

Point Prevalence and Factors Associated with Institutional Delivery among Married Women in Reproductive Age in Abe Dongoro Woreda, Horro Guduru Wollega Zone, Oromia Region, Western Ethiopia

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Abstract

Background: Giving birth in health institution which is under the care and supervision of skilled birth attendant is important to promote newborn survival and reduces maternal mortality. **Objectives:** To assess Point prevalence of institutional delivery service utilization and associated factors among married women's of reproductive age group in Abe dongoro Woreda, Horro Guduru Wollega zone, Oromia region, Western Ethiopia during November 4, 2014 to December 10, 2014. **Methods:** A community based cross-sectional study design was employed using quantitative and qualitative techniques from November 4, 2014 to December 10, 2014 among married women who gave birth in the last 12 months in Abe dongoro woreda. A multistage sampling procedure was used to select 506 study participants. A Bivariate, multivariable logistic regression was fit and statistical significance was determined with a 95% confidence interval. **Results:** The study showed that 57% of mothers give birth at health facilities. Educational status of mother (AOR=3.71[95% CI=1.10-12.54]), having information about benefit of giving birth at health facility (AOR=5.99 [95% CI=2.29-27.90]), ANC visit for last pregnancy (AOR=15.82 [95% CI=6.08-28.14]), and knowledge of mother on pregnancy complications during the last 12 months (AOR=5.21[95% CI=2.49-10.92]) Showed significant associations with utilization of institutional delivery services. **Conclusions and Recommendations:** Institutional delivery service utilization in Abe dongoro woreda was almost more than half and mother's education, having information about benefit of giving birth at health institution, ANC visit, and knowledge of mother on danger sign of pregnancy complications were found to be factors associated with skilled institutional delivery service utilization. Hence, at all level (home, community, health facility, country and international); Expanding education opportunities for women especially, those living in rural area on benefit of giving birth at health institution and danger sign of pregnancy complications, Strengthening promotion of antenatal care at health facility and Creating strong linkage between antenatal care and skilled delivery.

Keywords: institutional delivery service utilization

Background

Statement of the problems

Delivery in health facilities is still challenging in developing countries in which higher number of women attend antenatal clinic but about half of them deliver at home without assistance of skilled birth attendant, majority of the maternal deaths that occur are avoidable or preventable. An emerging consensus said that, these deaths can be prevented if deliveries are managed by skilled birth attendants. However, it has been estimated that only 50% of women in the world have access to such skilled care by the year 2002 (10).

In many developing countries including Ethiopia, the majority of births occurred without the help of a skilled birth assistant however, home or non-skilled deliveries associated with un-hygienic, unsupervised and when intervention is required it usually is not at hand and lead to unwanted maternal and infant outcomes (2).

Low delivery in health facilities as result of many factors leads to high morbidity and maternal mortality. Therefore, proper interventions must be taken to increase delivery in health facilities. Moreover, home delivery increases the risk of transmission of HIV/AIDS to relatives or traditional birth attendants who conduct deliveries without protective equipment's. Several factors have been identified as barriers to access to skilled care by women especially in developing countries; these include unavailability of the services, inadequate number of skilled personnel, geographical inaccessibility and poor quality of care, financial constraints, no perceived need for such services, preference for home delivery because it is much less expensive (10).

Most obstetric complications occur around the time of delivery and cannot be predicted. Therefore, it is important that all pregnant women have access to a skilled attendant, i.e. someone with midwifery skills, who is able to manage a normal delivery and who can recognize and manage obstetric complications, or refer in time if needed. Skilled attendance at delivery is advocated as the single most important factor in preventing maternal deaths and the proportion of births attended by skilled health personnel is one of the indicators for Millennium Development Goal Number five (11).

Data show that antenatal coverage in Ethiopia is only 67.7 percent. Delivery and postnatal care services are only 18.4 percent and 34.3 percent, respectively. This low utilization of health care services may give some indication of service coverage in the country. Women trust their experience, the experience of relatives, friend or neighbor. Personal preference, fear or desires may lead women to choose different from that suggested by the evidence. A problem solve approach “bottom-up” start with the consumer to identify deficiencies in the system as it stands from women’s perspective should demonstrate in maternity care provision (12).

Reducing maternal mortality is one of the Millennium Development Goals (MDGs) targeted reduce maternal mortality rate by an average of 5.5% every year over the period 1990-2015 ; however at the global level, decreased by less than 1% per year between 1990 and 2005 which is far below 5.5% to reach the target (13). Most Sub- Saharan African countries are not on track for meeting the targets pertaining to MMR. Recent estimates suggest that the average annual rate of reduction in MMR in SSA countries is less than 1% (5). As Ethiopian EDHS 2011 has shown, the MMR was 676 per 100,000 live births which is not significantly different from EDHS 2005 report (673 per 100,000 live births) (8). The estimates of infant mortality rate in 1990 and in 2007 for Ethiopia were 122 and 75 deaths per 1000 live births which is typically associated with events surrounding the neonatal period and the infants delivery (14).

Literature Review

Place of delivery is an important aspect reproductive health care. The place of delivery often determines the quality of care received by the mother and infant and is an important factor in differential risks of prenatal mortality .In delivering essential obstetric services there are four basic model of care deliveries are conducted at home by community member relatives who receive brief training, deliveries takes place at home but it is performed by professional, deliveries is performed by a professional in a basic essential obstetric care facility or all women give birth in a comprehensive essential obstetric care facility with the help of professional (16).

