

## DETERMINANTS OF POSTNATAL CARE SERVICE UTILIZATION AMONG REPRODUCTIVE AGE WOMEN IN BASSO LIBEN WOREDA, NORTH WEST ETHIOPIA

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### ABSTRACT

**Objectives:** The objective of the study is to assess the determinants of postnatal care service utilization among reproductive age women in Basso Liben woreda.

**Methods:** The data were collected from a representative sample of 374 populations using systematic sampling technique. The major strategy of the study was mixed approach. In quantitative study, the data were collected using structure questionnaires. The study participants were women of reproductive age (15–49 years) who gave birth in the past 2 years before the study. The dependent variable is utilization of at least one postnatal care visit within 6 weeks of delivery. Bivariate and multivariate analyses were employed to determine the association between dependent and independent variables.

**Results:** From the total respondents, 37.7% of the mother and 20.3% of newborn had gotten postnatal checkup within the first 6 weeks, respectively. From PNC users, 51.1% of the mother and 47.4% of the newborn had utilized PNC 1 time, respectively. Based on multivariate analysis maternal education, number of ANC follow-up, PNC information before delivery, monthly income, place of delivery, and attendant during delivery have statistically significance association with postnatal health-care service utilization.

**Conclusion:** The use of postnatal care service utilization is still limited in the study area. Only 37.7% of the mother and 20.3% of newborn had gotten postnatal checkup. Establishing qualified health facility around the area, expanding transport accessibility, and providing vehicles like ambulances that used to take mothers in the health facility are used to improve postnatal care service utilization.

**Keyword:** PNC, Utilization, Basso Liben, North West Ethiopia.

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### BACKGROUND

Postnatal care is one of the most important maternal health-care interventions for prevention of illnesses and deaths during the postnatal period [1]. The first 48 h of life is a critical phase in the lives of newborn babies and a period in which many neonatal deaths occur. Thus, prompt postnatal care (PNC) for both the mother and the child is important to treat any complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child [2].

Postnatal care is regarded as one of the most important maternal health-care services for the prevention of impairments and disabilities resulting from childbirth. Immediately after birth, bleeding and infection pose the greatest risk to the mother's life, while preterm birth, asphyxia, and severe infections pose greatest risk to newborn in the world. Evidences strength this assertion since over 60% of maternal deaths occur in the first 48 h after child birth, three-fourth of newborn deaths in the 1<sup>st</sup> week; and two-thirds of these occur in the first 24 h mainly due to asphyxia, sepsis, and prematurity in the year 2009. All these maternal and neonatal problems could be reduced if women receive appropriate postnatal care [3].

The World Health Organization recommends that providing postnatal care in the first 24 h to all mothers and babies, regardless of where the birth occurs is necessary. The minimum duration of stay at health facility is at least 24 h and is not discharged early, and all mothers and babies need at least four postnatal checkups in the first 6 weeks [4].

In 2015, 2.8 million newborns died in their 1<sup>st</sup> month of life, 1 million of these newborns died on the 1<sup>st</sup> day in the world [5]. Globally, 303,000

maternal deaths have occurred in 2015, yielding the overall maternal mortality ratio of 216 per 100,000 live births. Developing regions account for approximately 99% (302,000) of the estimated global maternal deaths in 2015, with sub-Saharan Africa alone accounting for roughly 66% (201,000) followed by South Asia (66,000) maternal deaths [5].

In sub-Saharan Africa, the data show that overall, there were approximately 8.8% neonatal deaths per 1000 births during the first 2 days and 7 days among those who receiving no PNC. For the outcome of deaths during the first 2 days and 28 days among those with no PNC, the rate increased to 14.2% per 1000 births in the year 2009 [1].

According to the WHO, the maternal mortality ratio in sub-Saharan Africa has reached 546 per 100,000 live births in 2015 [5]. Ethiopia is found among sub-Saharan countries with the maternal mortality ratio of 412 deaths per 100,000 live births in 2016. Even if the trend of maternal mortality ratio is reduced with a significant number from 676 deaths per 100,000 live births in 2011 to 412 deaths per 100,000 live births in 2016. However, the magnitude of maternal mortality ratio in Ethiopia needs higher intervention in the area of improving antenatal, delivery, and postnatal care services [2].

