



## Level of Institutional Delivery Service Utilization and Associated Factors among Women who Gave Birth in the Last One Year in Gonji Kollela District, Amhara Region, Ethiopia: Cross-Sectional Study

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### Abstract

**Background:** Institutional delivery is giving birth in health institution under the Overall supervision of trained health professional. Proper care during pregnancy and delivery is important for the health of both the mother and the baby.

**Methods:** Collected questionnaires were checked for completeness coded and entered into SPSS version 16.0 software package. The strength of association of predictor variables with institutional delivery service utilization was assessed using odds ratio with 95% confidence interval.

**Results:** From a total of 573 respondents, only 97 (16.9%) of them gave birth at health facilities and majority of them (83.1%) delivered at home. Regarding preference of the mothers about delivery place during their last pregnancy, 310 (54.1%) preferred to deliver at home, 148 (25.8%) preferred to give birth in health facilities with the assistance of skilled professionals and 20.1% of the mothers preferred to deliver in their mother's home. Most of the respondents 315 (55%) of mothers prefer to be attended by their mothers and relatives and 190 (34%) preferred traditional (untrained) birth attendants.

**Conclusion:** Low utilization of institutional delivery service and low antenatal care visit in their last pregnancy. Mothers who gave birth at home without a skilled attendant were account the large proportion. Educational status, monthly incomes, ANC visit, distance of health institute, gravidity and abortion experience were significantly associated with the utilization of institutional delivery service.

**Keywords:** Institution; Delivery; Home; Utilization; Birth; Gravidity

### Introduction

A woman requires special attention during 15-44 years of her life since she gets matured sexually and socially, gets married, conceives and gives birth to children during this phase [1]. If proper care is not taken during this childbearing process, then it affects the overall health especially the reproductive health of the woman as well as the health and wellbeing of the new-born child [2]. Access to proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that may lead to death or serious illness for the mother and/or baby [3,4].

Ethiopia agreed to decrease maternal mortality by 75% from 1990 to 2015. But still the expected level is not achieved. Assessment of Institutional delivery in Gonji Kollela District is not previously done. Therefore the purpose of this study is assessing the institutional delivery and the hindering factors to take appropriate intervention in order to improve the institutional delivery service in the District.

### Methods

#### Study area

The study was conducted in Gonji Kollela District which is located 70 km to the south east of Bihar Dar, the capital city of Amhara region .The District has 26 kebeles (the smallest administrative unite of district). The total population is estimated to be 103,554 Women with reproductive age accounts for 27,742. The District has 6 public (Government) health center and 10 private clinics.

#### Measurements

Community based cross sectional study was conducted. Sample size was determined by the formula for single population proportion.

$$n = \frac{(Za/2)^2 \times P(1-P)}{w^2}$$

CI=95% and p=10%, w=3.5%

$n = (1.96 \times 1.96) \times 0.1 \times 0.9 / (0.035)^2 = 283.$

Since it is multistage  $283 \times 2 = 566$

For non-respondents were account for 10% then,  $n = 622.$

#### Sampling procedure

Multistage sampling technique was used during sampling. In sampling process first six kebeles were selected by lottery method. From the selected kebeles eligible mothers in the selected kebeles were registered and there were 686 mothers who deliver in the last one year during data registration. Six hundred twenty two participant mothers were selected by proportional allocation to each Kebele.

#### Data collection procedure

The data were collected using face to face interview by the trained interviewers using the prepared structured questionnaire. The questionnaires are designed in such a way that the necessary variables (questions) would be answered. Therefore the data about socio demographic characteristics, obstetrics characteristics were collected.

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## Quality assurance

In order to get the quality data during data collection, the data collectors were trained first and then the supervisors also were trained. There was daily follow up and check-up of the collected data.

## Data analysis

Collected questionnaires were checked for completeness, coded and entered into SPSS version 16.0 software package. Binary logistic regressions and multiple logistic were run to assess the associations of various factors with institutional delivery service utilization. The strength of association of predictor variables with institutional delivery service utilization was assessed using odds ratio with 95% confidence interval.

