Factors associated with institutional delivery in Dangila district, North West Ethiopia: a cross-sectional study.

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Abstract

Introduction: Childbirth in a health institution has been shown to be associated with lower rates of maternal and neonatal mortality. However, about 85% of mothers in Ethiopia deliver at home.

Objective: To assess factors associated with institutional delivery service utilization among women who gave birth within one year prior to the study in Dangila district.

Methods: A cross-sectional study was conducted from February 01-28, 2015. A total of 763 mothers were interviewed using structured questionnaire. SPSS version 20 was used for analysis. Crude and adjusted Odds ratios were computed for selected variables. A P-value less than 0.05 was considered statistical significant.

Results: Only 18.3% of mothers gave birth at health facilities. Knowledge on danger signs [AOR=2.0, 95% CI: (1.1, 3.4)], plan to give birth at health institution [AOR=5.4, 95% CI: (3.0, 9.6)], having ANC follow up during pregnancy [AOR=12.9, 95% CI: (5.0, 33.3)] and time taken to get to a nearby health institution [AOR=5.1, 95% CI: (2.9, 9.1)] were associated with institutional delivery service utilization.

Conclusion: Institutional delivery was very low. Knowledge about danger signs, having ANC visits, and time were factors associated with institutional delivery service utilization. Thus,the findings recommend repeated re-enforcement of institutional delivery service utilization through professionals. And also, the findings recommend promotion of institutional delivery service utilization through mass media.

Keywords: unskilled personnel, skilled professional, delivery.

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Introduction

Although there are national and global efforts to reduce maternal morbidity and mortality nevertheless a significant number of mothers die because of pregnancy and child birth related causes. Worldwide, an estimated 287,000 maternal deaths occur every year; almost all (99%) of them are from developing countries[1].

In developing countries more than half of the women deliver at home, and this is common among the poor and rural dwellers[2]. Home deliveries are un-hygienic, attended by unskilled personnel and when intervention is required, it is usually late. In sub Saharan African, 74.7–89.9% of women in the lowest two wealth quartiles give birth at home[3].

In Ethiopia, the maternal mortality ratio (MMR) is estimated to be 676 deaths per 100,000 live births. Women from rural areas and the less educated ones are less likely to give birth at health institution[4]. Lack of skilled attendance is considered as one of the major factors in maternal and neonatal mortality. During child birth, there are about 1.02 million intrapartum stillbirths, 904,000 intrapartum-related neonatal deaths and around 42% maternal deaths each year[5]. This can be reduced if all women give birth in a setting where skilled attendants can provide emergency obstetric care (EmOC) and life-saving neonatal interventions in the event of complications. Different studies identified inconsistent factors that affect institutional delivery service utilization such as individual, demographic, socioeconomic, and other characteristics of the mother, her family and the service environment[4,6,7].

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The type of assistance a woman receives during childbirth has great impact on health of the mother and her baby. An important component of efforts to reduce health risks to mothers and kids is increasing the proportion of babies that are delivered in health facilities[8]. Predictors of safe delivery service use and the reasons for under utilization of the existing health service are not adequately investigated. Therefore, this study was designed to assess the predictors of institutional delivery service utilization in Dangila district, North West Ethiopia.

Methods

Setting

The study was conducted in Dangila district, North West Ethiopia. The district has a total population of 174,963, of whom 53.3% are women. The estimated annual deliveries are about 5,073; of which only 12% of mothers delivered at health institution. In the district, there are 6 health centers and 34 health posts. In these health facilities, the service is delivered by health officers, midwives, nurses and health extension workers[9]. To increase institutional delivery, the Ethiopian government prepares transportation. This is done by assigning at least one ambulance per health institution. All maternal services are given free of charge to all women. Health extension workers have a list of pregnant and lactating mothers, and their address in their Kebele (smallest administrating unit).

Study design and study population

A community based cross-sectional study was conducted from February 01-28, 2015. Women who gave birth within the last one year prior to the study were included in the study.

Sample size, sampling procedure and data collection

A total sample size of 780 was calculated using single population proportion. We used a proportion of 18% institutional delivery[10], 95% confidence level and 4% marginal error. The sample size was multiplied by a design effect of 2 and added 10% non-response rate.

