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Research Article

Magnitude and Associated Factors for Home Delivery Among Women Who Gave Birth in Last 12 Months in Ayssaita, Afar, Ethiopia-2016. A community Based Cross Sectional Study

Abstract

Introduction: Proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that can cause the death or serious illness of the mother or newborn baby. Home deliveries are common in developing Home deliveries range from 22% in Senegal, 65% in Tanzania, 87.7% in Bangladesh and 94% in Ethiopia.

Objective: To assess the magnitude and factors associated with home delivery in Ayssaita district, Afar, Ethiopia, 2016.

Methods: A community based cross-sectional study was conducted in May2016 with 317 sample using structured questionnaire. Bivariate and multivariate analyses were conducted and Odds ratio with 95% CI and p value of < 0.05 for statistical significance were declared.

Results: About 71.0% of women delivered at home and majority of them were assisted by non-skilled attendants (75.4%). The independent predictors for home delivery in this study were maternal age, maternal residence, maternal education and maternal awareness on at least one danger signs during pregnancy.

Conclusion: Majority of women (74.4%) attended at least one antenatal visit from skilled health care providers during their recent pregnancy however; majority of them gave birth at home (71.0%) and assisted by non-skilled attendant. Being rural resident, illiterate, younger age, and not having least awareness on at least one danger signs were the independent predictors for home delivery. Women empowerment through educational opportunities; strengthening health extension workers to create community awareness on the importance of institutional delivery particularly for the rural pastoralist mothers are recommended.

Introduction

In spite of global efforts to reduce maternal mortality, the World Health Organization (WHO) reports that the global maternal mortality ratio (i.e., the number of maternal deaths per 100,000 live births) declined only 2.3% per year between 1990 and 2008. This is far from the annual decline of 5.5% required to achieve the fifth Millennium Development Goal (MDG) [1]. Wide disparities respectively are found among regions in the level of skilled attendance at birth—ranging from 100% and 97% in Eastern Asia and Central Asia respectively and it is about 50% in Southern Asia and sub-Saharan Africa [2].

Health problems during pregnancy may have serious consequences for the woman, her child, her family, and her community. Maternal health has emerged as global priority because of a great gap in the status of mother's wellbeing between rich and the poor countries. In developing countries, many women suffer from the ill health during pregnancy and child birth [3].

Although most pregnancies and births are uneventful, approximately 15% of all pregnant women develop a potentially life-threatening Complication that calls for skilled care and some will require a major obstetrical intervention to Survive. If

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Emergency Obstetric Care is available, and women can access it in time, women's lives can be saved [4].

Each year around four million newborns die in the first week of life, worldwide, an estimated 529,000 mother's die due to pregnancy-related causes. In low and middle-income countries many deliveries still occur at home and without the assistance of trained attendants [5]. This has generated serious concern, since women who develop life-threatening complications during pregnancy and delivery require appropriate and accessible care. The major causes of maternal death in low income countries include obstructed labor, ruptured uterus, severe pre-eclampsia/eclampsia, malaria and complications from abortion [6,7]. Home deliveries are common in developing countries. Studies in some countries have reported that home deliveries range from 22% in Senegal to 65%in Tanzania and to 87.7% in Bangladesh [8,9].

In Ethiopia 94% of births take place at home without the assistance of trained persons. Of these, 28% are assisted by Traditional Birth Attendants (TBAs), 61% by relatives or others and 5% are delivered without any type of assistance at all [10]. The Ethiopian Demographic and Health Survey(EDHS) 2011 shows that home delivery comprises 90% of all deliveries in the country, regardless of expansion of strategies to increase service utilization and to improve maternal and child health [11].Small studies in different regions of the country also support this figure 1. Similar to studies conducted Bangladesh and Nigeria, small studies in Ethiopia show that the most frequent reasons for high rates of home delivery are distance to health facility, problems in transportation, lack of decision making power among women, low levels of antenatal care (ANC), and cost for medical care , poor educational attainment [1,12,13].

Ethiopia is one of the ten countries that comprised 58% of global maternal deaths estimated in 2013. Based on data in the 2011 Ethiopia Demographic and Health Survey, the MMR was estimated at 676 maternal deaths per 100,000 live births [11]. This makes it very difficult to achieve the Millennium Development Goal. The risk of dying from pregnancy in Africa is 1 in 16; in Asia, 1 in 65; and in North America, 1 in 3,700. The overall risk for developing countries is 1 in 48, whereas in industrial countries the risk is 1 in 1,800 [14].

