

Full Length Research Paper

# Determinants of Home Delivery Among Recently Delivered Women in Zala Woreda, Southern Ethiopia

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A key intervention to achieve the goal of maternal mortality reduction in deliveries that occur at home is significant. In Ethiopia, the MMR has reduced from 676/100,000 live births in 2011 to 420/100,000 live births in 2013 with a skilled attendant of 23%, whereas 77% deliveries occurred at home without proper medical attention and care during childbirth. Little is known about cultural factors that contribute to home delivery. Therefore, this study aimed to explore the cultural factors and other factors in detail that previous studies did not address in detail and assess prevalence of home delivery and associated factors among child bearing age women who gave birth in the preceding two years in Zala Woreda, Southern Ethiopia. A community based cross sectional study that triangulates quantitative with qualitative approaches was conducted from March 15 to April 10, 2015. Multistage sampling through simple random technique was employed to select 447 study participants. Bivariate and multivariable analyses were carried out to identify factors associated with home delivery. Qualitative data was analyzed thematically and results were triangulated with the quantitative data. Associations were determined by using OR at 95% CI and  $p \leq 0.05$ . The prevalence of home delivery is found to be 67.6%. The factors that significantly affected home delivery in this study were place of residence (AOR: 5, 95% CI: 2.2, 12), women age at interview (AOR: 2.78, 95% CI: 1.2, 6.5), women's education (AOR: 5.8, 95% CI: 2.86, 11.8), antenatal care (AOR: 3, 95% CI: 1.3, 8.5), time to reach the nearest health facility (AOR = 4.5, 95% CI = 2.2, 9), family size (AOR= 3.9, 95% CI=2,16.77) and attitude of the mother to maternal services (AOR=3.7 95% CI= 2.2, 6). Home delivery is highest in the study area. The most important factors that determine home delivery appear to be women's education status, number of ANC visits, time to reach the nearest health facility and age and attitude of the women towards home delivery. Actions targeting maternal education, encouraging number of ANC visits, making health facilities in accessible distance and conducting behavioral change communication were the crucial areas to tackle in giving birth at home.

**Key words:** Home delivery, Zala, woreda.

## INTRODUCTION

The vast majority of women who deliver outside the health facilities give birth at home, where risks of mortality

are on the increase in the absence of professional attendance. It has been estimated that only 50% of the

women in the world have access to such skilled care in developing countries, however, still most women deliver at home (WHO, 2013; Folashade et al., 2013). Worldwide, an estimated 529,000 maternal and nearly 4 million neonatal deaths (during the first 4 weeks of life) occur annually, 75% of neonatal death is in the first week of life. Approximately, 99% of these deaths are in low and middle income countries, where 43% of births are attended by TBAs, the proportion generally being higher in rural areas (WHO, 2013). These home deliveries conducted by TBAs may be responsible for an increased risk of maternal and perinatal mortality as the TBAs have low educational status and sometimes were not trained in preventing or recognizing complications and promptly referring the patient to an appropriate facility for emergency obstetric care (WHO, 2013; Folashade et al., 2013). In addition, nearly 4 million stillbirths occur annually, and most of them are close to the time of delivery (WHO, UNFPA, WB, 2009). Of the neonatal deaths, nearly 50% occur among children delivered at home. Perinatal mortality (stillbirths and neonatal deaths) is often related to intrapartum complications, and is, thus, higher in countries where highest deliveries are conducted at home environment. It has been estimated that decreasing the proportion of deliveries conducted at home reduces perinatal and maternal deaths by nearly half (WHO, 2013; Folashade et al., 2013, WHO et al., 2009; Sychareun et al., 2009). The five major pregnancy-related complications leading to maternal mortality globally are postpartum hemorrhage (25%), puerperal infections (15%), unsafe abortion (13%), hypertensive disorders of pregnancy (12%) and obstructed labor (8%). About 35% of women in developing countries receive no antenatal care during pregnancy; and 70% receive no postpartum care. In these countries, home deliveries are over 60% taking place largely in rural areas with unskilled attendants (WHO et al., 2008; Mwanakulya et al., 2008). According to study in Malaysia (2009), more than 90% of births occur at home with unhygienic conditions and without assistance of trained birth personnel (Sychareun et al., 2009). In Ethiopia, in 2000/2001, 871 maternal mortality per 100,000 were recorded as the highest rates of maternal mortality in Africa, and then reduced to 676 maternal mortality per 100,000 births in 2010/2011. Ethiopia was one of the six countries which accounted for more than 50% of all maternal deaths in 2012. The proportion of deaths due to postpartum hemorrhage (PPH) that occurred is most likely due to the fact that over 90% of births take place at home, and women with PPH may not arrive at a health facility on time (EDHS, 2011). In Ethiopia, the proportion of births attended by skilled personnel in health institution has increased in a very slow fashion from 2005 to 2011. The