In Ethiopia, the 2016 Ethiopian Demographic Health Survey (EDHS) reported that only 17% of the mothers received postnatal care within the first 2 days after delivery and 81% of the women did not receive postnatal care. In Amhara Region, the data also show that among women age 15–49 giving birth in the 2 years before the survey, 18.4% had a postnatal check during the first 2 days after birth. This implies that in Amhara region, even if the postnatal

care coverage is some higher compared to the national average, it needs higher intervention to improve maternal health-care services including postnatal care services [2]. Thus, understanding the factors related PNC utilization is critical for countries like Ethiopia with high maternal and child mortality. This study, therefore, aimed to identify the determinant factors affecting PNC service utilization among reproductive age women in Basso Liben woreda, North West Ethiopia.

## METHODS

### Study setting and period

The study was conducted in Basso Liben woreda, East Gojjam, and Amhara Regional State, Ethiopia. Basso Liben is one of the woredas in Amhara region. The study period was March 2019 to June 2019. The district is found 326 km far from Addis Ababa, the capital city of Ethiopia. The woreda has a total population of 168,571, of which 88,622 are female and 79,949 are male. According to Basso Liben woreda health office report, 10,610 women have given birth at health facility in the past 2 years.

### Study design

A community-based qualitative and quantitative cross-sectional study design was held to assess the determinants of postnatal care service utilization in Basso Liben woreda in East Gojjam Zone of Amhara National Regional State of Ethiopia.

### Source of population

All reproductive aged women (15–49) and lives in Basso Liben woreda.

### Study population

The study population was women of reproductive age (15–49 years) who gave birth in the past 2 years before the study and who were the usual residents of the district.

### Sampling technique

First, all kebeles were clustered into rural and urban kebele. The rural kebeles were also be clustered into far and near to the health facility by considering distance. Out of two urban kebeles, one kebele (*Yejube 01*) was selected using simple random sampling method. From the total rural kebeles, two kebeles (*Yelemelem* and *Kork*) near to the health facility and two kebeles (*Dendegeb* and *Gobetma*) far from the health facility were selected using simple random sampling method to give equal chances for all kebeles to be selected. By taking the total number of women who have given births in the past 2 years before the study in the selected five kebeles, the sample population in each kebele was taken proportional to the total sample sizes.

### Sample size determination

The required sample size was determined using single population proportion formula [6] with the assumption of 95% confidence interval, 5% error, and 34.8% prevalence of postnatal care service utilization and associated factors among women were done in Dembecha district [7].

$$n = \frac{(Z\alpha/2)p(1-p)}{d}$$

Where,

n = the desired sample size

$Z\alpha/2$  = standard normal score (95%)

p = prevalence of postnatal care service (34.8%)

d = error (5%)

Where,

$Z\alpha/2 = 1.96$

$$n = \frac{(1.96) \times 0.348 \times (1 - 0.348)}{(0.05)^2}$$

$$n = \frac{3.841 \times 0.348 \times 0.652}{0.0025} = 348$$

By taking 10% contingency, the minimum total sample size was  $348 + 34 = 382$ . To allow for possible non-response due to absenteeism or refusal during the actual data collection time, the sample size was increased by 10%. Accordingly, 382 questionnaires were prepared and distributed.

### Data collection instrument and procedure

Data were collected by qualitative and quantitative methods. In quantitative study, structured questionnaire is adopted from EDHS questionnaire with modification from relevant literature which was prepared in English version. Later on, the English version of the questionnaire was translated into Amharic version. Direct interviewing with face-to-face interaction between the interviewer and the interviewee using a structured questionnaire at household level was employed. Training was given to the supervisors and data collectors on the objectives of the study, the content of the questionnaire, issue related to confidentiality of the responses, and rights of the respondents during data collection.

### Dependent variable

The dependent variable is utilization of at least one postnatal care visit (within 6 weeks of delivery). This was a dichotomous/categorical variables, use or non-use of PNC services.

### Independent variables

Those were variables that contribute to use/none use of postnatal care service utilization in the study area.

### Data processing and analysis

After data collection, each completed questionnaire was checked for completeness at the time of data collection. Then, the data were entered into a computer by SPSS version 20. Descriptive analysis like percentage was carried out to describe the study participants according to different characteristics. Bivariate analysis was computed to examine crude association of predictors on PNC service utilization. To see the association of variables, By selecting eligible variables using logistic regression models with confounding effect of predictors on outcome variables. Odds ratio with their 95% confidence interval (CI) was used to determine the strength of association.  $P < 0.05$  was considered as a level of significance.

### Data quality

First, the questionnaires were prepared in English languages and later on translated in to local languages. Then, consent was taken from the respondents before the interview. The data were collected by principal data collectors and its completeness was checked before leaving the house and data also had been checked for its clarity and consistency every day by principal supervisors. The data were entered and analyzed after having different coding.

