

Utilization of Skilled Birth Attendant in Bonga Town, Kafa Zone, South West Ethiopia

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Abstract

Background: Ethiopia with maternal mortality ratio (MMR) of 353 per 100,000 live births, the majority of births are delivered at home and the proportion of deliveries assisted by skilled attendant is very low. Based on EDHS 2014 urban births are six times more likely than rural births to be delivered in a health facility (59% versus 10%). Implementing and assuring utilization of skilled delivery services is potentially one of the most effective maternal health interventions for preventing maternal morbidity and mortality.

Objective: To assess utilization of skilled birth attendant (SBA) among mothers who gave birth the last one year prior to the data collection period in Bonga town, Ethiopia.

Methodology: Community based cross-sectional study employing quantitative methods was conducted in Bonga town, Kafa zone, Southwest Ethiopia from June 1 to July 25, 2013. Stratified random sampling technique was employed to select a sample of 296 participants. Logistic regression analysis was performed to obtain predictors of SBA.

Results: From the total of 296 deliveries 78.6% of the women utilize skilled birth attendant during delivery. Women's educational status, their number of pregnancy, Antenatal care (ANC) visit, knowledge about risk factors related to pregnancy and women's power to make the decision in terms of getting skilled delivery are important predictors for their utilization of skilled birth attendant.

Conclusions: Interventional IEC activities focusing on pregnancy complications and benefits of ANC for reproductive age women will be helpful in utilizing skilled delivery attendant so that their influences can be directed in the line of encouraging women to utilize skilled delivery services.

Keywords: Antenatal care; Utilization; Skilled birth attendant; Logistic regression

Abbreviations: ANC: Antenatal Care; MCH: Maternal and Child Health; MMR: Maternal Mortality Ratio; SBA: Skilled Birth Attendant; OR: Odds Ratio

Background

Health services accessibility has been a challenge globally especially in developing countries. Utilization of maternal health services in developing countries is hindered by not only infrastructural and quality issues but also by accessibility. The effect of low utilization of quality maternal care services is known to be a contributory factor to the high incidence of avoidable deaths of pregnant women in mostly developing nations including Ethiopia. The use of skilled delivery is desirable as it is recognized to yield positive delivery outcomes by reducing maternal and infant morbidity and mortality. Sub-Saharan Africa (SSA) contributes to 57% of the 358,000 global maternal deaths despite the fact that it has 17% of the global births [1]. The life time risk of dying during pregnancy, childbirth or in the early post natal period is very high in this area; 1 in 31 compared to 1 in 4300 in developed regions. Similarly, more than a third of the approximately 2.65 million stillbirths and 3.3 million neonatal deaths globally occur in SSA [2].

Access to Skilled Birth Attendance during childbirth and in the immediate post natal period and access to Emergency obstetric care in case of obstetric complications are considered to be effective interventions to reduce the number of global maternal and newborn deaths [3]. As shown in assessment of trends in maternal mortality for 181 countries from 1980 to 2008, it was estimated to be 342,900 maternal deaths world-wide in 2008 decreasing from 526,300 in 1980.

More than 50% of all maternal deaths were only from six countries in 2008 (India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of Congo) [4]. It is known about 80% of maternal deaths are due to causes directly related to pregnancy and childbirth. Worldwide, the major causes of maternal mortality are severe bleeding (24%), infection (15%), unsafe abortion (13%), hypertensive disorders (12%) and obstructed labour (8%) [5]. In 2008, from the estimated 358 000 maternal deaths worldwide, developing countries accounted for 99% (355 000). Nearly three fifths of the maternal deaths (204 000) occurred in the SSA region alone followed by South Asia (109 000). Together the two regions accounted for 87% of such deaths globally. Southern Asia has made steady progress, with a 53% decline in maternal mortality between 1990 and 2008. In contrast, the ratio has fallen by only 26% in Sub-Saharan Africa, though evidence suggests that progress has picked up speed since 2000. The proportions of births attended by skilled personnel are very much lower than SSA. Even for women who have access to the services, the proportion of births occurring in health facilities is very low.

