Research Article **Open Access**

Institutional Delivery Service Utilization and Associated Factors among Women of Child Bearing Age at Boset Woreda, Oromia Regional State, Central Ethiopia

Taye Shigute, Solomon Tejineh and Legesse Tadesse*

Department of Public Health, Arsi University College of Health Sciences, Asella, Ethiopia

*Corresponding author: Legesse Tadesse, Department of Public Health, Arsi University, College of Health Sciences, Asella, Ethiopia, Tel: 251-222-308-252; E-mail: legesset2008@gmail.com

Abstract

Background: Evidence has shown access to skilled attendance at birth averting nearly 16-33% maternal deaths. Despite concerted effort to increase access and importance of institutional delivery in preventing maternal death, only 46% and 15% of developing nations and Ethiopian national deliveries, respectively delivered in health facilities that makes assessment of the barriers to health facility delivery important in the study setup.

Objective: To assess institutional delivery magnitude and associated factors among mothers delivered in the past 12 months in Boset Woreda, Ethiopia.

Methods: A community based cross-sectional study was employed. Systematic random sampling was used to select participants. Data collected using Interviewer administered questionnaire and entered Epi Info 7.1 and analyzed using SPSS version 20.0, p-value 0.05 used to declare statistical significance.

Results: A total of 589 women were participated in this study. The mean age of the respondents was 26 years (+5 SD). Educational status of 321 (54.0%) were read and write, while 198 (34.0%) were illiterate. The magnitude of institutional delivery utilization is found 60%. From the study, primary and above educational status (AOR: 2.1; (95%CI: 10.1, 4.70), occupation other than house wife (merchant, employee, etc.) (AOR:1.9; 95%CI:1.12,4.01), age ≥ 18 years during their first marriage (AOR: 1.5; 95%CI:1.21,2.30), age ≥ 18 years during their first pregnancy (AOR: 1.8; 95%CI:1.13,3.35), primigravida (AOR: 2.5; 95%CI: 1.57,3.99), distance from health facility <1 hour (AOR: 15; 95%CI: 9.34,27.11), and women decision maker for place of delivery (AOR: 3.4; 95%CI: 1.86,6.27) were statistically significant predictors contributing for better institutional delivery utilization.

Conclusion and Recommendation: Institutional delivery service utilization was found to be higher compared to other areas. Finding revealed education, occupation, age at marriage and distance from facility independently affect institutional delivery. Efforts should be made to increase maternal education access to facility to improve institutional delivery utilization.

Keywords: Institutional delivery; Pregnancy; Women; Healthcare; Cesarean

Background

Complications of pregnancy and childbirth are taking away the lives of an estimated 303,000 women annually worldwide [1]. Almost 99% these maternal deaths occur in developing countries, while sub-Saharan Africa (SSA) shares more than half of it [1,2]. Ethiopia is one of the SSA countries that markedly contribute a high toll of avoidable maternal deaths worldwide, 470 per 100,000 live births [3]. Nearly 75% maternal deaths in low income countries attributed to five major complications-severe bleeding; pregnancy induced hypertension, sepsis, obstructed labor and complications of unsafe abortion and clustered before, during or shortly after birth of which 15% unexpected, with Ethiopia as no exception [4-6]. Understanding the critical time in which maternal death burden peaks, has better odds to initiate key health-care interventions that could improve women's outcomes. Evidence has shown timely access to skilled attendance at birth averting nearly 16-33% maternal deaths, and its inverse association [7-9]. Increasing access to facilities is a recommended strategy to ensure urgent, facility-based management of labor by a skilled birth attendant in a supportive environment. In Sub-Saharan Africa, this is only applicable by encouraging pregnant women to deliver their infants in the context of properly functioning healthcare facilities [10-12].

Despite concerted effort to increase access and importance of institutional delivery in preventing maternal death, only 46% and 15% of developing countries and national deliveries, respectively delivered in health facilities for the latter the majority 84% of women give birth at home [13-15]. In SSA, the poorest women were over three times more likely to report giving birth at home than the richest women (77.7% *vs.* 22.4% respectively), likewise Ethiopia's situation is worse than SSA [14,15]. Many SSA countries, recently have introduced initiatives designed to overcome the identified barriers as an effort to increase facility deliveries [16].

