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Use of postnatal care services and determinant actors among women who gave birth in Addis Ababa

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Abstract

Background: A large proportion of maternal and neonatal deaths occur during the first 48 hours after birth. Prompt postnatal care (PNC) for both the mother and the child is important to treat any complications arising during and after delivery. There is limited information about postnatal care services use and associated factors among women who gave birth in Addis Ababa. Therefore, this study aimed to assess postnatal care services use and determinant factors among women who gave birth in Addis Ababa, Ethiopia.

Methods: Community-based cross-sectional study was conducted in Addis Ababa from October 05 to November 30, 2019. Multistage sampling technique was employed to select the study participants. The data was collected using interviewer administered structured questionnaires and analyzed using Statistical Product and Service Solutions (SPSS) version 23.0. Binary and multivariable logistic regression was used to see the association between independent and dependent variables and p-value ≤ 0.05 were considered as statistically significant.

Results: A total of 731 participants were included in the study, making the response rate of 97.2%. The prevalence of postnatal care services utilization was 92.1%. Family size (AOR=2.76, 95%CI: 1.28-5.91), husband's occupation (AOR=0.07, 95%CI: 0.001-0.57), (AOR=2.59, 95%CI: 1.12-6.02), number of antenatal care visit (AOR=2.59, 95%CI: 1.12-6.02), presence of danger signs (AOR=0.07, 95%CI: 0.03-0.17), were significantly associated with postnatal services utilization.

Conclusion: The prevalence of Postnatal care services use was high (92.1%)compared to most international data. Family size, husband's occupation, number of ANC visit, and experiencing danger signs were significantly associated with Post natal care service utilization.

Keywords: Postnatal care use, birth, women, associated factors, Addis Ababa, Ethiopia

Background

Postnatal care (PNC) is defined as a care given to the mother and her newborn baby immediately after the birth of the placenta and for the first 42days of life (1). Postpartum care should respond to the needs of the mother and her baby, and it includes the prevention and early detection and treatment of complications and disease, as well as the provision of advice and services on breastfeeding, birth spacing, immunization and maternal nutrition (2).

Globally, millions of women do not receive maternal health care and family planning services. Most of these women live in poor nations and the disparities between and within countries are massive: Ninety-nine percent of preventable maternal deaths occur in low- and middle-income countries. The lifetime risk of maternal mortality in women living in sub-Saharan Africa is more than 47 times greater than for those in the United States. Among the 122 million women who have a live birth annually, approximately 10 percent suffer complications, and many more suffer post-birth morbidities and disabilities (3).

In developing countries, less attention was given for the postnatal period; women and their newborns don't receive postnatal care services from a skilled birth attendant during the first days after childbirth(4). Both in South Asia and Sub-Saharan Africa, the leading causes of maternal deaths are hemorrhage and hypertension, which together account for more than half of maternal deaths (3).

The 2016 Ethiopian Demographic and Health Survey (EDHS) showed that the MMR was 412 deaths per 100,000 live births. This means 1000 live births and about four women died during pregnancy, childbirth, or within six weeks of childbirth (5).

Maternal death is the death of women pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes and direct maternal deaths are those resulting from interventions, omissions, incorrect treatment for obstetric complication of the pregnant state (postpartum, delivery and pregnancy) (4).Postnatal period or postpartum, starts about an hour after the delivery of the placenta and includes the following six weeks (6). Postnatal cares are to preserve and encourage the health of the woman and her baby and to foster an environment that compromises help and support to the extended family and community for a wide range of related health and social needs (1).This period is critical to the health and survival of the mother and her new born. Lack of care in this period may result in death or disability as well as missed opportunities to promote healthy behaviors affecting women, newborn and children (2). The risks decrease after the first few hours but do not vanish entirely. Some problems may arise during the early postnatal period and, less often, in the late postnatal period (1). A large proportion of maternal and neonatal deaths occur during the first 24 hours after delivery. For both the mother and the infant, prompt postnatal care is important in treating complications that arise from delivery and providing the mother with important information on caring for herself and her baby. (5).

In Ethiopia, as in many other low-income countries, maternal morbidity and mortality is excessively high. Due to this high burden and its grave consequences, maternal health is one of the top priorities in the national health agenda (7). According to Ethiopian Health Service Transformation plan (HSTP), postnatal care was one of the high impact interventions and goal was set to increase national postnatal care coverage to 95% by 2020 (8).

