

Utilization of Institutional Delivery Services and Associated Factors among Mothers in Semi-pastoralist, Southern Ethiopia

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Abstract

Background: The problem of home delivery and maternal mortality is still the problem which is ubiquitous in most developing countries like Ethiopia. Trendy home delivery practices due to cultural norms, beliefs, perceptions and knowledge of women were deterrent to maternal health service utilization.

Methods: A community based cross sectional study with internal comparison was conducted on 756 women who have delivered in the last two years. Descriptive, bivariate and multivariate analyses were used to analyze the data. Odds ratio with 95% CI was estimated to assess the predictors of institutional delivery services.

Result: Only 14.5% of the mothers delivered by skilled birth attendants, while a significant majority 83.3% gave birth at home. Maternal Knowledge about dangerous health problems related to pregnancy AOR (95% CI): 2.59(1.03,6.54), Lack of maternal knowledge about free delivery service AOR (95% CI): 0.02(0.01,0.06), Exposures to radio at least once a week AOR (95% CI):3.41(1.18, 9.89), husbands attendance during ANC AOR (95% CI): 4.08(1.25,13.32), knowledge of child birth need health professional help AOR (95% CI):3.60(1.40,9.30), Expecting birth complication during delivery AOR (95% CI): 3.68(1.41,9.65), preference of hot food AOR (95% CI): 0.03(0.01,0.12), a need to buried placenta immediately at home AOR (95% CI): 0.02(0.01,0.05) were important predictors of institutional delivery services.

Conclusion: The study indicates that there is low utilization of institutional delivery service. Knowledge of mothers, exposure to radio, husband attendance at ANC, preference of hot food, a need to buried placenta immediately at home were found to be factors affecting utilization of institutional delivery services.

Keywords: Institutional delivery; Predictors; Maternal knowledge; Hot food; Buried placenta

Introduction

Maternal mortality is “a neglected tragedy”-a tragedy in terms burden of the problem, equity, and social justice [1,2]. Study showed that women's health service utilization lower than men's due to men's discrimination towards women, which is translated into social and economic disparities, cause to a special vulnerability of women [3]. Women play a major role in the family and society, hence, their loss from delivery complications is a significant social and personal tragedy [4]. Globally, there were an estimated 287,000 maternal deaths in 2010. Developing countries account for 99% (2,84,000) of the global maternal deaths, the majority of which are in sub-Saharan Africa (1,621,000) and Southern Asia (83,000) [5].

Ethiopia is one of the Sub Saharan region countries that contribute 3% to 5% of global maternal deaths annually [5]. Maternal mortality is still high in Ethiopia. According to 2011 EDHS; the Maternal Mortality ratio shows 676 deaths per 100,000 live births seven years before the survey [6]. Still Ethiopia is not on the track of achieving MDGs five [5]. Study done in the South west, Ethiopia shows maternal mortality estimate by using the sisterhood method revealed that maternal mortality ratio of 1667 per 100,000 live births, 32% (819/2552) occurred during pregnancy and childbirth [7]. The majority of maternal deaths and disabilities occur suddenly and unpredictably between the third trimester and the first week after the end of pregnancy due to hemorrhage, sepsis, and obstructed or prolonged labor [8].

One of the corner stone to reduce Maternal Mortality is institutional delivery where births assisted by skilled health professional. Globally 65% of women only give birth by skilled health professional [5]. In Ethiopia only 10% of births were delivered in a health facility assisted by a health professional i.e., nine women give birth at home from every ten deliveries, but in the rural 95% of deliver at home level. In Southern

Nations and Nationalities People Region, of all births, 6.2% were delivered in health facility; of those, 6.1 % assisted by skilled health provider and 1.3% were attended by Health Extension Worker which is the lowest in the country [6]. Delivery practice in the rural setting is dire practice which is caused by trap of problems. Quality of care [9,10] and the lay-health culture presumably has substantial effects on utilization of maternal health services in regions of the country where poverty and illiteracy are widespread [11]. Cultural norms and beliefs have been shown to delay and sometimes stop women from seeking professional care during childbirth [12,13].

The organization and distribution of health service system in the country is very promising even in the remote areas. Even skilled birth attendant at health facilities is very low. Expansion of health facility alone does not guaranty its utilization [14]. Quality of care and socio-cultural beliefs, perceptions and norms are jeopardizing utilization of institutional delivery. Tradition of utilizing the existing health care system is very low among either the pastoralists (lowlands of south Omo) or the highlanders living in the remote areas. Tradition of utilizing the existing health care system is very low among either the pastoralists or the highlanders. However, it has never been assessed so far in semi-pastoralist Malle District. Magnitude of the problem, socio-

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cultural practices and other factors that are embedded in the social system might have an impact on place of delivery and associated factors in these areas are poorly understood and little known about associated factors.