Multi stage sampling was used. Five Kebeles were randomly selected. Women who gave birth within a year prior to this study were included using systematic random sampling. Women were interviewed at their home using pre tested and structured questionnaires. Three trained female diploma midwives collected the data. Two public health professionals were assigned as supervisor. Both data collectors and supervisors were trained on the purpose of the study, data collection technique and tool before and after pretest.

Data processing and analysis

Data was entered and analyzed using SPSS version 20. A frequency of each variable was calculated to check for outliers and missed values. Proportion of institutional delivery was determined. Logistic regression was done to analyze the data. Crude and adjusted Odds ratios were computed for each explanatory variable to determine the strength of association and control confounders. P value < 0.2 was taken as a cut-off point to select variables for the multiple logistic regression models. We used backward elimination to avoid multi collinearity. A p-value of less than 0.05 was considered statistically significant.

Ethical consideration

The study was approved by the Ethical Review Committee of Amhara Regional Health Bureau. Letter of permission was taken from respective administration. Written consent (finger print for those who cannot read and write) was taken from every woman. Privacy and confidentiality was maintained throughout the study period by excluding personal identifiers from the data collection form.

Results

Socio-demographic Characteristics of Participants

A total of 763 mothers were interviewed which made the response rate 97.8 percent. The mean (+SD) age of respondents was 29.5 ±6.3 years. All the respondents were orthdox Christian followers by religion, from Amhara ethnic group, married and rural residents. Majority of the respondents, 586 (76.8%) and their husbands, 697 (91.3%) were farmers. The average family size was five . Four hundred seventy six (62.4%) mothers could not read and write. Whereas, 363 (47.4%) of their husbands could not read and write (Table1).

Table 1: Socio-demographic characteristics of respondents, Dangila district; Ethiopia, February 2015

Variable	Frequency (n=763)	Percentage
Age of the mother		
15-19years	18	2.3
20-24years	106	13.9
25-29years	263	34.5
30-34years	218	28.6
±35years	158	20.7
Educational status of the mother		
Unable to read and write	476	62.4
Can read and write	147	19.3
Primary education	97	12.7
Secondary education	43	5.6
Educational status of the husband		
Unable to read and write	272	35.7
Can read and write	362	47.4
Primary education	94	12.3
Secondary education	35	4.6
Occupation of mother		
House wife	177	23.2
Farmer	586	76.8
Occupation of the husband		
Daily laborer	25	3.3
Farmer	697	91.3
Merchant and farmer	41	5.4
Family size		
≤5	470	61.6
>5	293	38.4

Obstetric and maternal characteristics

Three hundred twenty seven (42.8%) mothers were gravida one to three and 121 (15.9%) had more than six gravidity. About half of the respondents (51.3%) were between para one and three while 115(15.1%) had more than six parities.

In this study, 472 (61.9%) mothers planned place of delivery for their last pregnancy; of which 342(72.5%) planned to give birth at a health institution. Three hundred thirty six mothers (71.2%) decided by themselves on their place of delivery (Table 2).

Table 2: Obstetric and maternal characteristics of women, Dangila district; Ethiopia, February 2015

Variable	Frequency (n=763)	Percentage
Number of pregnancy (gravidity)		
1-3	327	42.8
4-6	315	41.3
>6	121	15.9
Number of delivery(parity)		
1-3	392	51.4
4-6	256	33.5
>6	115	15.1
Number of children		
1-3	421	55.2
4-6	242	31.7
>6	100	13.1
Abortion(termination of pregnancy before 28 weeks of gestation) in life time	89	11.7
Yes	674	88.3
No		
Still birth in life time		
Yes	140	18.3
No	623	81.7
ANC visit		
Yes	511	66.9
No	252	33.1
Gestational week at first ANC visit(n=511)		
First trimester	165	32.3
Second trimester	291	56.9
Third trimester	55	10.8
Number of ANC visit(n=511)		
1-3	235	46.0
4	242	47.4
>4	34	6.6
Plan place of delivery		
Yes	472	61.9
No	291	38.1
Where did you plan to give birth? (n=472)		
Health institution	342	72.5
Home	130	27.5
Decision maker about place of delivery (n=472)		
The mother herself	336	71.2
Her husband	97	20.5
Her relatives	39	8.3
ANC provider (n=511)		
Health extension worker	118	23.1
Nurse/midwife	393	76.9
Discussion about place of delivery with professionals (n=511)		
Yes	400	78.3
No	111	21.7
Assistant during last Delivery at home (n = 623)		
Family member	156	25.0
Her friend	25	4.0
TBA (Untrained)	367	58.9
TBA(trained)	76	12.1

