Original Research Article

Utilization of Health Facility–Based Delivery Service Among Mothers in Gindhir District, Southeast Ethiopia: A Community-Based Cross-Sectional Study

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Demisu Zenbaba, MPH[1], Biniyam Sahiledengle, MPH[1], Diriba Dibaba, MPH/Epi[1], and Mitiku Bonsa, MPH/Epi[1]

Abstract

Facility-based delivery service is recognized as intermediation to reduce complications during delivery. Current struggles to reduce maternal mortality in low-and-middle income countries, including Ethiopia, primarily focus on deploying skilled birth attendants and upgrading emergency obstetric care services. This study was designed to assess utilization of health facility–based delivery service and associated factors among mothers who gave birth in the past 2 years in Gindhir District, Southeast Ethiopia. A community-based cross-sectional study design was conducted in Gindhir District from March 1 to 30, 2020, among 736 randomly selected mothers who gave birth in the past 2 years. A multistage sampling technique was used to select the study participants and a pretested, structured questionnaire was used to collect data through face-to-face interviews. The collected data were managed and analyzed using SPSS version 23. Of the 736 mothers interviewed, 609 (82.7%), 95% CI: 80.1, 85.5%, of them used health facilities to give birth in the past 2 years for their last delivery. Mothers who lived in rural areas had 4 or more ANC visits, received 3 or more doses of the TT vaccine, and had good knowledge of maternal health services were found to have a statistically significant association with facility-based delivery service utilization. In Gindhir District, mothers have been using health facility–based delivery services at a high rate for the past 2 years. Higher ANC visits and TT vaccine doses, as well as knowledge of maternal health services and being a rural resident, were all linked to using health facility–based delivery services. As a result, unrestricted assistance must be provided to mothers who have had fewer ANC visits and have poor knowledge on maternal health services.

Keywords

health facility–based delivery, mothers, Southeast Ethiopia, utilization

Introduction

Facility-based delivery is one of the maternal health services supported by skilled birth attendants within the healthcare facility, and it is a dominant concern both internationally and nationwide.[1] It is recognized as intermediation to advance maternal health that moderates complications during delivery. Delivery attended by trained health professionals is the top strategy for dropping maternal deaths and one of the indicators for tracking the national effort towards safe maternity.[2]

Regardless of international movement toward dropping maternal deaths, there is a need for speedy action to meet the ambitious 2030 sustainable development goals (SDG) and finally eradicate preventable maternal mortality.[3] The World Health Organization (WHO) primarily advocates for skilled care at every birth in order to reduce the global burden of maternal mortality.[3] It warrants safe birth, reduces potential

[1]Department of Public Health, Madda Walabu University, Goba, Ethiopia

Corresponding Author:
Demisu Zenbaba, Madda Walabu University Goba Referral Hospital Public Health Deaprtment, Bale-Goba Southeast Ethiopia, Goba 302, Ethiopia.
Email: zdemisu@gmail.com

difficulties, maternal death, and increases the survival of most mothers and newborns. The well-known complications during childbirth are stillbirths, intrapartum-related neonatal deaths, and maternal deaths.[4] Skilled attendances during labor, delivery, and the early postpartum period could reduce maternal mortality by an estimated 16–33%.[5-7]

Every day, about 830 women lose their lives during pregnancy and giving birth around the world. These high numbers of maternal losses occur in low-and-middle-income countries, including Ethiopia.[8] The main causes of maternal deaths in Ethiopia were infection, hemorrhage, obstructed labor, abortion, and hypertension during pregnancy.[9-13] Globally, around three-fourths of childbirths are attended by skilled health professionals, of which about four-fifths and two-thirds of births are attended by urban and rural professionals, respectively. In developed countries, skilled birth attendance is about 99.5%, whereas it is less than 50% in low-and-middle-income countries, including Ethiopia.[14-18]

According to Ethiopian demographic health survey data sets, facility-based delivery service utilization has increased from 10% in 2011 to 26% in 2016.[19,20] On the other hand, the magnitude of home delivery declined from 90% in 2011 to 73% in 2016.[19,20] The findings from small-scale studies conducted in different parts of Ethiopia indicated that facility-based delivery service utilization ranged from 4.1% to 78.3%.[21-27]

