PREVALENCE AND ASSOCIATED FACTORS OF POSTPARTUM FAMILY PLANNING UPTAKE AMONG MOTHERS DELIVERED AT MEKELLE PUBLIC HOSPITALS, NORTHERN ETHIOPIA

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ABSTRACTS

BACKGROUND Postpartum family planning has the potential to reduce maternal and child morbidity and mortality. A short birth interval of less than two years is associated with adverse health effects for the mother and baby and the society as a whole. Postpartum contraceptive uptake is one of the lowest in Ethiopia.

OBJECTIVES The aim of this study was to determine the magnitude and associated factors of postpartum family planning acceptance in Mekelle public hospitals from 1 April to 31 July 2022.

METHODOLOGY The cross-sectional study design was employed. Data were collected prospectively using an interviewer-administrated structured questionnaire. In both hospitals (i.e. Mekelle General Hospital and Ayder Comprehensive Specialised Hospital), 399 mothers were interviewed in their immediate postpartum period. Data were analysed using the Statistical Package for Social Sciences (SPSS) version 22. In addition to descriptive statistics, Pearson's chi-square test was used for bivariate analysis of socio demographic and reproductive health factors and postpartum family planning. Multiple logistic regressions was used to explore factors associated with postpartum contraceptive use.

RESULTS The prevalence rate of family planning uptake in the immediate postpartum period was 17.8% (n=71). More than a third (n=152, 38.1%) of mothers in this study did not receive appropriate family planning. Slightly more than half (52.8%) intend to use contraceptives at 6 weeks postpartum. Compared to those who did not counseled, those who were counseled were ten times more likely to receive postpartum family planning (AOR=10.1, 95% CI: (3.911-26.375). Women who gave birth by cesarean delivery used family planning twice more than those who gave vaginally (AOR = 1.954, 95% CI: (1.072-2773).

CONCLUSION Despite the high-risk obstetric population in teaching hospitals, a small proportion of women used family planning. Furthermore, many women did not receive appropriate counseling on postpartum family planning. Counseling was the most significant factor influencing postpartum modern contraception uptake. Because referral and teaching hospitals host a large number of high-risk mothers, immediate postpartum family planning uptake should be considered a very important element of care. Previous studies have reported that most women who planned to come for contraceptive uptake 6 weeks postpartum do not actually come. Therefore, timely (ie, periconceptional and antepartum) and appropriate counseling should be advocated to increase the immediate adoption of postpartum family planning.

KEYWORDS: Postpartum family planning, counseling, contraception,

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INTRODUCTION

Postpartum family planning (PPFP) refers to the prevention of closely spaced pregnancies during the first 12 months after childbirth[1]. The postpartum period is critical to address widespread unmet needs in family planning and to reduce the risks of closely spaced pregnancies[2]. Previous reports have shown prenatal visits[3, 4], place of delivery[3, 5, 6], postnatal visits[4, 7], family planning counseling during antenatal care (ANC) and postnatal care (PNC)[8, 9], resumption of menses after birth[4, 10]. to be the key predictors of postpartum modern contraceptive use.

Globally, family planning (FP) is recognised as a key life-saving intervention for mothers and their children[1]. Postpartum family planning has an important role to play in strategies to reduce the unmet need for FP[1]. Postpartum women are among those with the greatest unmet need for FP. However, they often do not receive the services they need to support longer birth intervals or reduce unintended pregnancy and its consequences[1]. Postpartum family planning addresses the needs of those who wish to have children in the future (referred to as 'spacers'), as well as those who have reached their desired family size and wish to avoid future pregnancies (referred to as 'limiters')[1].

According to an analysis of data from Demographic and Health Surveys in 27 countries, 95% of women who are 0-12 months postpartum want to avoid a pregnancy in the next 24 months; but 70% of them did not using contraception[1]. Family planning can avert more than 30% of maternal deaths and 10% of child mortality if couples space their pregnancies more than 2 years apart[1]. According to the World Health Organisation (WHO) technical consultation committee for better maternal and child health outcomes, an interval of at least 2 years is recommended after a live birth before becoming pregnant again[11]. Pregnancies that occur within one year of the mother's previous birth are more risky for the health of both the mother and the child than those occurring later[12] , and children born within one year of a previous birth have a higher risk of mortality than those born after longer intervals[13]. Closely spaced births are also associated with an increased chance of chronic undernourishment, stunted growth, and infant mortality[12] .