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Received August 31, 2016; **Accepted** September 24, 2016; **Published** September 30, 2016

Citation: Temam I, Banbeta A (2016) Utilization of Skilled Birth Attendant in Bonga Town, Kafa Zone, South West Ethiopia. Gynecol Obstet (Sunnyvale) 6: 402. doi: [10.4172/2161-0932.1000402](https://doi.org/10.4172/2161-0932.1000402)

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Many countries are encouraging women to deliver at health facilities implying that the facilities are well equipped and have skilled health personnel. The Government of Ethiopia is committed to improve maternal health with a target of reducing MMR by three-quarters over the period 1990 to 2015. In accordance with this, the Federal Ministry of Health (FMOH) has applied multi-pronged approaches to reduce maternal and newborn morbidity and mortality. It is striving to assure improved access to emergency obstetric services and to create home delivery free kebeles (villages) in each woreda (district). Avail where hospitals with trained professional staff exist. Improving access to and strengthening facility-based maternal and newborn services is one such approach, and is also a Health Sector Transformation Plan (HSTP) strategic objective, and yet maternal mortality remains unacceptably high. MMR in Ethiopia was 353 (247-567) deaths per 100,000 live births in 2015, 523 (391-743) in 2010 and 743 (596-943) in 2005 [1,6,7].

Based on EDHS 2014, 16% of births in Ethiopia were assisted by a skilled provider: 5% by a doctor and 11% by a nurse or midwife. About 2% of births were assisted by a Health Extension Workers (HEW), and 51% of births were assisted by a relative, or some other person. Twenty-seven percent of births were assisted by a traditional birth attendant, while 5% of births were unattended. Skilled assistance at delivery increased from 6% to 16% in the last fifteen years [7]. In Ethiopia first births are much more likely than births orders six or higher to be delivered in a health facility (21% versus 4%). Delivery in a health facility is more common among births to mothers age 20-34, births to mothers who had at least four ANC visits, and births to highly educated mothers and mothers in the highest wealth quintiles. The coverage of skilled delivery is different from region to region. The percentage of births delivered in health facility ranges from less than 10% in SNNP (Southern Nation and Nationalities People), Affar, Oromiya, Somalia, and Benishangul-Gumuz regions to 82% in Addis Ababa administrative region. The proportion of births assisted by a skilled provider ranged from 6% in the SNNP region to 84% in Addis Ababa. This indicates regional differences in skilled delivery utilization are large [7]. Utilization of clean and safe delivery service in Kaffa zone was only 19% [8].

Since there was a limited study in the urban area of the countries related to this topic, particularly in the study area. Therefore, this study has tried to find the extent of the problem which is, basic information on the proportion of deliveries conducted by skilled delivery attendant, and identify the possible factors that affect the utilization of skilled birth attendant among mothers who gave birth in Bonga Town, Kafa Zone, South west Ethiopia. In health facilities in Bonga, delivery service is free of charge, and urban health extension program (HEP) is providing equitable access to promotive, preventive and selected curative health interventions through HEWs. Among the services based on health packages, maternal health is part of the family health package. Currently free ambulance services are also introduced in the town.

Methods

Study area and period

A cross-sectional data was collected from June 1 to 30, 2013 in Bonga town, Kafa zone in Southwest Ethiopia. Bonga, administrative town of Kafa zone is located at 105 kilometers from Jimma town and 465 kilometers southwest from the capital city, Addis Ababa. The total population of the town is estimated to be 27634 of which 13624 (49.3%) are males and 14010 (50.7%) are females [9]. The town has total of 3 administrative kebeles, one General Hospital, and one type "A" health center. All women of childbearing age, (15-49 yrs) who gave birth in

the last one year prior to the time of the interviews and are permanent residents of the Bonga town.

Sample Size and Sampling Procedure Stratified random sampling technique employed by using list of mothers from registration book of kebeles health extension workers. The total 296 respondents were allocated according to the proportion of total mothers who gave birth in each kebeles by using lottery method. Hence 121, 70 and 105 mothers were selected from kebele 1 kebele 2 and kebele 3 respectively.