Therefore, the results of this study provides paramount for further intervention and improve policymaker's understanding on utilization of institutional delivery in area and similar geographical setups. It may put milestones to the country to achieve MDG5 and universalities of institutional delivery in the remote semi pastoralist areas of Malle District and similar geographical setups.

Methods

Study area and period

The study was conducted in Malle District of South Omo Zone, Ethiopia. It is one of the semi-pastoralist Districts in South Omo zone which is situated 790 km south west of Addis Ababa. The District has 4 health centers, 24 health posts, 2 privet clinics. According to 2007 census projection in 2013 the Malle District has the following population profile. The District has a total population of 100088 of which 23321 women in the reproductive age and the District has 22 kebeles. There is no public transport and it is a rural and difficult to reach area with few roads and little transportation infrastructure contents. Until one year almost there is no transportation during rainy season. Walking is the basic mode of transportation, even for women in labor. Study period was from June 30 to July 15, 2013.

Study design and source population

Community-based cross-sectional study with internal comparison was conducted. All women who have given birth in the past two years before the study are permanent resident of Malle District.

Sample size and sampling procedures

The sample size was calculated by using a single population proportion sample size calculation formula considering the following assumptions.

$$n = z^2 * p (1-p) / d^2 = (1.96)^2 * 0.123(1-0.123) / (0.03)^2 = 460$$

n=number of study subject

d=margin of error of 0.03 with 95% confidence level

Z $\alpha/2$ =1.96 (level of significance)

p=12.3% study done in South east Ethiopia was used [15].

Multiplied by 1.5 for the design effect gives=690. With 5% non-response rate 35 final total of 725 study population. Multi stage sampling technique was used to select the study participants. Malle District has 22 kebele. From the total 22 kebeles, 9 kebeles were selected using lottery method. Then, samples were allocated proportional to the size of the women households in each kebele catchment area. Census was conducted to identify the eligible women in the household in each kebele and check list of all eligible women in the household in each selected kebele. Then, study participants were selected by simple random sampling using list prepared during the census.

Measurement and Variables

- **Dependent variable**

Utilization of institutional delivery services.

- **Independent variables**

- **Demographic:** Age, party, polygamy.
- **Health seeking behavior:** knowledge and perception of mothers on modern health facilities utilization.
- **Socio economic:** Maternal education, access to mass media, Means and cost of transport.
- **Health facilities factors:** Access of health facilities, Utilization ANC, privacy, Cost, knowledge of delivery services free of charge
- **Socio cultural:** Decision making power, perceptions (Beliefs and norms) of women, preference of burial of placenta, preference of food at birth, preference of female health care provider , women communication with husband , husband attitude and presence at ANC follow up and at birth and religion.

Operational Definitions

- **Perception of mothers:** is a condition that women expect that their illnesses are serious or simple and self-limiting, may or may not require any investment to seek care.
- **Good knowledge/knowledgeable :** women who score the computed mean value of knowledge of danger sign questions $> =16.96$ (persistent vomiting, anemia, leg swelling, headache, vaginal bleeding, hypertension, seizure, abnormal fetal position, obstructed /pronged labor, retained placenta).
- **Good privacy:** women who score of the computed mean value of privacy questions $> =5.67$ (receive ANC in a closed room, closed throughout length of care provided, no one come to the room while discussing, not worried or fear that people sitting outside may hear my conversation).

Data Collection and Quality Control

The data collection was carried out through interview using interviewer administered structured questionnaire. The data collection tools were developed based on conceptual frame work, related literatures and Ethiopian Demographic and Health Survey (EDHS) questionnaire and then adapted to the local situation. The questionnaire was prepared in English and translated to Malle then back to English by different language experts and Malle journalist to assure its consistency.

Twenty nine interviewers who had completed grade 12 and can speak Amharic and Malle tribe language were recruited from the study area. Nine Male nurses who have diploma and experienced on supportive supervision were selected as supervisors. Prior to the actual data collection, the instrument was pre-tested on 5% of Bena Tsemay District. A total of 40 respondents were interviewed. We conducted interval review meetings with data collectors and supervisors to assess the clarity, understandability, and completeness of the questions, and then the results were edited and corrected.

After the pre-test conducted, discussion was made with supervisors, and data collectors and measure was take on the problem seen on pretest. Both interviewers and supervisors were trained, and practiced the data collection technique for one and half days. During the actual data collection processes, strict supervisions were taken. The supervisors monitored activities of each data collection process concurrently with data collectors to increase validity. Each night the supervisors have checked the filled questionnaires for completeness and the principal investigator randomly checks up to 10% of the

questionnaires. Incomplete questionnaires were returned back to the interviewers the next day to be corrected in the field.