In Ethiopia, evidence has been found that almost half (47%) of all pregnancies occur within a short birth interval of less than 24 months after the preceding birth[14]. Postpartum women are an important group because they may not realize that they are at risk of pregnancy even if they are breastfeeding[15]; therefore, focussing efforts on increasing postpartum contraceptive use among these women could have a proportionally greater impact than focussing attention on other populations. However, in Ethiopia, policy makers are under emphasised contraceptive use in the postpartum period is under emphasized by policy-makers[16]. Identifying factors that hinder the use of postpartum contraceptives is essential for communities, because the length of postpartum insusceptibility is declining[17], as a result of urbanisation, economic development, and social and cultural changes[18] .

According to Ethiopian demographic and health survey (EDHS) 2016, the median birth interval is 34.5 months; therefore, half of nonfirst births occur within 3 years after the first birth. One in three births (32%) occur within 24 to 35 months of previous birth, and one in five births (21%) occur within at least 3 years after the previous birth. In Ethiopia, the pregnancy-related mortality ratio was 412 maternal deaths per 100,000 live births; the mortality rate is 67 deaths per 1,000 live births, and the infant mortality rate is 48 deaths per 1,000 live births[17].

Consequently, it is very important to initiate contraception in the postpartum period to avoid tragic maternal and child morbidity and mortality. Teaching hospitals host a high number of high-risk mothers that benefit the most from birth spacing. The failure of family planning is taken as a missed opportunity. Studies on postpartum Contraceptive use and associated factors are limited in Ethiopia, especially in the study area. Thus, this study sought

to examine the prevalence of postpartum modern contraception use and associated factors in Mekelle teaching hospitals.

METHODS AND MATERIALS

Study Design and setting

A cross-sectional study design was employed to collect data prospectively using a structured questionnaire. Data were collected from April 1-July 31, 2022. This study was conducted in Mekelle Public Hospitals (ie, Mekelle General Hospital and Ayder Comprehensive Specialised Hospital). Both hospitals differ as an academic setting with 5000 deliveries per year each. Both hospitals serve primarily as a catchment referral centers for high-risk mothers.

Sample size and sample procedure

The sample size of the study was calculated using OpenEpi, Version 3, open source calculator: considering the 48% prevalence of postpartum modern contraceptive use in Aksum[19]. Statistical power is 80 and confidence interval is 95%. With 10% nonrespondents, the final calculated sample size was 406.

Sampling Procedure

Mothers were interviewed in their postpartum period after receiving their discharge summary. Using a systematic probability sampling technique, each third mother was asked for consent to be interviewed and enrolled in the study.

Operational Definitions and terminologies

Postpartum contraception: defined as the initiation and use of a contraceptive method after childbirth, but before discharge from hospital.

Awareness of modern contraception: if mother at least mention one modern contraceptive.

Immediate postpartum period: refers to the period after delivery of the placenta until discharge.

Lactational amenorrhoea: It was taken as a modern contraceptive if the mother mentioned the criteria to be fulfilled 1) Exclusive breast feeding 2) Amenorrhoea 3) Used only in the first 6 months.

Family planning: is the planning of when to have children, the use of birth control and other technique to implement such plans.

Cohabiting: defined as living together and having sexual relationship but not married.

Data Collection Instrument and Procedures

A structured and pre-tested questionnaire was prepared first in English language and translated into the local language (Tigrigna), and then backtranslated into English language in order to assess its consistency. The translation from English to Tigrigna and from Tigrigna back to English was carried out by different individuals fluent in both Tigrigna and English languages. Thirteen junior residents were trained on the objectives of the study, the format of the data collection and data collection techniques. Data collection was started on April 1, 2022 with the first postpartum patients discharged from both hospitals.

The principal investigator pretested the questionnaire in 5% of the study population at Quiha Hospital, a public hospital in Mekelle. The principal investigator selected and orientated the principal investigator on a uniform and proper way to administer the questionnaire, and keep the data safe. The principal investigator oversees the data collection procedure in both hospitals. The principal investigator also supervises the timeliness of the study. The questionnaire was developed for data collection on the main variables needed (sociodemographics, characteristic of socio-economic status and reproductive factors).

Data were coded, entered, cleaned and analyzed using Statistical Package for Social Science (SPSS) version 22 by the principal investigator. For descriptive analysis, continuous variables were summarized using means, medians and standard deviations (SDs), while categorical variables were summarized using proportions. Bivariate and multivariate logistic regressions were used to identify factors associated with postpartum modern contraceptive use. Variables with a p-value<0.2 in the bivariate analysis were fitted into a multiple logistic regression model to control for confounding effects. Adjusted odds ratios (aOR) with 95% CIs were used to identify factors associated with

postpartum modern contraceptive use. The p-values less<0.05 were considered statistically significant of the associations with postpartum modern contraceptive use.

Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board of the Mekelle University College of Health Sciences and then submitted to the medical director's office of the Ayder comprehensive specialized hospital and the Mekelle general hospital before the start of the study. Participants were asked for their informed verbal consent. Their right to refuse from the outset or refuse in the middle was maintained. They were informed that their participation or refusal thereof will not be associated with the service they will receive then or in the future. Names and other identifiers were not used to collect data and confidentiality was maintained throughout the study.

RESULTS

Socio-demographic distributions

Of 406 women recruited, 399 responded, giving a response rate of 98.3%. More than half (n=201, 53.9%) were from the comprehensive specialised hospital of Ayder and the remaining (n=184, 46.1%) were from Mekelle General Hospital. The sociodemographic profile of the participants is described in Table 1.

Table 1 : Sociodemographic profile of women who gave birth in public hospitals, 2022

Socio-demographic characteristics	Category	Frequency (N=399)	Percent
Age	15-19	14	3.5
	20-24	91	22.8
	25-29	145	36.3
	30-34	80	20.1
	Above 35	69	17.3
Place of Residency	Rural	47	11.8
	Urban	352	88.2
Education status of the mother	Illiterate	22	5.5
	Primary	90	22.6
	Secondary	151	37.8
	College and above	136	34.1
Site	ACSH	215	53.9
	MGH	184	46.1
Marital status	Married	387	97
	Single	8	2.0
	Cohabiting	3	0.8
	Divorce	1	0.3
Religion of mother	Christian	376	94.2
	Islam 23	5.8	
Occupation	Employed	126	31.5
	Unemployed	248	62.2
	Merchants	25	6.3
Partner level of education	Illiterate	39	9.9
	Primary	80	20.3
	Secondary	132	33.5
	College and above	143	35.8

ACSH: Ayder Comprehensive Specialised Hospital,
MGH: Mekelle General Hospital

Reproductive and Contraceptive History

In 73 (18.3%) of the study participants, the index pregnancy was not planned. The main reasons mentioned for the appearance of unplanned pregnancy were; lack of availability of family planning options (n=31,42.5%), lack of awareness about family planning (n = 28, 38.4%) and contraception failure (n=14,19.1%). About three-quarters of the mothers in this study have ever used some form of family planning (Table 2).

Table 2 Reproductive and contraceptive history in women who gave birth in Mekelle public hospitals, 2022

Variable	Category	Frequency	Percentage
Parity(N=399)	Primipara	132	33.1
	Para 2 to 4	229	57.4
	Grand multipara	38	9.5
ANC(N=399)	Hospital	156	39.1
	Private	184	46.1
	Health center	52	13
	No ANC	7	1.8
Maternal serostatus (N=399)	Non-reactive	385	96.5
	Reactive	14	3.5
Abortion (N=399)	Yes 1 to 3	64	16.0
	Above 3	1	0.3
	No Total	65	16.3
		334	83.7
Gestational age at first visit(N=399)	First trimester	102	25.6
	Second trimester	238	59.6
	Third trimester	21	5.3
	Unknown	31	7.8
	No ANC	7	1.7
Ever used contraceptives (N=399)	Yes	301	75.4
	No	98	24.6
Family planning method used before (N=301)	Injectable	154	51.2
	Pill	46	15.3
	IUD	9	3.0
	Implant	74	24.6
	Emergency contraceptive	14	4.6
	Lactation amenorrhea	2	0.7
	Others	2	0.7
Problems experienced with use of contraceptives (N=301)	Yes	110	36.5
	No	191	63.5
Action taken for the problem experienced (N=110)	Prematurely stop usage	54	49.1
	Removed at appropriate time	47	42.7
	Switch to other	9	8.2
	Yes	326	81.7
	No	73	18.3
Unplanned pregnancy(N=73)	Family planning was not available	31	42.5
	Contraceptive failed	14	19.1
	Lack of awareness	28	38.4

Antepartum and current contraceptive use

Of the 399 participants 71 (17.8%) received some form of contraceptive in their immediate postpartum period. Most of these opted for implants as their family planning of choice. The main reasons mentioned by the respondents for declining contraceptive uptake in the immediate postpartum period are; intending to receive family planning in the latter 6 weeks, fear of side effects, and the inaccessibility of family planning of choice (Table 3).