Study variables

The dependent variable of the study "utilization of skilled birth attendant" was binary outcome with "Yes" for mothers who gave birth with an accredited health professional such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in identification, management and referral of complications in women and newborns, and "No" otherwise. The socio demographic factors included in the study were age, marital status, occupation, wealth index, education, place of residence. Obstetric factors considered were gravidity (total number of pregnancy), parity (total number of children) and ANC visit to health facility during last pregnancy. Knowledge and attitude factors, health service factors and women's decision making for place of delivery were also included as independent variables in the analysis.

Ethical consideration

Ethical approval of the research proposal was received from Ethical approval committee at Jimma University college of public Health and medical science and letter of permission was taken from department of Health Services Management and Bonga town administration health unit. Individuals' verbal informed consent was taken and confidentiality with privacy was ensured for all participants.

Results

Socio-demographic characteristics of study population

The response rate from the total the total of 296 women who were included in the study was 100%. The majority, 246(83.1%) were between the age of 20 and 34 with mean age of 25.8 ± 5.13 . Most of the women, 268(90.5%), were currently married (Table 1).

Obstetric factors

For 131 (44.3%) mothers the last pregnancy was their first and 24 (8.1%) of them had more than 5 pregnancies (Table 2). Among the respondents 137 (46.3%) had one child, 143 (48.4%) have 2-4 children, 16 (5.4%) have >5 children with mean parity of 2.01 ± 1.25 . Regarding the prenatal service utilization of respondents 280(94.6%) had attended at least once for the last pregnancy and 269 (90.9%) have received information on pregnancy and delivery complications during their visit. Only 277 (93.6%) were informed to deliver in health facility and 278 (93.9%) of them were recommended to use health professional during their delivery (Table 2).

Delivery practice of respondents during the last delivery prior to the study

Utilization of skilled delivery attendant among total number of live births surveyed among the age group 15-49 years with a birth in the one year prior to the study was 232(78.3%). Among the 296 interviewed mothers, 227(76.7%) were having institutional delivery while 69 (23.3%) home delivery. Among the total home deliveries only 5(7.2%)

Variable	Frequency	Percent
Age of respondent		
<20	24	8.1
20-34	246	83.1
>=35	26	8.8
Marital status		
Married	291	98.3
Single	12	0.7
Divorced	2	0.7
Separate	1	0.3
Widowed	1	0.3
Religion		
Orthodox	208	70.3
Muslim	47	15.9
Protestant	31	10.5
Catholic	10	3.4
Ethnicity		
Kafa	240	81.1
Amhara	20	6.8
Guraghe	8	2.7
Oromo	20	6.8
Others	8	2.7
Women's education		
Illiterate	39	13.2
Read and write	19	6.4
Primary	125	42.2
Secondary	66	22.3
12 plus	47	15.9
Women's Work status		
Household wife	228	77
Gov. employer	37	12.5
Daily laborer	4	1.4
Merchant	18	6.1
House worker	7	2.3
Student	2	0.7
Wealth index		
Poorest	58	19.6
Poorer	61	20.6
Middle	58	19.6
Richer	59	19.9
Richest	59	19.9
Husband's education		
Illiterate	22	9.1
Read and write	9	3
Primary	98	33.1
Secondary	76	25.7
12 plus	86	29.1

Table 1: Selected Socio-demographic characteristics of respondents, Bonga tw, Ethiopia.

were attended by skilled attendants. From the total births 291(98.3%) were live birth and 5(1.7%) were still births. From the total ANC service attendants 276 (92.6%) have used health professional during their actual delivery. Delivery in health facility is more common among younger mothers (age 20-35 yrs), 192 (79.7%). Among home deliveries 12(17.4%) encountered problem at the time of delivery. Reasons given for home delivery includes, feeling more comfortable giving birth at home 22 (31.9%), usual practice 24 (34.8%), close attention from relatives and family members 18(26%), do not like the service in the health facility 5 (7.2%) (Figure 1).

Reasons given for health institution delivery are, better service in health facility 20 (8.8%), Health institution is nearby to the residence 12 (5.3%), better outcome from institutional delivery 173(76.2%) informed to deliver in HF 5 (2.2%), poor out comes from home delivery 25 (11%) (Figure 2).