Considering the terrifying situation, the government of Ethiopia has committed to improve maternal and child health (MCH) and introduced several initiatives to increase access to and enhance communities demand for greater service use, through eliminating user fees, by availing emergency transport to reach a health facility for child birth and community mobilization endeavors since July 2005 [17], aligned with country's flagship community-based approaches called Health Extension Program (HEP). HEP served as a vehicle to improve equitable access to preventive, promotive, and basic curative care through implementation of 16 health packages at the community level, since 2003. Maternal health is part of the family health package and includes delivery of normal births [18,19]. There is evidence from a number of countries that materialization of those initiatives improved utilization of target services and had a positive impact on the rate of assisted deliveries and/or Cesarean sections [20-22].

Ethiopia with maternal mortality ratio (MMR) of 470 adjusted per 100,000 live births, the majority (91%) of births is delivered at home and the proportion of deliveries assisted by skilled attendant is very low less than 16.8% [23]. The use of a skilled attendant has been cited as the single most critical intervention for improving maternal and child health [24]. "Skilled attendance" refers to professionally trained health workers with the skills necessary to manage a normal delivery and diagnose or refer obstetric complications. Complications of pregnancy and childbirth are the leading cause of morbidity and death among reproductive age women. Approximately 585,000 women die every year from maternal mortality related to pregnancy and childbirth complications, more than 25% others suffer a debilitating injury, often with lifelong consequences. More than 90% of these deaths and morbidity occur in developing countries, indicating that they could be averted with adequate and available recourses and health service [7-9,24].

Determining the magnitude of institutional delivery utilization helps to know the progress of service utilization from year to year after number of efforts made to increase utilization. The study also identifies factors associated with institutional delivery utilization that help government and non-government health stakeholders to act on those factors. Determining the magnitude of services utilization and identifying factors associated with utilization of institutional delivery helps the area which needs more efforts for better utilization. This study was crucial in assessing the factors associated with low utilization which need to be solved and those factors contributing for good utilization of institutional delivery need to be favored for better improvement in services utilization and decreasing maternal morbidity and mortality.

Methods and Materials

Study setup

The study was conducted in Boset Woreda, East Shoa Zone, Ethiopia. The district is located 123 Km South East of Addis Ababa. It is structured in to 38 kebele of which 33 rural and 5 urban; with a total population of 179,529 of these 32,424 are women of reproductive age group, as of the 2015 Central Statistical Agency (CSA) projected population. Health institution in the district comprises of 7 health centers, 33 health posts, 3 drug stores and 11 private clinics. Which staffed with 15 Public Health Officers, 6 BSc. Nurses, 37 diploma Nurses, 16 Midwife Nurses and 94 health extension workers. Antenatal, skilled delivery and post-natal services are provided at all government health facilities in the Woreda (Figure 1).
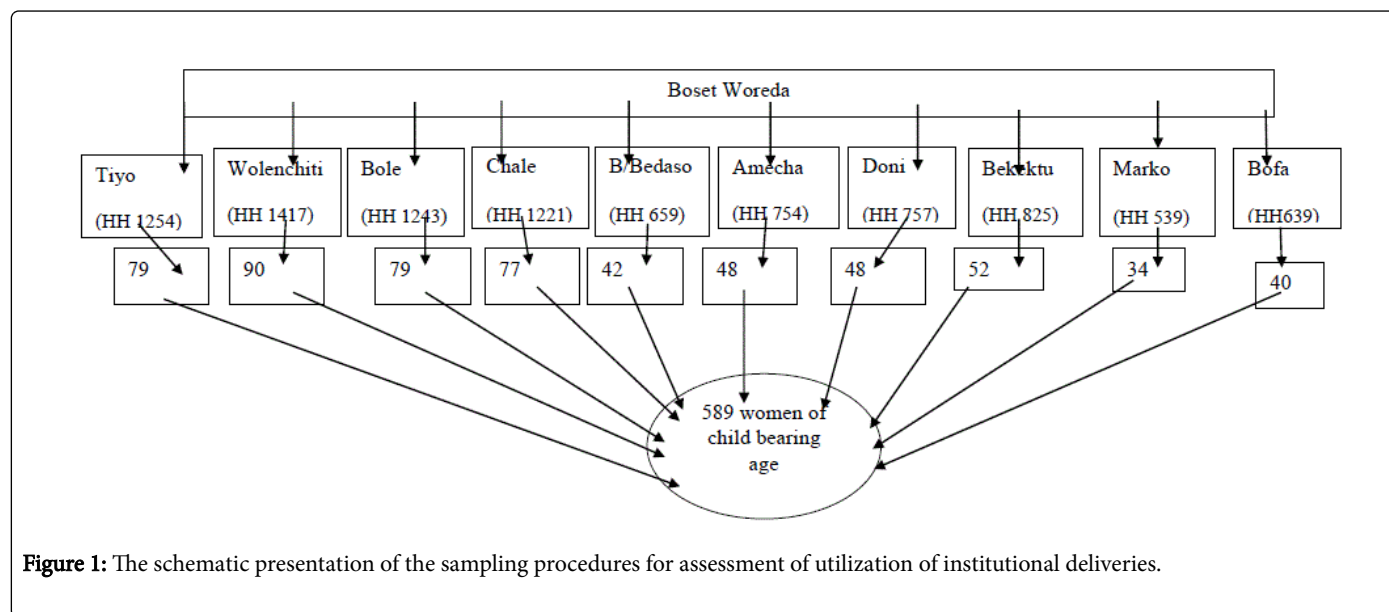