## Results

A total of 573 mothers were interviewed; from these the majority 456 (79.6%) were married while 78 (13.6%) and 39(6.8%) of them were separated and divorced, respectively. One hundred forty (24.4%) of the mothers were in the age range of 20–24 years and 136 (23.7%) were in the age range of 25-29. 44 (7.7%) of the mothers attended primary and 32 (5.6%) attended secondary education while 424 (74%) of the mothers were unable to read and write.

From a total of 573 respondents 456 (60.6%) of mothers were housewives. Thirty one (5.4%) of mothers was government employed mothers. Three hundred seventeen (57.5%) of the husbands were unable to read and write, 83 (15.1%) and 36 (6.6%) attended primary and secondary education and 115 of them were able to read and write. As to the husband's occupational status, the majority 311 (56.4%) were farmers. Economically, 132 (23%) of the households had net monthly income of less than \$20US and 202 (35.1%) had \$20-\$33US monthly income. Concerning the time they travelled by bare foot to reach the nearby health center, 343 (60.7%) of them took less than 1 h, 144 (25%) took between one to two hours and 86 (15.3%) took more than 2 h. 426 (74.3%) of mothers had family size of 2–4 and 147 (25.7%) had more than five individuals within the house hold (Tables 1 and 2).

Socio-demographic variables	Frequency	Percent
<b>Age of mothers at interview</b>		
15-19	78	(13.6)
20-24	140	(24.4)
25-29	136	(23.7)
30-34	79	(13.8)
35-39	87	(15.2)
40-44	41	(7.2)
45-49	12	(2.1)
<b>Marital status</b>		
Married	456	(79.6)
Separated	78	(13.6)
Divorced	39	(6.8)
<b>Educational status of mothers</b>		
Not read and write	424	(74)
Read and write	73	(12.7)
Primary education	44	(7.7)
Secondary education and above	32	(5.6)
<b>Educational status of husband</b>		
Not read and	317	(57.5)
Read and write	115	(20.8)
Primary education	83	(15.1)
Secondary education and above	36	(6.6)

**Table 1:** Socio-demographic characteristics of mothers in Gonji Kollala District, Ethiopia, 2013.

Socio-demographic variables	Frequency	Percent
<b>Occupational status of mother</b>		
House wife	371	(64.7)
Merchant	147	(25.7)
Government employee	31	(5.4)
Others	24	(4.2)
<b>Occupational status of husband</b>		
Farmer	311	(56.4)
Government employ	185	(33.6)
Merchant	49	(8.9)
Others	6	(1.1)
<b>Number of family</b>		
2-4	426	(74.3)
>=5	147	(25.7)

**Table 2:** Socio-demographic characteristics of mothers in Gonji Kollala District, Ethiopia.

Variables	Frequency	Percent
<b>Age at first marriage</b>		
<15	244	(42.6)
15-19	244	(42.6)
20-24	76	(13.3)
25-29	8	(1.4)
>30	1	(0.2)
<b>Age at first pregnancy</b>		
<20	328	(57.2)
>=20	245	(42.8)
<b>Gravidity</b>		
1	198	(34.5)
2-4	288	(50.3)
>=5	87	(15.2)
<b>Parity</b>		
1	218	(38)
2-4	298	(53.6)
>=5	57	(9.9)
<b>Institutional delivery</b>		
Yes	97	(16.9)
No	476	(83.1)

**Table 3:** Obstetric characteristics of mothers in Gonji Kollala Woreda, District, Ethiopia.

488 (85.2%) of the respondents were married before the age of 20 years. 288 (50.3%) of the mothers were gravid two to four and 87 (15.2%) of them were gravid five and above. 218 (38%) were para one and more than half of the respondents 298 (52.0%) were between para two and four while 57 (9.9%) were para five and above (Tables 3 and 4).

One hundred seventy 176 (30.7%) of the respondents had visited health facilities during last pregnancy for ANC purposes. Among the mothers who attended ANC 25 (14.2%), 91 (51.7%), 60 (34.1%) of them visited health facilities once, two to three times and more than four time respectively. 89 (15.5%) of the mothers had abortion experience in their life time.