Different reasons account for the high Maternal Mortality Ratio (MMR) in sub-Saharan African countries, including Ethiopia. A lack of decision-making power among women within the family remains a challenge in many countries [15,16]. Low levels of female education and little availability of medical services during pregnancy prevent women receiving care and accessing the best choices for themselves and their children's health, resulting in critical delays in receiving care and unnecessary maternal complications and deaths [16,17].

Globally both child and maternal mortality have dropped dramatically since 1990. Maternal deaths have declined from 543,000 per 100,000 live births in 1990 to 287,000 in 2010 [18].
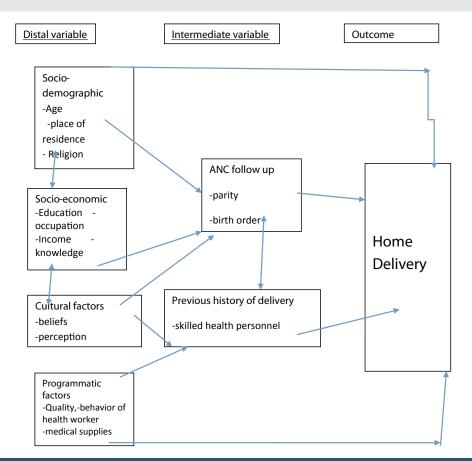

Figure 1: Conceptual framework adopted from different literatures to investigate factors associated with home delivery in Ayssaita district, Afar, Ethiopia - 2016.

Globally, an estimated 42% of maternal deaths are intra partum related, that is during birth or the first day after birth in which majority of this occurs in developing countries. Intra partum-related neonatal death is a key issue during delivery in which almost all intra partum-related neonatal deaths occur in low- and middle-income countries particularly South Asia and Africa with large numbers 73% of all intra partum-related neonatal deaths worldwide. Ethiopia is one of the 10 countries that contribute more than 65% of all intra partum related deaths including: India, China, Democratic Republic of Congo, Pakistan, Nigeria, Bangladesh, Indonesia, Afghanistan, and Tanzania [19].

In one of the Amhara regional state district of Ethiopia as per 2012 study, 48.3% gave their last birth in health institutions and 51.7% gave birth at home [20].

Data analysis from 2011 EDHS with a sample from 576 communities of 7,908 women whose most recent births were within five years preceding the survey in Ethiopia showed that 88% of deliveries took place at home [21].

Demographic and Health Survey(DHS) analysis done in 2011 shows only 6 % of women who delivered in the five years preceding the survey were assisted by a health professional for their most recent pregnancy [22]. Even if institutional delivery increases from 10% in 2011 to 15% in 2014 it is very low comparing with other countries [11,23].

Several studies have been conducted Worldwide on the factors affecting delivery in health facilities and the following was observed, The issues of risk and vulnerability, such as lack of money, lack of transport, sudden onset of labour, short labour, staff attitudes, lack of privacy, geographical location, perception of poor quality of health services, tradition, cultures and the pattern of decision-making power within the household were perceived as key determinants of the place of delivery [24-27].

A secondary data analysis of the third (2005) Rwandan Demographic Health Survey shows although more than 90% of participants attended an antenatal service, only 30% delivered at a health facility. [28].

A study conducted in Gondar, North Ethiopia in 2012 revealed that women having at least one skilled antenatal care in their recent pregnancy were about two times more likely to have birth attendance by a skilled provider [29]. In similar way, study conducted in Woldia, Ethiopia in 2012 revealed that women who attended Ant Natal Care (ANC) four times were more likely to utilize skilled delivery compared to women who attended 1-3 times during pregnancy [30].

A Community based cross sectional study in Goba woreda in 2013 indicates that factors were found to be associated with institutional delivery were residential place, educational level of mothers and husbands, ANC follow up and being birth prepared and ready for its complication. [31].

Similar study done in Tigray region in 2012shows Women in the younger age group had the highest proportion of institutional delivery use (54%) followed by the middle age group, 30–39 years (39%). Moreover, women with 5–12 years of education were more likely to use institutional delivery than non-educated mothers [32].

A study conducted in 2004 in Ethiopia Afar, Dubti, Ayssaita town indicated that as order of pregnancy and parity of the first time preferences to delivery at institution were more likely than those who have order of pregnancy and parity of five or more [33].