Magnitude of Institutional Delivery Service Utilization

Even for women who have access to the services, the proportion of births occurring in health facilities is very low. Only 6% of births were delivered in health facilities and, there is no significant difference in proportions of delivery service utilization between EDHS 2000 and 2005; however this figure moderately increased to 10% in EDHS 2011. Twenty eight percent of mothers delivered by TBAs; while the majority of births were attended by a relative or some other person (61%) and 5% of all births were delivered without any type of assistance at all (8). Maternal health care service utilization is important for the improvement of both maternal and child health. In a study of six African countries, lower rates of maternal and neonatal mortality and morbidity were shown to have a positive relationship with giving birth in a health facility with the help of skilled medical personnel (17).

However, in many developing countries the majority of births are delivered at home. According to an analysis of DHS data from 48 developing countries since 2003, in 23 countries more than half of the births are reported to take place at home (18).

The proportion of women who delivered with the assistance of a skilled birth attendant is one of the indicators in meeting the fifth MDG. In almost all countries where health professionals attend more than 80% of deliveries, MMR is below 200 per 100,000 live births (3). However, birth with skilled attendance was low in Southern Asia (40%) and SSA (47%), the two regions with the greatest number of maternal deaths (19).A study in Dodota woreda, Arsi zone showed that a total of 18.2% of the mothers gave birth to their last baby in a health facility (20).

Factors Associated with Institutional Delivery Service Utilization

Women’s Socio demographic Related Factors

Several studies have shown that women’s use of health facility delivery service is influenced by their demographic background characteristics and their socioeconomic status. A study in rural India showed that institutional delivery is much more common for first births than for subsequent births(18).

Regarding age at delivery, another study in rural India, Punjab, revealed that institutional deliveries were more common in comparatively younger age groups, at 43 percent for women age 18-25 compared with 23 percent for women age 36-45 (21). A study in Nepal, showed that 70 percent of women age 20-34 had their most recent birth in a health facility compared with 58 percent of women age 35. The same study revealed that about 79 percent of women with a first pregnancy and 70 percent of women with a second pregnancy delivered in a health facility compared with 50 percent of women with a fourth or higher-order pregnancy (22).

Home delivery is more common among poorer than wealthier women. In a study in Nepal, a higher percentage of women with a higher income level gave birth in a hospital compared with those with a lower income (22). A study among expectant mothers in Ghana found that women from households in the highest income quintile were more likely to demand institutional delivery, by 18 percentage points, compared with women in the lowest wealth quintile (23).

Exposure to mass media is also another important factor associated with place of delivery. The same study in Ghana found that women who had access to media/health information via television were more likely to have institutional delivery (23). A maternal health care service utilization study conducted in three states of South India with different social settings also found that mass media exposure had a positive association with delivering at health facilities (24).

In the Nepal study, the percentage of deliveries in a health facility was nearly double for women at the highest education level compared with uneducated women (22). In addition, according to the analysis of DHS data in six sub-Saharan countries, women's higher level of education was associated with an increase in the decision to seek health care. In Malawi, Tanzania, and Ghana, living in urban areas increased the probability of a woman having her most recent birth in a health facility (17).

Women's past obstetric Related Factors

Antenatal care (ANC) utilization is also another factor associated with institutional delivery. A study among expectant mothers in Ghana indicated that women with at least four ANC visits were more likely to give birth in health institutions (23).

In Ethiopia, several studies have also shown that antenatal care service utilization is a strong determinant of utilization of institutional delivery. Analysis of 2005 EDHS data showed that seeking assistance during delivery was strongly associated with use of ANC services (25).

Moreover, a study from Amhara region North Shewa zone showed that women who had made at least one ANC visit were at least six times more likely than women with no ANC visits to give birth at health facility. In addition, women with five or more ANC visits were at least two or three times more likely to use a health facility for delivery compared with women with two to four visits, or only one visit. Mothers with at least five ANC visits during their last pregnancy were also significantly more likely to give birth in a facility than mothers with only one ANC visit. Concerning the reasons for not using modern health services, in the same study 44 percent of respondents reported that they were not seriously ill, while 15 percent said they were too busy with household chores, and 14 percent cited the high cost of the facility (26).

The determinants of maternal health and mortality interact to produce a complex set of circumstances that involve clients, communities, the health system, and the government. These dynamics become urgent when a life-threatening obstetric emergency occurs. Recognizing danger signs and deciding to seek care are influenced by a woman's knowledge of pregnancy-related health risks(27). Study in Tanzania showed that the proportion of women with skilled care at delivery increased with knowledge of danger sign from 39 percent among women who did not mention any to 68 percent among who did mentioned four almost or more danger signs ($P < 0.005$) (28).

Women's decision-making power

Women's decision-making power is another factor usually exists within the community that influences use of skill attendant at delivery. In many parts of the world, women's power to make decisions is limited, even over matters directly related to their own health. In Bangladesh, it is usually the mother in law and husband who make the decisions to seek (or not to seek) care (29). According to the three levels of delay in decision making for emergency obstetric care, decisions at the first two levels are dependent on the woman's family and community resource. Poor community tends to delay decision making or making wrong choices when there are complications (30).

Women's health Service Related Factors

The availability of skilled attendant, accessibility of health institutions and the presence of referral system are some factors that enable mothers to utilize skilled attendant care. Studies indicate that one of the reasons women give for choosing not to use available obstetric care is poor access to health institutions. Since most women live more than five kilometers from the nearest health institutions, vehicles shortages and poor road conditions affect skilled attendant care. In Tanzania 84% of women who gave birth at home intend to deliver at a health facility, but couldn't because of distance and lack of transportation (31). Study conducted at Gullele district in Addis Ababa also shows that the reasons given for preferring to deliver in health institution is high quality of service 50.1%, following by nearness of health institution 36.8%, and the approach of good health workers 9 % (32).

