

ORIGINAL ARTICLE**PREDICTORS OF SAFE DELIVERY SERVICE UTILIZATION IN ARSI ZONE, SOUTH-EAST ETHIOPIA**Mulumebet Abera¹, Abebe G/mariam¹, Tefera Belachew¹**ABSTRACT**

BACKGROUND: Evidence show that lack of access to and use of, essential obstetric care services to be a crucial factor that contributes to the high maternal morbidity and mortality. Skilled attendance during labor, delivery and early post-partum period could reduce deaths due to obstructed labor, hemorrhage, sepsis and eclampsia. There is limited information on the mothers' use of skilled delivery services in the study area. This study assessed the predictors of safe delivery service utilization in Arsi Zone, Southeast Ethiopia.

METHODS: A cross-sectional community based study using quantitative and qualitative methods was conducted from February 15th to March 15th 2006. A total of 1089 women who had at least one birth one year prior to the study were involved in the study from nine rural and four urban kebeles in three Woredas (Districts) selected using a systematic sampling method from all households in the study area. A pre-tested structured interviewer administered questionnaire was used to collect data. Information on the utilization of safe delivery service and socio-demographic, individual and institutional factors and past obstetric history were collected. Focus Group Discussion guide was used for qualitative data collection. The data were edited, cleaned, and entered into a computer and analyzed using SPSS for windows version 12.0.

RESULT: One thousand seventy four women who had at least one birth were interviewed making a response rate 98.6%. Two hundred seventy one (75.0%) of urban and 373(52.0%) rural women received antenatal care from skilled health professional at least once during their last pregnancy. Thirty-one (4.3%) of rural and 145 (40.4%) of urban women delivered in health institution. In multivariate analysis showed that residential area OR= 8.5, 95%CI; (5.1,13.9), parity OR=0.18, 95%CI; (0.08, 0.42), and ANC service use OR= 4.5, 95%CI; (2.2,8.9), and maternal education OR=4.6, 95%CI; (1.7,12.8), were most significant predictors of safe delivery service use by mothers ($P < 0.01$).

CONCLUSION: Birth attended by skilled personnel was low in the study area. Maternal education, her birth experience and her use of prenatal services are important predictors. Promoting information, education and communication on safe delivery service utilization, expansion of health service and empowerment of women are needed.

KEY WORDS: safe delivery, skilled attendants, and maternal health service utilization.

INTRODUCTION

Globally about 585,000 women die each year due to conditions related to pregnancy and child birth 99% of which occur in developing countries (1). Over three quarter of maternal deaths are due to causes directly related to pregnancy and childbirth (2).

The complications that cause the deaths and disabilities of mothers affect the unborn fetus. These deaths could be avoided if preventive measures were taken and adequate cares available particularly during pregnancy, childbirth and postpartum period through obstetric care services. More than 60% of maternal deaths occur immediately following delivery, with more than half occurring within a day of delivery (3-4).

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The Millennium Development Goals (MDGs) had set maternal mortality ratio (MMR) and proportion of births attended by skilled health personnel as process indicators for the achievement of maternal health. Skilled attendance during labor, delivery and the early post-partum period could reduce an estimated 16-33% of maternal deaths (4-6). However, only 61% of births are attended by a skilled health worker globally. In Ethiopia, institutional delivery is very low as compared other countries, only five percent of women give birth at health facilities. Over 95% of the deliveries take place at home and mostly without the assistance of medically trained personnel (7-8).

As reported in literature maternal health care utilization is affected by multiple factors such as educational, socio-economic status, and knowledge of mothers about the benefits of maternity services (8-12). Other important factors which affect the utilization of maternity care services in developing countries are the cultural background of the woman, involvement in decision making, time constraints, physical access to health facility, and cost of the services (13-16). Other predictors of health services use include institutional factors such as approaches of the health personnel and absence of privacy and perceived quality of health care during institutional delivery and perceived quality of over all services (17).

In Ethiopia, even though under utilization of the existing health service was a major problem, study on the predictors of safe delivery service use and the reasons for not using institutional delivery was scarce. Therefore, the objective of this study was to assess the predictors of safe delivery service utilization in Arsi zone southeast Ethiopia.