These factors could also influence women's decision to give birth at home rather than in a health facility. Urban are notably more likely than rural births to be delivered in a health facility (50% versus 4%). The % of births delivered in health facility ranges from less than 10% in Afar, South Nationality Nations Peoples Region (SNNPR), Oromiya, Somalia, and Benishangul-Gumuz regions to 82% in Addis. Previous qualitative study in Afar was reported that most mothers deliver at home, assisted by Traditional Birth Attendants (TBAs) [12]. However, determinant factors of delivery practices in this region remain scarcely explored. So this study finding will be useful to concerned stake holders in planning, implementing and evaluating various interventions to reduce maternal and neonatal mortality rate.

This Conceptual framework is adopted from different literatures to investigate factors associated with home delivery. It indicates the relation between home delivery and different direct and indirect associated factors for home delivery in the study area. All these factors are leading to Home delivery and strength of association is explained in analysis part.

General objective

To assess the magnitude and associated factors for home delivery among women of reproductive age who gave birth in the last 12 months preceding the survey in Ayssaita district, Afar, Ethiopia – 2016.

Methods and Materials

Study area and period

The study area is Ayssaita district located in zone one, Afar region North East Ethiopia. It is about 700 Km from Addis Ababa with an estimated population of 64,393 of which 34,382 are males and 30, 011 females and the expected numbers of pregnant women are 2576 (CSA; 2011). The District is subdivided into 2 urban and 11 rural villages. The district though it is found in pastoralist region; it has a relatively settled population. However, the utilization of health services in general and maternal healthcare service in particular is very low even lower than the national average. As per EDHS 2011 the antenatal and delivery care in Afar region was 32.3% and 6.6% respectively. The study was conducted from May 10– 30, 2016 with Community based cross-sectional design.

Source population

All reproductive age women who gave birth in the last twelve months in the Ayssaita district, afar, Ethiopia.

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Specific objectives:

➢ To determine the magnitude of home delivery practice in Ayssaita district.

➢ To identify factors that influence women's practicing home delivery in Ayssaita district.

Study population

Selected women who gave birth during a one year period preceding the study and residing in the district.

Exclusion Criteria: Women, who are critically ill, couldn't talk or listen.

Sample size determination

318 samples were selected by using single population proportion formula based on the assumptions: in the previous prevalence data on the population under study, p was 0.936 with 4% margin of error and 95% confidence level of certainty.

Sampling procedure

Multi-stage sampling technique was applied to select study subjects. The district was divided into urban and rural village. Urban consists of two areas and the rural consists of elevenvillages. One area from urban, four villages from rural district were identified using simple random sampling method. Pre-survey was conducted to identify the elibible households for the survey. Then, sampling fraction for each of the selected kebeles was determined by probability proportional sampling method and then used systematic random sampling technique to reach each sample households and kth household with eligible mother was included in the study. Whenever more than one eligible respondent was present in the same selected household, only one respondent was chosen by lottery method (simple random sampling).

Dependent Variable: Home delivery practice (yes/no).

Independent Variables: Socio demographic characteristics like age, religion, education level, marital status, parity, and head of household, size of the family, women occupation and husband occupation, socio economic, cultural and so on.

Data Collection Tools: Data was collected by using pre-tested structured interviewer administered questionnaire.

Data management, analysis and interpretation

Data was entered in to EPIdata 3.0 and transported to SPSS Version20 for further processing and computation. Frequencies, percentages and summary statistics were computed to describe the study population in relation to relevant variables. Bivariate analysis using cross tabulation was done to see the association between each independent variables and the outcome interest (home delivery practice) and crude odds ratio (COR) with 95% CI was obtained. Then, variables observed in the bivariate analysis with (p-value < 0.2) was subsequently included in to the final models of multivariable logistic regression to control for possible confounding effect and to assess the separate effects of each variable on the outcome variable (home delivery practice). The strength of statistical association was measured by adjusted odds ratios (AOR) and 95% confidence intervals (CI). All tests were two-sided and p < 0.05 was considered statistically significant.

Ethical Consideration: ethical clearance and permissions to carry out the study were obtained from the concerned authorities and participants were assured for confidentiality and right to withdraw from the study.

Results and Discussion

Socio-demographic characteristics of the respondents

Total sample was 317 with response rate of 99.7%. The mean ages (+SD) of the respondents' was 26.61+ 4.4. Majority of them were Muslims (93.4%) and Majority of them were married (93.4%). 212(66.9%) of the respondents never attended formal school and, 47(14.8%) of women attended elementary education whereas, 33(10.4%) women attended secondary and above education. Majority of the respondents' occupation was house wife (94.3%) (Table 1).

