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Original Research Article

Modern contraceptive method utilization among mothers of children aged 7 to 24 months at the Yalgado Ouédraogo University Hospital, Burkina Faso, West Africa

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ABSTRACT

Background: This study aimed to examine the use of modern contraceptive methods among mothers of children aged 7 to 24 Months at Yalgado Ouédraogo University Hospital (CHU-YO) in Ouagadougou, Burkina Faso.
Methods: An analytical cross-sectional survey was conducted among 412 women who had delivered at CHU-YO and whose infants were between 7 and 24 months of age. A structured questionnaire was used to collect data on sociodemographic characteristics, obstetric history, and modern contraceptive use. Data analysis using R software identified associations between modern contraceptive use and various factors.
Results: The study found a 69.2% prevalence of modern contraceptive use among participants. The progestin implant and intrauterine device (IUDs) were the most commonly used methods. Factors associated with modern method use included age over 30 years, higher level of education, having at least two living children, having received family planning counseling, and having given birth by cesarean section. Factors associated with the use of long-acting methods in the multivariate analysis were being married, having received family planning counseling during pregnancy or in the postpartum period, having had a cesarean delivery, and being overweight (BMI ≥ 24.5 kg/m^2). Factors associated with the use of hormonal methods in multivariate analysis were having received family planning counseling during pregnancy or in the postpartum period and having had a vaginal delivery.
Conclusions: The use of modern contraceptive methods was higher among mothers of children aged 7 to 24 months than in the general population. However, factors such as age, level of education and having received family planning advice influenced women's contraceptive use. Health professionals need to explore ways to further improve the use of modern contraceptives.

Keywords: Associated factors, Burkina Faso, Modern contraceptive use, Mothers of young children

INTRODUCTION

Pregnancy spacing of two to five years improves the health of both mothers and children.[1-3] This practice involves utilizing a variety of contraceptive methods, ranging from natural techniques like breastfeeding and the lactational amenorrhea method (LAM) to modern contraceptives. Modern contraceptive method is defined as method based on medical technology that offer a high efficacy level in preventing unwanted pregnancies.[4] These methods include hormonal contraceptives and barrier or mechanical methods such as intrauterine devices (IUDs).

For breastfeeding women, LAM is the most reliable natural method, remaining effective for up to six months postpartum. However, after this period, natural methods, including LAM, often become ineffective.[5] Consequently, birth spacing in this particular population necessitates the adoption of modern contraceptive methods rather than relying solely on natural options.

The existing literature indicates a significant gap in data regarding modern contraceptive use among breastfeeding women in Burkina Faso, especially those with children aged 7 to 24 months. This group has much to gain from accessing modern contraceptive methods. The lack of research emphasizes the necessity of this study, which seeks to explore women's contraceptive practices within this population to identify barriers and promote suitable services.

This study seeks to examine the use of modern contraceptives among mothers of children aged 7 to 24 months who delivered in the obstetrics department of the Centre Hospitalier Universitaire Yalgado Ouédraogo in Ouagadougou, Burkina Faso. By providing accurate data on this population, the study could facilitate the optimization of strategies to promote modern contraception for mothers with children under two years of age.

METHODS

This study was conducted as part of a cross-sectional analytical investigation in the obstetrics department of the Centre Hospitalier Universitaire Yalgado Ouédraogo (CHU-YO). The CHU-YO is a tertiary-level healthcare facility located in Ouagadougou, Burkina Faso. The target population for this study consisted of women who had given birth at CHU-YO and whose children were between 7 and 24 months old at the time of the survey. This age group was selected due to its significance in reproductive health, as ensuring adequate spacing between pregnancies is crucial for optimizing the well-being of both mothers and their children.

Mothers who had given birth at CHU-YO and whose child was still alive at the time of the survey were included in the study. Mothers who had undergone a hysterectomy following delivery were excluded from the study.