METHODS AND MATERIALS

This comparative cross-sectional community based study, which involves quantitative and qualitative methods, was conducted from February 15 to March 15 2006 in Arsi zone among women of childbearing age. Arsi zone is located 175 Km South-East of Addis Ababa.

The source populations for this study were all women in a child bearing age who had at least one birth experience. The study population comprises of randomly selected women from the source population. Women who had at least one birth in the last one year and volunteered to participate, in the study were included. Those women who were severely ill and who have lived in the study area for less than a year were excluded.

The sample size was determined using Epi Info version 6 statistical packages and based on the

following assumptions: 2% for proportion of rural woman utilizing safe delivery service (18, 19) [P_1] and 8% for proportion of urban woman utilizing safe delivery service (P_2), precision 5% at 95% confidence level, power of 80%, non-response rate 10% and design effect of 2. Based on this data, a sample size of 1089 was calculated (363- urban and 726 - rural).

First three woredas (Tiyo, Shirka and Assela Town) were randomly selected. Second from the list of rural kebeles in the two woredas 9 kebeles were randomly selected (3 from Tiyo and 6 from Shirka). Since the rural population is large in number, allocation of sample size was in the ratio of 2:1. After identifying households having the target, women (women with at least one child) in each urban and rural kebeles sample size was allocated proportional to the size of households selected in each area. Systematic random sampling was applied to identify the required households from the selected households and one eligible woman is expected from each household. To control for potential intra household correlation, one woman was randomly selected in the event where a household had two or more eligible women.

A structured pre-tested English version questionnaire adapted from previous similar studies and translated to Oromiffa the local language was used to collect the quantitative data. Ten experienced nurses collected the data after taking training, and the investigator made strict supervision.

The data were entered, cleaned and analyzed using SPSS for windows version 12.0 at Jimma University Reproductive Health Data Center. Frequency and measure of variations were used to describe the study population in relation to the dependant and independent variables collected. Chi-square (χ^2) test and Binary logistic regression tests was employed to check associations. All variables that have significant association in the chi-square test were entered into the model. Multivariate logistic regression model was fitted to identify the predictors of safe delivery use. Statistical significance was declared at $P < 0.05$.

Six focus group discussions consisting of eight participants each were also carried out. The Focus Group Discussion was to complement the data that was generated by quantitative survey and elaborate issues that would not be clearly reflected in findings. The discussion was conducted using semi-structured open-ended question guides in order to provide more room for more discussion. Trained female with nursing background moderated the discussion while, psychologist with the

principal investigator guided the overall process. One female research assistant was trained to organize the focus group discussion and handle tape recording and note taking during discussion. Each session was tape-recorded and the principal investigator together with the moderators and note takers transcribed the information after each sessions.

Ethical clearance was obtained from the Jimma University Ethical Review Committee. Permission was secured from the Zone and Woreda Administrative Council after explaining the purpose of the study. Informed verbal consents were obtained from each respondent before data collection. The participants were assured that the information to be collected would be kept confidential and participation was entirely voluntary. The following operational definitions were used in the study.

Safe delivery: delivery attended by skilled attendants in a health institution

Skilled attendant: people with midwifery skills who have been trained to manage normal delivery diagnose and make refer obstetric complication.

Knowledgeable: women were considered knowledgeable about danger signs related to pregnancy and childbirth if they scored above the mean or median of 11 knowledge questions and not knowledgeable if otherwise.

Favourable attitude: women were considered as having favourable attitude towards utilization of safe delivery service if they scored above the mean or median on 10 attitude questions and unfavourable if otherwise. A total of ten attitude questions, which has got three choices agree, disagree and neutral. For positive statement those who chose agree were given 1 point and those who chose neutral and disagree were given zero. For negative statement those who chose disagree were given 1 point, and those who chose, agree and neutral given zero. The overall attitude was calculated by summing scores.