Factors influencing utilization of skilled delivery attendant

Socio-demographic influencing factors on utilization of skilled delivery attendant: By Applying multiple logistic regression on socio demographic variables age of respondents, religion, women's education, women's work status, wealth index and husbands education, only their educational status and their husband's educational status were significantly associated with utilization of skilled delivery attendant (p-values<0.05), though women's work status were significant using the crude odds ratio. If women have secondary education and more, they are four and eight times more likely to utilize SDA, OR=4.82 with 95%CI of (1.03, 22.52) and OR=8.06 with 95%CI of (1.75, 37.12) respectively. Likewise, if husbands can read and write, have primary education, secondary education and above they are more likely to utilize skilled delivery attendant, OR=38.01 and 95%CI of (3.43, 421.89), OR=9.23 and 95%CI of (2.64, 32.26) and OR=36.64, 95%CI of (8.22, 163.23) and OR=14.31 with 95%CI of (3.30, 62.10) respectively (Table 3).

Obstetric factors on utilization of skilled delivery attendant

When the obstetric factors, parity, ANC visit and age at first pregnancy were adjusted, all were significantly associated with utilization of skilled delivery attendant (P-values<0.05) (Table 4). Women with first pregnancy were about three times, OR=2.70 and 95%CI of (1.02, 7.15) more likely to utilize skilled delivery attendant than women who have >5 pregnancies. Women who had ANC visits were about ten times more likely to utilize skilled delivery attendant when compared to those who did not have ANC visit, OR=9.87 95%CI of (1.79, 54.40) (Table 4).

Information and knowledge about obstetric risks and women decision making power

When Information about pregnancy and delivery complication,

Variable	Frequency	Percent
Gravidity (Total No. of Pregnancy)		
1	131	44.3
2-4	141	47.7
>=5	24	8.1
Parity(total No. of Children)		
1	137	46.3
2-4	143	48.4
>=5	16	5.4
ANC visits during the last pregnancy		
Yes	280	94.6
No	16	5.4
Age at first pregnancy		
<20	110	37.2
21-29	183	61.8
>=30	3	1
Any visit to health facility during last pregnancy		
Yes	280	94.6
No	16	5.4

Table 2: Obstetric History and Reasons for visiting Health Facility, Bonga town, Ethiopia.

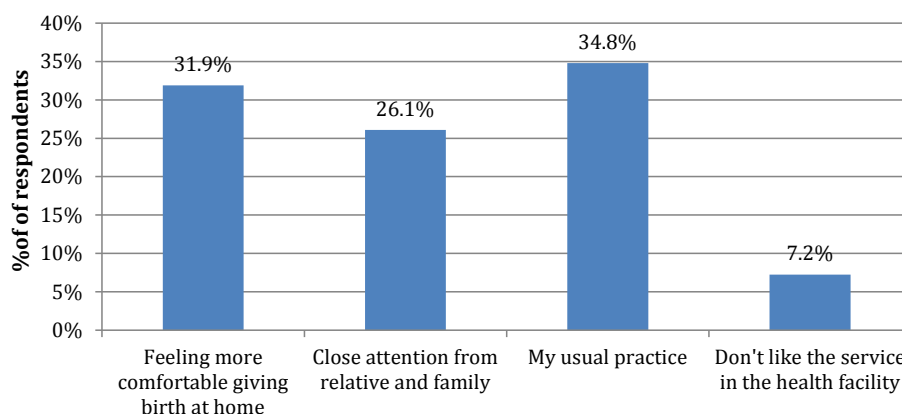


Figure 1: Reason for home delivery of respondents, Bonga town, Ethiopia. Reasons given for health institution delivery are, better service in health facility 20 (8.8%).