majority of Ethiopian women give birth at home without skilled attendants. Further, as reported in 2011, Ethiopia Demographic and Health Survey (EDHS), the 90% of births at home take place in unhygienic conditions and associated with adverse infant and maternal outcomes. There is no significant difference in proportions of home delivery between EDHS in 2005 and 2011 (Sibley et al., 2009; Central Statistical Agency [Ethiopia] and ICF International, 2012; Mwanakulya, 2008; Ethiopia MDG Report, 2013; Pakistan Demographic and Health Survey, 2006-07). The rate of home delivery in Ethiopia is in the highest bound by sub-Saharan Africa standard (Central Statistical Agency [Ethiopia], ICF International, 2012; Pakistan Demographic and Health Survey, 2006-07). According to health and health related indicators' report, Skilled Birth Attendant (SBA) of Ethiopia was 23% (EFMOH, 2013) and the achievement of Southern Nation Nationalities peoples Region (SNNPR) was 20.6% (EFMOH, Health and Health related indicators, Oct. 2014). In Ethiopia, according to the latest estimate of United Nations, the MMR has declined from 676/100,000 live births in 2011 to 420/100,000 live births in 2013 (UNDP, 2014). Based on 2013 annual review report of the Gamo-Gofa zone health department, despite efforts exerted to reduce giving birth at home, the institutional delivery achievement of Gammo Gofa Zone and Zala Woreda is 22 and 9%, respectively. Home delivery at Gammo Gofa Zone and Zala woreda accounted for more than 80 and 90% respectively (Gamo-Gofa zone, July 2013).

Many studies dictated the socio demographic, socioeconomic and obstetric factors of home delivery. But cultural and traditional factors were not addressed in detail. Therefore, the purpose of this study was to assess prevalence of home delivery and associated factors among women in child bearing age, who gave birth in the preceding two years. This study will be helpful for the relevant stakeholders in the planning and implementation of intervention activities to improve the delivery service utilization through significant reduction of giving birth at home.

## METHODOLOGY

### Study design and study area

A community based cross-sectional study was conducted in Zala Woreda, Southern Ethiopia from March 15 to April 10, 2015. The study was triangulated with qualitative survey through focus group discussions (FGDs). Zala woreda, which is located 485 km South of Addis Ababa and 278 km from Hawassa, the capital city of Ethiopia and SNNPR respectively. Zala is one of the woredas (districts or third level administrative division) in the Southern Nations,

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Nationalities and Peoples' Region of Ethiopia, part of the Gamo Gofa Zone. Zala woreda is bordered on the Southwest by Uba Debretehay woreda, on the Northwest by Demba Gofa woreda, on the Northeast by Kutcha woreda, on the east by Deramalo woreda and on the Southeast by Kembra woreda. The woreda is divided into 35 kebeles [lowest administrative unit]. It has 34 rural and 1 urban kebeles. The woreda had a population of 74,369 of whom 37,576 are men and 36,793 women (CSA, 2007). The total population is projected to be 91,107 and women of child bearing age is 20,954. (Zala Woreda, 2015). Concerning health facilities distribution, the woreda has 34 health posts, 5 government health centers, 8 private clinics and 1 rural drug vender (Zala Woreda, July, 2013).

### Source population

All women in child bearing age (15-49 year) who gave birth in the preceding two years (from March 10, 2013 to April 10, 2015) in Zala Woreda, Southern Ethiopia.

### Study population

All women in child bearing age who had given birth at least one birth in the preceding two years prior to data collection in ten selected kebeles of the Woreda.

### Inclusion criteria

All women who delivered in the preceding two years regardless of pregnancy outcome and marital status, those who gave birth by the help of traditional birth attendants (trained or not) were included under home delivery. Permanent resident (those who lived at least 6 month and gave birth in the area) as well a mother that had more than one births in the preceding two years, the last birth was included in the study.

### Exclusion criteria

Home deliveries with skilled birth attendances, delivery by health extension workers, respondents of FGDs for quantitative survey and women who are mentally not capable of being interviewed.