From those who deliver at home the majority; 259 (51%) were attended by untrained birth attendants.

## Institutional delivery service utilization

From a total of 573 respondents, only 97 (16.9%) of them deliver

Variables	Frequency	Percent
<b>Abortion experience in life</b>		
Yes	89	(15.5)
No	484	(84.5)
<b>ANC visit in the last pregnancies</b>		
Yes	176	(30.7)
No	415	(72.3)
<b>Number of ANC visits during last pregnancy</b>		
One	25	(14.2)
Two to three	91	(51.7)
Four and above	60	(34.1)
<b>ANC visit in the previous pregnancies</b>		
Yes	183	(32)
No		
<b>Assistant during last Delivery at home</b>		
My mother and Family member	161	(32)
TBA (Untrained)	239	(51)
One/Myself	76	(16.2)

Table 4: Obstetric characteristics of the respondents in Gonji Kellela district.

Variables	Frequency	Percent
<b>Preference of the mother about delivery place</b>		
Health facility	148	(25.8)
My home	310	(54.1)
My mother's home	115	(20.1)
<b>Preference of the mother about delivery attendants</b>		
SBAs	46	(8)
TBAs	190	(33.2)
My mother and relatives	315	(55)

**Abbreviations:** SBAs: Skilled Birth Attendants, TBAs: Traditional Birth Attendants

Table 5: Preference of the respondents about place of delivery and delivery attendants during their last pregnancy in Gonji Kellela, district.

in the health facilities and majority of them (83.1%) delivered at their home. Regarding preference of the mothers about delivery place during their last pregnancy, 310 (54.1%) preferred to deliver at home, 148 (25.8%) preferred to give birth in health facilities with the assistance of skilled health professionals, and 20.1% of the mothers preferred to deliver in their mother's home. Most of the respondents 315 (55%) of mothers prefer to be attended by their mothers and relatives and 190 (34%) preferred traditional (untrained) birth attendants.

The common reasons for home delivery were distance of health facilities, home delivery is usual practice, fear of mothers, husband's influence and closer attention from families and relatives (Table 5).

### Factors associated with institutional delivery service utilization

Binary logistic regression analysis shows; distance from health facility, monthly income, gravidity, ANC visit during last pregnancy, abortion experience of women, educational status of women and their husbands were the factors significantly associated with institutional delivery service utilization. ANC visit during last pregnancy was also a strong predictor of institutional delivery service utilization. Mothers who had ANC visit during pregnancy were 4 times more likely to deliver in health facilities than those who did not ANC visit during last pregnancy (95% CI=(2.206, 5.418)). Mothers with educational level of secondary and above were about 2 times more likely to give birth in health facilities than those with primary education and below (95% CI=(2.4, 8.8) and 6 times more likely than who do not read and write.

Distance of health facility is also another factor for the utilization of institutional delivery service.

Mothers' monthly income was another significant factor associated to the utilization of institutional delivery service which showed that women with the house hold income of greater than \$47US were about 2 times more likely to deliver in the health facility than women with monthly income of \$33-\$47US. Occupational status of the mother also significant factor for place of delivery (Tables 5 and 6).

Multi variant analysis shows; educational status of husbands did not show significant association with the utilization of institutional delivery service. Educational status of mothers, distance of the nearby health center, monthly income, gravidity and ANC visit in the last pregnancy had significance association with the utilization of institutional delivery service. Those who attended primary education were 2 times more likely to delivery at health institute than who did not read and write. The women who travel 1-2 h to reach the nearby health institute were more than 5 less likely to deliver at health institute than who travel less than 1 hour. Women who had abortion experience were 3 times more likely to give birth at the health facilities than who did not (Tables 7-9).