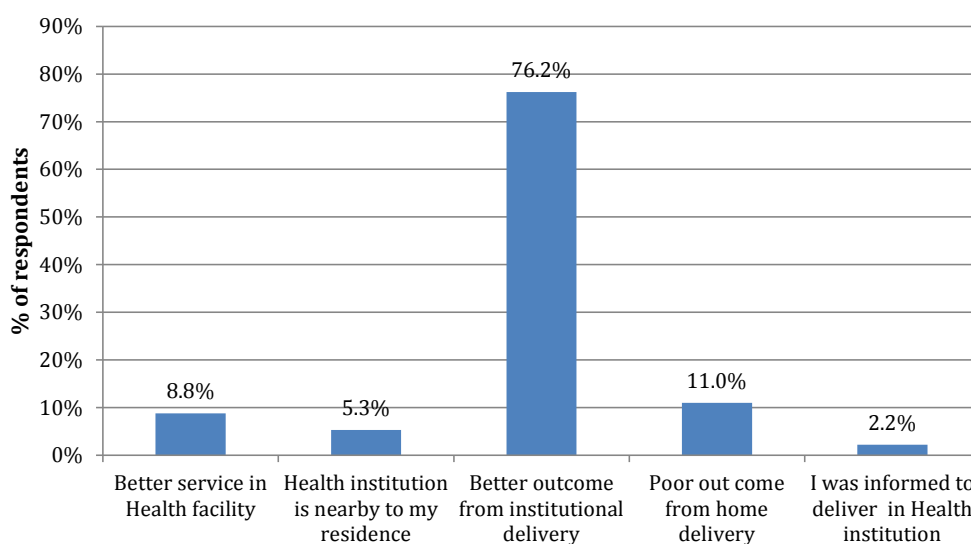


Figure 2: Reason for Institutional delivery of respondents, Bonga town, Ethiopia.

Information about MCH and Knowledge about risk factors related to pregnancy were adjusted and all except Information about MCH, were significantly associated with utilization of skilled delivery attendant (P -values <0.05). Women who informed about pregnancy and delivery complication are about twelve times, OR=12.45 and 95%CI of (3.15, 49.26) were more likely to utilize skilled delivery attendant when compared to those who had no information about pregnancy and delivery complication. Women who had Knowledge about pregnancy and delivery complication, OR=4.6 95%CI of (1.31, 16.16) were five times more likely to utilize skilled delivery attendant when compared to those who had no Knowledge about pregnancy and delivery complication. Women who decided to deliver at health facility by themselves were twice more likely to utilize skilled delivery attendant than others (Table 5).

Discussion

This community –based study has attempted to identify the extent and factors associated with utilization of skilled attendant at delivery in Bonga town. The current study indicated that delivery with the help of skilled birth attendants was (78.6%) whereas the result was only (19%) [8] in the whole zone in which urban and rural were included. This is in

agreement with the idea that urban births are more likely than rural to take place in a health facility [7].

Bonga town has relatively higher level of skilled delivery utilization may be due to the charge free of delivery service in health facilities, and urban HEP is providing equitable access to promotive, preventive and selected curative health interventions through HEWs. Other justification is the newly introduced free ambulance services could have also positive impact on utilization of skilled professionals. However, it is less than Addis Ababa administrative region (83.9%) and more than Gambela region (27.4%) [7]. This could be probably due to the level of awareness and women's decision to ward place of delivery.

The study finding revealed that proportion of institutional delivery was 76.7% and skilled delivery attendance was 78.6%. So utilization of skilled delivery attendant is more likely to be similar or slightly increase from institutional delivery because births delivered at a health facility are more likely to be delivered by a trained health professional and births delivered at home are usually more likely to be delivered without assistance of health professionals [7,10]. However, we acknowledge the limitation of our study for not being able to clarify the effect of traditional birth attendants (TBA) in the study population.