ANC – Antenatal Care; TBA – Traditional Birth Attendant

Institutional delivery service utilization

Of the total respondents, only 140 (18.3%) gave birth at health facilities, and most of them (81.7%) delivered at home. Only 76 (12.1%) home deliveries were assisted by trained traditional birth attendant. Two third (66.9%) of mothers attended Antenatal Care (ANC), of whom 276(54%) had more than three ANC visit (Table 2).

Factors associated with institutional delivery service utilization

In this study, the bivariable logistic regression analysis showed that knowledge about danger signs, planned to give birth at a health institution, had ANC follow up during pregnancy, number of live birth, age, educational status, occupational status, husband occupation, husband education, time taken to arrive at health institution were statistically associated with institutional delivery service utilization.

In the multivariable logistic regression analysis, having sufficient knowledge about danger signs [AOR=2.0, 95% CI: (1.1, 3.4)], Planned to give birth at health institution[AOR=5.4, 95% CI: (3.0, 9.6)], had ANC follow up during pregnancy [AOR=12.9, 95% CI: (5.0, 33.3)] and taking less than one hour to reach nearest health institution [AOR=5.1, 95% CI: (2.9, 9.1)] were positively associated with institution delivery service utilizatiin (Table 3).

Table 3-factors associated with institutional delivery among women, Dangila district; Ethiopia, February 2015

Factor	Institutional delivery		COR	AOR
	Yes	No	(95%c/I)	(95%c/I)
knowledge about danger signs during delivery				
Sufficient knowledge	53(7.0)	129(16.9)	2.3(1.5,3.4)	2.0 (1.1,3.4)
Insufficient knowledge	87(11.4)	494(64.7)	1.00	1.00
Plan to give birth at health institution				
Yes				
No	108(14.1)	234(30.7)	5.6(3.6,8.5)	5.4.1(3.0,9.6)
	32(4.2)	389(51.0	1.00	1.00
ANC follow up				
Yes	134(17.6)	377(49.4)	14.5(6.3,33.5)	12.9(5.0,33.3)
No	6(0.8)	246(32.2)	1.00	1.00
Number of delivery(parity)				
1	8(1.0)	49(6.4)	1.00	
2-4	109(14.3)	418(54.9)	1.5(0.7,3.4)	
>4	23(3.0)	156(20.4)	0.9(0.3,2.1)	
Having still birth				
Yes	22(2.8)	118(15.5)	1.2(0.7,2.0)	
No	118(15.5)	505(66.2)	1.00	
Educational status				
Have no formal education	83(10.9)	540(70.8)	1.00	
Primary education	28(3.7)	69(9.0)	2.6(1.6,4.3)	
Secondary education	29(3.8)	14(1.8)	13.4(6.8,26.5)	
Occupational status				
Farmer	79(10.4)	507(66.4)	3.3(2.2,4.9)	3.2(1.8,5.4)
Housewife	61(8.0)	116(15.2)	1.00	1.00
Husband education				
Have no formal education	95(12.5)	539(70.6)	1.00	1.00
Primary education	37(4.9)	57(7.5)	1.8(1.1,2.9)	5.2(2.5,10.4)
Secondary education	8(1.0)	27(3.5)	4.4(2.6,7.6)	4.6(1.6,12.6)
Time taken to arrive at health institution				
<1hour				
≥1hour	113(14.8)	337(44.2)	3.5(2.2,5.5)	5.1(2.9,9.1)
	27(3.5)	286(37.5)	1.00	1.00

ANC – Antenatal Care; COR- Crude odds ration; AOR – adjusted odds ratio, C/I- Confidence interval

Discussion

This study aimed to assess factors associated with institutional delivery service utilization among mothers who gave birth in the last 12 months. Considering the last delivery a mother had, in this study, 18.3% of mothers gave birth at a health institution. This finding was consistent with study findings in Ethiopia[10-13] and Bangladesh[14] .

