optimise maternal and infant outcome. Shorter spacing between delivery and conception has been associated with an increased risk of obstetric complications, premature delivery and neonatal death [14].

Unintended pregnancy is a direct consequence of the failure or the non-use of modern contraception. Of the 493,000 unintended pregnancies registered in Cameroon in 2013, 79% and 21% occurred due to the non-use of contraception and failure of methods, respectively [2]. In Cameroon, about 60% of women with no intention to conceive do not use modern contraception or use relatively ineffective folklore methods [2]. According to the 2018 demographic and health survey, the prevalence of unmet need for contraception among women of childbearing age was 23.0%. The satisfaction of this unmet need for family planning was only at 19% [3].

To control unintended pregnancy among women after childbirth, women are advised to take up family planning immediately after delivery. In Sub-Saharan Africa, the pooled prevalence of postpartum contraception is 37.41% [15]. In a recent study in Cameroon, only 17.6% of women adopted modern contraceptive methods within the first year following delivery [16]. In Sub-Saharan Africa, factors associated with postpartum family planning include the level of education, resumption of menses, discussion with partner, knowledge of woman on contraception and family planning counselling during antenatal care [15].

To the best of our knowledge, no study has evaluated contraceptive experience before conception and future desire for postpartum family planning among term pregnant women in Cameroon. In one recent study carried out in Nigeria and Ivory Coast, contraceptive trends were evaluated before abortion. It was found that the contraceptive prevalence before abortion was 42.1% and 32.4% in Nigeria and Ivory Coast, respectively [17]. The desire for postpartum family planning among Cameroonian women, which is a potential indicator for uptake of postpartum family planning has not been fully evaluated. Significant differences between the desire and actual uptake of family planning in the postpartum period could open doors to studies of other barriers and more focused interventions. This study aimed to evaluate past contraceptive experience and identify factors associated with the desire for postpartum family planning among women in late pregnancy.

Methods

Study design

This was a cross-sectional study targeting women in late pregnancy in the Nkongsamba Health District. All eligible pregnant women visiting the study sites for their routine antenatal care or childbirth, and who consented

to the study were consecutively enrolled. Data were collected using a semi-structured interviewer-administered questionnaire, and analyses were done using the statistical software Epi-Info version 7.2.3.1.

Setting

We conducted this study in four health facilities in the NHD. These health facilities included the Catholic Medicalised Health Centre, the Nkongsamba Regional Hospital, Good Samaritan Medicalised Health Centre and the Fultang Polyclinic. According to statistics, these health facilities receive, follow and deliver about 80% of the women in the health district. Nkongsamba as a town is one of the major cities of the Moungo Division with a cosmopolitan population of about 104 050 inhabitants (2005 population census).

Study duration and study population

This study was carried out between September 2020 and December 2021. This study targeted all term (≥37 weeks of pregnancy) pregnant women who were received at the maternities of the four health facilities. Term pregnant women were selected because these women were likely to have gone through antenatal care and the pregnancy experience to be able to make a decision on future contraception in postpartum.

Sampling and sample size

Using Cochran's (single proportion sample size formula) [18], the sample size of the study was estimated. This formula was used with 37.41% as the prevalence of postpartum family planning in Sub-Saharan Africa [15]. The absolute precision on either side of the proportions was set at 0.03, while the acceptable two-sided alpha error was set at 5%. This gave us a minimum required sample size of 1000 participants. Women were consecutively included in the study as they arrived at the maternities of the chosen health facilities during the study period.

Data collection

Administrative authorisation was obtained from the District Medical Officer of the Nkongsamba Health District. Questionnaires were pretested for suitability, adaptability and capacity to meet research objectives on a sample of 15 women in the Kekem District Hospital, West Region of Cameroon. The data collected from the 15 women for the pretest were not included in our study database. Midwives already working in these maternities were responsible for data collection following a 5-hour training on the ethical consideration of the research and data collection procedures.

All data were collected through face-to-face interviews, which lasted for eight to ten minutes each. Interviews were conducted only after the complete package of routine health care had been administered (exit interviews). Data collected included sociodemographic data (like age, level of education of woman and partner, marital status, occupation, and number of household occupants), and economic characteristics (monthly revenue), contraceptive behaviour and use prior to current pregnancy, pregnancy intendedness, and desire for contraception following delivery.