RESULTS

A total of 1074 women who had at least one birth were interviewed giving a response rate 98.6%. Two third 715(66.6%) are from rural, the majority were in the age range of 25-29 years (30.6%), 52.7% belong to Oromo ethnic group, and 723(67.3%) were Orthodox by religion. Regarding their educational status, 320(44.8%) of rural and 46(12.8%) of the urban study subjects were illiterate. The majority 741(69.0%) were housewives (rural 66.7% and 73.5% urban) and 957(89.1%) were married (rural 90.5% and 86.4% urban) (Table 1).

Out of the ever-married women 514(47.9%) were married before the age of 18 years, 611(56.9%) were pregnant before the age of 20 years and the mean age at first pregnancy was 19 years (± 4 years). Early age at first pregnancy has significant association with rural residence ($P < 0.001$).

The mean parity of the respondents (mean, SD) was 2.5 ± 1.7 for urban and 3.5 ± 2.3 for rural women. Forty-nine (13.6%) of urban and 230(32.2%) of rural women had five and more children. One hundred forty (39.0%) of urban and 379(53.0%) of rural women reported that their last pregnancy was unplanned (Table 2).

Regarding maternal health service utilization, 271(75.5%) of urban and 373(52.2%) of rural had at least one prenatal visit during their last pregnancy. Three hundred forty six (53.5%) of the respondents received 1st ANC in their 2nd trimester of pregnancy. Among those women who attended ANC 274(42.6%) have made 4 and more visits and 449(69.7%) of the respondents reported that they received health education during their ANC visits. Out of those who said they have received health education during their ANC visit 298(66.4%) were informed about the danger signs related to pregnancy, and 338(75.0%) about the place of delivery. Out of the studied subject's 82.1% of urban and 88.2% of rural women received at least two injections of Tetanus Toxoid vaccine during their pregnancy.

Table 1. Socio demographic characteristics of respondents by residential area Arsi zone, March 2006.

Variables		Rural (n= 715) No(%)	Urban (n= 359) No(%)	Total (n=1074) No(%)
Age at interview	15-19	60(8.4)	22(6.1)	82(7.6)
	20-24	189(26.4)	110(30.6)	299(27.8)
	25-29	219(30.6)	110(30.6)	329(30.6)
	30-34	124(17.3)	66(18.4)	190(17.7)
	35&above	123(17.2)	51(14.2)	174(16.2)
Ethnicity	Oromo	390(54.5)	176(49.0)	566(52.7)
	Amhara	301(42.1)	143(39.8)	444(41.3)
	Guragie	21(2.9)	27(7.5)	48(4.5)
	Others	3(4)	13(3.6)	16(1.5)
Religion	orthodox	498(69.7)	225(62.7)	723(67.3)
	Muslim	200(28.0)	96(26.7)	296(27.6)
	Others	17(2.4)	38(10.7)	55(5.1)
Educational status	illiterate	320(44.8)	46(12.8)	366(34.1)
	read and write	61(8.5)	12(3.3)	73(6.8)
	grade1-4	120(16.8)	53(14.8)	173(16.1)
	grade 5-8	137(19.2)	82(22.8)	219(20.4)
	grade 9-10	47(6.6)	67(18.7)	114(10.6)
	11-12 grade	30(4.2)	60(16.7)	90(8.4)
	above 12th grade	0(0)	39(10.9)	39(3.6)
Occupation	house wife	477(66.7)	264(73.5)	741(69.0)
	farmer	191(26.7)	2(6)	193(18.0)
	government	3(4)	40(11.1)	43(4.0)
	employee	44(6.1)	53(14.8)	91(7.6)
	Others			
Marital status	not ever married	40(5.6)	36(10.0)	76(7.1)
	married	647(90.5)	310(86.4)	957(89.1)
	Others**	28(3.9)	13(3.6)	41(3.8)

- Merchant (1.1% & 7.8%); Daily laborer (1.7% & 1.4%); Student (1.7% & 2.5%) ** Divorced, Separated and widowed (3.9% & 3.6%).

Table 2. Past reproductive history of respondents by residential area Arsi zone, March 2006.