Data Management and Analysis Procedures

Data template was prepared and the data were entered in to Epi Info version 3.5.1 and the data were exported and analyzed by SPSS version 20 computer software's package. The results were presented in the form of tables, figures and descriptive statistics were calculated for most variables using frequencies and summary statistics and percentage to describe the study population. The data were analyzed using logistic regression to determine how much is likelihood of institutional delivery is explained by all independent variables. Odds ratio with 95% CI was estimated to identify the predictors of institutional delivery. The independent variables related with the outcome variable were included in the multivariate analysis to adjust for potential confounding. Multivariate logistic regression analysis carried out by using a model of Hosmer-lemeshow goodness of fit test and Enter modal to determine the most important statistically significant variables to look for strength of association.

Ethical Considerations

Ethical clearance was obtained from Addis continental institute of public health and Woliata Sodo University from Sciences Ethical Review Committee. Official letter of cooperation was written to Malle District and South Omo Zone Health department by the University. Informed consent was obtained to ask participants for their consent to participate in the interview. Finally, only participants who have been consented were participated in the interview. There was no record of names in data collection process to better ensure open and honest dialogue between participants and the interviewer. Informed written consent was obtained from individual respondents and they were assured to withdraw if they want to discontinue the participation at any point of time.

Results

Socio-demographic characteristics of the study

All the questionnaires distributed were returned and analyzed making the response rate 100%. As the study shows, most of the respondents 436 (57.7%) were in the age range of 25-49 year, while 320 (42.3%) were between 15-25 years. The mean age of the respondents was 26.31 years with SD 6.19 and the majority of the respondents 658(87.04%) give birth to their first child before the age of 20 years. Protestants and Traditional were the major religious groups, which account 332(43.9%) & 329(43.5%) respectively. Out of the total respondents, 717 (94.7%) were married and 129 (17.1%) were polygamous (Table 1).

Maternal health service utilization

Out of the total, 756 women who give birth in the last two years, 14.5% of them have delivered in health facilities (2.5% at hospitals,12% at health centers) and 2.1% at health post which is not considered as institutional delivery, while the others 83.3% have delivered at home. Of the total respondents, 637(84.3%) had at least one ANC visit. 119(15.7%) were not attended ANC in the last pregnancy due to perceiving pregnancy is not a diseases and other reasons (Table 2).

Reason for health institution delivery service utilization

This study revealed that women gave a variety of reasons for utilization of institutional delivery. The following figure shows that some of the enhancing factors for utilization of institutional delivery (Figure 1).

The main reasons that women don't give birth in the government HFs

Previous normal delivery 305(48.41%), Long distance from the health facility 213(33.81%) and other reasons were hinder women to visit health facility at delivery (Table 3).

The main socio cultural factors women to Resort/retained to home at delivery

Urgency of labor 519(82.38%), customary 293(46.52%), lack of communication barrier 210(33.33%) and others reasons were the socio-cultural factors retained women at home during delivery (Table 4).

Factors associated with institution delivery service utilization

Out of the total variables found to be significant associated with institutional delivery services utilization in the bivariate analysis is knowledge about dangerous health problems related to pregnancy, knowledge of delivery free of charge, need to buried placenta at home, hot food preference during and after delivery, communicate with husband about ANC follow up and place of delivery, listen to the Radio, expecting birth complication, expecting child birth need health professional help, preference to health care provider, religion, husband attended at ANC, decision making in previous delivery, education were analyzed in multivariate analysis(Table 5).

Religion shows significant association with institutional delivery services utilization. Protestant and orthodox AOR (95% CI): 3.92(1.32,

	Variables	Frequency	Percentage (%)
Age	15-19	109	14.4
	20-24	211	27.9
	25-29	225	29.8
	30-34	117	15.5
	35&above	94	12.4
Religion	Protestant	332	43.9
	Orthodox	66	8.7
	Traditional	329	43.5
	Others *	29	3.8
Marital status	Married	717	94.7
	Others **	41	5.3
Polygamy	Polygamous	129	17.1
	Non-Polygamous	626	82.8
Maternal education	Unable to read and write	509	67.35
	Primary and secondary education	185	24.5
	12+	20	2.6
	Adult education	42	5.6
Access to mass media	Yes	176	23.3
	No	579	76.6
Means of transport to the nearest HF	Walk	749	99
	Others	7	1
The nearest health facility	Health post	443	58.6
	Health center	300	39.7
Time to reach nearest health facility	Less than 1 hours	606	80.2
	1-2 hours	100	13.2
	Greater than 2 hours	50	6.6

Table 1: Socio demographic characteristics of the study participants, Malle District, South Omo Zone, Ethiopia.

NB* Muslim, Catholic, Jehovah witness, ** Divorced, widowed, never married, separated.