### Discussion

The study results showed that institutional delivery service utilization was 16.9% in the District and the majority of mothers (83.1%) gave birth at home. This study finding was higher than National EDHS result of 2011 and the study done in Sekela District in 2012 which was 10% and 12.3% respectively; this might be due to the time gap, i.e., since 2011 there could be improvement in accessing and utilizing the service and probably due to relatively good commitment of the district health office and health professionals working there [5,6].

This study was in line with the findings of Magnitude and Factors Affecting Safe Delivery Service Utilization done in Gedio Zone 18.2% [7]. But the finding was lower than the report of ministry of health in Ethiopia nationally 20% [8]. The difference probably my study was done in rural district.

Variables	Utilization of institution delivery service		COR	
	Yes	No	(95% CI)	P-value
<b>Income in month</b>				
≤ \$20	7	125	1.00	0.003
\$20-\$33	15	187	1.4 (1.2, 3.6)	
\$33-\$47	31	102	5.4 (2.02, 11.0 )	
>\$47	44	62	12.6 (7.4, 28.9)	
<b>Time taking to reach health Center</b>				
>1 h	89	254	9.69 (1.0-28.9)	0.000
1-2 h	5	139	0.995 (0.234-4.314)	
>2 h	3	83		
<b>Gravidity</b>				
1	62	136	9.5 (3.5-28.1)	0.000
2-4	31	257	2.503 (1.37-12.65)	
≥ 5	4	83	1.00	
<b>Educational status of mothers</b>				
Not read and write	49	375	1.00	0.001
Read and write	17	56	2.32 (1.8, 4.54)	
Primary education	17	27	4.82 (3.46, 9.707)	
Secondary education and above	14	18	6.56 (4, 11.2)	

Table 6: Binary logistic regression analysis of factors associated with institutional delivery service utilization among mothers in Gonji Kellela district.

ANC visit in last pregnancy	Utilization of institution delivery service		COR	
	Yes	No	(95% CI)	P-value
Yes	53	123	3.457 (2.206-5.418)	0.032
No	44	371	1.00	
<b>No of ANC visit</b>				
One	9	10	1.895 (0.611-2.524)	0.3234
Two to three	30	68	0.95 (0.184-1.513)	
Four and above	19	40	1.00	
<b>Educational status of husband</b>				
Not read and write	24	293	1.00	0.030
Read and write	20	95	2.5 (1.63, 4.21)	
Primary education	29	54	6.5 (3.03, 11.3)	
Secondary Education and above	17	19	10.9 (5.3, 15.3)	
<b>Occupational status of women</b>				
House wife	46	323	1.00	0.003
Merchant	37	110	2.36 (1.2, 3.9)	
Government employed	10	20	3.5 (6, 11.2)	
Others *	4	20	1.04 (0.78, 3.54)	

\* Daily Labors, Tala Sellers, No Job at All and Family Dependent

**Table 7:** Binary logistic regression analysis of factors associated with institutional delivery service utilization among mothers in Gonji Kollela district, Ethiopia.

Variables	Utilization of institutional delivery service			AOR (95% CI)	P value
	Yes	No	COR		
<b>ANC</b>					
yes	53	123	3.457 (2.2, 5.4)	2.2 (1.2, 4.1)	0.001
No	44	353	1.00	1.00	
<b>Gravidity</b>					
1	62	136	13.4 (3.5, 28.1)	5.4 (2.9, 8.4)	0.02
2-4	30	258	3.26 (1.37, 11.65)	1.8 (1.2, 3.6)	
>=5	3	84	1.00 (2.202, 5.418)	1.00	
<b>Abortion</b>					
Yes	37	52	5.02 (3.047, 8.3)	3.1 (1.23, 5.7)	
No	60	424	1	1.00	
<b>Educational status</b>					
Not read and write	49	375	1.00	1.00	0.001
Read and write	17	56	2.32 (1.8, 4.54)	1.03 (0.81, 2.3)	
Primary Education	17	27	4.82 (3.46, 9.707)	2.4 (0.9, 6.7)	
Secondary Education and above	14	18	6.56 (4, 11.2)	4.51 (1.89, 8.2)	
<b>Educational status of husband</b>					
Not read and write	24	293	1.00	1.00	0.000
Read and write	20	95	2.5 (1.63, 4.21)	1.5 (1.03, 3.6)	
Primary education	29	54	6.5 (3.03, 11.3)	3.4 (2.1, 4.8)	
Secondary Education and above	17	19	10.9 (5.3, 15.3)	4.82 (3.02, 7.2)	

**Table 8:** Multi variant analysis of factors associated with institutional delivery Service utilization among mothers in Gonji Kollela district, Ethiopia.