Methods and materials

Study setting, design, period, and population

A community-based cross-sectional study was conducted. The study was conducted in Addis Ababa from October 05 to November 30, 2019. Addis Ababa is the diplomatic capital of the African Union and the capital city of Ethiopia. It has ten sub-cities and 116 districts. The city has an estimated population of 3.2 million of which 52.6% are females and 47.3% are males. The city covers about 540 km2 (9). According to the Ministry of Health report, the city has 44 hospitals (33 governmental and 11 private), 94 health centers (88 government owned and 6 NGOs owned), and more than 777 clinics from low to higher that provide postnatal care services (10).

The source population was all women who delivered in Addis Ababa one year before the study. The study population was all women who reside in the selected district in Addis Ababa who gave birth one year before the study period.

The sample size was calculated using a single proportion formula for Postnatal care service use by taking the proportion of 89.2%from a study conducted in Gulelle Sub-city (11), Addis Ababa considering 95% confidence level, 5% marginal error. 1.5 design effects and 10% nonresponserate.

To determine the sample size of the determinant factors (exposed groups and groups who are not exposed); a double population proportion formula was used as follows.

Table 1: Sample size for the determinant factors

Factors	Unexposed Group	Exposed Group	AOR	Sample size
Family size	0.918	0.826	2.16	752
Marital status	0.902	0.656	4.34	172
Information about PNC	0.918	0.391	0.07	53

Therefore, the largest sample size was selected for the study, which was 752.

Multistage stage sampling technique was employed to select the study participants. There are ten sub cities in Addis Ababa at the time of data collection in 2019 and Yeka, Bole, Arada, Kirkos Sub-cities (25% of the total Sub-cities) were randomly selected using the lottery method. Districts were selected from each Sub-selected Sub-city (25% of the total districts of each Sub- city) by using a lottery method. First, the lists of women who gave birth in the last one year of the selected districts were identified from district Health Offices. Then, the total sample size which was 752 women was distributed to the selected districts proportional to the number of births. The initial mother to be interviewed was selected using systematic random sampling from the sampling frame using a number between 1 and the sample interval.

Data collection and tools

The data were collected using interviewer administered structured questionnaires. All reproductive age women who resided for more than 12 months in the selected district and gave birth one year before the study were included and those women who had difficulty in communication due to severe illness were excluded.

The questionnaire was originally prepared in English and translated to the local language (Amharic) and then back translated to English to ensure the reliability of the tool. The questionnaire included information; Mothers' socio-demographic characteristics(Husband's socio- demographic characteristics () Knowledge, Accessibility and service quality(Maternal and obstetric factors(),Pregnancy and delivery related complication related questions. Before the commencement of the actual data collection, the questionnaire was pretested on 5% randomly selected women who were later excluded from the study.

The data collection was done by ten urban health extension workers (UHEW) and two supervisors who are public health officers and professional nurses with possible experience in data collection. One day training was given to the data collectors about the study objectives, data collection tools, principles, and ethical considerations of data collection procedures. A point-by-- by-point discussion was made on the content of the questionnaire. During data collection, the questionnaire was reviewed every day for completeness, accuracy, and consistency by supervisors.

Study variables and operational definitions

Postnatal care service use was the dependent variables, while the independent variables were participants': age, sex, education status, religion, occupational status monthly income, husband socio-demographic characteristics, knowledge, accessibility and service quality, maternal and obstetric.

"**Postnatal care**" means care provided to the mother for a period of the first six weeks starting immediately after the time of delivery.

"**Postnatal care service use**" means a mother who had at least one postnatal check-up for the recent delivery by health workers within six weeks after delivery

Knowledge of PNC

Good knowledge: Participants who scored greater than or equal to 8 questions (>80%) out of 10 knowledge related questions (31, 32).

Poor knowledge: Participants who scored less than 8 questions (<80%) out of 10 knowledge related questions (31, 32).

Data Processing and Analysis

The collected data were coded, cleaned, and entered into Epi-data version 3.1; and was exported to SPSS version 23 for analysis. The data were cleaned for anomalies by running frequencies and cross tabulations. Erroneous data was be cross-checked with hard copies of the completed questionnaire. Descriptive analysis was done for each variable in the study by running frequencies and was presented using graphs and tables. At 25% level of significance, binary logistic regression was done to screen out the potentially significant independent variables. The independent variable that was associated with the outcome variable in the bivariate analysis was included in the multivariable logistic regression analysis. To assess knowledge about Postnatal care service utilization, 10 questions in five Likert scale (0–4 scale) were used and each question was coded and computed, and the scores were categorized into good knowledge (Participants who scored >8 knowledge-based questions)and poor knowledge (Participants who scored below 8 knowledge-based questions).To check the adequacy of the final model, Hosmer- Lemeshow goodness of fit test was checked and the model fitted to the data well (p value = 0.79) and multi-collinearity was checked using the variance inflation factor. Adjusted odds ratio with 95% confidence interval was computed. Variables with p-value ≤ 0.05 were considered as statistically significant . two matrix of measure of diagnostic validity (15).