Variables	Frequency	Percentage (%)	
ANC follow up last pregnancy	Yes	637	84.3
	No****	119	15.7
Type of health professional visit	Health officers	12	1.9
	Nurse	54	8.4
	Midwife	132	20.5
	Health extension worker	425	66.1
	Don'tknow	20	3.1
Sex of ANC providers preferred	Female	519	68.7
	Male	87	11.5
	Comfortable both	37	4.9
Number of ANC visit in last pregnancy	Once	108	16.8
	Two	156	24.3
	Three	119	18.6
	Four and more	260	40.6
Stage of ANC visit	1-3months	194	30.2
	4-6months	348	54.1
	7monthsandabove	101	15.7
Get advice about danger signs of pregnancy, place of birth, birth preparation.	Yes	475	73.9
	No	168	26.1
Counseling /Information get during ANC visit	About dangerous signs of pregnancy	277	58.2
	About place of birth	126	26.5
	About birth preparation	118	24.8
Visited by HEWs in last pregnancy	Yes	420	55.6
	No	336	44.4
Numbers of HEWs visit during last pregnancy	Once	70	16.6
	Two	123	29.2
	Three	85	20.2
	Four or more	143	34
Those have been kept good privacy	Yes	419	55.4
	No	337	44.6
Sources of delivery services	Health institution	37	28.5
	HEWs	97	74.6
	Community conversation	34	26.2
	Radio	8	6.2
	Family and friends	9	6.9
Kind of transport used during delivery	Foot	16	12.5
	Animal	86	67.2
	Motor vehicle	5	3.9
	Gov't ambulance	21	16.4
Time taken to reach health facility at time of delivery	<2hour	115	91.2
	>2hour	11	8.8
Interest for home delivery	Self interest	454	72
	Husband	42	6.7
	Mothers in low	15	2.7
	Both wife and husband	58	9.3
	Others(urgency of labor and no previously HF)	56	9
Assistance during home delivery	Health workers	19	2.5
	HEWs	8	1.1
	TBA	128	16.9
	Close relatives/friends	197	26.1
	Neighbors	316	41.8
	No one	77	10.2
Reason for resorting TBAs for delivery	Because, they are nearby	172	134.38
	They do not charge to much	25	19.53
	They are respectful	15	11.72
	The treatment is effective	27	21.09
	Influence of others in family or outside	35	27.34
	They keep your privacy	17	13.23
	They are female	20	15.63

Table 2: Maternal health service utilization of the study participants, Malle District, South Omo Zone, Ethiopia.

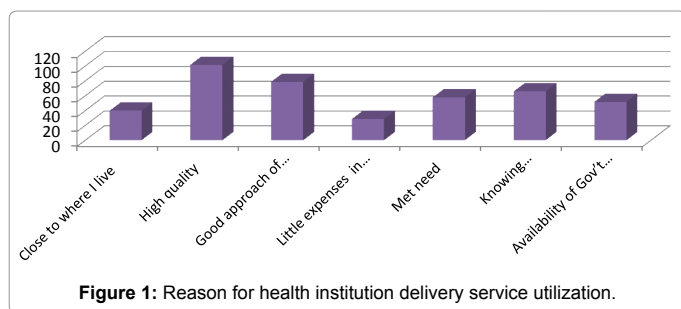


Figure 1: Reason for health institution delivery service utilization.

Variables	Frequency	Percentage (%)
Unwelcoming approach of health workers	65	10.32
Had bad experience from past health facility delivery	187	29.68
Previous normal delivery	305	48.41
Dislike birth position on bed in the health facility	160	25.4
Fear of health care provider due to some surgical manipulation	168	26.7
Lack of transport	175	27.88
High cost of the service	111	17.62
Long distance from the HF	213	33.81
Lack of privacy	149	23.65
Absence of waiting area	85	13.49
Service closure	72	11.43
Concern that there may not be a female health provider	134	21.27
Concern that there may not be a Male health provider	54	8.57
Long waiting time	118	18.73

Table 3: The main reasons women not give birth in the government HFs of the study participants, Malle District, South Omo Zone, Ethiopia.

Variables	Frequency	Percentage (%)
Wishes to deliver at home where relatives are nearby	169	26.83
More trust on TBAs/relatives than health workers at health institution	155	24.6
Availability of cultural Malle food at birth	176	27.94
No communication barrier at home	210	33.33
Preference to traditional treatment	164	26.03
Need burial placenta around home	164	26.03
Not wanting to go alone?	146	23.17
Because of religion	79	12.53
Cultural belief	128	20.32
It is customary	293	46.52
Urgency of labor	519	82.38

Table 4: The main socio cultural factors women to Resort/ retained to home at delivery of the study participants, Malle District, South Omo Zone, Ethiopia.

11.66) and 21.20(2.64, 169.74) were more likely to utilize the service than traditional religion followers. Women access to mass media (radio) those listen radio at least once a week shown that 3.41times more likely to utilize the institution delivery service than women who were listen less than once a week and never listen to radio AOR (95% CI): 3.41(1.18, 9.89) (Table 5).

Men's knowledge about reproductive health and their presence during antenatal care visits had strongly correlated with the use of professional delivery care utilization. Women whose husband attended during ANC visit were 4.08 times more likely to given birth at health institution than whose husband were no attended AOR (95% CI): 4.08(1.25, 13.32). Women who were preferred hot food during and after

delivery and those who need to buried placenta immediately at home were less likely utilize institutional delivery services than others AOR (95% CI): 0.03(0.01, 0.12) and 0.02(0.01, 0.05) respectively (Table 5).