Any woman who reported to have adopted any modern contraceptive method in the past (before her conception) was considered to have had modern contraceptive experience. Future desire for postpartum family planning was measured from a "Yes/No" question which wanted to know if the woman was ready or planning to take any modern method of family planning after delivery.

To limit social desirability or reporting bias, data collectors were trained on the procedure of interview with emphasis on the fact that data collected was purely for research reasons, all questionnaires were designed anonymous with no links of specific identification, and every participant was interviewed on a one-to-one basis.

Data analysis

The main outcome (desire for postpartum family planning) was a binary variable. Hence the proportions with their 95% confidence intervals (CIs) were calculated for categorical variables. Means with their standard deviations were estimated for normally distributed continuous variables. The strength of the association between the main outcome and selected potential factors was measured using the odds ratio (OR) in simple logistic regression (used for bivariate analysis). All variables with p-values≤0.25 on bivariate analysis [19, 20] were included in the multiple logistic regression model to generate adjusted odds ratios (AOR). The cutoff of 0.25 was considered based on scientific recommendations and existing scientific papers in the field [21–23] Two-tailed p-values below 0.05 were considered statistically significant. All analyses were conducted using Epi-info version 7.2.3.1.

Ethics statement

Only willing and consenting participants were included in this study. For each participant, a written and signed informed consent was obtained after a thorough explanation of the study. For participants who were minors, their verbal informed assent coupled to the signed informed consent of their parents or legal representatives was obtained. The ethical clearance approving the study was obtained from the Cameroon Bioethics Initiative/Ethics Review and Consultancy Committee. The ethical clearance reference number is CBI/455/ERCC/CAMBIN. The research was conducted in accordance with the guidelines proposed on the declaration of Helsinki.

Results

Characteristics of the study population

We registered a non-response rate of 6.61% in this study. Data were collected from 1074 eligible participants, aged 15 to 47 years. The mean age of the 1074 participants included in the study was 28.20±6.08 years. Table 1 below presents information on some sociodemographic characteristics of participants. Most of the participants were between 21 and 30 years old (56.52%), had at least secondary education (93.29%), and were cohabiting (39.89%). About 9 in every 10 were Christians (90.81%) and 43.06% earned about 100,000-200,000FCFA per month (Table 1).

Modern contraceptive experience before conception and future desire for postpartum family planning

Figure 1 summarises contraceptive past behaviour (experience) before conception and desire for postpartum contraception. The self-reported prevalence of use of modern contraception in the past in the study population was 48.87% [95%CI: 45.86–51.88]. However, a major fraction had adopted only the use of barrier methods in the past (Fig. 1). It was noted that 82.36% [95%CI: 78.84–85.41] of women who had adopted a modern family planning method in the past used only barrier methods. This implies that only 17.64% [95%CI: 14.59–21.16] of women had adopted a modern contraceptive method other than the barrier methods in the past (Fig. 1).

Among pregnant women who had used modern contraception in the past, 11.50% [95%CI: 9.02–14.55] reported to have had their modern contraceptive experience with long-acting reversible contraceptives (LARCs). Considering the whole study population, 41.71% [95%CI: 38.78–44.70] of these women reported a future desire for modern postpartum contraception (Fig. 1).

Among these women in late pregnancy, 40.04 [95%CI: 37.15-43.00] % declared their pregnancies to be unintended (11.55% were unwanted, and 28.49% were mistimed).

Factors associated with the desire for postpartum modern family planning

Table 2 presents factors associated with the desire for modern postpartum family planning. Using simple logistic regression (for bivariate analysis), 14 variables were evaluated for their possible association with a desire for modern postpartum contraception.

Factors significantly associated with higher odds of the desire for postpartum modern contraception included (Table 2): lack of higher education (OR=1.86[1.38–2.51], p-value<0.001), lack of higher education by the partner (OR=1.67[1.26–2.20], p-value<0.001), use of modern contraception in the past before conception (OR=3.03 [2.45–3.92], p-value<0.001), use of any method of modern contraception other than a barrier method in the past before conception (OR=1.63 [1.06–2.49], p-value=0.026), the use of LARCs in the past before conception (OR=2.46[1.46–4.15], p-value=0.001), and having a current unintended pregnancy for delivery (OR=2.18[1.69–2.80], p-value<0.001).