Reproductive variables	Rural (n= 715) No (%)	Urban (n=359) No (%)	Total (N=1074) No (%)
Age at 1 st marriage			
<18yrs	378(52.9)	136(37.9)	514(47.9)
18 yrs &above	337(47.1)	223(62.1)	560(52.1)
Age at 1 st pregnancy			
<20 yrs	456(63.8)	155(43.2)	611(56.9)
20 yrs &above	259(36.2)	204(56.8)	463(43.1)
Gravidity			
1	151(21.1)	131(36.5)	282(26.3)
2-4	325(45.5)	174(48.5)	499(46.5)
5 and above	239(33.4)	54(15.0)	293(27.3)
Parity			
0-1	155(21.7)	133(37.0)	288(26.8)
2-4	330(46.2)	177(49.3)	507(47.2)
5 and above	230(32.2)	49(13.6)	279(26.0)
Ever had still birth			
No	594(83.1)	335(93.3)	929(86.5)
Yes	121(16.9)	24(6.7)	145(13.5)
Ever had abortion			
No	633(88.5)	330(91.9)	963(89.7)
Yes	82(11.5)	29(8.1)	111(10.3)
Ever had neonatal death			
Yes	55(7.7)	26(7.2)	81(7.5)
No	660(92.3)	333(92.8)	993(92.5)
Last pregnancy planed			
Yes	336(47.0)	219(61.0)	555(51.7)
No	379(53.0)	140(39.0)	519(48.3)
Duration of last labor			
< 12 hrs	513(71.7)	260(72.4)	773(71.9)
12-24 hrs	144(20.1)	64(14.8)	208(19.4)
> 24 hrs	58(8.1)	35(9.7)	93(8.7)

Two hundred fourteen (59.6%) and 684 (95.7 %) of urban and rural women, respectively, delivered their last child at home (Fig 1). Seven hundred

ninety six (88.6%) of home deliveries were attended by unskilled birth attendants including neighbors and relatives.

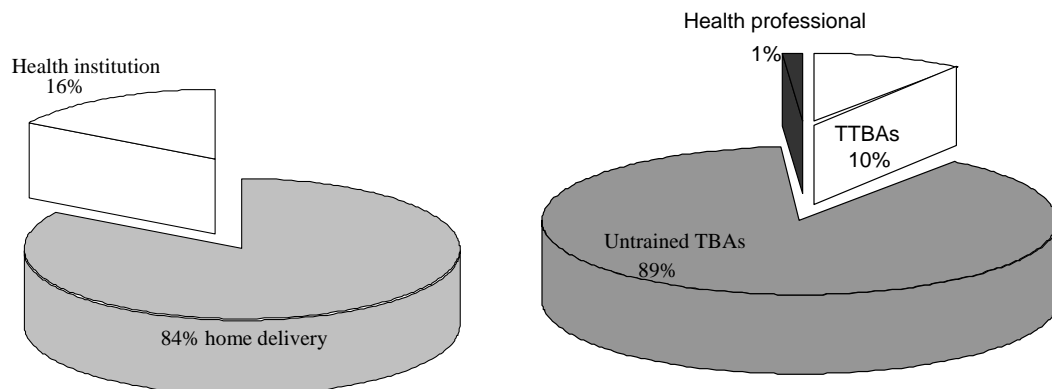


Fig 1: Respondents' place of delivery and attendants of home delivery, Arsi Zone, March, 2006.

When asked about the reason for preferring home delivery, 492(54.8%) reported that their labor was short, 218(24.2%) absence of nearby health facility, 184(20.5%) preferred to give birth in the presence of close relatives and 174(19.4%) fear of manipulation in the health facility (Fig 2). In the FGD component of the study similar reasons were cited in all group discussions.

Most of the participants said and agreed that home delivery is a tradition and custom for a long time,

women may deliver immediately after the start of labor so they didn't get enough time to go to health institution. The other reason mentioned was lack of transportation especially during the nighttime. Some participants mentioned that women do not go to health institution due to fear of manipulations like operative procedure, mistreatment by few health workers and inability to afford the cost of materials.