Previous research has found that a variety of interrelated factors influence the use of facility-based delivery services, including maternal age, birth order, educational status, income, place of residence, distance from the health facility, ANC service uptake, maternal knowledge, and mothers' decision-making power.[24-29]

Current efforts to reduce maternal mortality in low- and middle-income countries such as Ethiopia are primarily focused on training and deploying skilled birth attendants as well as improving emergency obstetric care services.[30,31] A number of actions have been taken by the Ethiopian government to reduce maternal mortality through increasing facility-based delivery service utilization under the care of skilled birth attendants.[30] Thus, promoting facility-based delivery services with a referral capacity is the most effective approach to reduce maternal deaths in low-income countries, including Ethiopia.[8,21,29,31] Therefore, this study was designed to assess utilization of health facility–based delivery service and associated factors among women who gave birth in the past 2 years in Gindhir District, Southeast Ethiopia.

Methods and Materials

Study Setting and Period

A community-based cross-sectional study was carried out from March 1 to 30, 2020, among 736 randomly selected mothers who gave birth in the past 2 years in Gindhir District. The estimated total population of the District was 164,703, of which 36,449 of the population are in a childbearing age of 15–49 years. In this District, there are five urban and 32 rural kebeles, which are the lowermost administration in Ethiopia. Within the District, there are one Hospital, 8 health centers, and 32 health posts.[32]

Study Populations and Eligibility Criteria

The source and study populations were all women who had given birth in the past 2 years in the Gindhir District. All mothers in selected kebeles from Gindhir District who gave birth in the past 2 years were included in the study, and mothers with any known illness or pain that may have rendered them unable to hear or listen, talk, or respond to questions were excluded from the study.

Sample Size Determination and Sampling Procedure

The sample size was calculated using a single population proportion formula: P (proportion of facility-based delivery service utilization: 34%),[33] margin of error (5%), a design effect of 2, and a 10% non-response rate. Accordingly, the sample size was found to be 759. For this study, a stratified multi-stage sampling technique was used to include the respondents. Primarily, the district was stratified into urban and rural kebeles. The sampling frame was prepared with the list of mothers who gave birth at the nearby healthcare facilities (health post, health center, and hospital) of selected kebele in the past 2 years. From each stratum (urban and rural), 3 urban and ten rural kebeles and study participants (mothers) were selected using simple random sampling (lottery method). To access mothers who have given birth in the past 2 years, health extension workers and women's development army leaders of each kebele were used.

Data Collection Tool and Procedure

The data collection tool was adapted from previous studies conducted in different parts of Ethiopia that could satisfy the objectives and variables under the study.[34-36.] The data collection tool was primarily prepared in English and translated into the local language, "Afan Oromo," then translated back into the English language to check its consistency. The data collectors and supervisors were trained for 1 day on data collection tools and methods. The data collection tool was pretested among 5% of the total sample (38 mothers) in 2 kebeles not included in the study. The data collectors were ten health extension workers who were not working in the healthcare facility of a selected kebele and were supervised by 3 public health professionals. A structured data collection tool was used to collect data through a face-to-face interview.

Data Management and Analysis

The completeness of collected data was checked manually, coded, and entered using EPI Data version 3.1 and exported

to IBM statistical package for social science version 23 for data processing and analysis. The outcome variable of this study was assessed using the item, "is the mother giving birth to the last child in the health facility by trained birth attendants in the past two years?" (categorized as "Yes" if the mother gives birth at the health facility and "No" if the mother gives birth at home)." On the other hand, knowledge of maternal health services was assessed using 11 items (coded as Yes = 1 and No/I don't know = 0), and mothers who scored >50% were considered to have good knowledge and those who scored below ≤50% as having poor knowledge. The frequency tables and charts were used in descriptive analysis. All required assumptions were checked to apply multivariable logistic regression to identify factors associated with the outcome variable. In this regard, Hosmer and Lemeshow's model fitness test was used, and multicollinearity of independent variables was checked using variance inflation factor (VIF). The variables with a *P*-value .20 in the bivariable analysis can be candidates for the multivariable binary logistic regression. If the *P*-value was <.05 with a 95% confidence level, all variables in the multivariable logistic regression analysis were considered statistically significant.