Table 1 Sociodemographic characteristics of the participants

Characteristic	Modalities	Frequency	Percentages (%)
Age groups (*n*=1074)	15–20 years	97	09.03
	21–30 years	607	56.52
	31–50 years	370	34.45
Marital status (*n*=1068)	Single	371	34.74
	Married	269	25.19
	Cohabiting	462	39.89
	Widow	02	0.19
Level of education (*n*=1074)	Primary	72	06.60
	Secondary	741	68.99
	Higher	261	24.30
Monthly revenue in thousand FCFA (*n*=1059)	Less than 50	119	11.24
	50–100	270	25.50
	100–200	456	43.06
	Above 200	214	20.21
Religion (*n*=1056)	Atheist	64	06.06
	Catholic	518	49.05
	Muslim	33	03.13
	Protestant	441	41.76
Number of household occupants (*n*=1053)	1–4	438	41.60
	5–7	415	39.41
	More than 7	200	18.99

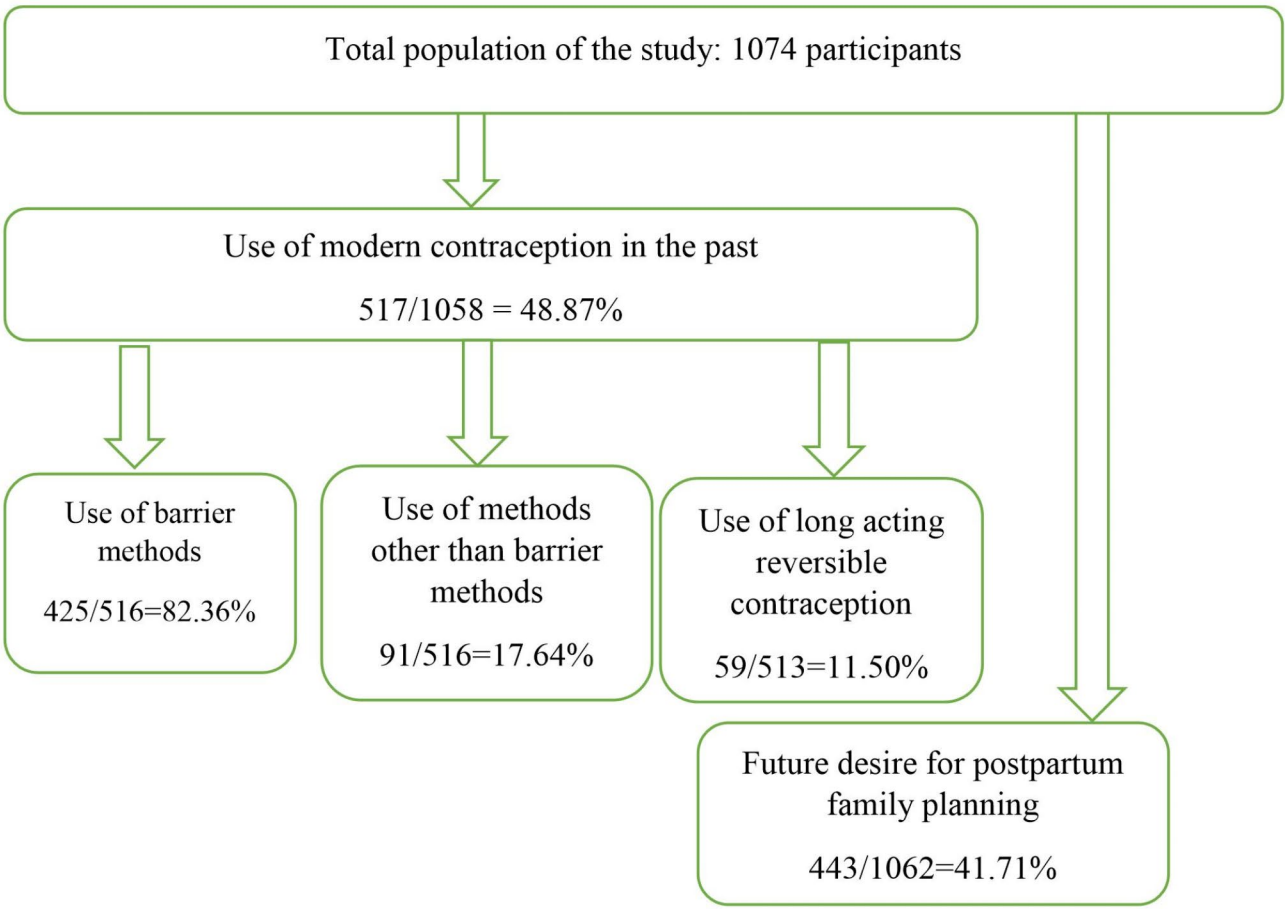

Fig. 1 Contraceptive behaviour before conception and future desire for postpartum modern contraception