To determine the sample size, the Schwartz formula was employed. This calculation utilized an estimated proportion of 50%, a standard approach when no accurate previous estimates are available, as it maximizes the sample size. A confidence interval of 95% was established to ensure the reliability of the results. Based on the Schwartz formula for sample size calculation, where Z represents the value associated with the confidence interval (1.96 for 95%), p denotes the estimated proportion (0.50), and E indicates the margin of error (0.05), the sample size (n) was calculated as follows:

$$n = \frac{Z^2 \times p \times (1-p)}{E^2}.$$

$$n = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2} = \frac{(3.8416) \times 0.5 \times 0.5}{0.0025} = 384.16$$

The minimum sample size required for reliable results was rounded up to 385 participants. However, for the study, participants were randomly selected from the birth registers during the study period, employing a sampling step to ensure representativeness. The delivery period extended from April 1, 2022, to September 1, 2023, while data collection occurred between March 1 and April 15, 2024. Women who gave birth during this timeframe thus had children aged between 7 and 24 months. In total, 8,043 women gave birth during this period and met the inclusion criteria. Of these, 450 were randomly selected using a sampling step, and ultimately, 412 participants took part in the study, surpassing the minimum required number.

For data collection, a structured questionnaire was developed, encompassing key socio-demographic variables such as age, education level, marital status, and obstetric history. Additionally, the questionnaire included targeted questions regarding the use of modern contraceptives, sources of information, and the barriers women faced in accessing these contraceptive methods. Before the survey commenced, each woman was informed about the study's objectives and data collection procedures. To adhere to ethical research standards, an informed consent form was signed by all participants. Furthermore, the study received approval from the national health research ethics committee.

Statistical analysis

Data analysis was performed using R software. Fisher's exact test was used for comparisons. A difference was considered significant if $p<0.05$. Bivariate and multivariate logistic regression analyses were performed, providing crude odds ratios (cOR) and adjusted odds ratios (aOR), 95% confidence intervals (CI) and p-values set at 0.05 to assess the statistical significance of associations between modern contraceptive use and various sociodemographic and clinical factors in mothers of children aged 7-24 months.

RESULTS

The 412 participants in the survey were aged between 16 and 45 years, with a mean age of 29.7±5.8 years. Among them, 227, representing 55.1%, were 30 years old or younger. Moreover, 63.1% (260/412) of the participants had received a maximum of six years of education. Table 1 presents the detailed characteristics of the participants.

Of the 412 participants, 285 (69.2%) were using a modern contraceptive method. Of these, 33.68% (96 out of 285) had opted for the subcutaneous progestin implant, while

16.50% (47 out of 285) used the intrauterine device (IUDs). Of these, 33.68% (96/285) had opted for the subcutaneous progestin implant, while 16.50% (47/285) used the IUDs.

Table 1: Characteristics of the 412 participants.

Characteristics	N (%) or Mean±SD
Mother's age in years	
Average±SD	29.7±5.8
15 to 19	13 (3.6)
20 to 24	67 (16.3)
25 to 29	127 (30.9)
30 to 34	115 (27.9)
35 to 39	70 (17.0)
40 to 44	19 (4.6)
45 to 49	1 (0.2)
Marital status: N (%)	
Married	361 (87.6)
Unmarried	51 (12.4)
Education level	
No schooling	146 (35.4)
Primary	114 (27.7)
Secondary	91 ((22.1)
University	61 (14.8)
Main occupation: N (%)	
Income-generating private activity	149 (36.2)
Salaried	122 (29.6)
Pupil/student	3 (17.7)
Housewife	68 (16.5)
Number of living children: mean±SD	2.2±1.3
Total number of children wanted: mean (extremes)	4.01 (2 et 6)
Mother's weight status: N (%)	
Normal weight	231 (56.1)
Overweight	97 (23.5)
Obesity	84 (20.4)
Mothers with high blood pressure n (%)	99 (24.0)
Child's age N (%)	
6 to 12	136 (33.0)
13 to 18	143 (34.7)
19 to 24	133 (32.3)
Breastfeeding at time of survey, N (%)	
Yes	308 (74.8)
No	104 (25.2)

In all, 51.2% (146/285) of modern contraceptive users were on a long-acting method, including IUDs, subcutaneous progestin implant and tubal ligation. Figure 1 shows the distribution of participants according to contraceptive method.

In univariate analysis, five factors were associated with the use of a modern contraceptive method: age over 30, years of schooling over 6, participants with at least two living children, participants who had received family planning counseling during pregnancy and in the post-partum period, and those who had given birth by caesarean section. In multivariate analysis, the factors still associated with the use of a modern contraceptive method were the number of years of schooling over 6 years, participants with at least two living children, and participants who had received family planning advice during pregnancy and in the post-partum period. Table 2 presents odds ratios with confidence intervals for risk factors in univariate and multivariate analysis.