Results

Socio-Demographic Characteristics of Respondents

Of the 759 mothers targeted for the study, 736 mothers who had given birth within the last 2 years were interviewed, of which 77.2% of them were from rural areas. The mean age of the mothers who had participated in this study was 31.48 (SD ± 3.36). The majority of the respondents, 419 (56.9%), were in the age category of 25–32 years old. Regarding educational status, nearly one-third of the respondents had attended high school. (Table 1)

Knowledge on Maternal Health Services

About 320 (43.5%, 95% CI: 39.9, 47.2%) of mothers have good knowledge of maternal health services, including 42.8% and 45.7% of mothers from rural and urban areas, respectively. On the other hand, around 460 (56.5, 95% CI: 52.8, 60.1) mothers have poor knowledge of maternal health services. (Table 2)

Utilization of Health Facility–Based Delivery Service

In this study, about 609 (82.7%, 95% CI: 80.1, 85.5%) mothers who gave birth within the last 2 years reported using healthcare facilities, whereas 127 (17.3%) of mothers delivered at home. (Figure 1)

Factors Associated With Utilization of Health Facility–Based Delivery Service

In the bivariable logistic regression analysis, the number of under-five children, place of residence, occupation of mothers, monthly income, time spent in minute to reach the health facility, number of ANC visits, number of TT vaccine doses provided, and knowledge of maternal health services were candidate variables identified at a *P*-value less than .2. Accordingly, in the multivariable logistic regression, place of residence, time spent in minute to reach the health facility, number of ANC visits, knowledge of maternal health services, and number of TT vaccine doses were significantly associated with the utilization of the health facility delivery service.

Mothers who were rural residents were 1.94 times more likely to give birth in healthcare facilities than mothers who lived in urban areas (1.94, 95% CI: 1.22, 3.40). Mothers who had 4 or more ANC visits were 4.02 times more likely than mothers who had fewer than 4 ANC visits to give birth in a healthcare facility (AOR = 4.02, 95% CI: 1.59, 10.20). Mothers who received 3–5 doses of the TT vaccine were 2.12 times more likely to give birth in a health facility than mothers who received 1–2 doses of the TT vaccine (AOR = 2.12, 95% CI: 1.62, 6.41). Mothers with good knowledge of maternal health services were 1.87 times more likely to give birth in a health facility than mothers with poor knowledge (AOR = 1.87, 95% CI: 1.27, 6.14). The odds of using a health facility to give birth, on the other hand, were 1.72 times higher among mothers who spent less than ≤30 minutes getting to the health facility than among those who spent more than 30 minutes (AOR = 1.72, 95% CI: 1.10,2.72). (Table 3)

Discussion

This study was intended to assess utilization of health facility–based delivery service and associated factors among mothers who gave birth in the past 2 years in Gindhir District. Accordingly, the level of facility-based delivery service utilization in the study area was 82.7%. However, the remaining 17.3% of mothers gave birth at home. This study result was nearly equivalent to a study carried out in Bahir Dar, 78.8%;[37] Bench Maji, 78.3%[27] and greater than studies found in Woldia, 48.3%;[38] Dodota, 62.4%;[18] Assosa, 72.5%;[39] and Mirab Abaya District, 54%,[40] Ethiopia. This discrepancy might be due to disparity in the study area, duration of the study, and healthcare coverage. The difference in the health professional's ethics and the quality of the infrastructure might affect mothers' facility-based delivery service utilization. Besides, the intention might be due to further responsiveness that has been set for an intensification of the facility-based delivery services' utilization in recent years. In this study, the mothers who had 4 and above ANC visits were more likely to use a healthcare facility to give birth than their counterparts. This study's findings were comparable with other studies done in different parts of Ethiopia; in Sekela District[25,] and other parts of Ethiopia[23,34,41,42] and from African countries in Ghana[43] and Tanzania.[44] This can be moderately enlightened in the point that ANC visit is one of the interaction topics with healthcare providers, and the further the ANC visits, the improved possibility of obtaining

Table 1. Socio-Demographic Characteristics of respondents in Gindhir District, Southeast Ethiopia, 2020 (n=736).