Variables	Utilization of skilled delivery attendant		Crude ORs (95% CL)	Adjusted ORs (95% CL)
	Yes (%)	No (%)		
Age group				
<20	16(7)	8(11.6)	1.00	1.00
20-34	192(84.6)	54(78.3)	1.78(0.72,4.38)	1.02(0.35,3.00)
35-49	19(8.4)	7(10.1)	1.36(0.40,4.56)	0.95(0.18,5.11)
Women's education				
Illiterate	20(8.8)	19(27.5)	1.00	1.00
Read and write	15(6.6)	4(5.8)	3.56(1.01,12.67)*	1.47(0.31,7.08)
Primary	87(38.3)	38(55.1)	2.17(1.04,4.53)*	1.14(0.43,3.04)
Secondary	62(27.3)	4(5.8)	14.72(4.48,48.41)*	4.82(1.03,22.52)*
12 plus	43(19.0)	4(5.8)	10.21(3.07,33.96)*	8.06(1.75,37.12)*
Women's occupation				
Household wife	173(76.2)	55(79.7)	1.00	1.00
Gov. employer	35(15.4)	2(2.9)	5.56(1.29,23.88)*	3.17(0.50,20.07)
Daily laborer	1(0.4)	3(4.3)	0.11(0.01,1.04)	0.56(0.03,10.39)
Merchant	15(6.6)	3(4.3)	1.59(0.44,5.59)	0.97(0.23,4.10)
House worker	2(0.9)	5(7.2)	0.16(0.03,0.89)*	0.16(0.01,2.03)
Student	1(0.4)	1(1.4)	0.32(0.02,5.17)	0.47(0.03,8.30)
Husband's education				
Illiterate	4(1.8)	18(26.1)	1.00	1.00
Read and write	8(3.5)	1(1.4)	36.00(3.45,375.30)*	38.01(3.43,421.89)*
Primary	70(30.8)	28(40.6)	11.25(3.50,36.20)*	9.23(2.64,32.26)*
Secondary	70(30.8)	6(8.7)	52.50(13.38,206.00)*	36.64(8.22,163.23)*
12 plus	74(32.6)	12(17.4)	27.75(8.00,96.21)*	14.31(3.30,62.10)*

*Statistically significant at $p < 0.05$

Table 3: Logistic Regression of Utilization of skilled birth attendant with socio- demographic factors, Bonga town, Ethiopia.

Variables	Utilization of skilled delivery attendant		Crude ORs (95% CL)	Adjusted ORs (95% CL)
	Yes (%)	No (%)		
Gravidity (No. of pregnancy)				
1	108(47.6)	23(33.3)	2.82(1.10,7.22)*	2.70(1.02,7.15)*
2-4	104(45.5)	37(53.6)	1.68(0.68,4.18)	1.86(0.70,4.91)
>=5	15(6.6)	9(13.0)	1.00	1.00
ANC Visit during last pregnancy				
No	2 (0.9)	16 (23.2)	1.00	1.00
Yes	225(99.1)	53 (76.8)	29.17(6.44,132.17)*	9.87(1.79,54.40)*

*Statistically significant at $p < 0.05$

Table 4: Logistic regression of skilled delivery attendant utilization with women's selected obstetric factors, Bonga town, Ethiopia.

Some of the reasons given by the respondents for utilization of health facility for delivery are, better service in health facility 8.8%, better outcomes from Institutional delivery 76.2%, information received from health professionals to deliver in health institution 2.2%, closeness of HF to where they live 5.3%, and poor outcomes from home delivery (11.0%). An earlier study conducted at Gulelle district in Addis Ababa also shows that the reasons given for preferring to deliver in health institution is high quality of service 50.1%, following by nearness of health institution 36.8%, and the approach of good health workers 9.0% [11].

The study has identified several variables that have important influence on utilization of skilled delivery attendant. It revealed that woman's education, husband's education, gravidity (total number of pregnancy), ANC visit, those who knows about risk factors related to pregnancy and delivery, and women decision making power for place of delivery factors associated with the utilization of skilled birth attendant. Most of these findings are consistent with previous studies [1,6,11].

In this study women's literacy was found to be an important predictor for the use of maternal health care Services. Women with secondary educational level are eight times more likely to use skilled delivery attendant as compared to illiterates and women with twelve and above educational level are five times more likely to utilize skilled birth attendant than illiterate women. This finding is similar with findings of Bangladesh studies, women with twelve and above educational level are almost seven times more likely to utilize skilled birth attendant than illiterate [12,13]. This is due to the fact which was acknowledged by Shieh and Halstead which revealed as women education increased, health literacy and utilization to use higher quality services increased [13]. If the husband can read and write and has more education, women are more likely to utilize SDA. The finding is consistent with the findings in North Gonder and Adigrat Town and from elsewhere in the world [14,15]. Women with elementary, secondary and above schooling were 3 and 13 times more likely to use institutional delivery than illiterate mothers. The possible explanation for why education is a key determinant could be that as a woman go up through the ladder of education, the more knowledgeable she will be about the use of