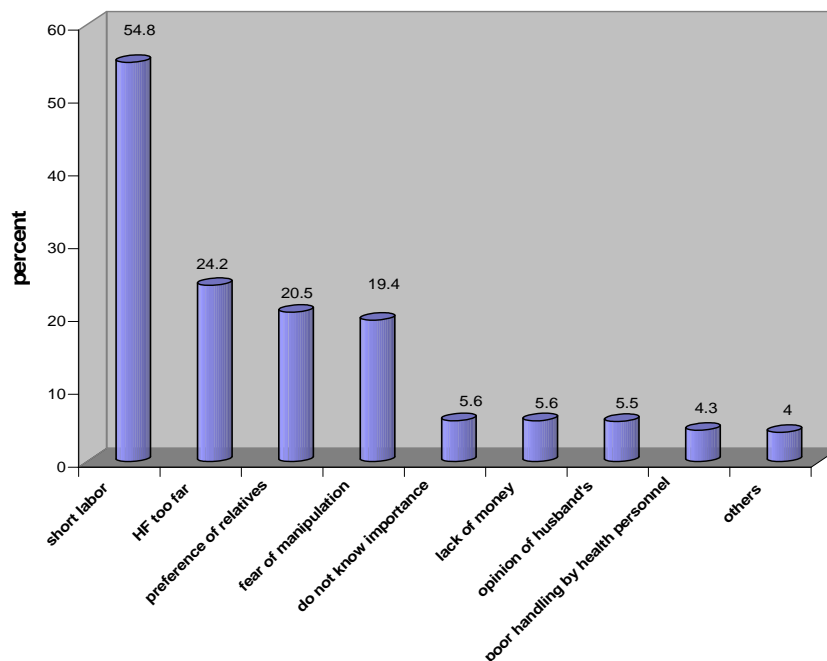


Fig 2. Reasons for home delivery among respondents Arsi zone, March 2006.

Overall, 117(16.1%) of rural and 67(18.7%) of urban women had good knowledge on knowledge questions of danger signs related to pregnancy and

child birth. Similarly, the majority of the FGD discussants in the rural areas mentioned the danger signs related to pregnancy and childbirth (Table 3).

When the participants were asked about the means of prevention of these problems, most of them agreed that the problems may be avoided if a woman consults a trained person in the health facilities. Majority of the participants mentioned that maternal health services were provided in the near by health facility.

Regarding their attitudes towards danger signs of pregnancy, child birth and safe delivery service utilization, 657(61.2%) of the study subjects showed favorable attitudes towards safe delivery service utilization. However, they had unfavorable responses on specific issues where three hundred sixteen (29.5%) disagreed to the statement a “woman should plan ahead of time where she will give birth”; and 430(40.0%) agreed to the statement “delivering on the delivery bed in labor ward was very shameful” (Table 4).

Out of the total 176 women who delivered their last child at health institution, 138(78.4%) paid for the service and out of these 23(16.7%) complained that the payment was too expensive. Fifty one (29.0%) said they waited for long time before receiving the service and (13.0%) said the health worker were not respectful. 26 (14.8%) of them were not satisfied with the service they received. They also complained about the distance to the health institution from their residence, 359(33.4%) had walked more than 2 hours to reach the nearest health facility.

Concerning the predictors of safe delivery service utilization, multivariate logistic regression analysis carried out to determine the most important variables predicting the utilization of safe delivery services among the study participants, showed that women who live in urban areas were eight times more likely to use the service than their counterparts OR=8.5, 95%CI; (5.2, 13.9).

The other predictor was maternal education, women whose educational status was secondary and above

secondary were 2.5 and 4.6 times more likely to utilize the service than women who were illiterate {OR (95%CI): 2.5(1.2,5.0) 4.6, (1.7, 12.8), respectively. But there was no significant difference in utilization between those illiterate and who attend primary education.

As shown in Table 5, religion had significant association with utilization of safe delivery services. Orthodox Christians and Muslims were less likely to utilize the service than others Christians (protestant, Catholic, Jehovah witness) OR (95%CI):.36, (0.17, 0.79) and 0.31, (0.13, 0.73)}, respectively.