Variable	Frequency (%)	Birth Place	
		Health Facility (%)	Home (%)
Place of Residence			
Urban	164 (22.3)	124 (75.6)	40 (24.4)
Rural	572 (77.7)	485 (84.8)	87 (15.2)
Age			
≤24 years	23 (3.1)	16 (69.9)	7 (30.4)
25–32 years	419 (56.9)	344 (82.1)	75 (17.9)
33–40 years	294 (39.9)	249 (84.7)	45 (15.3)
Living condition of couples			
In union	702 (95.4)	581 (82.8)	121 (17.2)
Not in union	34 (4.6)	28 (82.4)	6 (17.6)
Number of under-five children			
One	176 (23.9)	136 (77.3)	40 (22.7)
Two	380 (51.6)	328 (86.3)	52 (13.7)
Three and above	180 (24.5)	145 (80.6)	35 (19.4)
Religion			
Orthodox	197 (26.8)	163 (82.7)	34 (17.3)
Muslim	416 (56.5)	345 (82.9)	71 (17.1)
Protestant	97 (13.2)	82 (84.5)	15 (15.5)
Catholic	26 (3.5)	19 (76)	6 (24)
Educational status of the mother			
No formal education	82 (11.1)	65 (79.3)	17 (20.7)
Read and write	102 (13.9)	84 (82.4)	18 (17.6)
Grade 1–8	124 (16.8)	104 (83.9)	20 (16.1)
Grade 9–12	263 (35.7)	216 (82.1)	47 (17.9)
college and above	165 (22.4)	140 (84.8)	25 (15.2)
Educational status of the father			
No formal education	93 (12.6)	78 (83.9)	15 (16.1)
Read and write	76 (10.3)	63 (82.9)	13 (17.1)
Grade 1–8	115 (15.6)	93 (80.9)	22 (19.1)
Grade 9–12	237 (32.2)	198 (83.5)	39 (16.5)
College and above	209 (28.4)	172 (82.3)	37 (17.7)
Ethnicity			
Oromo	556 (75.5)	458 (82.4)	98 (17.6)
Ahmara	125 (17.0)	104 (83.2)	21 (16.8)
Somale	43 (5.8)	37 (86.0)	6 (14.0)
Tigre	12 (1.6)	10 (83.3)	2 (16.7)
Occupation			
Housewife	217 (29.5)	174 (80.2)	43 (19.8)
Farmer	174 (23.6)	150 (86.2)	24 (13.8)
Employee	170 (23.1)	144 (84.7)	26 (15.3)
Merchant	175 (23.8)	141 (84.7)	34 (19.4)
Monthly income			
≤1000	128 (17.4)	105 (82.0)	23 (18.0)
1001–2000	388 (52.7)	315 (81.2)	73 (18.8)
2001–3000	162 (22.0)	139 (85.8)	23 (14.2)
≥3001	58 (7.9)	50 (86.2)	8 (13.8)

satisfactory facts about danger signs and complications linked to pregnancy and the significance of giving birth at the health facilities. This suggests that making frequent ANC visits has dominant significance to increase facility-based delivery services utilization. Lately, the Ethiopia Ministry of health providing ANC and facility-based delivery services at every health facility is obtainable without payment.[47] Mothers in rural residents were more likely to give birth in healthcare

Table 2. Knowledge on Maternal Health Services Among Women Give Birth in the Past Two Years in Gindhir District, Southeast Ethiopia, 2020 (n = 736).

