

Health Institutional Delivery Service Utilization and Associated Factors Among Mothers Who Gave Birth in the Last Year in Dembecha Zaria Woreda, Northwest Ethiopia: A Community Based Cross-Sectional Study

Misganaw Fikrie Melesse (✉ misganawfikrie@gmail.com)

Debre Markos University

Bewket Yeserah Aynalem

Debre Markos University

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Abstract

Background: The morbidity and mortality of women is a worldwide challenge and the current global maternal death is more than 800 per day; ninety-nine percent of maternal death occurs in developing countries and in Ethiopia about 30% of all ladies' death is identified with pregnancy-related causes. We, therefore, did this study to assess the magnitude and associated factors of institutional delivery service utilization among mothers who gave birth in the last year in Dembecha Zuria woreda, Northwest Ethiopia.

Methods: A community-based cross-sectional study design was employed, and multistage sampling technique was used. Data were collected through face-to-face interviews with pre-tested structured questionnaires among mothers who gave birth in the last year in Dembecha zuria woreda, Northwest Ethiopia from November 23, 2020 to January 16, 2021. After data collection, data were coded and entered using EPI info version 7 and analyzed using SPSS version 25 statistical software. Binary logistic regression analysis was used to ascertain the association between explanatory variables and the outcome variable. Variables with P value less than 0.25 in the Bivariable analysis and P-value < 0.05 in the multivariable analysis and corresponding 95% CI of odds ratio were considered to declare a result as statistically significant.

Result: In this study, the magnitude of institution delivery service utilization among mothers who gave birth in the last year was 179 (42.4%) with 95% CI [37.7, 46.9]. type of pregnancy [AOR: 1.906, (95%CI: 1.017,3.57)], gravidity [AOR: 1.899 (95% CI: 1.244, 2.898)], ANC follow up [AOR: 2.079 (95% CI: 1.242, 3.482)], husband preference on place of delivery [AOR: 2.036) (95% CI: 1.291. 3.211)] and decision-maker on place of delivery [AOR: 2.853 (95% CI: 1.321, 6.160)] were significantly associated with health institution delivery service utilization.

Conclusion: In this study, the magnitude of health institution delivery service utilization was low as compared to the national expectation. The concerned bodies need to create awareness on the function of antenatal care follow-up and empower the mothers to decide on the place of delivery and give counseling for husbands about the importance of health institution delivery.

Background

The morbidity and mortality of women is a worldwide challenge and the current global maternal death is more than 800 per day; ninety-nine of maternal death occurs in developing countries [1, 2]. The major causes of maternal deaths are infection, hemorrhage, obstructed labor, abortion, and hypertension in pregnancy [3]. The direct obstetric causes account for 75% of maternal mortalities in developing countries specially in Africa including Ethiopia [4, 5].

In Sub Saharan Africa (SSA), about 3% of childbearing women have a danger of death during labor and in Ethiopia, about 30% of all ladies death is identified with pregnancy-related cause[6]. The Federal Ministry of Health (FMOH) in Ethiopia has applied multi-pronged approaches to minimize maternal

Despite this, the current maternal mortality proportion is 412 for every 100,000 live births [2]. Even though this huge number of maternal deaths could be minimized through convenient and proper interventions including the nearness of trained skilled birth attendants at each birth [8] the current skilled birth delivery is only 50% [2]. Place of delivery and the clean condition is significant to minimize maternal complication but in Ethiopia maternal and neonatal disabilities related to labor delivery is very high which shows the problem in health care delivery system [9].

Numerous studies showed that there are various variables related to institutional delivery like a living arrangement, information on pregnancy related issues, educational status of the mother, parity, Ante Natal Care (ANC) follow up, distance from the facility, quality of service, and previous experience [10–12].

In Ethiopia, even though there is a large number of health facilities, emergency services, and expectant mothers' waiting rooms, delivery-related morbidity and mortality are still high [4, 5].

Therefore, the purpose of this study was to assess the magnitude and associated factors of health institution service utilization among women who gave in the last year in Dembecha zuria woreda, Northwest Ethiopia.