The process of childbirth is associated with higher level of risk than pregnancy and post partum. Beliefs and practices during pregnancy leads to development of complication (34). In general Previous studies showed

that institutional delivery service utilization were associated with educational status of mothers and their husbands, income level, preferences of the attentions of their relatives, trust on traditional birth attendants, absence of health problems during pregnancy, antenatal visits during pregnancy, short duration of labor, mothers' place of residence, age, perceived distance to the nearest health facility and transportation costs (20,35).

Objectives

General Objective

To assess Prevalence of institutional delivery service utilization and associated factors among married women of reproductive age group in Abe Dongoro Woreda, Horro Guduru Wollega zone, Oromia Region, North West Ethiopia.

Specific Objectives

- To describe prevalence of institutional delivery service utilization in Abe dongoro woreda, Horro Guduru Wollega, Oromia Region, North West Ethiopia, November 4, 2014 to December 10, 2014
- To identify factors associated with institutional delivery service utilization in Abe dongoro woreda, Horro Guduru Wollega, Oromia Region, North West Ethiopia, November 4, 2014 to December 10, 2014

Methods

Study period and area

The study was conducted from November 4, 2014 to December 10, 2014 in Abe Dongoro woreda, which is located in Oromia regional state of Horro Guduru wollega zone, 375Km far away from Addis Ababa. The current population of Abe dongoro woreda by the year 2007 is 83108, of whom 42,317(51%) is male and 40,790 (49%) is female. Among female reproductive age group, pregnant women are estimated to be 2,884. There are seven health centers, twenty one health posts and one private drug stores and six private clinics. The woreda contains 1 urban Kebeles and 21 rural Kebeles. Also the woreda have different professionals like 6 Health officers, 4 Bachelor of science nurse, 10 midwifery, 34 C/nurse diploma and 47 Health extension workers(2 urban and 45 rural) (15).

Study design

A community based cross-sectional study design using both quantitative and qualitative method.

Source population

The source population was all married women in reproductive age group who gave birth in the last 12 months prior to the study period in Abe dongoro woreda.

Study population

The study population was randomly selected mothers who give birth in the last 12 months prior to the study period.

Inclusion and Exclusion criteria

Inclusion criteria

All married women of reproductive age group who give birth in the last 12 month were included in the study.

Exclusion criteria

Mothers', who weren't physically and mentally capable to be interviewed and mothers who live less than six month in the study area were excluded from the study.

Sample size determination

4.6.1. Quantitative method

The sample size was determined using single population proportion formula $n = z^2 (p q) / d^2$

Proportion of institutional delivery care services of Oromia region Dodota woreda is 18.2% (20)

Where n =sample size

Z =Reliability Coefficient with 95% confidence interval

P =Population variance available from previous data $q=1-p$

d = Standard error allowed

If the value of p is 0.182 and the desired error chosen to be 0.05 with the reliability coefficient of 95% certainly ($z=1.96$)

Then, $n=[(1.96)^2(0.182*0.818)] / (0.05)^2$

$n=230$ multiplying by 2(design effect) =460+10% none respondent rate = **506** (for quantitative method).

Qualitative method

- ✚ For the qualitative methods, purposive sampling was used by selecting respondents from four Kebeles for a series of four focus group discussion.

Pre-testing the questionnaire

The questionnaire was pre-tested to identify errors, unanticipated interpretations and cultural objections to any

of questions in 5% of mothers who give birth in the last 12 months by Afan Oromo having similar characteristics with the study subjects in Dabisi kebele.

Sampling Procedures

Quantitative Study

From the total of 22 kebeles, by Simple Random sampling technique 12 kebele's (1 urban and 11 rural) were selected randomly to represent the woreda. Then all mothers who give birth in the last 12 months were registered in each kebele and number labeling was given for each house before the actual data collection process. After getting the total number of mothers who give birth in the last 12 month in each kebele which gives a total of 2009 mothers, the sample was proportionally allocated to represent each kebele. Then using computer generated sampling, the required sample was taken and interviewed. Where mothers are two or more in the same house, only one was taken by lottery method.

Qualitative Study for female participants

Purposive sampling was used to select respondents from two Kebeles for a series of two focus group discussion on married women who gave birth in the last 12 month and who were volunteered for each group. The chairpersons of the kebeles and health extension workers were assist the recruitment of the participants.

Qualitative Study for male participants

Purposive sampling was used to select respondents from two Kebeles for a series two focus group discussion on males' whose their wives give birth in the last 12 month and who were volunteered for each group discussion. The recruitment of the participants were assisted by kebele leaders and health extension workers.

Data Collection Procedures

Structured questionnaire's and in-depth interview guide

Face to face interview using a pre-tested, structured questionnaire was used to collect the data. To meet the objectives of this study, the questionnaire was adapted and modified from DHS and related thesis works after reviewing relevant literatures to collect information about all the relevant variables(8).

Focus group discussion (FGD) was Conducted to explore and to share the experiences, thoughts, feelings, attitudes and ideas of participants on determinant of deliver in the health institution. FGD was conducted on married women who gave birth in the last 12 month and males' whose wives gave birth during the last 12 month by involving members having eight participants until the idea becoming saturated. The group members were not knows each other and homogenous in terms of gender and fulfilled inclusion criteria .Before the FGDs, the moderator introduced all participants, explained the general purpose of the study and topic of the discussions. The participants were informed about the tape-recorder and permission to be recorded was requested. Informed verbal consent was obtained from all individuals participating in the discussion. The FGDs generally took place at the nearest school and health facility. The sessions lasted 40-60 minutes. The researcher and other trained moderator (the supervisor) and two note takers from the data collectors led the discussion and it was recorded using a tape recorder. Oromiffa or Amaharic was the language used in all the sessions. The moderators used the topic guide to direct the discussion and cover all of the relevant topics. The questions were selected in relation to the research objectives while taking into account local knowledge and cultural sensitivities.