Husbands' attitude towards institutional delivery was also associated with utilization of safe delivery service. Women whose husbands' attitudes were negative were less likely to utilize the service OR= 0.11, 95%CI; (0.02, 0.58). Women's decision making power has a significant association with the utilization of service in that those women who were decision maker in their house utilized the service 8 times more likely than the others OR= 7.8, 95%CI; (2.3, 26.5). Respondents' overall attitudes towards danger health problem related to pregnancy and childbirth and safe delivery utilization has significant association with service utilization. Those women who have favorable attitude utilized the service three times more than those who have unfavorable attitude OR=2.8, 95%CI; (1.6, 4.7) (Table 5).

Table 3. Respondents' knowledge on danger signs related to pregnancy and childbirth by residential area Arsi zone, March 2006.

Variables	Rural	Urban	Total
*Knowledge on danger signs related to pregnancy(n=427)			
Persistent vomiting	173(67.8)	128(74.4)	301(70.5)
Vaginal bleeding	131(51.4)	79(45.9)	210(49.2)
Sever headache	66(25.9)	41(23.4)	107(24.9)
Hypertension	32(12.5)	24(13.7)	56(13.0)
Face and hand swelling	29(11.4)	34(19.8)	63(14.8)
Fits	20(7.8)	15(8.7)	35(8.2)
Others	16(6.3)	10(5.8)	26(6.1)
*Knowledge on danger signs related to labor and delivery(n=598)			
Prolonged labor (> 12 hrs)	286(70.8)	127(65.5)	413(69.1)
Retained placenta	259(64.3)	116(60.1)	375(62.9)
Vaginal bleeding	176(43.6)	88(45.4)	264(44.1)
Hypertension	8(2.0)	10(5.2)	18(3.0)
Others	2(.5)	3(1.5)	5(.8)
*Knowledge on danger signs that occurs with in the first week after birth(n=505)			
Massive vaginal bleeding	154(46.2)	83(48.3)	237(46.9)
After pain	149(44.7)	43(25.0)	192(38.0)
High grade fever	100(30.0)	79(45.9)	179(35.4)
Offensive vaginal discharge	91(27.6)	44(25.6)	135(26.7)
Fits	13(3.9)	13(7.6)	25(5.1)
Hypertension	12(3.6)	10(5.8)	22(4.4)
Face and hand swelling	11(3.3)	17(9.9)	28(5.5)
Others	5(1.5)	7(4.1)	12(2.4)
Over all knowledge on danger health problems related to pregnancy and child birth			
Not knowledgeable	600(83.9)	292(81.3)	892(83.1)
Knowledgeable	115(16.1)	67(18.7)	182(16.9)

*More than one answer is possible

Table 4. Attitude of respondents towards utilization of safe delivery by residential area, Arsi Zone, March 2006.

Attitude statements	Rural			Urban		
	Agree	Indifferent	Disagree	Agree	Indifferent	Disagree
Any pregnant woman can develop delivery complication	585(81.80)	53(7.4)	77(10.8)	288(80.2)	26(7.2)	45(12.5)
Delivery complications can be dangerous for the health of the woman	675(94.4)	10(1.4)	30(4.2)	333(93.0)	11(3.1)	14(3.9)
Delivery complications can't be dangerous for the health of the new born	121(16.9)	28(3.9)	566(79.2)	38(10.6)	21(5.9)	299(83.5)
A woman should plan ahead of time where she will give birth	497(69.5)	64(9.0)	154(21.5)	260(72.6)	15(4.2)	83(23.5)
A woman shouldn't plan ahead of time how to get to the place where she will give birth	219(30.6)	75(10.5)	421(58.9)	90(25.1)	15(4.2)	254(70.8)
Every pregnant woman needs a skilled attendant at delivery.	677(94.7)	4(0.6)	34(4.8)	333(92.8)	5(1.4)	21(5.8)
Being attended by male health professional during delivery is very shameful and unethical	242(33.8)	38(5.8)	435(60.8)	100(27.9)	15(4.2)	244(68.0)
It is very shameful to deliver on delivery bed in labor ward	154(21.6)	169(23.7)	391(54.8)	52(14.5)	55(15.3)	252(70.2)
Women do not go to health facility for delivery because it is too expensive	277(38.7)	60(8.4)	378(52.9)	84(23.4)	25(7.0)	250(69.6)
Women do not go to health facility for delivery because the health worker do not treat them respectfully	228(31.9)	152(21.3)	335(46.9)	105(29.2)	63(17.5)	191(53.2)