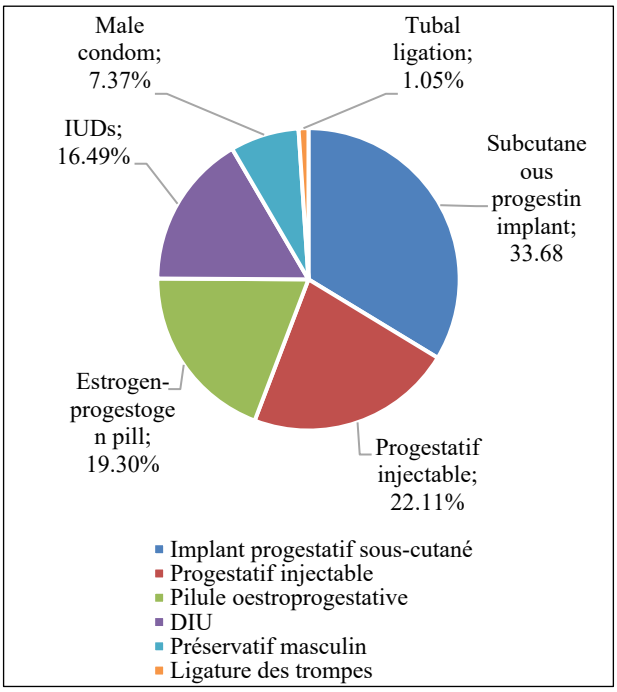

Figure 1: Distribution of modern contraceptive participants by method (n=285).

Among the 285 modern contraceptive users, the factors associated with use of a long-acting method in univariate analysis were being married, having received family planning counseling during pregnancy or postpartum, delivery by cesarean section, being overweight (BMI≥24.5 kg/m^2), and being hypertensive. In multivariate analysis, the factors that remained associated with use of a long-acting contraceptive method were being married, having received family planning counseling during pregnancy or in the postpartum period, delivery by cesarean section, and being overweight (BMI≥24.5 kg/m^2). Table 3 presents the results of the analysis designed to identify associated factors, first in univariate analysis, then in multivariate analysis.

Of the 285 mothers using a modern contraceptive method, 214 (75.1%) were using a hormonal method. Factors associated with the use of a hormonal contraceptive method were vaginal delivery, presence of hypertension, and BMI greater than or equal to 24.5 kg/m^2 (Table 4).

Table 2: Factors associated with the use of a modern contraceptive method by 412 mothers of children aged 7 to 24 months.

Factors	Total mothers	Use a modern contraceptive method N (%)	Univariate analysis cOR (IC95%, p)	Multivariate analysis aOR (IC95%, p)
Age (years)				
< 30	227	147 (64.8)	1	
≥ 30	185	138 (74.1)	1.60 (1.04-2.46, p=0.032)	1.52 (0.89-2.64, p=0.127)
Years of schooling				
≤ 6	260	148 (56.9)	1	
> 6	152	137 (90.1)	6.91 (3.95-12.87, p<0.001)	7.25 (3.82-14.64, p<0.001)
Marital status				
Married	361	244 (67.6)	1	
Unmarried	51	41 (80.4)	1.97 (0.99-4.28, p=0.068)	1.94 (0.83-4.90, p=0.141)
Financial independence?				
Yes	271	183 (67.5)	1	
No	141	102 (72.3)	1.26 (0.81-1.98, p=0.316)	1.35 (0.76-2.42, p=0.303)
Number of live children				
1	178	113 (63.5)	1	
≥ 2	234	172 (73.5)	1.60 (1.05-2.44, p=0.030)	1.93 (1.12-3.38, p=0.019)
Desired family size				
< 4	29	23 (79.4)	1	
≥ 4	369	251 (68.0)	0.55 (0.20-1.32, p=0.212)	0.55 (0.16-1.70, p=0.324)
Don't know	14	11 (78.6)	0.96 (0.21-5.20, p=0.955)	0.93 (0.15-6.67, p=0.935)
Advice FP*				
Non	127	43 (33.9)	1	
Oui	285	238 (83.5)	9.89 (6.15-16.18, p<0.001)	12.05 (6.90-21.84, p<0.001)
Mode of delivery				
Vaginal route	198	127 (64.1)	1	
Caesarean section	214	158 (73.8)	1.58 (1.04-2.41, p=0.034)	1.37 (0.80-2.35, p=0.245)
BMI				
≥ 24.5 kg/m^2	181	125 (69.1)	1	
< 24.5 kg/m^2	231	160 (69.6)	1.01 (0.66-1.54, p=0.965)	1.19 (0.58-2.44, p=0.630)
Hypertension?				
Yes	99	68 (68.7)	1	
No	313	217 (69.3)	1.03 (0.63-1.67, p=0.904)	0.96 (0.42-2.23, p=0.925)
Breastfeeding?				
Yes	308	214 (69.5)	1	
No	104	71 (68.3)	0.95 (0.59-1.54, p=0.817)	0.68 (0.36-1.26, p=0.219)