Obstetrics characteristics of the respondents

The mean ages (+SD) of the respondents' during first pregnancy and gestational age at first ANC visit was 20.12+ 2.5 years and 15.2 + 2.8 weeks respectively. 84.2% were with intended pregnancy whereas, 15.8% were unintended (either unwanted or mistimed) and 74.4% of them attended antenatal care (Table 2). Only 46.1% of the respondents were aware at least one obstetric danger sign during recent pregnancy while, more than half (53.9%) were not aware at all. concerning about not attending of ANC service, more than half, reported that being in a state of healthy (60.5%), very far from health facility (8.6%), due to too busy (9.9%), not knowing the importance of antenatal care use (2.5%), afraid of the cost (1.2%), feel shame to attend ANC (4.9%) and reported poor quality of the service (7.4%).

Magnitude of home and institutional delivery

236 (74.4%) of them attended at least one antenatal visit during their last pregnancy. The majority of the participants (83.1%) used their first antenatal visit below sixteen weeks of pregnancy (Table 2). 225 (71.0%) of the interviewed women delivered in their home and assisted by non-skilled health professionals: including, traditional birth attendants (26.1%), mother (39.3%), health extension workers (24.6%) and other relatives (9.5%). 92 (29.0%) of the respondents delivered at health facility and assisted by skilled health professional. Regarding the reasons for not utilizing the health facility for delivery, 37.8% of women reported no health problem to attend delivery care, 31.1% said far distance from health facility, 15.1% said poor quality of service, and 6.2% of the women reported no female health worker (Table 3).

Socio demographic factors associated with home delivery

Mother's age, residence, mother's education and husband's occupation were significantly associated with home delivery.

Women's age less than 25 years was 2.3 times more likely to use home delivery as compared to women age more than 25 years (COR=2.28, 95% CI=1.32, 3.94). Women living in rural areas were 8.2 times more likely to deliver at their home than urban dwellers (COR=8.23, 95% CI= 4.31= 15.71). Women with

no formal school were 2.1 times higher than women with formal education to give birth at their homes (COR= 2.11, 95% CI = 1.24, 3.61) **(Table-4)**.

Maternal and obstetric factors associated with home delivery

In the bivariate analysis, gravidity, parity, wanted pregnancy, attending ANC for the recent pregnancy, Gestational Age (GA) at first ANC service, number of live births, mother's awareness on at least one danger signs and history of facing any health problem during labor and delivery, were the factors associated with home delivery among the study participants (Table 5). Women who were Primigravida were 2.2 times more likely to deliver at home as compared to Multigravida women (COR=2.15, 95% CI=1.09-4.25). Regarding parity, women who were primipara were 1.53 times more likely to deliver at home as compared to multiparaous women (COR=2.53, 95% CI=0.85, 2.85).

At multivariable logistic regression analysis level after adjusting for each other, revealed that variables that were independent predictors for maternal home delivery are maternal age (AOR= 2.959, 95%CI=1.076-8.133), maternal residence (AOR=7.29,95%CI=6.89-13.41), maternal education (AOR= 2.838, 95%CI=1.073-7.506) and maternal awareness on at least one danger signs during pregnancy (AOR=3.306, 95%CI= 1.346-8.119) which could affect for home delivery among women who gave birth in the last 12 months period. However, husband's occupation, mother's gravidity, mother's parity, mother's want to the pregnancy, ANC follow up for the pregnancy, gestational age (GA) of ANC at first visit, number of livebirths, and history of facing any pregnancy related health problem in the previous were not statistically significantly associated with home delivery (Table 6).

Women who are less than 25 years old were 2.9 times more likely to deliver at home than women having age of greater than 25 years old (AOR= 2.9, 95 % CI = 1.1– 8.1). Women who are living in the rural were 7.3 times more likely to deliver at home than women living in the urban areas (AOR= 7.29, 95 % CI = 6.89– 13.41). Participants who had no formal education 2.83 were more likely to deliver in their home than women who had formal education (AOR= 2.83, 95 % CI = 1.1– 7.5). This study indicated that women who had not awareness on at least one danger signs during pregnancy and delivery were 3.3 times more likely to be delivered in the home as compared to women who had some level of awareness on these danger signs (AOR=3.30, 95%CI=1.35, 8.12).