Methods

Study area and period

This study was done in Dembecha zuria woreda, Amhara region, Northwest Ethiopia from November 23, 20 to January 16, 2021. The study was conducted in rural Kebeles (the smallest administrative unit in Ethiopia) of Dembecha district which is located 349 kilometers northwest of Addis Ababa, and 203 kilometers from Bahir Dar, the capital city of the Amhara region. The district has 31 kebeles (urban = 4, rural = 27) and 159,267 total projected populations of which 32,219 (20%) reproductive age group (15–49), and 81, 226 (51%) females. Of the total population, 25,917 (16%) are living in urban and the rest 133,350 (84%) are living in rural area[13]. The total number of women who gave birth in the rural district was 4,959.

Study design

A community-based cross-sectional study design was used [14].

Study participants

The source population was all women who deliver in the last year and who live in Dembecha zuria woreda. The study population was all mothers who gave birth in the last year[15] and live in Dembecha zuria woreda during the study period in the selected kebeles. We excluded mothers who are not permanent residents of Dembecha zuria woreda and those who were critically ill during the data collection period [14].

Sample size

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The sample size was calculated based on a single population proportion formula assumption. The magnitude of institutional delivery service utilization was 48 % from the Ethiopian demographic health survey 2019. A 5% margin of error was used [14].

$$\text{initialsamplesize} = \left(Z \frac{\alpha}{2} \right)^2 * \frac{p(1 - p)}{w^2} = 1.96^2 * \frac{0.48(1 - 0.48)}{(0.05)^2} = 384$$

By considering 10% non-response rates, $384 * 0.10 = 38$. Then the final sample size was $384 + 38 = 422$.

Sampling techniques

The multistage Sampling technique was carried out. First, 30 % of 27 kebeles which are found in the study area were randomly selected then study participants were allocated proportionally to each randomly selected kebeles of the Dembecha zuria woreda to determine the total sample size of the study. Participants were selected using systematic sampling techniques from randomly selected kebeles in every K^{th} interval and every participant was taken for the study after selection[16]. In the case of absenteeism, after three repeated visits the next eligible respondent was included in the study [14].

Study variables

Dependent variable: Institutional delivery service utilization

Independent variables

Socio-Demographic Characteristics and obstetric characteristics.

Operational definitions

Institutional delivery service utilization

mothers who had delivered their last baby in hospitals, health centers, private clinics, or Health Posts by skilled personnel [17].

Access to health care facility

a woman traveled less than one hour to reach the nearest health care facility, considered as she has access to a health care facility[18]

Home delivery

When a mother gave birth at her home or others' home (neighbor, relatives, or family) or when a birth takes place outside of a health institution[15, 19].

Data collection and data quality control

The quality of data was assured with four trained data collectors and two supervisors. Data were collected with face-to-face interviews by BSc Midwives after two-day data collection training was given to them together with two MSc holder supervisors. The questionnaire was structured and pre-tested which was first prepared in English and translated to local (Amharic) language and then again translated back to English. A pretest was conducted on 21 mothers of the sample size in other sites and the necessary correction on the tool was employed accordingly [14].

Data processing and analysis

Epi Info version 7 software was used for data entry and SPSS version 25 for used for analysis. Bivariate logistic regression was employed to identify an association between independent and dependent variables. Variables having a P-value of less than 0.25 in the bivariate logistic regression analysis were fitted into the multivariable logistic regression model. The 95% confidence interval of Adjusted Odds Ratio (AOR) was computed and a variable having P-value less than 0.05 in the multivariable logistic regression analysis was considered as statistically significant [14].

Results

Socio-demographic characteristics of the respondents

All 422 study participants gave the response to the questionnaire, giving a response rate of 100%. All participants are Amhara by ethnicity and 393 (93.1 %) had Christian religion; 374 (88.6 %) married. Four hundred two (95.3 %) of the respondents were farmers (Table 1).

Table 1
Sociodemographic characteristics among
mothers (n = 422) mothers who gave birth in the
last year in Dembecha zuria woreda, Northwest
Ethiopia, 2020

Variable	Frequency	Percent
Age of mothers		
18–24	196	46.4
25–39	207	49.1
≥40	19	4.5
Marital status		
Married	374	88.6
Widowed	19	4.5
divorced	29	6.9
Religion		
Christian	393	93.1
Muslim	29	6.9
Educational status		
No formal education	243	57.6
Formal education	179	42.4
Ethnicity		
Amhara	422	100
Occupation		
Farmer	402	95.3
Other *	20	4.7
*daily laborer, and government worker		

Obstetric characteristics

Three hundred five (72.3%) of the participants had ANC follow-up at least once. About 360 (85.3%) of the respondents decide by themselves on the place of delivery that where they can deliver. About 286 (67.8%) of the respondents' husbands prefer institutional delivery. And 71.1% of the study participants had unplanned pregnancies (Table 2).