Results

Socio-demographic characteristics of participants

Among the 752 women, 731women participated in the study making a response rate of 97.2%.The mean age of the respondents was 28.33(SD ± 4.45) years. Three hundred and nine (42.3%) of the respondents were between 25-29 years of age and 492 (67.3%) of them were Orthodox Christians. One-third 221 (30.1%) of the participants attended primary school and majority of the respondents, 662(90.6%) married. Almost half of the respondents 362(49.5%) were housewife and 155(43.4%) had average monthly income of 1501-3000 Ethiopian birr (ETB). Greater than one-third of the participants 287(39.3%) had a family size of less than four. Regarding the participant's husbands, 182 (24.9%) of them attended secondary school and 314(43%) of them were private employees. Three hundred and ninety-five of the respondents' husbands (62.2%) had an average monthly income of 1215-4623ETB (Table 2).

Table 2: Socio-demographic characteristics of women are gave birth in Addis Ababa,2019.

Variables	Frequency (n)	Percent (%)
Age(in years)		
19-24	116	17.2
25-29	281	41.8
30-34	210	31.2
>35	66	9.8
Religion		
Orthodox	492	67.3
Catholic	27	3.7
Protestant	89	12.2
Muslim	123	16.8
Marital status		
Not married	43	6.4
Married	608	90.3
Divorced	22	3.3
Educational status		
No formal education	102	14
Primary school (1-8th)	221	30.2
Secondary school (9-12th)	176	24.1
Certificate or diploma	159	21.8
First degree and above	73	10
Occupation		
Housewife	365	49.9
Housemaid	20	2.7
Governance employee	140	19.2
Private employee	112	15.3
Merchant	82	11.2
Student	12	1.6
Average monthly income (in ETB)		

400-1500	87	24.4
1501-3000	155	43.4
>3001	115	32.2
Family size		
<4	287	39.3
4	253	34.6
>4	191	26.1
Husbands "level of education		
No formal education	61	8.3
Primary school (1-8th)	156	21.3
Secondary school (9-12th)	182	24.9
Certificate or diploma	120	16.4
First degree and above	177	24.2
Husbands „occupation		
Private employee	115	18.0
Government employee	286	44.8
Merchants	161	25.2
Daily laborers	76	11.9
Husbands" average monthly income (n=690) in ETB		
300-1214	31	4.9
1215-4623	395	62.2
> 4623	209	32.9

Obstetrics and reproductive factors

One third of the women (39.9%) were primigravida and 612(83.7%) of the current pregnancies were planned and supported. Seven hundred and twenty-six (99.3%) of the participants attended ANC follow-up and more than half 429(58.7%) of them had four times follow-up. Fifty nine (8.1%) of the study participants encountered previous pregnancy and delivery related complications. Almost all 687(94%) of the participants did not encounter maternal and obstetric related complications for the current delivery. Regarding the place of delivery, 720(98.5%) of them delivered in health facilities and 644(88.1%) of them were spontaneous vaginal deliveries. Five-hundred and fifty-three (75.6%) of the women were stayed in the health facilities for one day after delivery. In addition, 655(89.6%) of the participants were given an appointment for postnatal care services by the health professionals before discharge and561(76.7%) of them attended delivery by midwife nurses **(Table 3).** Among women who have Previous pregnancy and delivery-related problems, 30(50.8%) encountered low birth weight (**Figure1)**.From the total appointed women, 419 (57.3%) of them have appointed within one week (**Figure 2).**