Home deliveries are common in developing countries. Studies in some countries have reported that home deliveries range from 22% in Senegal to 65% in Tanzania and to 87.7% in Bangladesh. In Ethiopia, 94% of births take place at home without the assistance of trained persons [8, 9]. So, the best way to assure a safe and successful delivery outcome remains to be ensuring the presence of a skilled birth attendant at every child birth. Therefore, this study was designed to assess magnitude of home delivery and associated factors among reproductive age group women (15-49 years) who gave birth in the last 12 months, Assaita district Afar region, North Eastern Ethiopia.

Table 1: Socio-demographic characteristics of the mother's in Aysaita district, Afar region, North Eastern, Ethiopia, 2016 (n=317).

Variable (s)	Frequency(n=317)	Percentage (%)
Mother's Age (years)		
15-19	33	10.4
20-24	83	26.2
25-29	91	28.7
30-34	102	32.2
>35	8	2.5
Religion		
Muslim	296	93.4
Orthodox	20	6.3
Others	1	0.3
Ethnicity		
Afar	194	61.2
Amhara	104	32.8
Oromo	16	5.0
Others	3	0.9
Residence		
Rural	263	83.0
Urban	54	17.0
Educational status		
Unable to read and write	212	66.9
Only read and write	25	7.9
Attended elementary school(1-8)	47	14.8
Attended junior or senior high s	24	7.6
Attended higher(tertiary)education	9	2.8
Marital status		
Currently Married	296	93.4
Divorced	9	2.8
Widowed	9	2.8
Separated	3	0.9
Occupational status		
House wife	299	94.3
Government employee	17	5.4
Merchant	1	0.3
Husband's educational status(n=297)		
Unable to read and write	143	45.1
Only read and write	31	9.8
Attended elementary school(1-8)	63	19.9
Attended junior or senior high s	35	11.0
Attended higher(tertiary)education	24	7.6
Husband's occupational status(n=297)		
Pastoralist	103	32.5
Government employee	62	19.6
Merchant	57	18.0
Non-governmental employee	6	1.9
Others	68	21.5

Table 2: Obstetrics characteristics of the respondents in Aysaita district, Afar region, North Eastern, Ethiopia, 2016 (n=317).

Variables	Frequency(n=317)	Percentage (%)
Age of mother at first pregnancy		
<18	75	23.7
18-24	221	69.6
25-29	8	2.5
30-34	7	2.2
>35	6	2.0
Gravidity		
Primigravida	67	21.1
Multigravida	250	78.9
Parity		
Primiparous	71	22.4
Multiparous	246	77.6
No of live births		
0-1	79	24.9
2-3	155	48.9
>=4	83	26.2
No still births		
0	283	89.3
1	29	9.1
>=2	5	1.6
No of abortions		
0	278	87.7
1	33	10.4
2	6	1.9
No of neonatal births		
0	277	87.4
1	29	9.1
>=2	11	3.5
Wanted pregnancy		
Yes	267	84.2
No	50	15.8
Attended ANC		
Yes	236	74.4
No	81	25.6
Where did you attend (n=236)		
Hospital	102	43.2
Health center	127	53.8
Health Post	3	1.3
Others	4	1.7
GA at first ANC service (In weeks)		
<=16	196	83.1
>16	40	16.9
Frequency of ANC visit		
<4	151	64.0
>=4	85	36.0
Reasons for not attending ANC (n=81)		
No health problem	49	60.5
Too busy to attend ANC clinic	8	9.9
Health facility far	7	8.6
Husband refused	4	4.9
Afraid fee	1	1.2
Poor quality of the services	6	7.4
Feel shame	4	4.9
Do not know importance of ANC	2	2.5
Awareness on at least one danger sign during pregnancy and delivery		
Yes	146	46.1
No	171	53.9
Type of danger signs during pregnancy (n=146)		
Severe vaginal bleeding during p	48	15.1
Swollen hands/face	40	12.6
Severe headache	18	5.7
Absent fetal movement	14	4.4
Blurred vision	15	4.7
Severe vaginal bleeding during l	8	2.5
Pro-longed labor(>12 hours)	1	.3
Convulsions	2	.6

Magnitude of home delivery of the respondents

This study revealed that about71.0% (95% CI, 65.8%–75.8%) of women delivered at home and majority of them were assisted by non-skilled attendants (75.4%). This result was consistent with other studies conducted in Wukro and Butajira districts (75.0%) and Arbaminch Zuria district (79.4%) [34,35]; but lower than a study conducted in Munesa district, Oromiya region (87.7%) mini EDHS (2014) report (90.0%), Sekela district, Amhara region (87.9%) [1, 23, 36] and higher than the result from Woldia district, Amhara region (51.7%) [20]. This difference could partly be explained by their differences in socioeconomic, geographical location and the time gap between the studies of the study populations.