Data collectors

For the quantitative method, data were collected by trained data collectors (six 10th grade complete students) and 12 Health Extension workers who guide those data collectors in their respective kebeles with one trained supervisor and the training was given for two days by principal investigator to collect uniform data and for the qualitative, one principal investigator (facilitator), one supervisor (audio tape recorder) and two note taker (one BSC midwifery and one diploma nurse).

Operational definition

Institutional/skilled delivery: is any deliver that occurred in modern health facility and assisted by skilled birth attendant such as medical doctors, nurses and midwife.

Traditional birth attendant- is who initially had acquired her ability by delivering babies by herself or through apprenticeships to other TBAs.

Delivery in the last 12 months- all births within 12 month's irrespective of the outcome of the delivery, including live birth, abortion, still birth or death after live birth.

Distance: - is measured in kilometers from home to the nearest health facility. According to WHO standard distance > 5 km from home to health facilities are said to be far.

Benefit of giving birth in health institution:- mothers who have an information related to maternal and child services in the last 12 month.

Decision making power on place of delivery:- husbands/neighbours, relatives and other bodys who decide their place of delivery during the last 12 month.

Knowledge of mother on pregnancy complications:- mothers who have knowledge on danger sign of pregnancy complications.

Poor knowledge: mothers who score knowledge questions of pregnancy and labour below the mean score.
Good knowledge: mothers who score knowledge questions of pregnancy and labour above the mean score.

Variables of the study

Dependent variable

Institutional delivery service utilization (yes/no)

Independent variables

- Socio demographic characteristics of mothers (place of residence, age of mother, religion, ethnicity, occupational status, educational status, income level, family size);
- Obstetric characteristics of mothers (age at marriage, age at first pregnancy, age at last pregnancy, gravidity, parity, ANC visit);
- Health service utilization and decision making power (past experience, availability of HF nearby, decision making power, availability of transportation, access to information), Women's knowledge on pregnancy and delivery complications.

Data processing and analysis

Quantitative part

The data were entered to SPSS version 20 statistical packages and data cleaning were performed to check for accuracy, and consistencies and missed values and variables. Descriptive statistics (Frequency tables, graphs, percentages, means and standard deviations) of the collected data were done for most variables in the study. Bivariate analysis was conducted primarily to check which variables have association with the dependent variable individually. Variables found to have association with the dependent variables $p \leq 0.2$ probability were entered in to multivariate logistic regression for controlling the possible effect of confounders and finally the variables which have significant association were identified on the basis of Odds Ratio OR, with 95%CI and 0.05 p-values to fit into the final regression model.

Qualitative part

Participants' conversations were audio taped, transcribed verbatim and translated by the Expert's. Then the data were systematically coded segment by segment based on the research questions and used to answer the research questions in conjunction with the data from the quantitative study.

Data Quality Management

To assure data quality, standard data collection tools (questionnaire) was prepared in English and translated into local language Afaan Oromoo, data collectors and the supervisor were trained on the data collection techniques for two days and the data collection tools were pre-tested out of the study area participants ; to check for ambiguity and sequencing of questions, prior to the actual data collection time. In addition, the completeness, accuracy and consistency of the collected data were checked on daily basis during the data collection time, by the principal investigator and trained supervisor.

Ethical Considerations

Ethical clearance and permission was obtained from Wollega university institutional review board. Permission was obtained from woreda administrators and woreda health office consciously for the selected kebeles. The purpose and importance of the study was explained to the participants and data was collected after full informed verbal consent was obtained and confidentiality of the information was also maintained by omitting their names and personal identification or privacy.

Results

Socio-Demographic Characteristics of the mothers

Four hundred ninety five mothers were included in the study which made the response rate 97.8. Majority 473(95.6%) of respondents were living in rural area. The mean (\pm SD) age of mothers was 26.85 (\pm 5.73) years. Four hundred fifty seven (92.3%) of the respondents were married and 237(47.9%) of mothers are orthodox in religion. About two third, 328 (66.3%) were Amhara. Above three fourth (78.4%) of the respondents was house wives and 376 (76%) of husband's occupational status were farmers. Three hundred eleven (62.8) of mothers can't read and write while 42.8% of mother reported that their husbands can't read and write. Economically, 127 (25.7%) of the households had monthly income of <400 ETB and 128(25.9%) had \geq 1000 ETB monthly income based on quartile classification. Four hundred forty seven (90.3%) of the respondents had information about benefit of delivering in health institution. Of this majority of them 387(86.6%) got information from health workers. Concerning the time they travelled to reach the nearby health facility, 409 (82.6%) of them said less than one hour and Two hundred fifty nine (52.3%) of mothers had family size of two to five. (Table-1)

Obstetric factors of mothers

In this study, the mean (\pm SD) age at first marriage and age at first pregnancy were 17.62(\pm 2.6) and 26.28(\pm 5.84) years respectively. Three hundred fifty six (71.9%) (Cumulative proportion) of participants got married at the age of \leq 19 years. Two hundred sixty one (52.8%) of the mothers had got their first pregnancy at their early age

(≤ 19 years). Of the total birth, 19.0% were from unplanned pregnancies. Two hundred fifty three (51.1%) of the mothers were gravida < 3 and more than half of the respondents (52.1%) were parity < 3 . Majority of mothers 410 (82.8%) had reported antenatal care visits for current birth and more than half of the respondents 273 (55.2%) gave birth two to four (Table 2).

Institutional delivery service utilization and reasons for use of health institution delivery

Of the total respondents, 283 (57%) of them gave birth at health facilities and 212 (43%) of them delivered at home (figure 3). Out of those mothers, majority 259 (52.3%) of them decide their place of delivery by their husbands and others (See figure 3).