Figure 1: The schematic presentation of the sampling procedures for assessment of utilization of institutional deliveries.

Study design and period

Community based cross-sectional study design was conducted from Jan 01 to May 30 2016. All women of reproductive age (15-49 years) who gave birth to child in the last 1 year before the study period involved if lived six months or more in the kebele prior to the last delivery so that characteristic of the population maintained. Mothers who are mentally and severely ill, not capable of being interviewed were excluded.

The study has two objectives, and for the first objectives, using a single population proportion formula was used. The sample size calculation considered the desired precision of 3% and expected prevalence 14.7% institutional delivery for Oromia in 2014 mini EDHS [14] at confidence level 95%. The no response rate was estimated 10%

and sample size was found to be 589 women. For the second objective sample size determination for two populations was undertaken with an assumption of a prevalence of 14.7% among non-exposed mothers (non-educated) and a chance of increment by odds of 2.00, with 80% power and 95% confidence level a total of 424 women are needed. Adding 10% for non-response due to different reasons, the sample size was raised to 466. Finally comparing sample size determination for the first and second objectives, it was taken the largest sample size, of 589 women who had given birth last year prior to the survey.

Boset woreda was divided into two strata, 33 rural and 5 urban kebeles'. Seven rural and three urban kebeles were selected randomly. To maximize the representativeness of the sample 25% of the kebeles (10 kebeles) were included in the survey. From the selected kebeles, by taking the households' name list from the kebele [health extension workers] as a sampling frame and proportional to the size allocation technique HHs were selected by systematic sampling for the interview in each kebele (i.e. study subjects). By communicating with key-informant of each kebele starting point were selected randomly and going straight within each household, mothers who gave birth in Boset woreda for the past one year before May, 2016 were interviewed until the total sample size was obtained. Variable of interest was utilization of institutional delivery service where as independent variables includes socio-demographic factors (Age of mother, Marital status, Religion, Ethnicity, occupation, education, monthly income, information obtained). Obstetric factors (Obstetrics history, parity, birth order, past history of pregnancy, delivery and post-partum), Availability and accessibility of health service, Knowledge and attitude of mothers about HF delivery.

Operational Definitions

Maternal health: Refers to health of a woman during delivery period.

Skilled attendant: These include doctors, Midwifes, Nurses or Health assistants, Auxiliary Midwives, who undergo formal education in educational program, and successfully completed the qualification to be registered and legally licensed to practice midwifery.

Utilization of Institutional delivery: Is giving birth at health facility.

Home delivery: Delivery took place at locations other than health facility.

Maternal death: Deaths of women while pregnant or within 42 days after termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Educational status: Refers to no education, primary, secondary and more than secondary education.

Structured and pre-tested questionnaires in local languages were used for data collection. Questionnaire includes basic demographic details and other factors related to institutional delivery utilization. The questionnaire was prepared originally in English and then translated to Afan Oromo by a person who had legal license for translation. Back translation to English was done by English teacher who had second degree to check its consistency. The questionnaire was administered in Afan Oromo. Within the selected 10 Kebeles house-to-house visit was carried out to identify households (HHs) with eligible women and 589 HHs were found fulfilling the eligibility criteria. Households from each

kebele were selected again by systematic random sampling with a sampling interval of 4 using list prepared during the house to house visit. If the houses were closed or the mothers were not present at the time of data collection, frequent visits were made until data collectors could communicate them throughout the data collection. The next houses were considered in place of the houses which could not be accessed for collecting mothers' data regarding Institutional Delivery (ID) service utilization.

Data was collected by five diploma nurses who speak Afan Oromo and Amharic. The data collection process was assisted by two field supervisors (health Officers). Two days training was given to data collectors and supervisors to overview the objectives and nature of the study. In each kebele data was collected by interviewing women using the questionnaire. To assure data quality, in addition to adequate training and orientation for supervisors and data collectors, principal investigator and collectors visited the data collection process daily. The researcher reviewed the collected data on daily bases. Questionnaire was pretested on 5% of sample size of non-participating kebles with similar setup to study population and corrective measures were undertaken following comments from data collectors and supervisors.