Factors associated with home delivery of the respondents

This study identifiedvarious predictors for home delivery; those are socio-demographic factors like mother's age, mother's residence, mother's educational status and obstetric factors like awareness on at least one danger signs during pregnancy and delivery of the women.

Mainly, women who are living in the rural areas were 7.3 times more likely to deliver at home than women living in the urban areas (AOR= 7.29, 95 % CI = 6.89– 13.41). The reason for these might be due the fact that in rural areas proportion of mothers with education is low, inaccessibility of the services with long distance and transport, and mothers could not have better decision making autonomy and better access to information than urban mothers. Similar findings were found in the study done in Sekela and Goba districts [31,36].

Educational status of the women was an important predictor for home delivery; women who had no formal education were 2.8 more likely to deliver in their home than women who had formal education (AOR= 2.83, 95 % CI = 1.1– 7.5). The reason for this might be due the fact that when mothers have some level of formal education, it is more is likely to enhance female empowerment so that mothers develop decision making power regarding their own as well as their children health.

Additionally, it is more likely that educated women demand higher quality service and be aware of difficulties/complications during pregnancy as well as child birth and as a result, they are more likely to use maternal health care services unlike that

Table 3: History of the recent home and institutional delivery of the study participants Aysaita district, Afar region, North Eastern, Ethiopia, 2016 (n=317).

Variable(s)	Frequency(n=317	Percentage (%)
Place of delivery		
Home	225	71.0
Health facility	92	29.0
Reasons for home delivery (n=225)		
No health problem	85	37.8
No female health worker	14	6.2
Health facility is far	70	31.1
Husband refused	2	.9
High cost	2	0.9
Poor quality of service	34	15.1
Feel shame	17	7.6
Others	1	0.4
Who assisted you during home delivery		
Trained Traditional birth attend	55	26.1
Health extension worker	52	24.6
Mother	83	39.3
Relative	20	9.5
Others	1	0.5
Did you faced any health problem during labor and delivery		
Yes	88	27.8
No	229	72.2
Types of health problem during labor and delivery (n=88)		
Ante partum hemorrhage	44	50.0
Excess bleeding during labor	30	34.1
Intrauterine fetal death	7	8.0
Elevated blood pressure	5	5.7
Others	2	2.3
Duration of labor		
Less than half a day	273	86.1
One day or one night	27	8.5
More than one and half day	17	5.4
new born status after delivery		
Alive	309	97.5
Alive but died immediately	3	0.9
Dead fetus	4	1.3
Other situation	1	0.3
Any health problem of the alive baby (n=309)		
Yes	286	92.6
No	23	7.4
Decision maker for place of delivery		
Self	27	8.5
Husband	70	22.1
Jointly	217	68.5
Others	3	0.9

Table 4: Socio-demographic factors associated with home delivery among the study participants from the bivariate logistic regression analysis, in Assaita District, North Eastern, Ethiopia, March, 2016(n=317).

Variable (s)	Place of delivery		
	Home (%)	Health facility (%)	COR (95%CI)
Mother's age (years)			
< 25	94(81.0)	22 (19.0)	2.283(1.321-3.947)
>=25	131(65.2)	70 (34.8)	1
Religion			
Muslim	208(70.3)	88(29.7)	0.556(0.182-1.700)
Others	17(81.0)	4(19.0)	1
Residence			
Rural	208 (79.1)	55 (20.9)	8.231 (4.312-15.713)
Urban	17(31.5)	37(68.5)	1
Mother's education			
No formal education	178 (75.1)	59(24.9)	2.118 (1.242-3.612)
Formal education	47(58.8)	33 (41.2)	1
Mother's occupation			
Housewife	212(70.9)	87(29.1)	0.937(.324-2.708)
Working	13(72.2)	5(27.8)	1
Mother's marital status			
Currently married	211 (71.3)	85 (28.7)	1.241 (0.484-3.182)
Currently unmarried	14(66.7)	7(33.3)	1
Husband's education			
No formal education	122(70.1)	52(29.9)	0.870 (0.520-1.456)
Formal education	89(73.0)	33(27.0)	1
Husband's occupation			
Pastoralist	80(76.9)	24(23.1)	1
Non-pastoralist	131 (68.2)	61 (31.8)	0.644(.372-1.115)

the illiterate one. The result of this study is consistent with other studies conducted in Wukro Butajira, Arbaminch Zuria and Sekela districts of other region [34–36].