Knowledge about dangerous health problems related to pregnancy was significantly associated with delivery service utilization AOR (95% CI): 2.59(1.03, 6.54). Mothers who had knowledge of child birth need health professional help and those expecting birth complication during delivery were more likely given birth at HFs than non-knowledgeable and those perceived that not susceptible to complications during childbirth AOR (95% CI): 3.60(1.40, 9.30) and 3.68(1.41,9.65). One of the most important barrier to access to health services lack of money. The result of this study shows that mothers who did not know delivery services free of charge less likely utilized institutional delivery as compared who did know exemption policy in the delivery services AOR (95% CI): 0.02(0.01, 0.06) (Table 5).

Discussion

Findings of this research work indicates that only 14.5% of women gave birth by skilled health professional at health facilities and 2.1% by HEWs, while a significant majority (83.3%) gave birth at home. According to 2011 EDHS report, finding of this study is not consistent with the previous studies done in the country and as well as in the region (SNNPR) which are 10% and 6.2% respectively [6]. The result of this study revealed that current utilization of institution delivery is higher when compared with 2011 EDHS report and study done in Munesa District, Southeast Ethiopia in 2011, which was 10% and 12.5% [6,15]. This variation could be because of the time gap difference in these three solid years and also there are substantial evidence improvements in access to information, services and health care system, health education that can break a trendy home delivery culture, because of geography, the health center and the study were two years prevalence may be explained. It is very low compared to study in southern Tanzania, Bangladesh and global delivery services utilizations which were 46.7%, 23% and 65% respectively [5,16,17].

The research work also shows that protestant Christian religion was more likely to utilize the service than traditional religion followers and this is similar with other studies [15,18,19] and also Orthodox Christian follower utilize of institutional delivery. The possible explanation might be in this religious group there is a positive attitude towards education and the higher proportion of educated mothers in this group than traditional views. Religious teachings, prohibition and beliefs within the community may act as barriers for seeking care [18,20]. The teaching of those religious groups may break the traditional beliefs that deep-rooted and strong community proponents [21] that impede facility based delivery and can explain the observed association.

Women's access to mass media (radio) also matters. For example in this study, those women who listened radio at least once a week were more likely to utilize institution delivery service than women who were listen less than once and never listened to radio. This study was similar in line with studies done in Ghana and Pakistan [4,22]. According to this study, 67.3% respondents were unable to read and to write. And such that delivering health education through mass media will bring tremendous effect in changing in attitude and behavior of the women. This might help uneducated women to acquire new knowledge and ameliorate consciousness of mother in health seeking behavior.

Women whose husbands attended at ANC follow up were more likely to utilize the institution delivery service. This is also similar with the studies conducted in Tanzania, rural Bangladesh, and Nepal [16,23-29]. Women, whose husbands attending with their own ANC follow