On the other hand, this finding was lower than study findings elsewhere in Ethiopia[15,16] and other developing countries such as Zambia, Uganda, Tanzania and Nepal[17-20]. The difference might be due to the study area; the current study was done in a rural area, while the former studies included both rural and urban mothers. Beside this, discrepancies might be attributed to socio - economic difference of participants. Moreover, this might be due to the difference in access especially in terms of physical distance which is important to service utilization. This study was done among rural mothers; health insitutions are not in close proximity, even if the government arranges free transportation, the vehicle may not be available at the time they need it.

Knowledge about danger signs during delivery had statistically significant association with institutional delivery service utilization. Mothers who had sufficient knowledge about danger signs were 3 times more likely to give birth at a health institution compared with mothers who had insufficient knowledge. This finding was in agreement with study findings from Ethiopia and Kenya[11,21,22]. Knowledge is an important factor that affects attitude, intention and behavior. Women who have sufficient knowledge about delivery danger signs might have perceived service benefits of a health institution, like complication management by skilled health care workers in time of labor.

Mothers whose husbands had formal education were 5 times more likely to deliver at health institution than those mothers whose husbands had no formal education. This finding was consistent with study findings in South East Ethiopia, Nepal and Bangladesh[16,23-25]. Educated husbands might have better understanding about complications of home delivery and benefit of institutional delivery and assist their partner in deciding on place of delivery[26]. Other studies reported that partner support in decision making increases institutional delivery service utilization of mothers[27].

Distance from the nearest health institution was significantly associated with institutional delivery service utilization. Women who travelled less than one hour walking distance to a nearby health facility were 3 times more likely to deliver at a health institution than women who spent more than 1 hour to access a health facility. Similarly, studies in low income countries such as Bahi District, Central Tanzania, Rural Zambia, Nepal, Rural Malawi and Rural India[25,28-33] showed that physical distance is one of the major constraints that prevented community members from accessing and using trained attendants and institutional deliveries.

ANC service utilization was significantly associated with institutional delivery. Women who had ANC follow up were 13 times more likely to deliver at health institutions than their counterpart who had no ANC visits. This finding was consistent with study findings in Ethiopia, Nepal and Bangladesh[11,16,23,25]. Antenatal care visits offer a window of opportunity to get counseling services on the benefit of institutional delivery over home delivery. One component of focus ANC is counseling of the women about pregnancy, delivery and postnatal danger signs and importance of institutional delivery[26].

Plan to give birth at health institution was another factor significantly associated with institutional delivery service utilization. Women who planned to give birth at a health institution were 5 times more likely to deliver at a health institution than their counter part. This study finding was in line with another study in Ethiopia[34]. Better birth preparedness being considered as an intervention fostering preventive behavior and influencing other socio-ecomnomic and cultural barriers, thus encouraging the use of health facilities.

Significant association was observed between institutional delivery service utilization and occupational status of the mother. In this study, farmers were 3.2 times more likely to give birth at a health facility than housewives. This finding was not in agreement with study finding in Metekel Zone[35]. Currently, the government is working to increase institutional delivery service utilization by promoting maternal service utilization through professionals and mass media, and arranging transportation and free ANC delivery and postnatal service. Therefore, the discrepancy might be due to time gaps between studies. Farmers in the current study have the opportunity to get existing updated information than housewives, due to their outdoor exposure.

This study was limited to rural setting hence; results will not be generalized to the entire district. Since the study

is cross-sectional, we could not establish a casual relationship of the explanatory and outcome variables.

Conclusion

Institutional delivery service utilization was very low. Knowledge about danger signs, husband education, p0lan to give birth at a health institution, had ANC follow up during pregnancy, and time taken to get nearby health institution, were factors associated with institutional delivery service utilization. Thus, the findings recommended repeated re-enforcement of institutional delivery service utilization through professionals. And also the findings recommend promotion of institutional delivery service utilization through mass media.

Competing interests

The authors declare that they have no competing interests

Authors' contributions

YMD and GBG conceived and designed the study, conducted statistical analysis and result interpretation, prepared manuscript. AAN assisted with data analysis and interpretation. All authors read and approved the manuscript.

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