Age at first pregnancy showed statistical association with place of delivery. Those who were pregnant before the age of 20 years were less likely to utilize the service than those who were pregnant after the age of 20years {OR (95%CI): .60, (.38, .95)}. Order of pregnancy has also showed a statistical association with the utilization of safe delivery. Those women who have five and more

children were less likely to utilize the service than those who have one child {OR (95%CI): .18, (.08, .42)}. The other strong predictor of safe delivery service utilization was prenatal visit; women who had at least one registered prenatal visit were 4.5 times more likely to utilize the service than those who did not {OR (95%CI): 4.5, (2.2, 8.9) } (Table 6).

Table 5. Association of socio demographic characteristics of respondents and place of delivery, Arsi zone, March, 2006

Variables	Delivered in health institution		Crude OR (95% CI)	Adjusted OR(95%CI)*
	Yes	No		
	N(%)	N(%)		
Residential area				1.00
Rural	31(4.3)	684(95.7)	1.00	8.5(5.1, 13.9)**
Urban	145(40.4)	214(59.6)	14.9(9.8, 22.6)	
Religion				
††Others	25(45.5)	30(54.5)	1.00	1.00
Orthodox	116(16.0)	607(84.0)	.23(.13, .40)	.36(.17, .79)***
Muslim	35(11.8)	261(88.2)	.16(.08, .30)	.31(.13, .73)***
Educational status				1.00
No formal education	15(3.4)	424(96.6)	1.00	1.5(.75, 2.9)
Primary level	54(13.8)	338(86.2)	4.5(2.5, 8.1)	2.4(1.2, 5.0)***
Secondary level	79(38.7)	125(61.3)	17.8(9.9, 32.1)	4.6(1.7, 12.8)***
Tertiary level	28(71.8)	11(28.2)	71.9(30.2, 171.2)	
Husband's attitude towards ID				
Negative	2(1.9)	106(98.1)	.07(.18,.30)	.11(.02,.58)***
Positive	152(20.4)	596(79.6)	1.00	1.00
Decision maker				
Husband only	10(5.2)	182(94.8)	.23(.12, .45)	.74(.31, 1.71)
Self	20(19.1)	85(80.9)	1.0(.59, 1.7)	7.8(2.3,26.5)***
Others	5(14.3)	30(85.7)	.71(.27, 1.8)	2.5(.51, 13.0)
Both	141(19.1)	601(80.9)	1.00	1.00
Over all respondents attitude				
Favorable	146(22.3)	511(77.7)	3.7(2.4,5.6)	2.8(1.6, 4.8)***
Unfavorable	30(7.2)	387(92.8)	1.00	1.00
Over all knowledge				
Knowledgeable	42(22.5)	145(77.5)	2.8(1.3,6.2)	
Not knowledgeable	134(15.0)	758(85.0)	1.00	

Adjusted for socio-demographic variables; ** p<0.001; *** p< 0.01, †Gurage, Tigre, Silte; †† Catholic, protestant , Jehova witness; ††† merchant, student, housemaid, daily laborer. ID .. Institutional Delivery

Table 6. Association of prior obstetric and delivery history of respondents and place of delivery, Arsi, March 2006

Variables	Delivered in the health institution		Crude OR (95%CI)	Adjusted OR (95%CI)*
	Yes	No		
	N(%)	N(%)		
Age at 1 st pregnancy				
20 Yrs and above	121(26.0)	345(74.0)	1.00	1.00
<20 yrs	55(9.0)	553(91)	.28(.20, .40)	.60(.35, .95)***
Parity				
0-1	91(31.6)	197(68.4)	1.00	1.00
2-4	76(15)	431(85)	.38(.27, .54)	.38(.24, .61)**
5 and above	9(3.2)	270(96.8)	.07(.04, .12)	.18(.08, .42)**
ANC received				
No	14(3.3)	416(96.7)	1.00	1.00
Yes	162(25.2)	482(74.8)	9.9(5.7, 17.5)	4.5(2.2, 8.9)**