Association of demographic characteristics of respondents and place of delivery					
Variables		Delivered in health institution		Crude OR (95% CI)	Adjusted OR(95% CI)
		Yes	No		
Age of mothers	15-19	40	69	10.32(3.87,27.53)**	***
	20-24	45	166	4.83(1.83, 12.59)**	
	25-29	30	196	2.79(1.03, 7.29)*	
	30-34	6	111	0.96(0.28, 3.26)	
	35	5	89	1	
Religion	Protestant	82	250	5.33(3.15 , 9.03)**	3.92(1.32, 11.66)*
	Orthodox	17	49	5.64(2.74 ,11.60)**	21.20(2.64,169.74)*
	Others	8	21	6.22(2.33 ,15.02)**	1.03(0.05, 22.60)
	Traditional	17	310	1	1
Maternal education	Yes	86	160	6.32(4.17 ,9.57)**	2.90 (1.02, 8.24)*
	No	40	470	1	1
Listing radio	Yes, at least once a week	35	47	7.47(4.45,12.55)**	3.41(1.18, 9.89)**
	Yes, less than once a week	37	41	9.06(5.36,15.31)**	***
	No ,not at all	54	542	1	1
Husband attitude towards ID	Positive	117	381	9.11(3.94,21.09)**	***
	Negative	3	71	1.25(0.31 ,5.15)	
	Neutral	6	178	1	
Communicate with your husband about ANC follow up and place of birth	Yes	111	323	7.03(4.01,12.33)**	***
	No	15	307	1	
Husband attendance at ANC follow up	Yes	40	49	5.52(3.43 , 8.87)**	4.08(1.25, 13.32)*
	No	86	581	1	1
	Self	44	439	1	
Decision maker last delivery birth place	Husband	10	50	1.99(0.95 ,4.21)	2.67(0.59, 12.03)
	Both wife and husband	60	104	5.76(3.69,8.97)**	2.79(1.01, 7.70)*
	Husband and mother in low	10	28	3.56(1.62,7.82)*	0.36(0.04, 3.35)
	Others	2	9	2.22(0.46 ,10.58)	0.52(0.02, 13.82)
Hot food preference at delivery	Yes	65	578	0.1(0.06 ,0.15)**	0.03(0.01, 0.12)**
	No	61	52	1	1
Preference burial of placenta at home	Yes	8	495	0.02(0.01, 0.04)**	0.02(0.01,0 .05)**
	No	118	135	1	1
Number of ANC visit	No ANC	5	108	1	***
	Once	6	102	1.27(0.38 ,4.29)	
	Two	14	142	2.13(0.74 ,6.09)	
	Three	18	101	3.85(1.38 ,10.75)**	
	Four and more	83	177	10.13(3.98,25.77)**	
Numbers of HEWs visit during last pregnancy	Once	10	60	1	***
	Two	13	110	0.71(0.29 ,1.71)	
	Three	16	69	1.39(0.59 ,3.36)	
	Four or more	47	96	2.94(1.38 ,6.25)**	
Preferences of Sex of providers	Female	86	433	0.29(0.15 ,0.58)*	***
	Male	20	67	0.44(0.19 ,1.00)*	***
	comfortable both	15	22	1	
Have no knowledge of delivery service free of charge	Yes	115	183	1	1
	No	11	447	0.04(0.02, 0.07)**	0.02(0.01, 0.06)**
Expecting birth complication at time of delivery	Yes	55	143	2.64(1.77, 3.93)**	3.68(1.41,9.65)*
	No	71	487	1	1
Have knowledge of child birth need health professional help	Yes	81	212	3.54(2.37, 5.28)**	3.60(1.40, 9.30)*
	No	45	417	1	1
Parity	First	56	75	9.37(5.61 ,15.65)**	***
	Second	25	84	3.74(2.08 ,6.72)**	
	Three	16	107	1.88(0.98 ,3.59)	
	Greater than four	29	364	1	
Good knowledge about dangerous health problems related to pregnancy	Yes	84	356	1.54(1.03, 2.30) *	2.59(1.03, 6.54)*
	No	42	274	1	1

NB ** P <0.001, * P < 0.05 and ***Not significant

Table 5: Bivariate and multivariate analysis of factors associated with institutional delivery service utilization in Malle District, South Omo Zone, Ethiopia.

up, give opportunity for the husband access to health information. This may give the chance for the women to communicate with their husbands about ANC follow up and place of birth. According to different literatures, women and their husbands should be given health education together, as this would result in a greater net impact on maternal health behaviors, compared to educating the women alone [26,27]. This might give the chance to men's to acquire knowledge about maternal health care and develop positive attitudes towards institution delivery. This might also promoted spousal communication and arrange means of transportation and resources for facility based delivery [27,28].

Women who had good knowledge about dangerous health problems related to pregnancy were about 2.76 times more likely to deliver in health institutions than mothers who had poor knowledge. This finding was in line with studies done in Tanzania and Sekela in Ethiopia [16,29]. The possible explanation might be the women who were knowledgeable develop positive attitude towards health seeking behaviors and they might be enforced by the danger pregnancy sign or perceiving susceptible severity might lead to institutional delivery services utilization.

Women decision making power in the last place of delivery was not associated with institution delivery services utilization. In different literatures women decision making power was significant association with institutional delivery [30,31]. And yet, this study agrees with the similar studies done in Metekel zone, North West Ethiopia [14]. The possible explanation might be the result from descriptive analysis shown that majority of the women in the area about 67.3% illiterate ,76.7% not access to mass media and 72% home delivery were there interest. This might shows that women in this area had lack of knowledge, economical power, in addition to strong beliefs and norms in society that hinders the women resort to the nearby TBAs.

Women who were preferred hot food during and after delivery were less likely to utilize institutional delivery services than others. This finding support by studies in Ethiopia, Mali and Fuji the women believed that hot food would facilitate labor, enrich the blood , gives her gain back strength and heal quickly [21,32,33] . This is similar to laboring women in the study area who want hot drink the so called "shoforo" which is made of leaf of coffee and milk, and a thick, hot porridge called "genfo" which is made from sorghum or maize is eaten by the new mother as a result of which women may too late to seek institution delivery.

Women who were preferred to burry placenta immediately at home were less likely to utilize institutional delivery services than others. This is similar with qualitative studies done in rural Bangladesh and Ethiopia which state that placenta should be buried around the home [34,35] and believed that placenta should be buried in the dry soil so as to protect the child would not suffer from any cold or cough at a later stage [13]. It should be by no means being thrown out everywhere [34]. Unless the women got life threatening condition they should never go to deliver at health facilities [34]. But study in Uganda revealed that women were preferring health workers to dispose the placenta [35]. This might be explained by the level of knowledge of women and socio cultural beliefs and norms in the respective area.