Table 3: Postpartum contraceptive uptake among women who gave birth in Mekelle public hospitals, 2022

Variable	Category	Frequency	Percentage
Received antepartum / postpartum family planning counseling (N=399)	Yes	247	61.9
	No	152	38.1
Have taken/agreed to any form of postpartum family planning(N=399)	Yes	71	17.8
	No	328	82.2
Type of family planning taken/agreed(N=71)	Bilateral tubal ligation	2	2.8
	IUD	8	11.3
	Lactation amenorrhea	12	16.9
	Implants	49	69
Taking what was chosen antepartum (N=71)	Yes	57	80.3
	No	14	19.7
Reasons for changes in decision (N=14)	Providers advice	7	50
	My husband disapproves	1	7.1
	I am afraid of side effects	5	35.8
	Not available	1	7.1
Reasons for using family planning (N=71)	Birth spacing	68	95.8
	Complete family size	3	4.2
Reason for not using family planning(N=328)	I want to have another child	20	6.1
	My husband disapprove	11	3.4
	It is harmful to the health of my child	2	0.6
	The family planning of my choice is not available	45	13.7
	I am breast feeding	18	5.5
	I am afraid of side effects	46	14
	I intended using contraceptive later at 6 weeks	172	52.4
	Husband away	14	4.3

Factors affecting postpartum contraceptive use

In the index pregnancy, 42.6% gave birth by cesarean delivery. Almost half (n=x, 46%) of the study participants had a previous scared uterus (Table 4).

Table 4: Factors affecting postpartum family planning uptake among women who gave birth in Mekelle public hospitals, 2022

Variable	Category	Frequency	Percentage
Place of delivery (N=399)	Hospital	398	99.7
	Home	1	0.3
Mode of delivery(N=399)	Vaginally	229	57.4
	Cesarean sections	170	42.6
Outcome of the current pregnancy(N=399)	Alive	395	98.9
	Still birth	3	0.8
	Early neonatal death	1	0.3
Number of Cesarean delivery scar(N=399)	0	217	54.4
	1	137	34.3
	2	25	6.3
	3	20	5
Male partner involved during counseling (N=247)	Yes	227	91.9
	No	20	8.1
Counseled about side effects (N=247)	Yes	207	83.8
	No	40	16.2
Provider fully addressed all concerns (N=247)	Yes	227	91.9
	No	20	8.1
	Total	247	100
Usefulness of information provided by providers concerning family planning(N=247)	Useful	219	88.7
	Somewhat useful	27	10.9
	Not useful	1	0.4

In the binary logistic regression analysis, 14 variables were analysed. These were age, residence, marital status, education status, partner education status, occupation, ANC and number of visits, gestational age at first visits, timing of counseling, previous side effects of contraception, parity, history of abortions, mode of delivery, and number of scars. From these age, parity, counseling, and mode of delivery were identified as independently associated with postpartum modern contraceptive use with a P value< 0.25.

Multiple logistic regression shows that comparing women who had counseling on family planning with those who did not, the former had 10 times higher odds of using modern postpartum contraceptives than the later [(AOR= 10.157, 95% CI: (3.911-26.375)]. Women who deliver via cesarean section have two-time odds of using modern contraceptive compare to counterpart who deliver vaginally.

Table 5. Binary and multivariate logistic regression for the factor associated with postpartum family planning use among women who gave birth at public hospitals, 2022

Variable	Category	Postpartum family planning use		COR(95%CI)	P- value	AOR(95%CI)	P-value
		Yes	No				
Age	(15 – 19)	1	13				
	(20 – 24)	14	77	0.423(0.051-3.497)	0.425	0.672-(0.073-6.157)	0.725
	(25 – 29)	30	115	0.295(0.037-2.344)	0.248	0.480(0.053-4,358)	0.514
	(30 – 34)	11	69	0.483(0.057-4.065)	0.503	0.918(0.093-9.082)	0.942
	Above 35	15	54	0.277(0.033-2.291)	0.234	0.421(0.041-4.293)	0.466
Parity	Primipara	19	113				
	Para 2 to 4	46	183	0.669(0.373-1.199)	0.177	0.792(0.389-1.612)	0.521
	Grand multiparous	6	32	0.897(0.330-2.433)	0.831	1.647(0.471-5.766)	0.435
Abortion	Yes	7	64				
	No	58	270	0.509(0.222-1.168)	0.111	0.505(0.210-1.212)	0.126
Counseling	Yes	66	181	10.720(4.210-27.302)	<0.001	10.157(3.911-26.375)	<0.001
	No	5	147	1		1	
Mode of delivery	Cesarean section	41	129	2.108(1.253-3.548)	0.005	1.954(1.072-2.773)	0.029
	Vaginal delivery	30	199				

DISCUSSION

The study sought to investigate postpartum contraceptive prevalence among postpartum mothers and to explore factors that determine the use or nonuse of modern contraceptive use. Contraceptives, the study showed that awareness about contraception was high. However, less than half (17.8%) of participants were using a modern contraception method at the time of the studies. Factors such as counseling and mode of delivery, were found to be significantly associated with postpartum contraceptive use. There was no significant association between history of abortions, level of education, number of scars, parity, and postpartum contraceptive use.