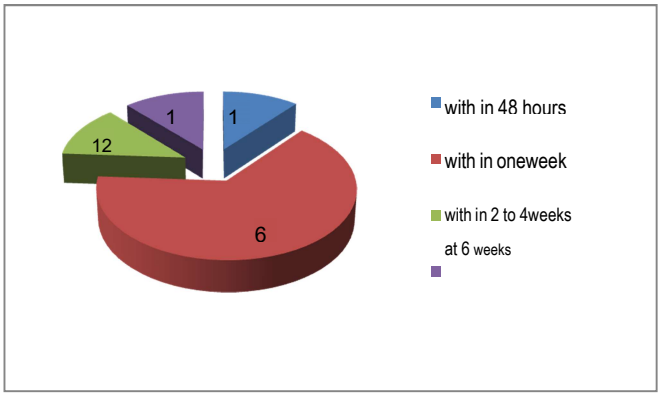


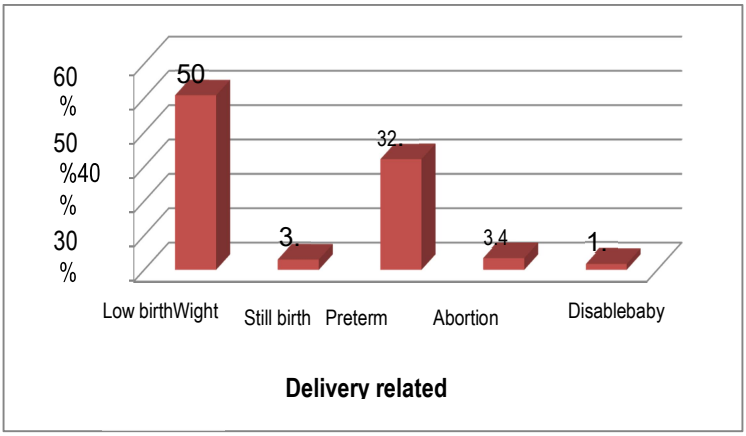
Figure 2: Time of appointment among women in Addis Ababa, 2019(n=644

Table 3: Obstetrics" and reproductive related factors of women, Addis Ababa, 2019

Variables	Frequency (n)	Percent (%)
Gravidity(n=431)		
Primigravida (1)	292	39.9
Multigravida (>1)	439	60.1
Parity (n=431)		
Primiparous (1)	266	63.6
Multiparous (>1)	152	36.4
Nature of pregnancy(n=431)		
Planned and supported	612	83.7
Unplanned but supported	105	14.4
Unplanned and unsupported	14	1.9
ANC follow up for current pregnancy		
Yes	726	99.3
No	5	.7
Number of ANC visit		
1-2 time	42	6.2
3 times	238	16
4 times	393	58.4
Previous pregnancy and delivery related complications (n=471)		
Yes	59	8.1

No	412	56.4
Maternal obstetric or medical complication before delivery for current pregnancy		
Yes	44	6.0
No	687	94.0
Place of delivery		
Home	11	1.5
Health facilities	720	98.5
Mode of delivery (n=720)		
Spontaneous vaginal delivery	644	88.1
Instrumental	5	.7
Caesarian section	71	9.7
Duration of stay in the health facility after delivery (n=720)		
1 days	553	75.6
>1 days	167	22.8
Appointed for postnatal care		
Yes	655	89.6
No	65	8.9
Delivery attendants		
Midwife	561	76.7
Physician	159	21.8

Figure 1: Previous pregnancy and delivery related problems encountered among women who gave birth inAddis Ababa, 2019(n=417)



Knowledge related factors

Among the study participants, 649(88.8%) of them have good knowledge and 82(11.2%) of themhave poor knowledge (Table 7).

Accessibility and service quality

Table 4: Accessibility and service quality among women who gave in Addis Ababa, 2019(n=731)

Variables	Frequency (n)	Percent (%)
Believed that Quality of service given was necessary		
Yes	674	92.2
No	57	7.8
Means of transport		
Walk	333	45.6
Public vehicle	362	49.5
Private vehicle	16	2.2
Bicycle	1	0.1
Advised about possible postpartum complication signs/symptoms		
Yes	672	91.9
no	59	8.1
Believed that health professionals offer prompt services to mothers		
Yes	688	94.1
No	43	5.9
Believed that the health professionals have knowledge to answer mothers" questions		
Yes	712	97.4
No	19	2.6

Postnatal care service use

Among the total study participants, 673(92.1%) of them utilized postnatal care services. With regard to the frequency of postnatal care visits, 263 (36.0%) of them visited two times and most of them were attending postnatal care service at health centers (75.4%) followed by government hospitals (98/731, 13.4%) **(Table 5).**

Table 5: Postnatal care service use among women who gave birth in Addis Ababa, 2019(n=731)