Age of the women was also strong predictor for home delivery; women who are less than 25 years were 2.9 times more likely to deliver at home than women having age greater than 25 years (AOR= 2.9, 95 % CI = 1.1– 8.1). This indicates that older women had a higher chance of delivery in health facilities than their younger counterparts. The relations between age and home delivery in the literature have conflicting findings. Other studies have reported that older women may believe that there is less risk to home delivery due to previous uneventful pregnancies and deliveries [35]. On the other hand, obstetric complications may increases with age as a result of older women may use health facility for delivery than younger women [34]. Which is similar to the present study. Hence, ANC visits foryounger mothers should focus on the benefits of institutional delivery as well as the unpredictability of risks and complications during the course of pregnancy and delivery.

Furthermore, in this study awareness on at least one danger signs during pregnancy and delivery was a predictor for home delivery; that women who had not awareness on at least one danger signs during pregnancy and delivery were 3.3 times more likely to be delivered at home as compared to women who had some level of awareness on these danger signs (AOR=3.30,

Table 5: Maternal and obstetric factors associated with home delivery among the study participants from the bivariate logistic regression analysis, in Assaita District, North Eastern, Ethiopia, March, 2016(n=317).

Variable (s)	Place of delivery		
	Home (%)	Health facility (%)	COR (95%CI)
Age at first pregnancy			
<18	55(73.3)	20(26.7)	0.873(0.485-1.571)
18-24	156(70.6)	65(29.3)	0.727(0.257-2.061)
>24	14(66.7)	7(33.3)	1
Gravidity			
Primigravida	55(82.1)	12(17.9)	2.157(1.094-4.252)
Multigravida	170(68.0)	80(32.0)	1
Parity			
Primiparous	55(77.5)	16(22.5)	1.537 (0.828-2.854)
Multiparous	170(69.1)	76(30.9)	1
Wanted pregnancy			
Yes	194(72.7)	73(27.3)	1
No	31(62.0)	19(38.0)	0.614(0.327-1.154)
Attended ANC			
Yes	172(72.9)	64(27.1)	1
No	53(65.4)	28(34.6)	0.704(0.410-1.209)
Place of ANC attendance			
Hospital	82(80.4)	20(19.6)	1.640(0.296-9.076)
Health center	85(66.9)	42(33.1)	0.810(0.151-4.348)
Others(such as health Post)	5(71.4)	2(28.6)	1
GA at first ANC service			
<=16 weeks	147(75.0)	49(25.0)	1
>16 weeks	25(65.5)	15(37.5)	0.556(0.271-1.138)
Frequency of ANC visit			
<4	109(72.2)	42(27.8)	0.906 (0.496-1.654)
>=4	63(74.1)	22(25.9)	1
No of live births			
0-1	62(78.5)	17(21.5)	2.288(1.142-4.586)
2-3	112(72.3)	43(27.7)	1.634(0.929-2.875)
>3	51(61.4)	32(38.6)	1
No of abortions			
0	198(71.2)	80(28.8)	1
>=1	27(69.2)	12(30.8)	0.909(0.439-1.882)
No of neonatal death			
0	196(70.8)	81(29.2)	1
>-1	29(72.5)	11(27.5)	1.090(0.519-2.285)
Awareness on at least one danger signs during pregnancy and delivery			
Yes	110(75.3)	36(24.7)	1
No	115(67.3)	56(32.7)	0.672(0.410-1.101)
Have you faced any health problem			
Yes	69(78.4)	19(21.6)	1.699(0.953-3.032)
No	156(68.1)	73(31.9)	1
Duration of labor			
Less than half a day	197(72.2)	76(27.8)	1
One day or one night	19(70.4)	8(29.6)	0.916(0.385-2.181)
More than one and half day	9(52.9)	8(47.1)	0.434(0.162-1.166)
Decision maker for place of delivery			
Self	21(77.8)	6(22.2)	1.599(0.618-4.139)
Husband	53(75.7)	17(24.3)	1.425(0.769-2.638)
Jointly	151(68.6)	69(31.4)	1

Table 6: Factors associated with institutional delivery service among the study participants from multivariable logistic regression analysis, in Assaita district, Afar regional state, North Eastern Ethiopia, 2016(n=317).