*Received advice on family planning

Table 3: Factors associated with the use of a modern long-acting contraceptive method (mLACM) by mothers of children aged 7 to 24 months.

Factors	Total mothers using a modern contraceptive method	mLACM N (%)	Univariate analysis cOR (IC95%, p)	Multivariate analysis aOR (IC95%, p)
Age (years)				
< 30	147	78 (53.1)	1	
≥ 30	138	68 (49.3)	0.86 (0.54-1.37, p=0.523)	0.84 (0.50-1.41, p=0.504)
Years of schooling				
≤ 6	148	70 (47.3)	1	
> 6	137	76 (55.5)	1.39 (0.87-2.22, p=0.168)	1.27 (0.76-2.15, p=0.365)

Continued.

Factors	Total mothers using a modern contraceptive method	mLACM N (%)	Univariate analysis cOR (IC95%, p)	Multivariate analysis aOR (IC95%, p)
Marital status				
Married	41	15 (36.6)	1	
Unmarried	244	131 (53.7)	2.01 (1.03-4.06, p=0.045)	2.26 (1.07-4.97, p=0.036)
Financial independence?				
Yes	183	96 (52.5)	1	
No	102	50 (49.0)	0.87 (0.54-1.42, p=0.578)	0.83 (0.48-1.43, p=0.500)
Number of live children				
1	113	58 (51.3)	1	
≥ 2	172	88 (51.2)	0.99 (0.62-1.60, p=0.978)	1.33 (0.77-2.30, p=0.306)
Desired family size				
< 4	23	12 (52.2)	1	
≥ 4	251	132 (52.6)	1.02 (0.43-2.40, p=0.970)	0.82 (0.30-2.18, p=0.693)
Don't know	11	2 (18.2)	0.56 (0.35-0.90, p=0.017)	0.24 (0.03-1.34, p=0.129)
Advice FP*				
Non	47	11 (23.4)	1	
Oui	238	135 56.7)	4.29 (2.15-9.21, p<0.001)	4.55 (2.14-10.38, p<0.001)
Mode of delivery				
Vaginal route	127	55 (43.3)	1	
Caesarean section	158	91(57.6)	1.78 (1.11-2.86, p=0.017)	1.93 (1.15-3.30, p=0.014)
BMI				
≥ 24.5 kg/m^2	160	63 (39.4)	1	
< 24.5 kg/m^2	125	83 (66.4)	3.04 (1.88-4.99, p<0.001)	2.19 (1.12-4.37, p=0.024)
Hypertension ?				
Yes	217	99 (45.6)	1	
No	68	47 (69.1)	2.67 (1.51-4.84, p=0.001)	1.60 (0.71-3.66, p=0.262)
Breastfeeding ?				
Yes	214	106 (49.5)	1	
No	71	40 (56.3)	1.31 (0.77-2.27, p=0.321)	1.49 (0.81-2.76, p=0.199)

*Received advice on family planning

Table 4: Factors associated with the use of a modern hormonal contraceptive method by mothers of children aged 7 to 24 months.