Table 2 Factors associated with a desire for postpartum modern family planning

Factor	Simple logistic regression		Multiple logistic regression	
	OR[95% CI]	*p*-value	AOR[95%CI]	*p*-value
Age of woman ≤ 30 years (Y/N)	0.52[0.41–0.68]	< 0.001*,£	0.71[0.52–0.99]	0.043*
Age of the last child > 2years (Y/N)	0.97[0.71–1.31]	0.837		
No higher education (Y/N)	1.86[1.38–2.51]	< 0.001*,£	1.46[0.89–2.38]	0.133
Partner having no higher education (Y/N)	1.67[1.26–2.20]	< 0.001*,£	1.00[0.65–1.54]	0.996
Occupation as student	0.52[0.39–0.71]	< 0.001*,£	0.92[0.61–1.37]	0.668
Marital status as single (Y/N)	0.52[0.40–0.68]	< 0.001*,£	0.38[0.27–0.54]	< 0.001*
Christian (Y/N)	1.53[0.98–2.38]	0.059 £	2.13[1.27–3.58]	0.004*
Monthly revenue below 100 thousand FCFA	0.38[0.29–0.50]	< 0.001*,£	0.45[0.32–0.62]	< 0.001*
Average spacing between pregnancies ≤ 2 years (Y/N)	0.95 [0.70–1.28]	0.721		
Number of household occupants > 6	1.17[0.90–1.53]	0.238£	1.39[0.98–1.96]	0.061
Past use of any method of modern contraception before conception (Y/N)	3.03 [2.45–3.92]	< 0.001*,£	2.80[2.02–3.90]	< 0.001*
Past use of modern contraception other than a barrier method before conception (Y/N)	1.63 [1.06–2.49]	0.026*,£	0.79[0.41–1.51]	0.472
Past use of LARCs before conception (Y/N)	2.46[1.46–4.15]	0.001*,£	1.70[0.81–3.59]	0.162
Having a current unintended pregnancy for delivery	2.18[1.69–2.80]	< 0.001*,£	2.91[2.13–3.99]	< 0.001*

£Eligible for multiple logistic regression (p-value ≤ 0.25)

*Statistically significant (p-value ≤ 0.05)

Y/N = Yes/No, OR = odds ratio, CI: confidence interval, AOR = adjusted odds ratio

On the other hand, the following factors were significantly associated lower odds for postpartum modern contraception (Table 2): Age≤30 years (OR=0.52[0.41–0.68], p-value<0.001), being a student (OR=0.52[0.39–0.71], p-value<0.001), being single (OR=0.52[0.40–0.68], p-value<0.001), and having an estimated monthly revenue below 100 thousand FCFA (OR=0.38[0.29–0.50], p-value<0.001).

Upon control of eligible factors (p-value≤0.25) in a multiple logistic regression model, only 6 factors came out with a statistically significant association with the desire of modern postpartum contraception (Table 2).

From Table 2, women who were aged≤30 years had a 0.71-fold lower odd of desiring modern postpartum contraception compared with their older counterparts (AOR=0.71[0.52–0.99], p-value=0.043). Also, women who had "single" as marital status had a 0.38-fold lower odd of desiring modern postpartum contraception compared to women in a union (AOR=0.38[0.27–0.54], p-value<0.001). In the same light, women with an estimated monthly below 100 thousand FCFA had a 0.45-fold lower odd of desiring modern postpartum contraception compared to women who earned higher (AOR=0.45[0.32–0.62], p-value<0.001).

On the other hand, being a Christian was associated with a 2.13-fold higher odd of desiring modern postpartum contraception compared to non-Christians (AOR=2.13[1.27–3.58], p-value=0.004). In the same light, women who used any method of family planning in the past before conception had a 2.80-fold higher odd of desiring modern postpartum contraception compared to those that had not use any modern contraception in the past (AOR=2.80[2.02–3.90], p-value<0.001) [see Table 2].