Among those mothers who gave birth at health institution during the last 12 month, the reasons for utilizing health institution was; told to deliver at health institution, need better service, availability of health institution in the nearby, difficulty of labor. The reasons for not utilizing the institutional delivery services as mentioned by mothers were; my labor was smooth and short, previous delivery was normal, need to be with relatives, due to too far distance, presence of traditional birth attendants, my husband were not willing to attend institutional delivery Services, no female provider at health facility, and others.

Factors associated with institutional delivery service utilization

In the multivariable logistic regression analysis (after adjusting the potential confounder); educational status of mother (AOR=3.71 [95% CI=1.10-12.54]), having information about benefit of giving birth at health facility (AOR=5.99 [95% CI=2.29-27.90]), ANC visit for last pregnancy (AOR=15.82 [95% CI=6.08-28.14]), decision making power on place of delivery (AOR=2.48 [95% CI=1.49-4.13]) and knowledge of mother on pregnancy complications during the last 12 months (AOR=5.21 [95% CI=2.49-10.92]) were found to be statistically associated with the institutional delivery service utilization (Table 4).

Qualitative results

Four focus group discussions (two FGD from male and two from female participants) were conducted involving a total of 32 participants, approximately age of female participants range from 19-35 years and male participants 23-45 years old. The discussion was held using discussion guides and relevant information was collected. Discussants had freely and actively expressed their idea. From the discussion, contents were analyzed.

Perception, belief and practices surrounding pregnancy and childbirth

The participants perceived and believed that the pregnancy and childbirth is a natural gift of God/Allah and most of the time ends up with short and easy deliveries even the one who is in neighbor without hearing that the women is in labour. *Pregnancy and delivery are natural process (27 years married women from Tullu wayu kebele) but according to our culture, regarding the pregnant women that blessing her to end in good outcomes saying that "God/Allah makes your labour smooth" she concluded.* Concerning the practice of child birth whenever the women is in labour, the husband not allow to inform for others but when the labour was complicated he told to the neighbors and health extension workers and the HEW's calls ambulance for referral system.

Reliance on traditional system

Most women involved in the discussion had attended antenatal care during their pregnancies. The reasons given for attending antenatal care were that they wanted to know the growth and progress of pregnancy, to obtain immunizations, to know if everything was normal, and to have any problems diagnosed and treated. Most of the participants do not know-how major problems in childbirth and complications that do arise are sudden and unpredictable. So, women and also their husband do not want to take the child delivery at health facility unless the complications are serious and out of control. labour is said to be prolonged when it exceed two days. They said that when the women become weak, exhausted, dehydrated. This behavior is major cause of utilization of modern delivery care. In addition to this there is some inherited belief and tradition. The entire participant agreed that most of the women in Abe dongoro woreda fell safe and secured to give childbirth in the presence of their family members at home.

Transport problem

Participants described transport as one of the major problems during child birth and when referral is needed by health extension workers was decided. Occurrence of home delivery without receiving care from skilled attendant due to transport was discussed in the FGDs.

"we know how home delivery is dangerous when labor is complicated, As our woreda we have one ambulance, this ambulance can't reach all kebele's of our woreda because most of the villages are far from the main road and our health facility is too far, but it is difficult to transport a laboring mother by manpower and carry for at least 2-3 hr, she might give birth in the way; it happens we saw when mothers gave birth in the way before reaching to the health facility" (male participant from Lomicha kebele age 35 years)

Influence from decision makers

Most of the women narrated that if they could choose, they would prefer to deliver in the health institution assisted by skilled attendant. They pointed out that a woman should ask permissions for her husband before she goes to the health facilities. Some did not know whether delivery needs a decision since most of them were illiterate they did not know when their delivery day was. All the participants agreed that most of the time

decisions were made by their husbands and relatives/neighbor women's. They commented that since most of them were illiterate and it has cultural value to accept their husband decision. Some of them said as the parents were also involved in decision making. They believed that this is correct. Unless labor is complicated when decided by relative's/neighbor women's, their husband would not allow her to go health facilities.

"I don't think delivery needs decision because it is a sudden onset and it is a natural process. From my experience labor starts suddenly. When I gave birth of my second child the labour was started when I was in my home. Then my neighbors were with me and I gave birth in short time. I think it needs to be lucky to have easy delivery, and it depends on the willingness of Allah. No need to think and discuss about delivery" (female participant from site-24 kebele age 26 years).

Provider approach

All the participants showed that not all health workers but few were as such hostile. They also perceived that the health workers were not good on handling and respecting the laboring mothers. One of the participants was said that the health workers sometimes has a rough behavior towards the women e.g. slapping their thighs during labor, yelling at them when they come in a late stage of labor or do something wrong etc. Fear of impartiality and discrimination also stated they said that *"health professionals were not concerned for the oppressed and the poor women who were not dress well rather treat those who dressed well respected being insolent and harsh"* (male participant from Tullu wayu kebele age 23 years)

Discussion

This community-based study has attempted to identify factors associated with institutional delivery service utilization among mothers who gave birth in the last 12 months in Abe dongoro woreda. The study showed that the magnitude of institutional delivery service utilization was 57% in the woreda. This finding is much higher with other studies conducted in Ethiopia (8,20,35). All of those studies reported that still large numbers of mothers are delivered at home under the care of unskilled birth attendants compared to this study.