Factors	Total mothers using a modern contraceptive method	Hormonal method N (%)	Univariate analysis cOR (IC95%, p)	Multivariate analysis aOR (IC95%, p)
Age (years)				
< 30	147	112 (76.2)	1	
≥ 30	138	102 (73.9)	0.89 (0.52-1.52, p=0.657)	0.88 (0.49-1.59, p=0.677)
Years of schooling				
≤ 6	148	115 (77.7)	1	
> 6	137	99 (72.3)	0.75 (0.43-1.28, p=0.289)	0.79 (0.43-1.43, p=0.432)
Marital status				
Married	41	31 (75.6)	1	
Unmarried	244	183 (75.0)	0.97 (0.43-2.03, p=0.933)	1.17 (0.48-2.65, p=0.718)
Financial independence?				
Yes	183	137 (74.9)	1	
No	102	77 (75.5)	1.03 (0.59-1.83, p=0.907)	1.19 (0.64-2.25, p=0.591)
Number of live children				
1	113	86 (76.1)	1	
≥ 2	172	128 (74.4)	0.91 (0.52-1.58, p=0.747)	0.82 (0.44-1.51, p=0.535)

Continued.

Factors	Total mothers using a modern contraceptive method	Hormonal method N (%)	Univariate analysis cOR (IC95%, p)	Multivariate analysis aOR (IC95%, p)
Desired family size				
< 4	23	17 (73.4)	1	
≥ 4	251	188 (74.9)	1.05 (0.37-2.66, p=0.917)	1.06 (0.34-2.97, p=0.916)
Don't know	11	9 (81.8)	1.59 (0.29-12.38, p=0.613)	0.85 (0.14-7.07, p=0.863)
Advice FP*				
Non	47	34 (72.3)	1	
Oui	238	180 (75.6)	1.19 (0.57-2.35, p=0.634)	1.29 (0.58-2.77, p=0.524)
Mode of delivery				
Vaginal route	127	105 (82.7)	1	
Caesarean section	158	109 (70.0)	0.47 (0.26-0.82, p=0.009)	0.40 (0.21-0.73, p=0.003)
BMI				
≥ 24.5 kg/m^2	160	132 (82.5)	1	
< 24.5 kg/m^2	125	82 (65.6)	0.40 (0.23-0.70, p=0.001)	1.21 (0.53-2.98, p=0.658)
Hypertension ?				
Yes	217	180 (82.9)	1	
No	68	34 (50.0)	0.21 (0.11-0.37, p<0.001)	0.15 (0.06-0.37, p<0.001)
Breastfeeding ?				
Yes	214	158 (73.9)	1	
No	71	56 (78.9)	1.32 (0.71-2.59, p=0.396)	1.21 (0.60-2.52, p=0.606)

*Received advice on family planning

DISCUSSION

The results of our study show a prevalence of modern contraceptive use of 69.2% among the 412 participants. This figure is higher than that observed in the general population in Burkina Faso and Ouagadougou, where the reported prevalences are 30.1% and 61.5% respectively.[6] This disparity suggests that our sample may be made up of women who are more aware of the benefits of family planning, probably due to high exposure to reproductive health education and proximity to health services. Nevertheless, all these participants have a child under the age of 2 years and should ideally be on a modern method of contraception. Efforts therefore need to be developed within the obstetrics department of CHU Yalgado Ouédraogo to further improve women's adherence to post-partum contraception.

An encouraging aspect of our results is the high proportion of women using a long-acting contraceptive method. They accounted for 51.2% of modern contraceptive users. This adoption of methods such as the progestin implant and the intrauterine device (IUD) exceeds the statistics observed in the city of Ouagadougou, where it was 28.65% in 2023, according to the statistical yearbook of the Ministry of Health and Public Hygiene.[7] The introduction of free family planning in Burkina Faso in 2023 may have improved financial access to long-acting contraceptive methods. Several studies have reported the positive impact of free family planning on contraceptive use.[8-10] Efforts to promote long-acting contraceptive methods such as the IUD are also advocated by the International Federation of Gynecology and Obstetrics (FIGO), which favors a longer delay between pregnancies while requiring fewer subsequent interventions.[11,12] To further improve the use of long-acting contraceptive methods, the family planning service at CHU Yalgado Ouédraogo can draw on a local experience of the Société des Gynécologues Obstétriciens du Burkina for demand creation.[13] This intervention included staff training, awareness-raising, equipping health facilities and providing free long-acting contraceptive methods.

Study participants with at least six years of schooling were more likely to use a modern contraceptive method. Education is often cited as a key determinant of contraceptive uptake. Makumbi et al in 2023 in Uganda point out that women with higher levels of education are better informed about contraceptive options, increasing the likelihood of their adoption.[14] A study carried out by Ibikunle et al in 2023 in Nigeria also showed the beneficial link between a high level of education and the adoption of a modern contraceptive method.[15] Indeed, a high level of education promotes a better understanding of the benefits of family planning, health issues and parenthood. It is therefore important to encourage young girls to go to school.