Having a current unintended term pregnancy was associated with a 2.91-fold higher odd of desiring modern postpartum contraception compared to women who carried intended pregnancies (AOR=2.91[2.13–3.99], p-value<0.001) [see Table 2].

In summary, among the 1074 participants, 41.71% [95% CI: 38.78–44.70] reported a future desire for modern postpartum contraception. The self-reported prevalence of use of modern contraception in the past in the study population was 48.87% [95%CI: 45.86–51.88]. Only 17.64% [95%CI: 14.59–21.16] of women had adopted a modern contraceptive method other than the barrier methods in the past. Among pregnant women who had used modern contraception in the past, 11.50% [95%CI: 9.02–14.55] reported to have had their modern contraceptive experience with long-acting reversible contraceptives (LARCs). The prevalence of unintended pregnancy (current pregnancy) was 40.04% [37.15-43.00] with 11.55% being unwanted, and 28.49% mistimed. Compared to their respective counterparts, participants≤30 years old (AOR=0.71[0.52–0.99]), with monthly revenue below 100 thousand FCFA (AOR=0.45[0.32–0.62]), who were single (AOR=0.38[0.27–0.54]), had lower odds for desire of postpartum family planning. In contrast, women who were Christians (AOR=2.13[1.27–3.58]), with a history of use of modern contraception before conception (AOR=2.80[2.02–3.90]), and had a current unintended term pregnancy had higher odds of desiring postpartum contraception (AOR=2.91[2.13–3.99]).

Discussion

Unintended pregnancy caused by low use or failure of family planning is associated with high maternal, neonatal, infant and under-five morbi-mortality. This study aimed at evaluating past contraceptive experience and identifying factors associated with desire for postpartum family planning in term pregnant women.

The prevalence of the past use of modern contraception before conception in this study was relatively high. As expected, this prevalence (48.87%) is by far higher than the national-level prevalence of modern contraception among women of childbearing age, which was reported by the 2018 demographic and health survey in Cameroon (19.3%) [3]. However, this prevalence is lower than the 77% prevalence of ever use of contraception [24]. Similar results have been found in Nigeria where about 49% of women reported to have used a method of contraception in the past [25]. Our results also concord with findings on contraceptive use among women before abortion in Nigeria and Ivory Coast [17]. The discrepancies in the results could be justified by the differences in the sociodemographic and cultural characteristics as well as the definitions of the outcomes in the different studies. This gives a picture of the relative exposure of these women to contraceptive services. Even though seemingly high, it represents an overall exposure of these women at any point in time of their lives to modern contraception. This is different from the point prevalence of modern contraceptive use and matches more with the prevalence of ever use of modern contraception which depicts past contraceptive experience. The type of experience (good or bad) is expected to have a significant impact on the future uptake of modern contraception.

In this study, a majority of these women reported to having used only short-acting reversible methods in the past, with only 11.50% using LARCs before pregnancy. This trend is similar to the general trend of contraceptive use, where women tend to use less effective barrier methods instead of the LARCs [3, 26, 27]. This was also observed in a study on contraceptive behaviour before abortion [17]. The use of LARCs is associated with lower discontinuation rates and very low failure rates in the population. The high rate of use of short acting reversible methods, especially condoms within this population

could explain the relatively high rates of unintended pregnancy reported in this study (40.04%).

As stated above, 40.04 [37.15-43.00] % of the participants had unintended pregnancies (11.55% were unwanted, and 28.49% were mistimed). This implies that 4 in every 10 of these women were carrying an unintended pregnancy. of which a majority are unsafe [6]. The findings of this study on unintended pregnancies are not very different from reports from a study conducted in Sri Lanka among women with term deliveries in which only 70% of deliveries were planned [28]. The prevalence of 40.04% is in line with reports in Cameroon, which state that 40% of all pregnancies in Cameroon are unintended [2]. Similar findings have also been reported among women in Nigeria and the Democratic Republic of Congo, with a recorded prevalence of unintended pregnancy of 36.5%, and 51.5%, respectively [29, 30]. The small discrepancies could be associated with the differences in contraceptive behaviours in the different settings.

Unintended births have been associated with no preconception care, late initiation of antenatal care, maternal stress and poor mental health [7], premature delivery and low birth weight, poor breastfeeding practices, inadequate childhood vaccination [8], decreased mother-to-child bonding [9], child neglect and abuse [10, 11].