But, according to Federal democratic republic of Ethiopia, ministry of health, joint review mission final report of October 2014, In 2006 (EFY), institutional delivery showed an increase to 41% compared to performance of the previous year.. However, the target set for 2006 (60%) were not attained nationally. This increment of institutional delivery contributed to the progress in the reduction of MMR to 420/100,000 live birth and infant mortality rate to 64/1000 live birth (36). The reason for this big difference might be due to the time gap, there could be improvement in accessing and utilizing the service. In addition, contributing factors might be attributed to functional health developmental armies established in the community, availability of ambulance service, practicality of women friendly services and health workers' commitment.

Educational status of mothers had significant association with institutional delivery service utilization. Mothers with secondary and above education level were nearly about 4 times more likely to utilize institutional delivery service than mothers who didn't have formal education (AOR =3.71[95% CI=1.10-12.54]). This finding is also nearly consistent with other studies done in Ethiopia, Arsi dodota, Sekela District and Nepal (20, 22, 35). This might because, when mothers are educated, they might have the power to make their own decision in matters related to their place of delivery. Education enables mothers to communicate and understand with any information concerning their health and perceive danger signs easily.

Mothers who have information about benefit of giving birth at health institution was nearly six times (AOR=5.99[95%CI=2.29-27.90]) more likely to give birth in health institution than those who have no information. This study was in line with study done in Ghana found that women who had access to health information on benefit of giving birth in health institution were more likely to have institutional delivery (23). Having information could influence women's knowledge about delivery risks and availability of services. Mothers who made ANC visit for their last pregnancy, eighteen times (AOR=15.82[95%CI=6.08-28.14]) more likely to give birth at health institution when compared with women who did'nt follow ANC for their last pregnancy. Previous studies conducted in Ethiopia revealed that receiving early and on time ANC advice will prepare mothers for child birth and encourage them to give birth at health institution [(20), (24), (26), (35)].

The other finding of this study was mothers who have good knowledge on pregnancy danger signs were about five times (AOR=5.21[2.49-10.92]) more likely to give birth at health institution than mothers who have poor knowledge on danger signs of pregnancy complication. This finding was similar to the study done in Sekela district that showed knowledge of mothers on pregnancy risk factors had significant association with use of skilled care at delivery (35). The possible reason might be when they have better knowledge on danger signs of pregnancy complication they can perceive life treating conditions which in turn alerts them to decide where to deliver.

Conclusion

This study indicated that the overall utilization of institutional delivery in this woreda was 57% and mother's education, having information about benefit of giving birth at health institution, ANC visit, and knowledge of

mother on pregnancy danger sign were independent associated factors for skilled institutional delivery service utilization.

Recommendation

Based on the findings of the study, the following recommendations were made; making motherhood safer time in women's life requires commitments at all levels, in home, in the community, in the health facility, at the country and at the international level. Expanding education opportunities for women especially, those living in rural area on benefit of giving birth at health institution and pregnancy danger sign, strengthening promotion of antenatal care at health facility and Creating strong linkage between antenatal care and skilled delivery.

Competing interests

Authors' contributions

DEMISEW BEKELE was participated in preparation of the research proposal, participated in data collection and analysis.

Adamu Birhanu revised subsequent drafts of the paper and involve in critical review of the manuscript

All authors read and approved the final manuscript.

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Key words: Institutional delivery service

DECLARATION INDICATING THAT:-

The authors declare that they have no competing interests, this the submission is original, the submission is not being considered elsewhere, there is no conflict of interests and, the authors agree to grant the first editing / publishing rights to the journal upon acceptance.