Collected data was entered using EPI info 7.1 and exported to SPSS version 20.0 for cleaning and analysis. Frequencies, bivariate and multivariate logistic regression analysis were done, OR and 95% Confidence Interval (CI) were derived. Bivariate and multivariate logistic regression was done to show associations between target variable and selected characteristics. Results were reported using adjusted odd ratio at significance level of 0.05. The study was approved by the ethics committee at the College of Health Sciences of Arsi University. Permission to undertake the research was obtained from the regional health bureau. After that, the letter was distributed to the next concerning level offices. Data collectors were trained on the principles of confidentiality and anonymity. No personal identifiers, such as names, were used during data collection, analysis or report writing. The purpose and procedures of the study was explained for potential participants. Then, oral consent was secured from each participant prior to interviewing, and opt out made to be optional without any pressure at any time while interviewing and spousal permission was also secured conditionally. Permission to visit each kebele and to consult with residents was secured from the respective kebeles.

Result

Socio-Demographic Characteristics of study population

In this study a total of 589 respondents were included (response rate of 100%). Of which 189 (32.0%) and 204 (34.6%) were in the age group of 20-24 and 25-29, respectively. The mean age of the respondents was 26 years (+5SD). Almost all (98.1%) of the respondents were married women. Concerning the religion, 367 (62.0%) and 135 (23.0%) of the respondents were Orthodox and protestant respectively. The majority, 494 (83.9%) belongs to Oromo ethnic group followed by Amhara, 78 (13%). Concerning educational status, more than half of the respondents educational status were read and write, 321 (54.0%), while 198 (34.0%) were illiterate and the rest 70 (12%) were educated to primary and above. Similarly, 186 (32.0%) and 217 (36.8%) of respondents husbands' educational status were illiterate and read and write, respectively. Nearly quarter (24.4%) of the respondents had family income of greater than or equal to 1000 ETB and rest three quarter gets below 1000 ETB per month on average (Table 1).

Variables		Frequency	Percentage (%)
Age of respondent	19	33	5.6
	20-24	189	32
	25-29	204	34.6
	30-34	104	17.7
	35+	59	10
Marital Status of respondent	Currently married	578	98.1
	Currently not married	11	1.9
Religion of respondent	Orthodox	367	62
	Protestant	135	23
	Muslim	66	11
	Others Specify	21	3
Ethnicity of respondent	Oromo	494	83.9
	Amhara	78	13.2
	Others	17	2..9
Educational status respondents	Illiterate	198	34
	Read and write	321	54
	Primary and above education level	70	
Educational status Husbands	Illiterate	186	32
	Read and write	217	37
	Primer education	126	31
	Secondary education and above	60	10
Occupation of respondent	Housewife	521	88.5
	Others*	68	11.5
Income of respondent	<600	217	36.8
	601-999	228	38.7
	1000+	144	24.4

Table 1: Socio-demographic characteristics of respondents, Boset Woreda, from Jan 01 to May 30, 2016 (n=589, percentage added to 100%) (*Employee, farmers, private business owners).

Reproductive and related Information of the respondents

Less than half of the respondents, 271 (46%) had 4-6 family size. Concerning age at first marriage, 271 (46%) of the respondents married while they were below age of 18 years. Similarly, 77 (13.1%) of the respondents were below age 18 years during their first pregnancy. About 209 (35.5%) were primigravida while the rest 64.5% were multi (≥ 2) during the time of this study. About 374 (63%) of the respondents were multi-pares during the study time. Only 3.5% of the respondents had no any ANC follow up while the majority had 1 to 2 ANC follow up (Table 2).

Variable	Frequency	Percentage (%)
Family size		
≤ 3	221	37.5

04-Jun	271	46
> 7	97	16.5
Age at first marriage		
<18	271	46
18	318	54
<18	77	13.1
≥ 18	512	86.9
Gravidity (number of pregnancy)		
1 (Primi)	209	35.5
≥ 2 (Multi)	380	64.5
Parity (number of birth)		
1 (primi)	215	37
≥ (Multi)	374	63
Number of ANC visits		
No ANC visit	20	3.5
1 visit	241	40.9
2 visit	237	40.2
3 visit	91	15.4

Table 2: Reproductive and related information of the respondents, Boset Woreda, from Jan 01 to May 30, 2016 (n=589, percentage added to 100%).