## RESULTS

### Socioeconomic and demographic characteristics of mothers in Basso Liben woreda

Out of 382 sample populations, 374 eligible respondents were interviewed with the response rate of 98% that shown in Table 1. The majority of the respondents (78.9%) were rural residents and the others were urban dwellers. In terms of religion, majority of the respondents are Orthodox Christian followers (96.0%) followed by Muslims. Regarding mothers education, majority of mothers (66%) did not attend formal education and the remaining mothers who attend primary and secondary education accounts 17.6% and 16.3%, respectively. As far as their marital status, most of mothers were married (75.4%) and the others were single (24.6%). In concerned with monthly income of the respondent, majority of the respondent (73.8%) had monthly income of <2000 Ethiopian Birr while few number of the

respondent (26.2%) had a monthly income of  $\geq 2000$  Birr. Regarding to age at last birth, more than half of the respondent (89.6%) were within the age 20 and above while the remaining (10.4%) of the respondent lives within below age 20.

#### Postnatal care service utilization for the mother in Basso Liben woreda, 2019

In Basso Liben woreda, majority of the mother did not attend PNC services. From the total respondents (374), the proportion of mother's postnatal care service utilization was 141 (37.7%) with a confidence interval of 33.2 and 42.2, as depicted in Fig. 1. Among those who used PNC, majority 90 (63.8%) of mothers have gotten first PNC checkup within 24 h whereas few number of mothers 13 (9.2%) have gotten first PNC checkup within 3–6 days after delivery that shown in Table 2.

#### Prevalence of PNC checkup for the newborn in in Basso Liben Woreda, 2019

Of the total number of children, 76 (20.3%) of them have utilized postnatal care services within the first 6 weeks by skilled attendants at health institution and their homes as depicted in Fig. 2. Regarding to the number of postnatal care service utilization that shown in Table 3, majority of the newborn 36 (47.4%) had PNC checkup 1 time whereas 31.6% have attended 2 times, 15.8% have attended 3 times, and 5.3% of the children utilized PNC checkup 4 times.

#### Problems in accessing PNC services

Women were asked whether each of the following factors is a big problem in seeking postnatal care services. Table 4 shows that majority of women 82 (35.2%) did not get postnatal care service utilization due to distance, whereas 77 (33%) of mothers did not attend postnatal care services because of the absence of PNC problems on the mother and their newborn. This shows that 33% of mothers did not utilize postnatal care services unless his/her child had faced postnatal problems after delivery.

**Table 1: Percentage distribution with socioeconomic and demographic characteristics of the respondent in Basso Liben woreda, 2019**

	Frequency	Percent
Residence		
Urban	79	21.1
Rural	295	78.9
Religion		
Orthodox	359	96.0
Muslim	15	4.0
Mothers education		
Did not attend formal education	247	66.0
Primary	66	17.6
Secondary and above	61	16.3
Mothers marital status		
Single	92	24.6
Married	282	75.4
Monthly income of the respondent		
<2000	276	73.8
2000+	98	26.2
Age at last birth		
<20	39	10.4
20+	335	89.6

**Table 2: Percentage distribution with timing of mother PNC checkup in Basso Liben woreda, 2019**

Timing of mother PNC checkup	Frequency	Percent
Within 24 h	90	63.8
1–2 days	14	9.9
3–6 days	13	9.2
7–41 days	24	17.0

#### DISCUSSION

In the study area, out of 374 respondents, 141 (37.7%) mothers have attended postnatal health-care service utilization with a confidence interval of 33.2 and 42.5. Research conducted in Dembecha district [7] (34.8%), in South Ethiopia [8] (37.2%), and in Wolayta zone [9] (34.9%) was in line with this results. However, the result was low compared with other research conducted in Lemo woreda [10] (51.4%) and Gondar Zuria district [11] (66.8%), this may be due to the accessibility in health-care services differences. This is supported by FGD participants at *Gobetma kebele* said that "to get postnatal health care at health facility we must cross with a long distance two undulating hills without any transport availability. In order to get qualified service in these kebele women should travel at least three hours on foot by passing unfavorable geographical lands."