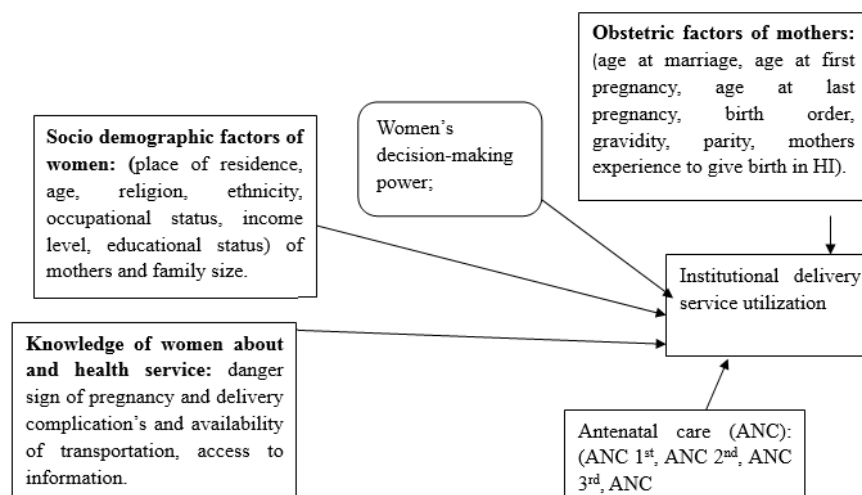
With best regards

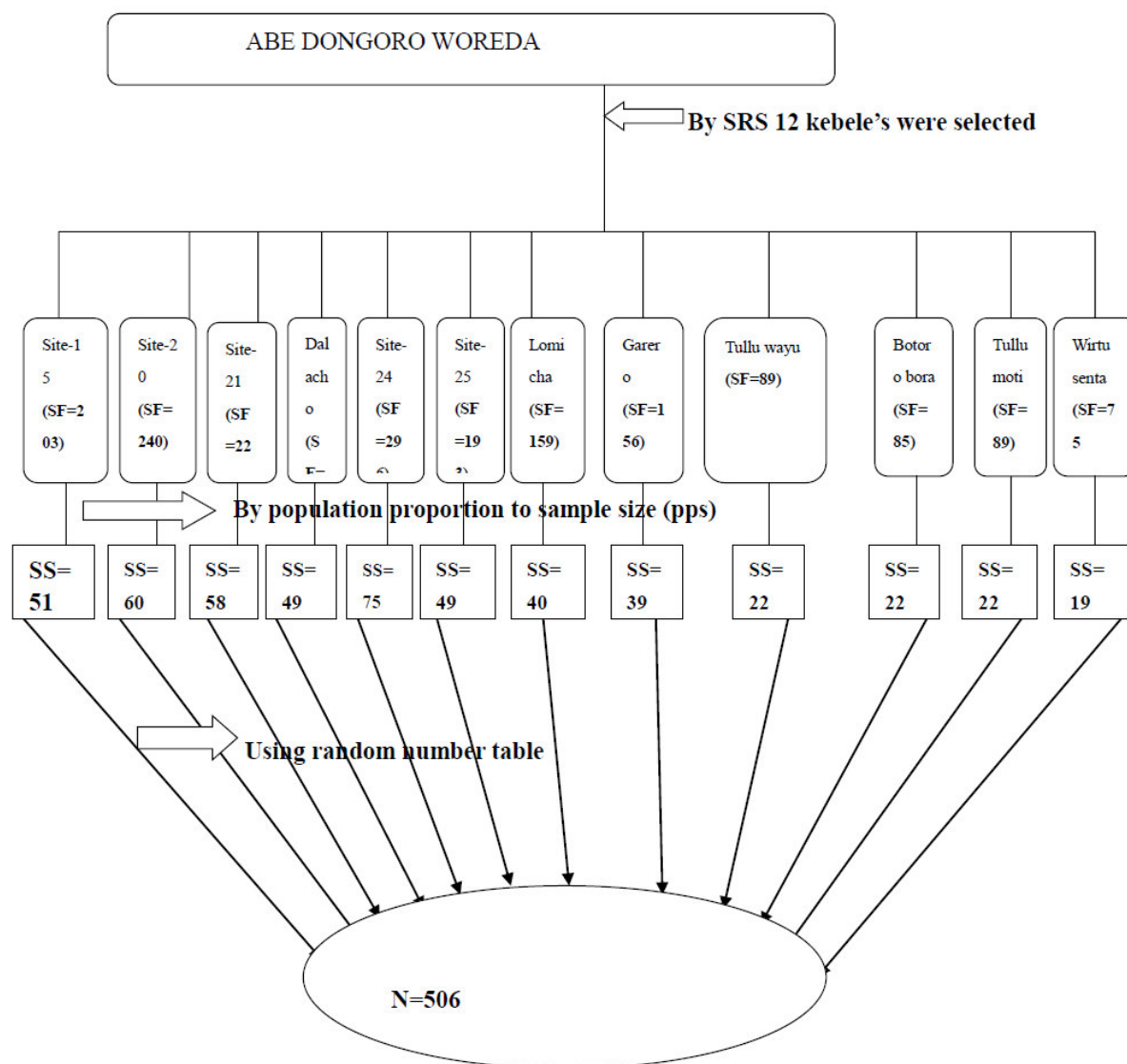
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Tables and Figures





NB:- SF-sampling frame SS-study subjects

Figure 1 Schematic presentation of sampling Technique of institutional delivery in Abe dongoro woreda, 2014.

Table 6 Socio demographic characteristics of mothers' and their husbands who gave birth in the last 12 months prior to the study period in Abe Dongoro woreda, Western Ethiopia, 2014

| Variables(N=495) | Frequency (%) |
|--|----------------------|
| Place of residence | |
| Urban | 22(4.4) |
| Rural | 473(95.6) |
| Current age of mother(mean, SD, 26.85±5.73) | |
| 15-19 yrs | 40(8.1) |
| 20-24 yrs | 132(26.7) |
| 25-29 yrs | 170(34.3) |
| 30-34 yrs | 81(16.4) |
| ≥ 35 yrs | 72(14.5) |
| Marital status of mother | |
| Married | 457(92.3) |
| Divorced | 26(5.3) |
| Widowed | 6(1.2) |
| Separated | 6(1.2) |
| Religion of the mother | |
| Orthodox | 237(47.9) |
| Muslim | 190(38.4) |
| Protestant | 66(13.3) |
| Catholic | 2(0.4) |
| Ethnicity of the mother | |
| Oromo | 158(31.9) |
| Amhara | 328(66.3) |
| Tigre | 9(1.8) |
| Mothers occupation | |
| House wife | 388(78.4) |
| Merchant | 23(4.6) |
| Civil servant | 25(5.1) |
| Farmer | 50(10.1) |
| Daily laborer | 6(1.2) |
| Student | 3(0.6) |
| Educational status of mother | |
| Can't read and write | 311(62.8) |
| Able to read and write | 44(8.9) |
| Primary education | 86(17.4) |
| Secondary education and above | 54(10.9) |
| Husband occupation | |
| Farmer | 376(76) |
| Daily laborer | 28(5.7) |
| Merchant | 39(7.9) |
| Government employer | 51(10.3) |
| Student | 1(0.2) |
| Educational status of husband | |
| Can't read and write | 212(42.8) |
| Able to read and write | 105(21.2) |
| Primary education | 109(22) |
| Secondary education and above | 69(13.9) |
| Family income in month(min.100.00 and max. 8000.00) | |
| <400 ETB | 127(25.7) |
| 400-650 ETB | 123(24.8) |
| 651-999 ETB | 117(23.6) |
| ≥1000 ETB | 128(25.9) |
| Time taken to nearby health facility | |
| <1 hrs | 409(82.6) |
| 1-2 hrs | 65(13.1) |
| >2 hrs | 21(4.2) |
| Family size | |
| 2-5 | 259(52.3) |
| >5 | 236(47.7) |
| Decision making power on place of delivery | |
| Self | 236(47.7) |
| Husband and others | 259(52.3) |