Variables	Frequency (n)	Percent (%)
Postnatal care visit within 6 weeks after delivery		
Yes	673	92.1
no	58	7.9
Number of PNC visit		
One time	118	16.1
Two times	263	36.0
Three times	194	26.5
Four times	98	13.4
Place postnatal care attended		
Health centers	551	75.4
Governmental hospitals	98	13.4
Private hospitals and clinic	24	3.5
Type of services provided during PNC visit		
Physical examination	390	53.3
Laboratory service	348	47.6
Advise for danger sign	469	64.2
Family planning	490	67
Immunization for the infant	490	67
Immunization for mother Nutrition	343	46.9
Baby was with mother during PNC visit		
YES	654	89.5
NO	19	2.6
Type of service provided to baby during PNC visit		
Physical examination	209	13.7
Laboratory examination	121	16.5
Advise for danger sign	154	21.1
Immunization	579	79.2

Factors determining magnitude of postnatal care services

In binary logistic regression; education, family size, husband occupation, number of antenatal visits, mode of delivery, and appointment for PNC before discharge, delivery attendants, knowledge, and danger signs were significantly associated with Postnatal care service utilization. However, in multivariable binary logistic regression analysis only family size, husbands' occupation, number of ANC visit, appointment for PNC before discharge, knowledge and danger signs were significantly associated with Postnatal care service utilization.

In this study, family size was significantly associated with Postnatal care service utilization. The odds of postnatal care services utilization among those women who had a family size of less than four were about two times compared to the odds of those who had four family sizes (AOR=2.76,95%CI:1.28-5.91).

Husbands' occupation was significantly associated with Postnatal care service utilization. Those women who had husband had an occupation of governmental employees 93% (AOR=0.07, 95%CI: 0.001-0.57), less likely to utilize postnatal care services compared to those women who had a husband having the occupation of private employees and the odds of Postnatal care service use among those women whose husband was daily labourer were about 2.59 (AOR=2.59, 95%CI: 1.12-6.02) compared to the odds of women whose husband were private employee.

Antenatal care visit was significantly associated with postnatal care service use. The odds of Postnatal care service use among those women who attended antenatal care for four times were about 2.18 compared to the odds of who attended for three times antenatal care visits (AOR=2.18, 95%CI: 1.03-4.60).

Danger sign was significantly associated with postnatal care service use. Those women who were told about danger signs were 93% (AOR=0.07,95%CI:0.03-0.17), less likely to utilize postnatal care services compared to those women who were not told about the danger signs. (**Table 6**).

Discussion

The present study aimed at assessing the prevalence, of postnatal care service, and determinant factors among women who gave birth for the last one year in selected sub-cities in Addis Ababa, Ethiopia. This study found out that postnatal care service use among women who gave birth one year before the study was 92.1% of which 16.1% of them visited only once after delivery. This implies that Postnatal care services use were high. This finding is greater than the systematic review in Ethiopia, which showed that use of PNC services was from: 21% to 43% (12). The magnitude of postnatal care service in this study was almost similar with a study conducted in Gulele Sub-city Addis Ababa (89.2%) (11) and lower than when compared to reports in Halaba Kulito Town, Shebe Sombo Woreda, Jimma Zone, 2019 mini-EDHS reports, Bangladesh, Nepal and Kenya (13, 14, 15, 6, 17, 18). The possible reasons for the difference might be due to the difference in the study setting and time and healthcare setting.

In this study, family size was significantly associated with postnatal care service use. The odds of postnatal care services utilization among those women who had a family size of less than four were about two times compared to the odds of those who had four family sizes, which indicates magnitude of PNC service had decreased as family size increases. This might be due to those women having less than four families might fear the health risk since they have less time to visit health facilities for PNC. This study is supported by a study conducted in Gulele sub city Addis Ababa and Nigeria (11, 19)

Those women who had a husband having an occupation of a governmental employees were 93% less likely to utilize postnatal care services compared to those women who had a husband having occupation of a private employees, on the contrary, the study done in Kampala Uganda showed that government employed utilize the postnatal service most, (20)and the odds of Postnatal care service utilization among those women whose husband daily laborer were about two times compared to the odds of women whose husband were private employee. This implied that increased family income related to occupational have no positive effect on the use of Postnatal care service.

The odds of Postnatal care service use among those women who attended antenatal care for four times were about two times compared to the odds of who attended for three times antenatal care visits. This could be due to the awareness of the mothers on possible postnatal complications as a result of previous contact with healthcare workers this study is supported by a systematic meta- analysis in Ethiopia (12) and in line with studies in Gondar (21). Those women who were told about danger signs were 93% less likely to utilize postnatal care services compared to those women who were not told about the

danger sign. This finding may lead to conclude that the PNC service use is not influenced by the information of mothers and counseling ability of health professionals on post-natal care. This study differs with the study done in Addis Ababa (22).The study had some limitations as well. Social desirability bias might affect the study findings, the study did not explore qualitative data related with believes and cultures which might have important roles in the service use.