Variables	Utilization of institutional delivery service			AOR (95% CI)	P value
	Yes	No	COR		
<b>Occupational status of women</b>					
House wife	46	323	1.00	1.00	0.003
Merchant	37	110	2.36(1.2, 3.9)	1.8 (0.4, 1.2)	
Government employed	10	23	3.5(6, 11.2)	2.3 (2.6, 4.9)	
Others *	4	20	1.04(0.78, 3.54)	0.94 (1.0, 2.12)	
<b>Distance of health Institute</b>					
<1 h	89	254	9.69(2.1, 28.9)	5.2 (2.8, 12.3)	0.032
1-2 h	5	139	0.995 (0.23, 4.3)	0.97 (0.56, 2.31)	
>2 h	3	83	1.00	1.00	
<b>Income in month</b>					
≤ 408 birr	7	125	1.00	1.00	0.000
409-693 birr	15	187	1.4 (1.2, 3.6)	1.2(1.01, 2.5)	
694-987 birr	31	102	5.4 (2.02, 11.0)	2.8 (2.1, 4.9)	
>988 birr	44	62	12.6(7.4, 28.9)	5.4 (3.2, 11.4)	

**Table 9:** Multi variant analysis of factors associated with institutional delivery service utilization among mothers in Gonji Kollela district, Ethiopia.

Women who attended secondary education and above were about 2.2 times more likely to deliver at the health institution when compared to women who attended primary education and below. This finding was similar to the study conducted in Sekela district on the utilization of institutional delivery service which showed that Mothers who attended secondary education and above were 12 times more likely to utilize delivery service than those mothers who had primary education and below. Other finding of the study conducted in North Gondar, Ethiopia indicated that mothers with educational status of secondary and above were 2.3 times more likely to delivery in health facilities than mothers with lower educational level [9,10].

Monthly income of the house hold was strongly associated with the utilization of institutional delivery service. Mothers whose monthly income is greater than \$47US were about 5.4 times more likely to give birth at the health institution than women with the house hold income of less than \$20 US. This finding was similar to the finding of the study conducted in Ghana on Expectant Mothers and the Demand for Institutional Delivery [11].

The time taking to reach health facilities was another factor for the utilization of institutional delivery service. Mothers who travel less than one hour by bare foot to reach to the nearby health institute were 5 times more likely to give birth in the health institution than mothers who travel more than 2 h and those who travel 1-2 times were 7 times more likely to delivery in the health institution than those mothers who travel more than 2 h.

This study also revealed that mothers who visited ANC during last pregnancy were about 2 times more likely to deliver in health facilities than mothers who did not visit ANC which was Similar to studies conducted in north Gondar, Sekela district and in Metekel Zone [6-8].

## Conclusion

From the result of this study we conclude the low utilization of institutional delivery service and low anti natal care visit in their last pregnancy. Mothers who gave birth at home without a skilled attendant were account the large proportion.

Educational status, monthly incomes, ANC visit, distance of health institute, gravidity and abortion experience were factors associated with the low utilization of institutional delivery service. Closer care by families and relatives and fear to assist by unknown persons were major reasons for home delivery.

Communities' awareness creation on institutional delivery service

should be done cooperatively by all sector institutes. More over the District Health Office should plan and implement in such a way that health education programs will address all women and do not wait pregnant mothers to come to the health institution. They should give health information about the service.

## Competing Interests

The authors declare that they have no competing interests.

## Authors' Contributions

Tsegahun W and Habtamu A were done all activities of the research and contributed for the final outcome of the research. Both authors write and edit and approved the final manuscript.

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