Delivery service utilization and related information of respondents

Among the 589 study participants, 355 (60%) delivered in health institution. Of those who delivered in health facility, majority (81.7%) get services in nearby health center. Major proportion, 308 (86.7%) of mothers preferred institutional delivery because mothers will be safe from delivery complications if they helped by health professional in health institutions. Respondents were asked about institutional delivery and related questions to assess their satisfaction on institutional delivery. Accordingly, the satisfaction score was calculated and 270 (76.1%) of respondents scored average (average satisfaction score 67%) and above and considered they were satisfied with institutional delivery and the rest quarter of respondents were not (Table 3).

Variable	Frequency	Percentage (%)
Health facility delivery (n=589)		
Yes	355	60.27
No	234	39.73
Health facility you prefer for delivery (n=355)		
Hospital	65	18.3
Health center	290	81.7
Reason for health facility delivery (n=355)		
Safe from complications	308	86.7
Better safety for newborn	37	10.4

Informed to deliver in HF during ANC	10	2.9
Service satisfaction of respondents delivered in HF (n=355)		
Satisfied	270	76.1
Not satisfied	85	23.9

Table 3: Delivery services utilization and related information of respondents, Boset Woreda, from Jan 01 to May 30, 2016 (n=589, percentage added to 100%).

Accessibility and other factors related with institutional delivery

Nearly quarter of the respondents travel more than two hours to health facility while the rest three quarter of the respondents travel less or equal to one hour to reach health facility. Majority 542 (91.9%) of the respondents get information about institutional delivery from health workers. Concerning the decision to place of delivery, 519 (88.1%) of the respondents place of delivery were decided by their husbands (Table 4).

Variable	Frequency	Percentage (%)
Time taken to health facility		
<1 hour	447	75.9
>1 hour	142	24.1
Source of information about institutional delivery		
Mass Media (TV, Radio)	48	8.1
Health worker	541	91.9
Decision maker for place of delivery		
Women	70	11.9
Husband	519	88.1

Table 4: Accessibility and other factors related with institutional delivery of respondents, Boset Woreda, from Jan 01 to May 30, 2016 (n=589).

Factors associated with institutional delivery utilization by logistic regression models

The binary logistic regression analysis revealed that, maternal educational status, Occupation, family size, age at first marriage, age at first pregnancy, gravidity, time taken to health facility, husband's educational status and decision maker for place of delivery were found to be significantly associated with the institutional delivery services utilization (Table 5).

Variables		Place of Delivery		Crude OR's (95%CI)	AOR (95%CI)
		Facility	Home		
Educational level	Illiterate	110 (55.56)	88 (44.44)	1	1
	Read and write	190 (59.19)	131 (40.81)	1.16 (0.81, 1.660)	0.9 (0.57,1.38)
	Primary and above	55 (78.57)	15 (21.43)	2.9 (1.55, 5.54)	2.1 (1.10,4.70)
Occupation	House wife	304 (58.35)	217 (41.65)	1	1
	Others*	51 (75.00)	17 (25.00)	2.1 (1.20,3.81)	1.9 (1.12,4.01)
Family size	<3	154 (69.68)	67 (30.32)	1.7 (1.20,2.54)	-
	04-Jun	154 (56.83)	117 (43.17)	1	-
	>7	47 (48.45)	50 (51.55)	0.7 (0.45, 1.14)	-

Age at first marriage	<18 years	140 (51.66)	131 (48.34)	1	1
	>18 years	215 (67.61)	103 (32.39)	1.9 (1.39,2.73)	1.5 (1.21,2.30)
Age at first pregnancy	< 18 years	32 (41.56)	45 (58.44)	1	1
	>18 years	323 (63.09)	189 (36.91)	2.4 (1.48,3.91)	1.8 (1.13,3.35)
Gravidity	1 (primi)	147 (70.33)	62 (29.67)	1.9 (1.37,2.81)	2.5 (1.57,3.99)
	>2 (Multi)	208 (54.74)	172 (45.26)	1	1
Time taken to HF	<1 hour	325 (73.20)	119 (26.80)	10.4 (6.65,16.48)	15 (9.34,27.11)
	>1 hour	30 (20.69)	115 (79.31)	1	1
Husband's education	Illiterate	101 (54.30)	85 (45.70)	1	-
	Read and write	125 (57.60)	92 (42.40)	1.4 (0.77, 1.70)	-
	Primary	86 (68.25)	40 (31.75)	1.81 (1.13, 2.90)	-
	Secondary and above	43 (71.67)	17 (28.33)	2.13 (1.13, 4.00)	-
Decision making power	Wife	73 (70.19)	31 (29.81)	1.7 (1.10, 2.68)	3.4 (1.86,6.27)
	Husband	282 (58.14)	203 (41.86)	1	1

Table 5: Factors associated with women's utilization of institutional delivery, Boset Woreda, from Jan 01 to May 30, 2016 (n=589, percentage added to 100%) [*Includes Government employees, Merchants, Farmers and private business owners].