Variables	Utilization of SDA		Crude ORs (95% CL)	Adjusted Ors (95% CL)
	Yes	No		
Information about pregnancy and delivery complication				
No	9(4.0)	17(24.6)	1.00	1.00
Yes	218(96.0)	51(75.4)	8.55(3.63,20.13)*	12.45(3.15,49.26)*
Information about MCH during ANC service				
No	7(3.1)	13(18.8)	1.00	1.00
Yes	220(96.9)	56(81.2)	3.93(2.93,5.26)*	1.15(0.24, 5.54)
Knows at least two danger signs about pregnancy and delivery complication				
No	7(3.1)	21(30.4)	1.00	1.00
Yes	220(96.9)	48(69.6)	13.75(5.53,34.18)*	4.60(1.31,16.16)*
Decision by women for place of delivery				
No	61 (26.9)	69(100)	1.00	1.00
Yes	166(73.1)	0(0)	1.58(1.35,1.87)*	2.1(1.81,2.41)*

*Statistically significant at $p < 0.05$

Table 5: Logistic regression of availability of service and awareness of women with their actual utilization of skilled delivery attendant, Bonga town, Ethiopia.

health facility also education is likely to enhance female autonomy so that women develop greater confidence and capability to make decision about their own health. Husband education is also a factor for utilization of facility based delivery service. Consistent with study in Munisa woreda, South East Ethiopia [16], mothers whose husbands had completed at least read and write were more likely to seek skilled delivery service compared to their counter parts.

Gravidity was another obstetric variable found to be significantly affecting the utilization of skilled delivery attendant. Women with first pregnancy were three times more likely to utilize skilled delivery attendant as compared to those who were pregnant for greater than five. Similarly study in India revealed that women are almost five more likely to get care for their first delivering than others that follow [17]. This is due to the fact that fear of a complication or lack of confidence in the face of problems may motivate women to use skilled delivery attendant [11].

Prenatal services can provide opportunities for health workers to promote a specific place of delivery or give women information on the status of their pregnancy which in turn alerts them to decide where to deliver. In the present study, about 94.6% had received prenatal care during the last pregnancy. This coverage could be due to ANC service is strongly given at the newly expanded growing health centers by way of strong linkage with health extension workers, strong community mobilization is being done to avert complication during pregnancy and child birth. This study revealed that those who have ANC visits were almost ten times more likely to utilize skilled delivery attendant than those who did not have ANC visit. This may be due to the fact that during ANC women are provided with health education and information about the benefits of having a skilled birth attendant for childbirth. From the total ANC service attendants 71.6% have used skilled attendants during their delivery.

Those who were informed about the presence of pregnancy and delivery complication were twelve times more likely to use skilled delivery attendant during their delivery, the finding that women informed about pregnancy complications during ANC visits were more likely to deliver in health facilities suggests that the quality of ANC may influence delivery patterns. In Rwanda, women informed about danger signs during antenatal care were more likely to deliver at a health facility. Other studies from India and Iraq also showed that lack of recognition of perceived seriousness of health problems are significant reason for not using available health care that accounts for half of maternal deaths. An earlier community- based study in

Ethiopia on maternity mortality also found that one of the reason for not having ANC was low level awareness of problems of child bearing [11,14,18,19].

Women's who had decision making power was found as significant factor of utilization for skilled birth attendant. Mothers who decide to use modern health service and place of delivery by themselves were more likely to give birth at health facilities (OR 2.1, 95%CI=1.81-2.41) than mothers who could not decide by themselves. A consistent study in Bangladesh had also showed that the decision on who and where to deliver the baby is taken before labour pain starts. In the same study, only 20% of the cases do women themselves take the decision about who will deliver their baby [12]. Other consistent study in Nepal, women with significant decision-making power were more than twice more likely to deliver at health facility than women with more limited decision-making power [20].

Conclusions

Even though this study demonstrated that utilization of skilled delivery services during the period of the survey were relatively higher than previous studies but inadequate in general. This is because it is below the plan that the federal government strive to create home delivery free kebeles in each town (woreda). Number of pregnancy, women educational status (twelve and above educational level), husband's educational status, ANC visit, mothers knows at least two danger signs about pregnancy and delivery complication, and women's power to make the decision in terms of getting skilled delivery were found to be factors associated with the utilization of skilled birth attendant.