Variable (s)	Place of delivery			
	Home (%)	Health facility (%)	COR (95%CI)	AOR (95%CI)
Mother's age (years)				
< 25	94(81.0)	22 (19.0)	2.283(1.321-3.947)	2.959(1.076-8.133)*
>=25	131(65.2)	70 (34.8)	1	1
Residence				
Rural	208 (79.1)	55 (20.9)	8.231(4.312-15.713)	7.29(6.89-13.41)*
Urban	17(31.5)	37(68.5)	1	1
Mother's education				
No formal education	178 (75.1)	59(24.9)	2.118 (1.242-3.612)	2.838(1.073-7.506)*
Formal education	47(58.8)	33 (41.2)	1	1
Husband's occupation				
Pastoralist	80(76.9)	24(23.1)	1	1
Non-pastoralist	131 (68.2)	61 (31.8)	0.644(.372-1.115)	2.039(0.846-4.912)
Gravidity				
Primigravida	55(82.1)	12(17.9)	2.157(1.094-4.252)	2.187(0.633-7.551)
Multigravida	170(68.0)	80(32.0)	1	1
Parity				
Primiparous	55(77.5)	16(22.5)	1.537(0.828-2.854)	1.759(0.740-4.180)
Multiparous	170(69.1)	76(30.9)	1	1
Wanted pregnancy				
Yes	194(72.7)	73(27.3)	1	1
No	31(62.0)	19(38.0)	0.614(0.327-1.154)	0.030(0.001-1.156)
Attended ANC				
Yes	172(72.9)	64(27.1)	1	1
No	53(65.4)	28(34.6)	0.704(0.410-1.209)	0.514(0.202-1.311)
GA at first ANC service				
<=16 weeks	147(75.0)	49(25.0)	1	1
>16 weeks	25(65.5)	15(37.5)	0.556(0.271-1.138)	0.752(0.284-1.997)
No of live births				
0-1	62(78.5)	17(21.5)	2.288(1.142-4.586)	1.527(0.617-3.781)
2-3	112(72.3)	43(27.7)	1.634(0.929-2.875)	1.774(0.690-4.563)
>3	51(61.4)	32(38.6)	1	1
Awareness on at least one danger signs during pregnancy				
Yes	110(75.3)	36(24.7)	1	1
No	115(67.3)	56(32.7)	0.672(0.410-1.101)	3.306(1.346-8.119)*
Have you faced any health problem				
Yes	69(78.4)	19(21.6)	1.699(0.953-3.032)	1.809(0.723-4.525)
No	156(68.1)	73(31.9)	1	1

*(p<0.05 is significant)

95%CI=1.35, 8.12). The reason for these might be due the fact that women that have some level of knowledge on danger signs might have perceived service benefits of a health institution, like complication management by skilled health care workers during labor. The result of this study is consistent with other

studies conducted in Dangila, Banja and Sekela Districts [4,36,37].

Strength of the study

The major strengths of this study were: community based including the urban and rural areas who gave birth in the last 12 months.

Limitation of the study

There might be the possibility of recall bias. However, we tried to minimize by focusing on those women who gave birth in the last one year.

This study used quantitative approach which could not address the "why" questions in detail. Therefore further studies should focus on qualitative approach to come up with additional findings.

Conclusion

This study revealed that home delivery in last 12 months preceding the survey was high. Majority of women (74.4%) attended at least one antenatal visit from skilled health care providers during their recent pregnancy but majority of them gave birth at home (71.0%) and assisted by non-skilled attendant. Women's residence (being rural), literacy status (being illiterate), age (having age less than 25 years old) and awareness on at least one danger signs during pregnancy and delivery (not having awareness) were the independent predictors for home delivery among the study subjects. Being apparently healthy (37.8%), distant of health facility (31.1%), and poor quality of healthservice (15.1%) were the main reasons given by the women for home delivery.

Hence it is recommended that the district education offices should strengthen access for women to education by establishing the appropriate schools within the reach of rural and pastoral community. The health extension workers should create awareness about the importance of institutional delivery; Health extension workers should assist the pregnant women for birth preparedness in the institution particularly for the rural pastoralist mothers. District health office should increase coverage of health institution to decrease distant of the rural areas by establishing the suitable delivery facility centers within the reach to the rural pregnant women.

Acknowledgments

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