In a multivariate analysis that shown in Table 5, maternal education has a significance association with the utilization of postnatal health-care services. Mother who attended primary education was 2.8 times more likely attended postnatal care service utilization than women who did not attend any formal education. Moreover, mothers who attended secondary and above education were 2.2 times more likely attended postnatal care services. This finding is consistence with other research conducted in Ethiopia [12] and Fenote Selam town in Amhara region [13]. This may be the fact that educated women have more awareness about the use of attending PNC that compared to did not attend formal education. Educated women may have a better communication with health-care providers and willingness to discuss the use of postnatal health-care services. This is in line with a 24 aged health extension workers opinion from *Gobetma kebele*, she said that "at this kebele, the postnatal care service utilization coverage is low due to majority of mothers in this area didn't attend formal education. Mothers didn't have awareness about the use of attending postnatal checkup by skilled attendants. The combination of such problem most of the postpartum mothers didn't go to the health facility to get postnatal care service utilization."

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**Table 3: Percentage of number of PNC checkup for the child in Basso Liben woreda, 2019**

Number of child PNC checkup	Frequency	Percent
1 times	36	47.4
2 times	24	31.6
3 times	12	15.8
4 times	4	5.3

**Table 4: Percentage distribution of problems in accessing PNC services in Basso Liben woreda, 2019**

	Frequency	Percent
Getting permission to go to the HF	25	10.7
Getting money for advice or treatment	22	9.4
Distance to a health facility	82	35.2
Not wanting to go alone	27	11.6
Healthy/absence of PNC problem	77	33.0

**Table 5: Results of multivariate and bivariate analysis: The distribution of mothers who give births in the past 2 years and PNC utilization in Basso Liben woreda, 2019**

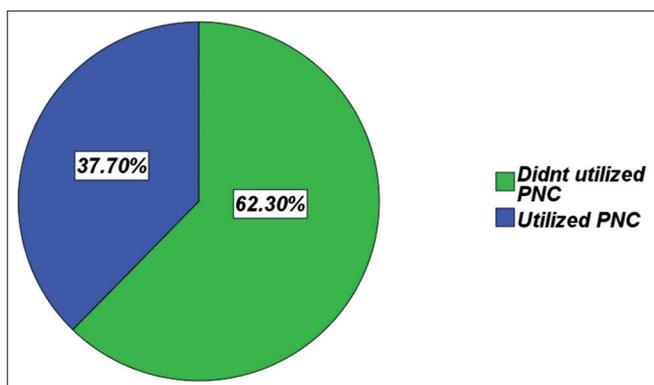
Variable	Mother's utilized PNC		B <sup>*</sup>	Adjusted OR (95%CI)	B <sup>*</sup>	Crude OR (95%CI)
	Yes	No				
Religion						
Orthodox (Ref)	136	223			0	1
Muslim	5	10			0.101	0.904 (0.315, 2.596)
Residence						
Urban	48	31	0.008	1.008 (0.470, 2.162)	1.213	3.363 (2.011, 5.624)
Rural (Ref)	93	202	0	1	0	1
Mothers education						
Did not attend formal education (Ref)	46	202	0	1	0	1
Primary	48	18	1.051	2.861 (1.393, 5.875)**	2.455	11.652 (6.210, 21.86)
Secondary and above	47	14	0.814	2.257 (1.008, 5.054)**	2.686	14.669 (7.452, 28.87)
Marital status						
Single (Ref)	19	73	0	1	0	1
Married	122	160	0.375	1.455 (0.651, 3.252)	1.075	2.930 (1.678, 5.114)
Decision-making status						
Respondent (Ref)	75	71	0	1	0	1
Husband/partner	22	134	-0.495	0.609 (0.295, 1.258)	-0.885	0.413 (0.253, 0.674)
Respondent, husband/partner jointly	44	28	0.065	1.067 (0.515, 2.214)	0.415	1.514 (0.859, 2.670)
Mothers occupation						
Housewife (Ref)	93	204	0	1	0	1
Government employee	22	10	0.324	1.383 (0.527, 3.629)	1.574	4.826 (2.197, 10.598)
Merchant	26	19	0.438	1.550 (0.697, 3.446)	1.099	3.002 (1.582, 5.695)
Transport accessibility						
No (Ref)	43	158	0	1	0	1
Yes	98	75	-0.014	0.986 (0.525, 1.850)	0.965	2.624 (1.707, 4.034)
Number of ANC follow-up						
1-4 (Ref)	32	70	0	1	0	1
4+	92	79	0.598	1.818 (1.009, 3.274)**	0.935	2.547 (1.522, 4.264)
PNC information before delivery						
No (Ref)	51	173	0	1	0	1
Yes	90	60	0.867	2.380 (1.352, 4.188)**	1.266	3.546 (2.285, 5.501)
Media exposure						
No (Ref)	56	181	0	1	0	1
Yes	85	52	0.125	1.134 (0.631, 2.035)	1.244	3.469 (2.228, 5.402)
Birth interval						
1-4 years (Ref)	111	196	0	1	0	1
4+years	30	37	-0.001	0.999 (0.502, 1.988)	0.652	1.920 (1.190, 3.097)
Age at last birth						
<20 (Ref)	26	13	0	1	0	1
20+	115	220	-0.797	0.451 (0.113, 1.791)	-1.342	0.261 (0.129, 0.528)
Monthly income						
<2000 (Ref)	85	191	0	1	0	1
2000+	56	42	0.995	2.705 (1.319, 5.549)**	1.097	2.996 (1.864, 4.816)
Place of delivery						
Home (Ref)	35	199	0	1	0	1
Institution	106	34	1.398	4.046 (1.430, 11.45)**	2.037	7.668 (4.778, 12.305)
Waiting time for ANC						
<30 min (Ref)	71	65	0	1	0	1
30+min	53	84	-0.047	0.954 (0.486, 1.874)	-0.549	0.578 (0.357, 0.934)
Pregnancy desire						
Unwanted (Ref)	49	77	0	1	0	1
Wanted	92	156	-0.353	0.702 (0.356, 1.384)	-0.328	0.720 (0.465, 1.117)
Type of delivery						
Cesarean (Ref)	22	6			0	1
Normal	81	31			-0.511	0.600 (0.235, 1.534)
Attendant during delivery						
Unskilled attendant (Ref)	21	171	0	1	0	1
Skilled attendant	120	62	0.926	2.524 (1.000, 6.369)**	1.892	6.630 (4.128, 10.647)
Distance from home to the near health facility on foot						
<1 h (Ref)	98	103	0	1	0	1
1 h and above	43	130	-0.116	0.891 (0.416, 1.906)	-1.057	0.348 (0.223, 0.541)