Having at least two living children is often correlated with women's willingness to control their fertility. Authors in Ghana have also noted that mothers with more child-rearing experience are generally more inclined to adopt contraceptive methods to space pregnancies.[16,17] These

women with several children feel pressure to space pregnancies to better meet family needs.

The fact of having received family planning advice during pregnancy or in the post-partum period was associated with the use of a contraceptive method. In addition, those women who received advice tended to use long-acting contraceptive methods. The role of family planning counseling has been documented in the literature. Researchers have reported that women who receive adequate information on contraceptive methods during antenatal and postnatal care are significantly more likely to adopt these methods.[18] Targeted educational support, begun early in pregnancy, enhances their knowledge of the various contraceptive options, thus facilitating their use.[19] This observation is reflected in the analysis carried out at the CHU Yalgado Ouédraogo, where it clearly appears that support during pregnancy and the postpartum period favors the use of a contraceptive method among mothers of children aged 6 to 24 months.

The observation that marital status influences the use of modern contraceptive methods is corroborated by other research, such as that of Tampah-Naah et al, which points out that married women make greater use of contraceptives, probably due to marital support and relationship stability.[20] Moreover, in many African cultures, marriage is often perceived as a factor facilitating social acceptance of contraceptive use, in contrast to unmarried status.[21] As a result, unwanted pregnancies, often leading to unsafe clandestine abortions, occur more frequently among unmarried women.[22] It is therefore important that healthcare providers step up their efforts to raise awareness among single mothers, to encourage them to adopt modern contraceptive methods.

We found a link between caesarean delivery and the use of long-acting contraceptive methods. This could be explained by the fact that women who have given birth by caesarean section may experience greater preoccupation and fear of an imminent pregnancy than those who have given birth vaginally.[19]

The correlation between overweight and the use of long-acting contraceptives found in our study is an interesting aspect. Studies, such as that by Jensen et al, have documented that overweight or obese women may be more concerned about their reproductive health and seek effective contraceptive methods that do not require daily use.[23] Overweight or obese women were less likely to use a hormonal method of contraception (RP=0.21). This finding corroborates the conclusions of other studies. The American College of Obstetricians and Gynecologists (ACOG) has noted that obesity can influence women's contraceptive choices. Overweight women are often concerned about the side effects of hormonal methods, including increased risk of weight gain and vascular complications.[24] As a result, they may be less inclined to opt for these methods. Harlow and colleagues observed that overweight or obese women express specific concerns about the safety of hormonal methods, which impacts their usage decisions. Their study highlighted that women with a high BMI tend to choose non-hormonal methods such as intrauterine devices (IUDs) or barrier methods, preferring to avoid the possible cardiovascular effects of hormonal contraceptives.[25] Ibrahim and co-authors found that overweight or obese women were less represented in the groups of hormonal contraceptive users in their research. The study showed a correlation between high BMI and increased use of non-hormonal contraceptive methods, due to health concerns and a lack of appropriate advice on available options.[26] Yet hormonal methods of contraception are not contraindicated for overweight women. Studies have shown that the efficacy of hormonal contraceptives, including implants, remains high in overweight or obese women.[27,28] Although some obese women express concerns about the side effects of hormonal methods, progestin-only implants are often well tolerated. They do not significantly increase the risk of obesity-related complications, unlike some methods such as combined oral contraceptives, whose use requires caution in obese women.[29] Progestin implants are an alternative for overweight or obese women who have a contraindication to the copper intrauterine device. Healthcare professionals should take this knowledge into account in their counseling.

CONCLUSION

The study revealed a high prevalence of modern contraceptive use among mothers of children aged 7 to 24 months who had given birth at the Yalgado Ouédraogo University Hospital in Burkina Faso. Women who had received family planning counseling, had a higher level of education, had at least two living children and had given birth by caesarean section were more likely to use a modern method. The study highlights the importance of promoting access to long-acting contraceptive methods, as well as raising women's awareness of family planning during pregnancy and at postnatal follow-up. It is also essential to provide guidance tailored to the needs of overweight or obese women regarding available contraceptive options.

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