Table 2
 obstetrics characteristics among mothers (n = 422) mothers who gave birth
 in the last year in Dembecha zuria woreda, Northwest Ethiopia, 2020

Variable	Frequency	Percent
Gravidity		
1–4	206	48.8
>4	216	51.2
Access to the health care facility		
No	123	29.1
Yes	299	70.9
Have at least one ANC follow up		
No	117	27.7
Yes	305	72.3
Decision maker for the place of delivery		
Myself	360	85.3
Family	62	14.7
Preference of husband for the place of delivery		
Institutional	286	67.8
Home	136	32.2
Home visited by health care providers		
No	117	27.7
Yes	305	72.3
Type of pregnancy		
Planned	300	71.1
Unplanned	122	28.9

Institutional delivery services utilization

About 179 (42.4%) of participants utilized institutional delivery services [95% CI: 37.7, 46.9] (Table 3).

Table 3
 Institutional delivery services utilization among mothers (n = 422)
 mothers who gave birth in the last year in Dembecha zuria woreda,
 Northwest Ethiopia, 2020

Institutional delivery services utilization	Frequency	Percent
Yes	179	42.4
No	243	57.6

Factors associated with institutional delivery service utilization

With controlling the effect of other variables in binary logistic regression, marital status, types of pregnancy, gravidity, educational status, ANC follow-up at least once, husband preference, decision-maker for the place of delivery, and occupation were significantly associated with the attitude towards cervical cancer screening (P-values < 0.25) (Table 4).

And with controlling the effect of other variables in multivariable logistic regression analysis, type of pregnancy [AOR: 1.906,(95%CI: 1.017,3.57)], gravidity [AOR: 1.899 (95% CI: 1.244, 2.898)], ANC follow up [AOR: 2.079 (95% CI: 1.242, 3.482)], husband preference on place of delivery [AOR: 2.036) (95% CI: 1.291. 3.211)] and decision maker on place of delivery [AOR: 2.853 (95% CI: 1.321, 6.160)] were significantly associated with health institution delivery service utilization (Table 4).

Table 4

Bivariable and Multivariable analysis of factors associated with institutional delivery services utilization among mothers (n = 422) mothers who gave birth in the last year in Dembecha zuria woreda, Northwest Ethiopia, 2020

Variable	Delivered at the health institution		Crude OR[95%CI]	AOR[95%CI]
	Yes	No		
Marital status				
Widowed	8	11	1.382(.419, 2.702)	2.080(.893,4.845)
Married	152	222	2.775(1.256,6.133)	1
Divorced	19	10	1	
Educational status				
Formal education	169	74	1	
No formal education	110	69	.698 (.465, 1.048)	
Types of pregnancy				
Planned	189	111	2.144 (1.399, 3.287)	1.906(1.017,3.57)
unplanned	54	68	1	1
Age of mothers				
18–24	81	115	1.578 (.614, 4.056)	
25–39	88	119	1.503 (.707, 1.560)	
≥40	10	9	1	
Religion				
Christian	167	226	1	
Muslim	12	17	.955 (.444,2.054)	
Gravidity				
>4	104	112	1.622(1.099,2.395)	1.899(1.244, 2.898)
1–4	75	131	1	1

Variable	Delivered at the health institution		Crude OR[95%CI]	AOR[95%CI]
Access to the health care facility				
Yes	130	169	.861 (.561, 1.320)	
No	49	74	1	
Have ANC follow-up at least once				
Yes	149	156	2.770(1.728, 4.440)	2.079 (1.242, 3.482)
No	30	87	1	1
Husband preference				
Home	57	79	1	1
Health institution	186	100	2.578(1.696, 3.917)	2.036(1.291, 3.211)
Providers visited home				
Yes	126	179	.850(.553, 1.306)	
No	53	64	1	
Decision maker for the place of delivery				
Myself	164	196	2.622(1.414,4.860)	2.853(1.321, 6.160)
Family	15	47	1	1
Occupation				
Farmer	228	174	1	
Other*	15	5	2.289 (.816, 6.420)	
*daily laborer, and government worker				

Discussion

This study was conducted to assess Institutional delivery services utilization and associated factors among mothers who gave birth in the last year in Dembecha zuria district, Northwest Ethiopia. So, the study found that 42.4 % [95% CI: 37.7, 46.9] of respondents utilized institutional delivery service.