To control the effect of confounding and look for the real effect of each factor multivariate logistic regression model was used. The factors those associated with institutional delivery in binary logistic regression were included in multivariate regression model. Using stepwise backward logistic regression model, the independent predictors of institutional delivery were identified. Mothers whose educational status of primary and above had more than twice more likely to utilize health facility for delivery than those who were illiterate (AOR: 2.1; 95%CI: 1.10, 4.70).

Similarly, mothers' occupation other than housewives (merchant, employee, farmers, and private business) was almost double (1.9 times) more likely to use institutional delivery compared to housewives (AOR: 1.90; 95%CI: 1.12, 4.01). On the other hand respondent's age 18 and above years during their first marriage were one and half (1.5 times) more likely to utilize institutional delivery than those less than 18 years (AOR: 1.5; 95%, CI: 1.21, 2.30). Similarly, respondent's age 18 and above years during their first pregnancy were 1.8 times more likely to utilize institutional delivery than those less than 18 years (AOR: 1.8; 95%CI: 1.13, 3.35). Gravidity (AOR: 2.5; 95%CI: 1.57, 3.99), time taken to health facility (AOR: 15; 95%CI: 9.34, 27.11), and decision maker of place of delivery (AOR: 3.4; 95%, CI: 1.86, 6.27) were the other predictors of institutional delivery utilization.

Discussion

This community based study was employed to determine magnitude and identify factors associated with institutional delivery service utilization. In this study the magnitude of institutional services utilization was 60%. The finding of this study is higher than the institutional delivery services utilization of 18.3 in Dangla District of Amhara region [25], 20.91 in Ankasha Guagusa Woreda of Amhara region [26], 4% in Tigray Region [27], 28.6% in South West Shoa of Oromia [28], 14.5 in Oromia at regional level [14] and 15.4 at national

level of Ethiopia [14]. The possible reason for the discrepancy could arise from the time difference between the current study and other studies which were done before two years of data generation. This is because currently massive initiatives have been undergoing in rural Ethiopia to improve institutional delivery those community mobilization using intensive developmental army activities to ensure maternal health services and free ambulance services aided by phone call might contribute for the very wide differences. However, the finding of this study is lower than the EDHS finding in Addis Ababa which is 86.5% and more than Dire Dawa which showed 58.4% institutional delivery services utilization [14].

Of those utilized institutional delivery, satisfaction level was determined to be 76.1%. This finding was lower than the study done in Oromia Region Asella Hospital which was 80.7% [29], and Gamogofa 79.1% [30] but higher than Amhara region, 61.9% [31]. The deference may be due to the fact the Addis Ababa is big city in which more staffed, motivated service providers and equipped facility. More coverage of health service also can add to larger satisfaction. This study also showed that women educated to primary level and above were two times more likely to utilize institutional delivery than those are not able to read and write. The result was in line with studies in other areas [25,27,28,32,33]. This may be explained by educated women's access to information and awareness of pregnancy problems positively influences their behavior of institutional delivery. Educated women might have knowledge from formal education and can have positive behavior in maternal health service take up and easy to overcome traditional and cultural practices during delivery.

The finding also showed women who were not house wife [other occupations like employee and merchant] were more likely to utilize institutional delivery because these women are in fact had better educational status than housewife in most of the cases and were economically decide independently or influence about institutional

delivery utilization. More over having own income helps to empower women to decide on their own health. The finding was alike with other studies [27,28,34,35] in Ethiopia and in other country Africa [36]. The finding of this study similarly identified place of delivery was decided by their husbands for the majority [82.3%] of the women. However, in contrary to this finding decision making by wife was positively associated to institutional delivery utilization. The fact that decision making by women themselves has positive odds of institutional delivery is in line with different studies in different areas [34,35].