The study shows that 98.7 percent of the respondents were aware of at least one modern method of contraception that can be used after delivery. The level of awareness is similar to 99 percent reported in EDHS 2016 for all women between 15-49 years[17]. Another study carried out in Ghana on the prevalence and associated factors of the utility of modern contraception level of awareness was lower 76.4%. This lower rate found in the Ghana study is expected because the respondents were young women (15-25 years of age)[20].The main source of contraceptive information was healthcare workers, similar to study carried out in Ghana[20].

Despite the high knowledge, the prevalence of postpartum modern contraceptive use was only 17.8%. This finding is lower than the modern contraceptive prevalence rate of 35% found during the EDHS of 2016 survey for all women aged between 15-49 years[17]. It is also lower than other studies done in Aksum 48%[21]. The lower rate in the present study could be due to the disruption of the health system in the ongoing war. Additionally, the study conducted in Aksum was extended to 6 weeks postpartum while our study included only mothers in their immediate postpartum period.

The most popular modern contraceptive methods used by postpartum women in this study implanon

69% followed by LAM 16.9%, IUD 11.3%and BTL 2.8%. This can be explained in light of women's preferences for contraceptive methods and the attitudes toward contraceptive methods. This is in contrast to study done in Aksum were injectable contraceptives (59.7%), implants (24.7%) and pills (12.0%) (21), Gondar town(4) and a 2014 report from the Ethiopian Demography Health Survey[17]. However, it is important to note that both injectable and combined oral contraceptives are contraindicated in the immediate postpartum period. Since our study enroled women in their immediate postpartum period, injectable and combined oral contraceptives cannot be of choice.

Factors associated with postpartum contraceptive use

Multivariate analysis showed that the association between family planning counseling during ANC, the intrapartum, and postpartum period was found to be associated with modern contraceptive use during the postpartum period. Women who had received family planning counseling had 10 times odds of using contraceptive comparing to those who were not counseled. This result agrees with those of studies conducted in Aksum[21], Malawi[9] and North America[8].

Women who deliver by cesarean section were at two-time increase in the chance of using modern contraceptive compared to counterpart who deliver vaginally. This could be related to the specific institutional protocol that advocates for a two-year period spacing for women giving birth by Cesarean delivery. This could have increased the vigilance of healthcare providers to provide strict counseling during the postpartum period.

The low uptake of contraception despite a high knowledge of FP reflects the existence of barriers to use. Some of the most common reasons women in the present study have not using immediate postpartum family planning are: they want to start using family planning 6 weeks postpartum, because they wanted to have another child, disapproval of their husband, and because their spouse lives away from them, thus there is no need to use. Some other women also stated reasons for refusing to use immediate postpartum family planning, such as: because they think family planning can be harmful to their child, their choice of family planning is unavailable, because they think breast feeding can prevent pregnancy, for fear of side effects. Similar reasons were mentioned in other studies conducted in both Ethiopia and outside[4, 5, 9, 21]. This finding highlights the importance of solving barriers to contraceptive uptake during the postpartum period. Consistent with the previous discussion, most of the barriers cited can be solved through detailed oriented counseling during the periconceptional and anterpartum periods.

CONCLUSIONS

Despite the high-risk obstetric population in teaching hospitals, a small proportion of women used family planning. Counseling was the most important determinant factor for modern contraceptive uptake in the postpartum period. Despite having ANC follow-up, 38.1% of mothers were not counseled. Despite a large body of evidence supporting the importance of family planning counseling during antenatal care follow up, majority of mothers were counseled in the postpartum period. The advantages of postpartum contraception use towards the wellbeing of mother and child cannot be overemphasized. Therefore, we recommend that adequate counseling on the relevance of available family planning options should be provided. and their fears adequately addressed by family planning service providers during every interaction with clients. The health care provider should practice family planning counseling during all contacts, including periconceptional, antenatal, and reaffirm choices, and provide family planning services in the postpartum period.

DECELARATION

Authors' Contribution

TJ: Conceived the research idea, formulated the research question, data collection tool, data analysis, and wrote the manuscript. FT and BA:

Supervised the entire process of the research project, participated in the design of the questionnaire, analysis, and reviewed the manuscript. AW and HT: Participated in the analysis, write up, and review of the manuscript. All authors have read and approved the final manuscript for publication.

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