In this study, institutional delivery service utilization is lower than mini Ethiopian demographic health survey (48%) and the finding of a study conducted in Bahirdar town (78.8%), Debremarkos town (180.5%

residence which is better infrastructures,

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accessibility, and education since the current study area was a rural community of Dembecha zuria woreda and it may also due to the fear of corona virus. Similarly, the finding was lower than the study conducted in Tanzania (79.6%) [23]. This might be due to the difference in health care service and the difference in culture. This study also was lower than the study conducted in Nyandarua, South district, Kenya (48%) [24]. This could be due to differences in the study period and the difference in cultural beliefs.

On the other side this study finding was higher than the studies done in Gozamin district (24.7%), Fogera district (31.6%), and Dodota (18.2 %), in Ethiopia [8, 17, 25, 26]. This difference might be due to time which could be the government and other concerned bodies investing different interventions to reverse the problem and study method, the data collection tools, huge geographical coverage particularly the mini Ethiopian demographic health survey might bring the difference.

In the current study women who had planned pregnancy 1.906 times more likely to utilize institutional delivery service as compared with women who had unplanned pregnancies. This study was supported by studies done in Debremarkos town [21, 27]. This might be due to planned pregnancy may prepare themselves to utilize institutional delivery service which helps them to get a healthy child. Again planned pregnancy indicates the presence of a support person either the husband or partner which means had a chance to share all over ideas. Consequently, if pregnancy is planned and supported the chance of seeking facility delivery enhances.

In this study, husbands' preference for place of delivery was also found to be a predictor for health institution delivery utilization. Mothers who had husbands who prefer health institutions for delivery, 2.036 times more likely utilized health institutions for delivery service as compared with their counterparts. This could be due to husbands who prefer health institutions for delivery may support and encourage them to attend ANC care and advise the mothers and initiate them to deliver at the health institution.

Mothers who attended ANC at least once in the last pregnancy 2.079 times more likely utilized health institutions for delivery service than those women who were not attended ANC. This could be due to in health institutions there are mid-level and senior educated and experienced health professionals that enabled them in proper counseling during ANC on the place of delivery while those who had no ANC follow-up cannot get this information.

Women who had gravidity greater than four 1.899 times more likely utilized health institution delivery as compared with those who had four and below gravidity. The possible reason might be as gravidity increases, the mothers may have the chance to have more information and knowledge on danger signs of pregnancy and the impact of home delivery on their health and the fetus.

Another associated factor for this study was mothers' power to decide on the place of delivery. Mothers who had the power to decide on the place of delivery, 2.853 times more likely to utilize health institutions

Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js y on the place of delivery. The possible

explanation could be mothers who had the autonomy to decide on the place of delivery, may have the chance to get the service in a timely and no one may be the cause to delay for service utilization.

Conclusion

In this study, the magnitude of health institutional delivery service utilization was low as compared to the national expectation of above 85 % [2]. Type of pregnancy, gravidity, ANC follow up and decision-maker on the place of delivery were significant factors for institutional delivery service utilization. All health professionals and government bodies need to create awareness on the function of ANC follow-up and empower the mothers to decide on the place of delivery. The health extension workers should give counseling to husbands about the importance of health institution delivery and the negative consequences of home delivery [14].

Abbreviations

SSA: Sub Saharan Africa, FMOH: Federal Ministry of Health, ANC: Ante-Natal Care

Declarations

Ethical approval and informed consent

The study protocol was approved by the Research Ethics and Approval Committee of Debre Marko's University, Health Science College. An official letter of co-operation was submitted to the Dembecha district health office. Respondents were provided information on the purpose of the study, its procedures, and their right to refuse or decline participation in the study at any time. Written informed consent was obtained from the study participants. **We confirm that all methods were carried out in accordance with relevant guidelines** and regulations. Participants were interviewed in a separate room and anonymity and confidentiality of the data providers were strictly maintained [14].

Availability of data and materials

The datasets used and/or analysed during the current study is available from the corresponding author on reasonable request.

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Consent for Publication

The authors would like to confirm that this article has not been submitted to any other journal and we fully agree to be published by this journal.

“NA”

Competing Interests

The author(s) declared that no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Authors' contributions

Conceptualization: Misganaw

Methodology: Bewket

Data Cleaning: Both authors

Formal analysis: Bewket

Supervision: Misganaw

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