Women who expect birth complication at time of delivery; those who know giving birth do need health professional help were more likely give birth in health facility than their counterparts. This study also similar with studies conducted in Arsi, Sekela and India which state that women expecting birth complication, had knowledge giving birth

need professional help and those who had fevered positive attitudes towards health seeking behaviors were utilize institution delivery services [29,36,37]. The health professionals seem to have substantial contribution in several aspects of utilization of institutional maternal health services which has a vital role in ameliorating consciousness of mother [38].

Women who have no knowledge about delivery service which is free of charge in the government health facility are less likely to deliver at the health facilities. According to EDHS 2011, one of the most important barrier to access health services is lack of money [6,18] preference to be assisted by TBAs with little or no payment at home [18]. The result of this study shows that only 1% women pay for the delivery services. This apparently could be a problem for poor sections of the societies those who cannot afford for the service utilization and they are afraid to use health care services [39,40]. The government put exemption policy on maternal health care. This information is not advocated massively and awareness is not yet created too in the community to utilize the health facility [39].

In conclusion, this study indicates that there is low utilization of institutional delivery services in the area and finally predictors affecting institutional delivery were pointed out:

- Involvement of men in the maternal health care services like (husband presence at ANC), both husband and wife decision making in the last delivery, access to mass media (radio), positive perception of women towards institutional delivery like expecting complication during delivery and those who knows about child birth need health professional help, knowledge about dangerous health problems related to pregnancy more were the strong determinant factors for institutional delivery.
- Socio cultural factors like preference to hot food at delivery need to burial placenta at home and those who had no knowledge of exemption policy on delivery service were identified as the dissuader to women to utilize facility based delivery services.

Therefore, based on the finding of this research work, the following recommendations have been made.

- Improve male involvement to maternal health issue and awareness should be given attention among men on the importance of maternal health care that improve maternal health services utilizations.
- More effort is needed to ameliorate the consciousness of mothers which could be supporting pregnant women for birth planning and preparedness and access to radio and education could be targeted.
- Advocacy on the Basic Health Plan about exemption fee on maternal health care specifically delivery services should be focused.
- Health behavior education should be carefully tailored to local cultural beliefs to increase positive perception, knowledge and maternal health services utilization.
- To make delivery services more trendy, operational and acceptable culture i.e. incorporating hot foods in the services area should be stepped.
- Working with religious leader in advocating institutional delivery services utilization needs attention.

- Further researches on socio cultural factors that affect maternal health services are recommended.

Conflict of Interest

The authors declare that we have no conflict of interests.

Author's Contribution

Gebeyehu Dejene, wrote the proposal, participated in data collection, analyzed the data and drafted the paper. Tesfahun Hailemariam participated in the preparation of the manuscript and approved the final manuscript with some revisions.