* Adjusted for the Scio-demographic variables, ** $P < 0.001$ *** $P < 0.05$

DISCUSSION

This study identified factors that influence the utilization of safe delivery services among the study subjects in both the urban and rural study area. Some of the factors identified to be predictors of safe delivery service utilization in this study includes residential place (rural and urban), having more than one delivery, antenatal care service utilization, maternal education, age at first pregnancy, religious affiliation, both husband's and respondent's attitude and decision making power of the pregnant women are more or less related to the demographic and socio cultural aspects of the women which is consistent with the findings of other studies in Ethiopia (7-10, 20). Our findings showed that urban women are more likely to utilize the delivery services than rural women. This might be due to the fact that rural women have less access to the health facilities and lack of awareness and information, which was in line with the Ethiopian Demographic Health Survey of 2000 report and other studies conducted in other areas of the country and else where (9,15, 18, 20).

Maternal educational status showed statistically significant association with the utilization of the delivery services. Moreover women having higher educational level were five times more likely to give birth in the health institution than illiterates

which is in agreement with DHS report and studies conducted elsewhere (10, 18, 20, 21).

Women whose husbands' attitude towards institutional delivery was unfavorable were less likely to utilize the service which is similar to report from Addis Ababa (8). As reflected during the FGD, by many of the participants the decision for place of delivery is made by the husbands. It was also observed that women who made independent decisions about place of delivery themselves were eight times more likely to utilize the service than other group.

Respondents' attitude towards danger signs related to pregnancy and childbirth was important predictors for the utilization of the service as women with favorable attitudes were three times more likely to use safe delivery service than those with unfavorable attitude. It is a well established fact that knowledge and attitude towards the delivery and other health care service shapes the decision to utilize. Similar to the findings of various studies in the country as well as elsewhere in Africa and Asia, religion emerged as a predictor for maternal service utilization (9, 13, 22). In our study Orthodox Christians and Muslims were less likely to utilize the service than other Christians (protestant, catholic and Jehovah witness). As to

how religion influences maternal health service utilization needs further studies to ascertain.

Among past obstetric histories parity and age at first pregnancy had a significant association with utilization of safe delivery service. Women with five and more children were less likely to utilize the service than women who had one child which is consistent with findings of other studies conducted in the county (15, 18). Similarly studies in India and Turkey reported that women with high parity utilize delivery service less likely (20, 22). The possible explanation for this is as parity increases women's confidence and experience increase. As also reported in other studies antenatal care visit has shown significant association with safe delivery utilization. This finding is in line with the findings of other studies in the country (19), and other studies conducted in Bangladesh and India which show that prenatal visit increased the odds of utilization of skilled attendant at Birth (23, 24). This may be because contact with skilled provider during pregnancies gives chance for the women to know more about the importance of skilled attendant during childbirth.

The other factor, found to affect the utilization of delivery service was related to health facilities in which about one third of women who gave birth in the health institution reported that the service charge was too expensive, waiting time as a problem and unrespectfulness of health workers. Similarly in the FGDs the discussant identified factors such as lack of support during labor, bad behavior of health workers, cost and shortage of equipments in the health institutions that hindered women from utilizing delivery services. In a study done in Tanzania among women who delivered at home 21% reported that they did so because of rudeness of the health workers (25). In this study about 6% of those women who delivered at home gave the same reasons. This shows how health facility related factors could contribute to under utilization of available services as unless they face a life treating complication those women may not return for the second time, which needs close attention of Ministry of Health and other concerned reproductive health organizations.

In conclusion, the study identified factors such as, urban residence, maternal education, antenatal care utilization, respondent's and husband's attitude towards institutional delivery and women's decision making power were found to be important predictors of safe delivery service utilization. Therefore based on the study findings for further improvement to utilize delivery services it needs to consider: promoting Information, Education and Communication tailoring messages to different

segment of the community in order to increase awareness on maternal health services particularly on danger signs related to pregnancy and childbirth. Further awareness needs to be created among men on the importance of safe delivery service utilization. Further research on community's knowledge about birth preparedness and the quality of maternal health services are recommended.

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