Items	Response Options	Frequency	%
Does using health facility for delivery can minimize maternal death	Yes	519	70.5
	No	185	25.1
	I do not know	32	4.3
Does visiting health facility enable you to understand danger signs during pregnancy	Yes	523	71.1
	No	157	21.3
	I do not know	56	7.6
At least 4 antenatal care is crucial during pregnancy	Yes	531	72.1
	No	158	21.5
	I do not know	47	6.4
Taking TT vaccine 2 doses and above can protect your child from tetanus	Yes	204	27.7
	No	471	64.0
	I do not know	61	8.3
Excessive bleeding during pregnancy can be managed at home	Yes	376	51.1
	No	322	43.8
	I do not know	38	5.2
Feeding variety of food during pregnancy is crucial	Yes	400	54.3
	No	298	40.5
	I do not know	38	5.2
Deciding where to give birth is one element of birth preparedness	Yes	26	3.5
	No	214	29.1
	I do not know	496	67.4
Health professionals have better skill to attend birth than traditional birth attendants	Yes	606	82.3
	No	114	15.5
	I do not know	16	2.2
Giving birth at health facility enables you to vaccinate your child at birth	Yes	48	6.5
	No	7	1.0
	I do not know	681	92.5
Giving birth at health facility enables you to obtain postnatal care	Yes	7	1.0
	No	41	5.6
	I do not know	688	93.5
The ultimate risk of delivery at home may be death	Yes	143	19.4
	No	585	79.5
	I do not know	8	1.1

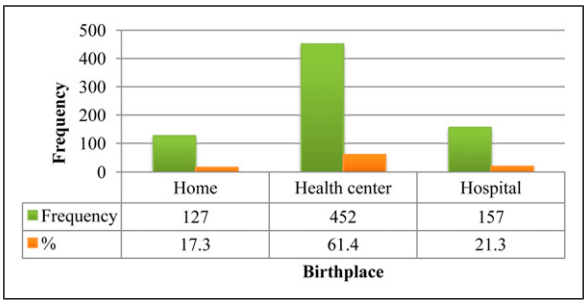

Figure 1. shows the number of mothers give birth at health facility and home in Gindhir District, Southeast Ethiopia, 2020.

facilities than mothers who live in urban. In our findings, majority of the mothers from rural residents have higher number of ANC visits than urban residents (81.4% vs 18.6%). This study indicates a large percentage of mothers who complete 3 and above ANC visits were rural residents. This discrepancy might be due to the Ethiopian government and non-government organizations giving great consideration to the rural areas regarding maternal health services like delivery service utilization. Besides, mothers' to-mothers' sustenance groups and mothers' development armies with the intention and network of public involvement are in place for maternal and child health issues, combined with health extension workers, who are active in rural areas rather than urban areas.[41,45] The rural mothers attend conferences monthly, partake in their life skills, and counsel newer pregnant mothers, which might aid them to have further ANC visits.[42,46] The mothers who had taken higher doses of the TT vaccine were more likely to use healthcare facilities to give birth than mothers who had taken lower doses of the TT vaccine. The possible explanation for this finding might be that mothers obtaining maternal health services like TT vaccine immunization services may have been informed about facility-based delivery services. On the other hand, the odds of using a health facility to give birth were higher among

Table 3. Factors Associated With Facility-Based Delivery Service Utilization in Gindhir District, Southeast Ethiopia, 2020.