\*\*Statistically significant at P<0.05. (Ref): Reference category. Source: Field survey, 2019

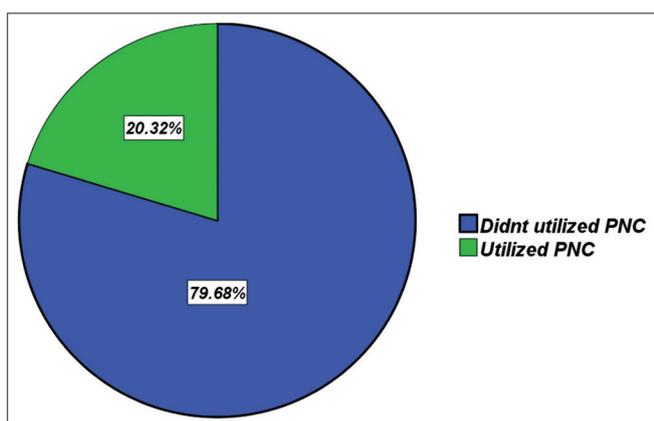
willingness to discuss the use of postnatal health care services. This is in line with a 24 aged health extension workers opinion from *Gobetma kebele*, she said that "at this kebele, the postnatal care service utilization coverage is low due to majority of mothers in this area didn't attend formal education. Mothers didn't have awareness about the use of attending postnatal checkup by skilled attendants.

*The combination of such problem most of the postpartum mothers didn't go to the health facility to get postnatal care service utilization."*

Women who heard PNC information from health-care providers, radio/television, and from their relatives/friends were 2.3 times more likely attend postnatal health-care services than those with their counterparts.



**Fig. 1: The proportion of postnatal care service utilization among mothers in Basso Liben woreda, 2019**



**Fig. 2: The proportion of child PNC checkup in Basso Liben woreda, 2019**

This is in line with studies done in Gulele in Addis Ababa [15], Enderta District, Tigray, North Ethiopia [16], in Jabitena district, West Gojjam [13], and Aseko District, Arsi Zone, South East Ethiopia [17]. This is because those who ever heard about PNC were more likely to know the benefits of having PNC visits and health risks during postnatal period.