As stated in the result section, only 41.71% [95%CI: 38.78–44.70] of these women reported a future desire for modern postpartum contraception. This implies that about six in every 10 of these pregnant women had no intentions of taking a modern family planning after delivery. Even though a great proportion of these women may decide to depend on the natural methods of family planning, this is usually associated with higher failure rates. Low desire for postpartum family planning among pregnant women who are in contact with a health facility, and health staff through antenatal consultation and delivery raises concern and questions about the population as a whole, the content of the health education and health promotion provided to these women at the health facility during visits. This implies an urgent need for re-evaluation and adapted intervention.

This study also evaluated factors associated with future desire for postpartum family planning. Factors associated with lower odds of the desire for postpartum family planning were age≤30 years, being single, having an estimated monthly revenue below 100 thousand FCFA, no past experience with modern contraception before conception, not being a Christian, and having a current intended pregnancy.

Contrary to findings in Ethiopia, where low maternal age was found to be associated with reduced uptake of postpartum contraception [31]. Women who are not married (single) were less likely to desire postpartum contraception compared to married women. Similar results have been obtained in South Ethiopia [32], and North West Ethiopia [33], where being married significantly increased the likelihood of postpartum family planning uptake.

Women who had used modern contraception in the past before conception were found to be significantly more likely to take up postpartum family planning. Similar results had been reported in multiple studies carried out on postpartum family planning uptake [33–38]. Contrary to findings reported in cross-sectional studies in Ethiopia [31, 32], women with a current unintended pregnancy had higher odds of desiring postpartum family planning than women who carried planned pregnancies. However, in a study that evaluated the effect of birth intendedness on postpartum family planning uptake, women who had unintended births were more likely to adopt highly effective methods of contraception (sterilisation and LARCs) [39].Unintended pregnancy was associated with a better decision on future need for modern contraception. This suggests that the healthcare workers might have given these women specific health education, adapted to their current status and risk or that these women learned from their mistakes.

This study had some limits. This study was cross-sectional, and the interpretation of these associations should consider the limits of cross-sectional designs (only hypotheses can be emitted with no causality). Even though "desire" is the first step towards contraceptive uptake, not all women who desire modern contraception in the postpartum period end up using these methods. However, the desire to use is one of the strongest indicators of family planning uptake. This study failed to evaluate other potential factors that could influence the desire for postpartum family planning, like the quality of antenatal care and the influence of the male partner. Furthermore, our study was a hospital-based study and included only women who came for antenatal and delivery care. We could not study all women in this category because some of them remain in the community and do not come for antenatal care. Nonetheless, this study successfully identified key factors logically backed by existing literature in other settings that cannot be neglected in the strategies to improve postpartum family planning uptake and the subsequent fight against unintended pregnancy in Cameroon.

Conclusion

The prevalence of the future desire for postpartum family planning is still low. The likelihood for future desire of postpartum family planning depends on sociodemographic factors like age, marital status, religion, and monthly revenue. Past contraceptive experience and the intendedness of the current pregnancy also have a key

role to play. Given the low rate of desire for postpartum family planning, adapted interventions to improve contraception desire are indispensable. At this stage, it is useful for the scientific community and local health actors (at the health district level) to investigate further on the package of health promotion provided to pregnant women during antenatal visits and barriers to contraception access and use at the community level. Public health and community health interventions aimed at reducing unintended pregnancy and improving postpartum family planning uptake should consider sociodemographic factors and past contraceptive experiences.

Abbreviations

AOR	Adjusted Odds Ratio
LARCs	Long-acting reversible contraceptives
NHD	Nkongsamba Health District
OR	Odds Ratio
CI	Confidence Interval

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Author contributions
A.B.A., M.N.Y., V.N.A., C.E.B., F.N.M., and B.K. designed the study, guided and supervised data collection. A.B.A. and L.M.W. carried out data management and analysis. A.B.A. drafted the original manuscript. All authors contributed in reviewing and approving the final manuscript.

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Data availability
The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Only willing and consenting participants were included in this study. For each participant, a written and signed informed consent was obtained after a thorough explanation of the study. For participants who were minors, their verbal informed assent coupled to the signed informed consent of their parents or legal representatives was obtained. The ethical clearance approving the study was obtained from the Cameroon Bioethics Initiative/Ethics Review and Consultancy Committee. The research was conducted in accordance with the guidelines proposed on the declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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