	Give Birth in Health Facility (n = 736)				
Variables	Yes, n (%)	No, n (%)	COR 95% CI	*P*-value	AOR 95% CI
Place of Residence					
Urban	124 (75.6)	40 (24.4)	1		1
Rural	485 (84.8)	87 (15.2)	1.80 (1.18, 2.74)*	.03	1.94 (1.22, 3.40)**
Age					
≤24 years	16 (69.9)	7 (30.4)	.46 (.18, 1.15)	.125	
25–32 years	344 (82.1)	75 (17.9)	.84 (.56, 1.25)	.189	
33–40 years	249 (84.7)	45 (15.3)	1		
Number of under-five children					
One	136 (77.3)	40 (22.7)	.88 (.53, 1.46)	.356	
Two	328 (86.3)	52 (13.7)	1.62 (1.01, 2.58)*	.002	
Three and above	145 (80.6)	35 (19.4)	1		
Occupation					
Housewife	174 (80.2)	43 (19.8)	.98 (.59, 1.61)	.367	
Farmers	150 (86.2)	24 (13.8)	1.51 (.85, 2.67)	.134	
Governmental employee	144 (84.7)	26 (15.3)	1.34 (.76, 2.34)	.157	
Merchant	141 (84.7)	34 (19.4)	1		
Monthly income					
≤1000 Ethiopian Birr (ETB)	105 (82.0)	23 (18.0)	.74 (.31, 1.76)	.879	
1001–2000 ETB	315 (81.2)	73 (18.8)	.70 (.32, 1.53)	.129	
2001–3000 ETB	139 (85.8)	23 (14.2)	.99 (.42, 2.37)	.174	
≥3001 ETB	50 (86.2)	8 (13.8)	1		
Time in minute to reach health facility					
≤30 minute	343 (84.5)	63 (15.5)	1.31 (.89, 1.92)	.005	1.72 (1.10,2.72)
>30 minute	266 (80.6)	64 (19.4)	1		1
Number of TT vaccine doses					
1st and 2nd doses	249 (80.3)	61 (19.7)	1		1
3rd to 5th doses	331 (87.8)	46 (12.2)	1.81 (1.19, 2.74)*	.03	2.12 (1.62, 6.41)**
Number of ANC visit					
<4 visit	507 (82.4)	108 (17.6)	1		1
≥4 visit	97 (95.1)	5 (4.9)	3.90 (1.55, 9.82)	.001	4.02 (1.59, 10.20)**
Knowledge on maternal health services					
Poor	335 (80.5)	81 (19.5)	1		1
Good	274 (85.6)	46 (14.4)	1.65 (1.21, 4.52)*	.012	1.87 (1.27, 6.14)**

mothers who had spent ≤30 minutes reaching a nearby health facility than those who had spent >30 minutes. This finding is consistent with previous similar studies conducted in Ethiopia.[47-49] It may be linked to the fact that an easily reachable health facility can increase the odds of mothers using ANC, labor, and delivery services. This finding recommends that making health facilities nearer to and easily reachable by the community is very critical to enabling more mothers to use health facility–based delivery services. The other important factor identified in this study was knowledge of maternal health services. The odds of utilizing health facility delivery services were higher among mothers who had good knowledge of maternal health services than among mothers who had poor knowledge. This finding is in line with previous similar studies done in Ethiopia.[25,41,47-50.] This may be because being aware of maternal health services helps mothers to expect the future distressing consequences, which may, in turn, be an assertive factor for mothers to give birth at health facilities. The other explanation might be that mothers' having good knowledge may not be affected by traditional malpractices and/or views. Furthermore, knowledgeable mothers might be highly influential on their husbands and/or other relatives to take them to healthcare facilities while they were in labor.

Limitation of the Study

This study shares drawback of cross-sectional study design, and its scope covers only specific administrative area (Gindhir District) in the Bale zone.

Conclusion

In this study, utilization of health facility delivery service among mothers in the study area was high. Receiving higher ANC visits and doses of TT vaccine, good knowledge on maternal health services and being rural resident were significantly associated with utilization of health facility delivery service. Thus, unlimited helpfulness must be given to mothers who had lower ANC visits, taken lower doses of TT vaccine, and poor knowledge regarding maternal health services.

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Authors Contributions

All authors were involved in the designing of method part, supervision, investigation, formal analysis, and drafting of the manuscript. And finally reviewed and approved the final version of the manuscript.

Declaration of Conflicting Interests

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

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Ethical Approval

Ethical clearance was obtained from the research ethics review board of Madda Walabu University, Goba Referral Hospital. The Bale zone and District administrative offices were informed about the purpose of the study and permission was obtained. Informed written consent was also attained from study participants after informing the objectives and benefits of the study. All information gained from the study participants was kept confidential, and at the end of the interview, mothers who give birth at home are counseled to give birth at healthcare facilities for the subsequent scheduled pregnancy.

Data Availability

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

ORCID iD

Demisu Zenbaba https://orcid.org/0000-0002-7733-7627

Supplemental Material

Supplemental material for this article is available online.

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