Recommendations

Interventional IEC activities focusing on women and husbands will be helpful in utilizing these people, so that their influences can be directed in the line of encouraging women to utilize skilled delivery services. Further studies are needed to investigate supply-side issues related to under use of skilled care services.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

IT the primary author conceived the idea and contributed in the conception and design of our research. IT and AB conceptualized the paper, analyzed data. AB the

corresponding author provided statistical inputs and wrote the manuscript draft. Both authors read and approved the final manuscript.

Acknowledgment

We are grateful to the study participants and the team members and field staff who contributed to data collection, entry, and processing.

References

1. WHO (1990) UNFPA, World Bank Group, United Nations Population Division. Trends in maternal mortality, 2015.
2. Lawn JE, Blencowe H, Pattinson R, Cousens S, Kumar R, et al. (2011) Stillbirths: Where? When? Why? How to make the data count? *Lancet* 377: 1448-1463.
3. Oestergaard MZ, Inoue M, Yoshida S, Mahanani WR, Gore FM, et al. (2011) Neonatal mortality levels for 193 countries in 2009 with trends since 1990: a systematic analysis of progress, projections, and priorities. *PLoS Med* 8: e1001080.
4. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, et al. (2010) Maternal mortality for 181 countries, 1980-2008: a systematic analysis of progress towards Millennium Development Goal 5. *The lancet* 375: 1609-1623.
5. USAID (2000) Population Reference Bureau: Making pregnancy and child birth safer. USA: Policy brief.
6. Central statistic Authority Ethiopia (2011) Demographic & Health Survey.
7. Central Statistical Agency Ethiopia (2014) Ethiopia Mini Demographic and Health Survey 2014, Central Statistical Agency and Federal Ministry of Health Ethiopia, Addis Ababa.
8. Bayou NB, Gacho YH (2013) Utilization of clean and safe delivery service package of health services extension program and associated factors in rural kebeles of Kafa Zone, Southwest Ethiopia. *Ethiop J Health Sci* 23: 79-89.
9. Kafa zone health department annual report, Bonga (2012).
10. Central statistic Authority Ethiopia (2005) Demographic & Health Survey.
11. Mekonnen Y, Mekonnen A (2003) Factors influencing the use of maternal healthcare services in Ethiopia. *J Health Popul Nutr* 21: 374-382.
12. Chakraborty N, Islam MA, Chowdhury RI, Bari W, Akhter HH (2003) Determinants of the use of maternal health services in rural Bangladesh. *Health Promot Int* 18: 327-337.
13. Shieh C, Halstead JA (2009) Understanding the impact of health literacy on women's health. *J Obstet Gynecol Neonatal Nurs* 38: 601-610.
14. Nigussie M, Mariam DH, Mitike G (2004) Assessment of safe delivery service utilization among women of childbearing age in north Gondar Zone, North West Ethiopia. *Ethiop J Health Dev* 18: 145-152.
15. Hiluf M, Fantahun M (2008) Birth preparedness and complication readiness among women in Adigrat town, north Ethiopia. *Ethiop J Health Dev* 22: 14-20.
16. Amano A, Gebeyehu A, Birhanu Z (2012) Institutional delivery service utilization in Munisa Woreda, South East Ethiopia: a community based cross-sectional study. *BMC Pregnancy Childbirth* 12: 105.
17. Balaji R, Dilip TR, Dujjal R (2004) Utilization of and expenditure on delivery care services: some observation from Nashik District. *Regional Health*.
18. Tsehainesh A (2007) Assessment of utilization of skilled birth attendant at delivery in Mekelle town, northern Ethiopia 2007.
19. Fantahun M, Olwit G, Shamebo D (1992) Determinants of Antenatal Care (ANC) Attendance and Preference of Site of Delivery in Addis Ababa. *Ethiop J Health Dev* 6: 17-21.
20. Matsumura M, Gubhaju B (2001) Women's Status, Household Structure and the Utilization of Maternal Health Services in Nepal: Even primary-level education can significantly increase the chances of a woman using maternal health care from a modern health facility. *APPJ* 16: 23-44.