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References

- Omar M (1994) Women health in rural Somalia. Licentiate Dissertation: 12.
- Mahler H (1997) The Safe motherhood initiative a call action. Report on safe motherhood conference 1987 preventing the tragedy of maternal death; a report on the international safe motherhood conference, Nairobi, Kenya. *Lancet* 1: 668-670.
- Spicer NJ (2005) Pastoral Sedentarization and health utilization: changing discourses in the northeast Badia of Jordan. *Soc Sci Med*. 61: 2165-2176.
- Edward Nketiah Amponsah (2009) Expectant Mothers and the Demand for Institutional Delivery: Do Household Income and Access to Health Information Matter? Some Insight from Ghana. *European Journal of Social Sciences* 8: 3.
- WHO, UNICEF, UNFPA, World Bank (2010) Trends in maternal mortality: 1990 to 2010. Geneva, World Health Organization.
- Central Statistical Agency, ICF International: Ethiopian Demographic and Health Survey (2012) Addis Ababa, Ethiopia, Calverton, Maryland, USA.
- Yaya Y, Lindtjorn B (2012) High maternal mortality in a rural south-west Ethiopia: estimate by using the sisterhood method; *BMC Pregnancy and Childbirth* 12: 136.
- World Health Organization (WHO): World Health Report 2005: Make every mother and child count WHO: Geneva.
- Kruk ME, Paczkowski MM, Tegegn A, Tessema F, Hadley C, et al. (2010) Women's preferences for obstetric care in rural Ethiopia: a population-based discrete choice experiment in a region with low rates of facility delivery. *J Epidemiol Community Health* 64: 984-988.
- Donabedian A (2002) An Introduction to Quality Assurance in Health Care. *Oxford University Press, USA*.
- Sugathan KS, Vinod Mishra, Robert D (2001) Rethor for Promoting Institutional Deliveries In Rural India: The Role of Antenatal-Care Services; International Institute for Population Sciences Mumbai, India.
- Syed U, Khadka N, Khan A, Wall S (2008) Care-seeking practices in South Asia: Using formative research to design program interventions to save newborn lives. *J Perinatol* 28: S9-S13.
- Choudhury N, Ahmed SM (2011) Maternal care practices among the ultra-poor households in rural Bangladesh: a qualitative exploratory study. *BMC Pregnancy Childbirth* 11: 15.
- Gurmsa T, Abebe G/Mariam (2008) safe delivery services utilization in Metekele zone, North West Ethiopia: *Ethiopia J health sci*: 17.
- Amanoet al (2012) Institutional delivery service utilization in Munisa Woreda, South East Ethiopia: a community based cross-sectional study. *BMC Pregnancy and Childbirth* 12: 1105.
- Mpembeni RN, Killewo JZ, Leshabari MT, Massawe SN, Jahn AD, et al. (2007) Use pattern of maternal health services and determinants of skilled care during delivery in Southern Tanzania: implications for achievement of MDG-5 targets. *BMC Pregnancy Childbirth*.7: 29.
- Streafield PK, Arifeen SE (2010) Bangladesh Maternal Mortality and Health Care Survey 2010: Summary of Key findings and Implication.
- Fenta M (2005) Assessment of factors affecting utilization of maternal health care services in Ayssaita and Dubti towns, Afar regional state, North east Ethiopia. MPH thesis Addis Ababa University.
- Joharifard S, Rulisa S, Niyonkuru F, Weinhold A, Sayinzoga F, et al. (2012) Prevalence and predictors of giving birth in health facilities in Bugesera district, Rwanda. *Public Health* 12: 1049.
- Yusuf J, Ayelew M, Seid F (2011) Maternal health beliefs, attitudes and practices among Ethiopian Afar.
- Henriette B (2012) Utilization of Maternal Health Care in Mali: The Role of Traditional Values 38: 1.
- Sohail Agha, Thomas W (2011) determine the effect of demographic, economic and program factors on the utilization of maternal health services in Pakistan; *International Journal for Equity in Health* 10: 31.
- Story (2012) Husbands' involvement in delivery care utilization in rural Bangladesh: A qualitative study. *BMC Pregnancy and Childbirth* 12: 28.
- Dharma N (2013) Involvement of males in antenatal care, birth preparedness, exclusive breast feeding and immunizations for children in Kathmandu, Nepal; *BMC Pregnancy and Childbirth* 13: 14.
- Mullany BC, Becker S, Hindin MJ (2007) The impact of including husbands in antenatal health education services on maternal health practices in urban Nepal: results from a randomized controlled trial urban Nepal. *Health Education Research* 22: 166-176.
- Mullany BC (2006) Barriers to and attitudes towards promoting husbands' involvement in maternal health in Kathmandu, Nepal. *Soc Sci Med* 62: 2798-2809.
- Sapkota (2012) In the Nepalese context, can a husband's attendance during childbirth help his wife feel more in control of labor? *BMC Pregnancy and Childbirth* 12: 49.
- Mutiso SM, Qureshi Z, Kinuthia J (2008) Birth preparedness among antenatal clients. *East African Medical Journal* 85: 275-283.
- Teferra (2012) Institutional delivery service utilization and associated factors among mothers who gave birth in the last 12 months in Sekela District, North West of Ethiopia: A community -based cross sectional study. *BMC Pregnancy and Childbirth* 12: 74.
- Greene MJ (2007) Strategies for Incorporating Cultural Competence into Childbirth Education Curriculum. *Journal of prenatal education* 16: 33-37.
- Binay Ayele (2005) what factors determine delivery practices of pregnant women?. MPH thesis Addis Ababa University.
- Raven J, Chen Q, Tolhurst J, Garner P (2007) Traditional beliefs and practices in the postpartum period in Fujian Province, China: a qualitative study. *BMC Pregnancy and Childbirth* 7: 8.
- Ruth Selinus (1971) The traditional Foods of the Central Ethiopian Highlands: the Scandinavian Institute of African Studies.
- Solomon Sh, Mark S, Merijn G, Yilma M, Michael T (2013) Why do women prefer home births in Ethiopia? *BMC Pregnancy and Childbirth* 13: 5.
- Abera M, G/mariam A, Belachew T (2011) predictors of safe delivery service utilization in Arsi zone, south -east Ethiopia, *Ethiopi J Health Sci*: 21.
- Anyait A, Mukanga D, Oundo GB, waha F (2012) Predictors for health facility delivery in Busia district of Uganda: a cross sectional study.
- Navaneetham K, Dharmalingam A (2002) Utilization of maternal health care services in Southern India. *Soc sci & med* 55: 1849-1869.
- Medhanyie (2012) The role of health extension workers in improving utilization of maternal health services in rural areas in Ethiopia: a cross sectional study. *BMC Health Services Research* 12: 352.
- Asfaw A, Jv Braun (2004) "How big is the Crowding-out Effect of User Fees in the Rural Areas of Ethiopia? Implications for equity and resources mobilization. *WorldDevelopment* 32: 2065-2081.
- Ethno Med (2010) Diabetes in the Eritrean and Ethiopian Community: Cultural Information and Recommendations for Diabetes Educators.