Table 6: Bivariate and multivariable analysis of factors associated with Postnatal care service use among women who gave birth in Addis Ababa, 2019(n=731)

Factors	PNC service use		COR (95%CI)	AOR (95%CI)	P-value
	yes	No			
Mothers education					
Certificate or diploma	148	11	1.00		
No formal education*	96	6	0.84(0.30-2.35)	0.32(0.08-1.34)	0.12
Primary(1-8)	197	24	1.64(0.78-3.45)*	0.67(0.26-1.71)	0.40
Secondary(9-12)	161	15	1.25(0.56-2.82)	0.79(0.31-2.03)	0.63
First degree and above	71	2	0.38(0.08-1.76)*	0.43(0.09-2.08)	0.29
Family size					
4	238	15	1.00	1.00	
<4	257	30	1.85(0.97-3.53)*	**2.76(1.28-5.91)**	**0.001***
>4	178	13	1.16(0.54-2.49)	1.15(0.46-2.90)	1.15
Husband occupation					
Private	286	28	1.00	1.00	
Governmental	161	12	4.29(0.94-19.52)*	**0.07(0.009-0.57)**	**0.01***
Merchant	115	2	5.63(1.32-24.02)*	**0.83(0.37-1.88)**	**0.66**
Daily laborer	76	16	12.11(2.71-54.16)*	**2.59(1.12-6.02)**	**0.02***
ANC visit					
3 times	238	16	1.00	1.00	
1-2 times	42	6	2.12(0.78-5.74)	0.99(0.26-3.76)	0.99
4 times	393	36	1.36(0.74-2.51)	**2.18(1.03-4.60)**	**0.04***
Mode of delivery					
Spontaneous vaginal* delivery	593	51	3.18(0.76-13.34)	2.17(0.35-13.53)	0.41
Instrumental delivery and Cesarean section	74	2	1.00	1.00	
Delivery attendants					
Midwife	514	47	2.33(0.98—5.56)	1.89(0.65-5.50)	0.24
Doctor	153	6	1.00	1.00	
Danger signs					
Yes	635	37	0.10(0.06-0.19)	**0.07(0.03-0.17)**	**0.001***
No	38	21	1.00	1.00	

p-value 0.05, ** Variables statistically significantly associated PNC use

Conclusion

The postnatal care service utilization among women who gave birth in Addis Ababa was found to be high Family size, husbands' occupation, number of antenatal care visit and danger sign was found to be significantly associated with postnatal care service utilization. Ministry of health should consider factors during training and postnatal program developments like ANC, Family size to sustain the PNC service; and researchers explore the quality data addressing cultural and social believes of the women.

Abbreviations

AACA	Addis Ababa city administration
AAPHREM	Addis Ababa public research and emergency management
AOR	Adjusted odds ratio

ANC	Anti natal care
EDHS	Ethiopia Demographic and Health Survey
HSTP	Ethiopian Health service transformation plan
PNC	Post natal care
PI	Principal investigator
PPS	Probability proportionate to size
SPSS	Statistical package for the social sciences
SVD	Spontaneous vaginal delivery
UHEW	Urban health extension worker
VIF	Variance inflation factor
WHO	World Health Organization
MCH	Mother and child health

Consent for publication

Participants consented for unanimous sharing of compiled data as approved by the IRB of the college at SPHMMC.

Ethical declaration

Ethical clearance will be obtained from GAMBY Medical and Business College's institutionally ethical committee. In addition, permission letter will be obtained from the sub-cities and district where the study area is located. Prior to data collection, written consent will be obtained from all study participants. Then participation in the study will be voluntary and autonomy of participants will also be respected. The confidentiality of the study participants' related data was maintained by avoiding possible identifiers such as name of the participants. Only identification number was used as a reference. The interview questionnaires will be kept confidential throughout the whole process of the research work.

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Authors' contributions

HK conceptualized the research problem, designed the study, conducted fieldwork, collected and data analyzed, and drafted the manuscript. KG/W, YH was involved in conceptualization, preparing the research proposal, and revising the final manuscript. All authors of the manuscript have read and agreed to its content.

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None

Competing interest

All authors read and approved the final manuscript. The authors declare that they have no competing interests.

Availability of Data and Materials

The datasets used in the current study or data collection tool are available from the corresponding author with a reasonable request.

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