Even if maternal health care is given freely in governmental health facilities, women still have to pay for transportation and other things. As a result, women, who could not afford to pay for these expenses, found it difficult or even impossible to visit health facilities. Women from higher monthly income households attended PNC better than women from low monthly income households. In this study, women from a household income  $\geq 2000$  were 2.7 times more likely utilized PNC than women from a household income  $< 2000$ . The finding is in line with other findings conducted in Kenya [14] and Pakistan [18]. This was also supported by FGD discussants in *Yelemelem kebele* said that *"I wanted to use postnatal health care services after delivery, but at that time I didn't have money and I didn't know the service of maternal health care is given without money payment. A midwife in Kork health center said that most of rural residents didn't attend postnatal health care services due to women perceived that the service is given with money payment. So if a woman didn't have money in hand at the time of postnatal period, they stayed at home due to fair of payments."*

Place of delivery was significantly associated with PNC service utilization. Mothers who gave their last birth in health institutions were 4 times more likely to utilize PNC service than those mothers who were gave their last birth at home. This is consistence with other findings in Lemo Woreda, Ethiopia [10], in Zambia [19], in Tigray region, Ethiopia [16], in South Ethiopia [17], and in West Gojjam, Ethiopia [13]. The association of place of delivery with PNC

services utilization could be attributed to the fact that women who gave their last birth in a health institution had greater opportunity to get exposed to health education related to PNC services at the time of delivery and thus get access to learn about the types, benefits, and availabilities of PNC services during their stay in the health institutions.

Access to skilled attendant during delivery used to improve postnatal care of the mother and their newborn. In this finding, mother who attended by a skilled attendant during delivery was 2.5 times more likely attended PNC services than mothers who attended by unskilled attendants. If a woman delivered with a skilled attendant, she may have developed a trust on health-care providers and came back to the health facility to attend postnatal health-care services. This finding is inconsistency with findings conducted in sub-Saharan African countries [1]. This may be due to the fact that women with pregnancy- and delivery-related complications may be more likely to come to a facility than women without complications.

## CONCLUSION

This study was conducted to assess factors that associated with postnatal care service utilization among mothers who gave birth in the past 2 years before this survey. The findings of this study revealed that the level of postnatal care service utilization is still limited even though relatively higher compared with the previous evidences [11]. Only 37.7% of the mother and 20.3% of newborn children had attended postnatal health-care services. Among PNC users, 51.1% of the mother and 47.4% of the newborn had utilized PNC 1 time.

Based on this finding, maternal education, number of ANC follow-up, PNC information before delivery, monthly income, place of delivery, and attendant during delivery were determinants of PNC service utilization in the study area.

Establishment of qualified health facility and adequate health-care providers around the area will increase not only the postnatal health-care coverage but also used to improve the overall maternal health cares. Expansion of road accessibility and providing different vehicles like Ambulances that used to take mothers in the health facility as mothers they want.

## DECLARATIONS

### Ethics approval and consent to participate

The study has got approval by College of Social Science and Humanities ethical clearance committee at University of Gondar. The study was commenced after written consent obtained from Basso Liben woreda administrative office. Written informed consent was not obtained from a parent or guardian for participants under 16 years old. However, each respondent was informed about the objective of the study and assurance of confidentiality. Verbal consent was secured from each participant at the end of each interview session; respondents who did not have postnatal care were advised to have health service utilization for having range of option family planning methods, the advantage of completing their vaccination, and the need of continuous follow-up care for HIV-positive mothers and their baby.

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## AUTHORS' CONTRIBUTION

AMH. Conception and designing of the research design, preparation of questionnaire, training of data collectors, data collection, data entry,

and conducting the analysis of the research. NMA. Data editing and cleaning. AMH. Also writing of the research and interpretation of the result. All authors have read and approved the manuscript and ensure that this is the case.

#### COMPETING INTEREST

There is no competing interest.

#### FUNDING

No funds are available.

#### AVAILABILITY OF DATA AND MATERIALS

All necessary data analyzed for this study are available in SPSS readable format and all of the findings are presented in figures and tables in the manuscript.

#### CONSENT TO PUBLISH

Not applicable in this section.

#### PARENTAL CONSENT

Hello. My name is \_\_\_\_\_ I am working with Gondar University. We are conducting a research about postnatal care service utilization at this woreda. The information we collect which will have importance for the government in improving maternal and child health services utilization during postnatal period. Now, I would like to ask you some questions about your socioeconomic and postnatal care service utilization history. The questions usually take about 40–50 min. All of the answers you give will be confidential and will not be shared with anyone other than members of our research team. You do not have to be in the research, but we hope you will agree to answer the questions since your answers are important. If I ask you any question you do not want to answer, just let me know and I will go on to the next question or you can stop the interview at any time.

Do you have any questions?

May I begin the interview now?

Respondent agrees Respondent does not agree

to be interviewed. 1 to be interviewed. 2—end

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