Table 7 Obstetric factors of mothers' who gave birth in the last 12 months prior to the study period in Abe dongoro woreda, Western Ethiopia,2014.

| Variables(N=495) | Frequency (%) |
|---|---------------|
| Age of mother at marriage(mean, SD, 17.62±2.6) | |
| <15 yrs | 52(10.5) |
| 15-19 yrs | 304(61.4) |
| 20-24 yrs | 136(27.5) |
| ≥25 yrs | 3(0.6) |
| Age of mother at first pregnancy(mean, SD, 19.36±2.6) | |
| <15 yrs | 3(0.6) |
| 15-19 yrs | 258(52.1) |
| 20-24 yrs | 220(44.4) |
| ≥25 yrs | 14(2.8) |
| Age of mother at last pregnancy(mean, SD, 26.28±5.84) | |
| 15-19 yrs | 61(12.3) |
| 20-24 yrs | 142(28.7) |
| ≥25 yrs | 292(59) |
| Number of pregnancy/gravidity | |
| <3 | 253(51.1) |
| ≥3 | 242(48.9) |
| Number of live birth/parity | |
| <3 | 258(52.1) |
| ≥3 | 237(47.9) |
| Information about benefit of giving birth in health facility | |
| Yes | 447(90.3) |
| No | 48(9.7) |
| Source of information to give birth in health facility | |
| Health workers | 387(86.6) |
| Friend's | 72(16.1) |
| Neighbors who get similar services | 75(16.8) |
| Media | 60(13.4) |
| Abortion in life time | |
| Yes | 38(7.7) |
| No | 457(92.3) |
| Still birth in life time | |
| Yes | 24(4.8) |
| No | 471(95.2) |
| Having plan for last pregnancy | |
| Yes | 401(81.0) |
| No | 94(19.0) |
| ANC visit during last pregnancy | |
| Yes | 410(82.8) |
| No | 85(17.2) |
| Number of ANC visit during last pregnancy(N=410) | |
| One | 9(2.2) |
| Two | 61(14.9) |
| Three | 111(27.1) |
| Four and above | 229(55.9) |
| Means of transportation to reach health facility(N=283) | |
| On foot | 98(34.6) |
| By cart | 34(12) |
| Local stretcher | 107(37.8) |
| Ambulance | 33(11.7) |
| Public transport | 11(3.9) |
| Birth order of last baby | |
| 1 | 132(26.7) |
| 2-4 | 273(55.2) |
| ≥5 | 90(18.2) |
| Experience of institutional delivery in the past | |
| Yes | 159(32.1) |
| No | 336(67.9) |

Table 8 Logistic regression of factors associated with institutional delivery service utilization among married women who gave birth in the last 12 months prior to the study period in Abe dongoro woreda, Western Ethiopia

| Variables | Institutional delivery service utilization | | COR[95%CI] | AOR[95%CI] |
|---|--|-----|--------------------|--------------------|
| | yes | No | | |
| Mothers occupation | | | | |
| House wife | 220 | 168 | 1.00 | |
| Farmer | 25 | 25 | 0.76[0.42,1.38] | |
| Daily laborers/student | 3 | 6 | 0.38[0.09,1.55] | |
| Civil servant/merchant | 35 | 13 | 2.06[1.06,4.01] | - |
| Educational status of mother | | | | |
| No formal education | 184 | 171 | 1.00 | 1.00 |
| primary education(1-8) | 55 | 31 | 1.65[1.01-2.68] | 2.02[0.99-4.14] |
| Secondary education and above | 44 | 10 | 4.09[1.99-8.38] | 3.71[1.10-12.54]* |
| Husband occupation | | | | |
| Farmer | 203 | 173 | 1.00 | |
| Daily laborers | 16 | 12 | 1.14[0.52,2.47] | |
| Merchant | 22 | 17 | 1.10[0.57,2.14] | |
| Government employer/student | 42 | 10 | 3.58[1.74,7.35] | - |
| Husband education | | | | |
| No formal education | 171 | 146 | 1.00 | |
| Primary education(1-8) | 62 | 47 | 1.13[0.73,1.75] | - |
| Secondary education and above | 50 | 19 | 2.25[1.27,3.98] | |
| Family size | | | | |
| 2-5 | 162 | 97 | 1.59[1.11, 2.72] | - |
| >5 | 121 | 115 | 1.00 | |
| Number of pregnancy/gravidity | | | | |
| <3 | 159 | 94 | 1.61[1.13, 2.30] | |
| ≥3 | 124 | 118 | 1.00 | - |
| Information about benefit of giving birth at health facility | | | | |
| Yes | 281 | 166 | 38.93[9.33,162.47] | 5.99[2.29-27.90]* |
| No | 2 | 46 | 1.00 | 1.00 |
| ANC visit for last pregnancy | | | | |
| Yes | 277 | 133 | 27.42[11.66-64.50] | 15.82[6.08-28.14]* |
| No | 6 | 79 | 1.00 | 1.00 |
| Birth order of last baby | | | | |
| 1 | 92 | 40 | 2.63[1.51, 4.58] | |
| 2-4 | 149 | 124 | 1.37[0.85,2.21] | |
| ≥5 | 42 | 48 | 1.00 | - |
| Knowledge of mother on pregnancy complication's | | | | |
| Poor knowledge | 117 | 183 | 1.00 | 1.00 |
| Good knowledge | 166 | 29 | 8.95[5.67, 14.15] | 5.21[2.49-10.92]* |
| Knowledge of mother on labour complication | | | | |
| Poor knowledge | 113 | 177 | 1.00 | - |
| Good knowledge | 170 | 35 | 7.61[4.93, 11.74] | |