This is because a woman who directly decides on their financial expenditure and select place of delivery without pressure of third party makes easy the facility delivery. The other features of decision making are being able to have authority on her health and property that improve health service utilization behavior in part increase facility delivery. In addition women age greater than 18 years at first marriage as well as greater than 18 years at first pregnancy were more likely to utilize institutional delivery. This may be those mothers greater than 18 years of age are matured and had economic advantage of negotiation and decision than below 18 years to utilize health services including delivery. The finding is in accord with other study results [28,33]. The order of pregnancy revealed women with first pregnancy are two and half times more likely to utilize institutional delivery as compared to those who are pregnant for two or more times. This finding is consistent with other studies, which indicate that women are more likely to utilize professional assistance for their first births [28,33,34,37]. Study done in Kenya and others reported better institutional delivery among women with lower parity [31,36,38]. This may be because of pregnancy complication fear for those with less experienced or bad experience of previous parity.

The finding also showed those mothers who found less or equal to one hour travel time to health facility better utilize institutional delivery. This was consistent with the result of the study done in Kembata Tembaro district in southern Ethiopia reported distance and lack of transportation were among the reasons not to utilize institutional delivery services [28,37]. This can be explained in different ways as the longer the time needed to reach the facility it may cost more, or needs means of transportation which may not be easily available, may require more relatives to accompany. This can also be seen from study in Sudan, Kassala State where there was wide difference in maternal mortality due to underutilization of health facilities, and transportation problems in rural areas [39]. The level of husband education had mounting effect on institutional delivery raise from primary to secondary level but not seen when multiple model logistic regression used to control confounders. This might be seen as the fact that it has less effect on the decision making opportunity of the mother in caparison to the mother own education.

Strength and Limitations

The strength of this community based study is that it represents the real community and generalization to the community is applicable. As limitation, the study is virtually cross-sectional and inherently difficult to trace its temporal effect, the so called the chicken-egg dilemma by which pinpoints further in-depth investigation.

Conclusion and Recommendations

Institutional delivery service utilization at the study area was higher compared to national and Oromia regional finding reported in 2014 EDHS. In this study women education, occupation, age at first married

and distance of residence from health facility were predictors of institutional delivery services. Hence, women empowering through formal education should be given more emphasis from Regional to Woreda level heath offices and education sector as it improves early marriage and pregnancy as well as can change women occupations (from being dependent to income generating type) which in turn increase maternal awareness, economic independence and decision making capability to utilize institutional delivery. Working to delay age at first marriage greater than 18 years should be considered by concerned sectors. Improving geographic health service coverage also needs focus. There is a need to conduct further studies by researchers on client provider interaction and identify other aspects which hinder institutional delivery utilization.

References

1. World Health Organization (2015) Trends in maternal mortality 1990 to 2015, Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva.

2. Hogan MC, Forman 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 Goals 5. The Lancet 8375: 1609-1623.

3. Ethiopian Demographic and Health Survey. Addis Ababa, Ethiopia: Central Statistical Agency and ICF International (2011).

4. Say L, Chou D, Gemmill A, Tunçalp O, Moller AB, et al. (2014) Global causes of maternal death: A WHO systematic analysis. Lancet Glob Health 2: e323-333.

5. Abdella A (2010) Maternal mortality trend in Ethiopia. Ethiop J Health Dev 24: 117-120.

6. UNFPA (2011) Skilled attendance at birth, State of the world population. United Nations Population Fund.

7. McCaw-Binns A, La Grenade J, Ashley D (1995) Under-users of antenatal care: A comparison of non-attenders and late attenders for antenatal care, with early attenders. Soc Sci Med 40: 1003-1012.

8. Graham WJ, Bell J, Bullough C (2001) Can skilled attendance at delivery reduces maternal mortality in developing countries? In: Safe motherhood strategies: A review of the evidence. Antwerp: ITG Press.

9. Scott S, Ronsmans C (2009) The relationship between birth with a health professional and maternal mortality in observational studies: a review of the literature. Trop Med Int Health 14: 1523-1533.

10. Campbell OM, Graham WJ, Lancet maternal survival series steering group (2006) Strategies for reducing maternal mortality: Getting on with what works. Lancet 368: 1284-1299.

11. Moyer CA, Dako-Gyeke P, Adanu RM (2013) Facility-based delivery and maternal and early neonatal mortality in sub-Saharan Africa: A regional review of the literature. Afr J Reprod Health 17: 30-43.

12. Harvey SA, Ayabacab P, Bucaguc M, Djibrinad S, Edsona WN, et al. (2004) Skilled birth attendant competence: An initial assessment in four countries, and implications for the safe motherhood movement. Int J Gynecol Obstetrics 87: 203-210.

13. WHO (2014) World Health Statistics Geneva: WHO.

14. Central Statistical Agency (CSA) 2014 Ethiopia mini demographic and health survey Addis Ababa, Ethiopia.

15. Montagu D, Yamey G, Visconti A, Harding A, Yoong J (2011) Where do poor women in developing countries give birth? A multi-country analysis of demographic and health survey data. PLoS One 6: e17155.

16. Leon B, Dusseljee J, Jurgens E (2006) The role of user fees and health financing in health care financing, Leusden.

17. Zelelew H (2012) Health care financing reform in Ethiopia: Improving quality and equity. Health Systems 20/20 project.

18. FMOH (2010) Health sector development program IV 2010-15. Addis Ababa, Ethiopia.

19. UNFPA (2004) Delivering in to good hands, material mortality updates.

20. Dzakpasu S, Soremekun S, Manu A, Ten Asbroek G, Tawiah C, et al. (2012) Impact of free delivery care on health facility delivery and insurance coverage in Ghana's Brong Ahafo Region. PLoS One 7: e49430.

21. Mbugua JK, Bloom GH, Segall MM (1995) Impact of user charges on vulnerable groups: The case of Kibwezi in rural Kenya. Soc Sci Med 41: 829-835.

22. Impact Toolkit-A guide and tools for maternal mortality programme assessment. Evaluating a health financing policy change: Framework and suggested approaches. Technical Paper: University of Abderdeen (2007).

23. UNICEF (2011) Maternal, Newborn and Child Survival: Ethiopia country profile.

24. www.who.int/reproductivehealth

25. Demilew YM, Gebregergs GB, Negusie AA (2016) Factors associated with institutional delivery in Dangila District, North West Ethiopia: A cross-sectional study. AHS 16: 10-17.

26. Alemayehu M, Mekonen W (2015) The prevalence of skilled birth attendant utilization and its correlates in North West Ethiopia. BioMed Res Int 436938: 8.

27. Assfaw YT (2010) Determinants of antenatal care, institutional delivery and skilled birth attendant utilization in Samre Saharti District, Tigray, Ethiopia: Umea University, Sweden.

28. Wilunda C, Quaglio G, Putoto G, Takahashi R, Calias F, et al. (2015) Determinants of utilization of antenatal care and skilled birth attendant at delivery in South West Shoa Zone, Ethiopia: A cross-sectional study. Reproductive Health 12: 74.

29. Amdemichael R, Tafa M, Fekadu H (2014) Maternal satisfaction with the delivery services in Assela Hospital, Arsi Zone, Oromia Region. Gynecol Obstet (Sunnyvale) 4: 257.

30. Tesfaye R, Worku A, Godana W, Lindtjorn B (2016) Client satisfaction with delivery care service and associated factors in the public health facilities of Gamo Gofa Zone, Southwest Ethiopia: In a resource limited setting. Obstet Gynecol Int 2016: 5798068.

31. Tayelgn A, Zegeye DT, Kebede Y (2011) Mothers' satisfaction with referral hospital delivery service in Amhara Region, Ethiopia. BMC Pregnancy Childbirth 11: 78.

32. Butawa NN, Tukur B, Idris H, Adiri F, Taylor KD (2010) Knowledge and perceptions of maternal health in Kaduna State, Northern Nigeria. AJOL 14: 3.

33. Abera M, Gmariam A, Belachew T (2011) Predictors of safe delivery service utilization in Arsi Zone, South-East Ethiopia. Ethiop J Health Sci 21: 95-106.

34. Eyob B, Alemayehu W (2013) Factors associated with utilization of institutional delivery among mothers in the Butajera Health & Demographic Surveillance System. A case control Study (Thesis).

35. Montagu D, Yamey G, Visconti A, Harding A, Yoong J (2011) Where do poor women in developing countries give birth? A multi-country analysis of demographic and health survey data. PLoS One 6: e17155.

36. Kitui J, Lewis S, Davey G (2013) Factors influencing place of delivery for women in Kenya: An analysis of the Kenya demographic and health survey, 2008/2009. BMC Pregnancy Childbirth 13: 40.

37. Shiferaw S, Spigt M, Godefrooij M, Melkamu Y, Tekie M (2013) Why do women prefer home births in Ethiopia? BMC Pregnancy Childbirth 13: 5.

38. Kaso M, Addisse M (2014) Birth preparedness and complication readiness in Robe Woreda, Arsi Zone, Oromia Region, Central Ethiopia: A cross-sectional study. Reprod Health 11: 55.

39. Mohammed AA, Elnour MH, Mohammed EE, Ahmed SA, Abdelfattah AI (2011) Maternal mortality in Kassala State-Eastern Sudan: Community-based study using reproductive age mortality survey (RAMOS). BMC Pregnancy Childbirth 11: 102.