### Sample size and sampling procedure determination

Sample size determination with first objective calculation for the first objective was done based on the following single population proportion formula:

$$N = \frac{Z_{\alpha/2}^2 P(1-P)}{d^2}$$

where N, number sample size  $Z_{\alpha/2}$ ; represents the desired level of statistical significance, proportion of home delivery (P). The prevalence is taken from previous study that took place in Banja Woreda, Awi zone, Amhara regional state, Northern Ethiopia, 2013 (P = 84.3%) and d, represents margin of error. Assuming design effect 2, Non response rate 10%, margin error 5%, desired level of statistical significance ( $\alpha$ ) =0.05 ( $z = 1.96$ ) and proportion (P) is 84.3%. Using the above formula and assumptions:

$$N = \frac{[1.96]^2 0.843(1-0.843)}{(0.05)^2} = 203.4$$

Adding 10% non-response rate, then, the result is 223.7. Using

design effect of 2, the numbers of women recruited for the study were 447. So as to be as accurate as possible, proportion of exposed and non exposed of the following variable with their proportion were used: ANC status, 61.2% (Addisalem and Meaza, 2012; Yifru and Asres, 2014), residence, 55.2% (Amon et al., 2014; Yifru and Asres, 2014), parity 66.2% (Yifru and Asres, 2014; Alemaw, 2014), educational status, 64.4% (Abdella et al., 2012; Yifru and Asres, 2014) and attitude, 66% (Yifru and Asres, 2014; Solomon et al., 2013), whereas with the non-exposed, the proportion is as follows: 79.77, 75.2, 83, 81.89 and 82.9%, respectively. Also, odds of 2.5% and power of 80% was used in order to obtain the final sample size, the final sample size became sample calculated for second objective which was 447. It was calculated using Epi.info 7.1.4.

### Sample size for qualitative study

Since determining sample size in qualitative design has no formula, it is systematically based on purpose of the study and data collection technique used. It is important to incorporate different homogeneous sub-groups of population with potentially different views on cultural and traditional aspects of home delivery. The study involved four separate groups, one with women, second with TBAs, third with adult and elderly men and women and the fourth with health workers. Overall, a total of four focus group discussions were conducted. Ten participants in each group except only eight women's group were selected for discussion based on their convenience, accessibility and knowledge of conveying the information.

### Sampling technique for quantitative study

Multi-stage sampling technique was employed to select the study participants. The woreda has 35 kebeles (34 rural and 1 urban). Then, ten kebeles (one urban and nine rural) were selected. After stratifying the kebeles based on the place of residence, nine of 34 rural kebeles were selected by simple random sampling through lottery method. Then to obtain 447 study subjects, the existing sampling frame was used through involvement of health extension workers in order to identify eligible mothers and inclusion and exclusion criteria, was prepared and proportional to size allocation was employed and simple random sampling technique through lottery method were applied.

### Sampling technique for qualitative study

For qualitative design, homogenous purposive sampling technique was conducted on four groups of population who were expected to convey credible information on cultural and traditional aspects of home delivery. All informants were selected from sampled kebeles and nearby health facilities based on their convenience, accessibility and knowledge of conveying the information. The recruitment of the participants in all groups was assisted by the chairpersons and health extension workers of the ten kebeles and managers of the five health centers. Each kebele selected one discussant from women, TBAs, and elderly men and women for each group. The study participants of women group were selected based on the inclusion and exclusion criteria. Each health center selected two health workers [midwives and/or nurses] from the delivery case team.

### Study variables

Dependent variables in this study was home delivery, whereas the

independent variables were socio-demographic and economic factors (age, marital status, education, place of residence, family size, time to the health facility, income and occupation), obstetric factors (gravidity, ANC status, duration of labor, previous information on place of delivery, place of previous delivery and plan pregnancy) and socio-cultural-attitude, preference of TBAs, decision making power.

### **Operational definition**

#### ***Access to health facility***

Refers to the women living not more than an hour from health facility by local means of transportation, or availability of health facility within travel distance of five kilometers (WHO, 2008).

#### ***Health facility***

This refers to health center and hospital (Tesfaye and Gebi, 2014).

#### ***Health extension workers***

Health workers in health posts in Ethiopia that have not yet been well evaluated, whether the skills they have or the extent of delivery care they could provide is up to the WHO definitions of SBA (EMOH, May 2007 version 1.0).

#### ***Home delivery***

Delivering outside health facility (Jared, 2015).

#### ***Plan pregnancy***

Prior decision to give birth at health facility for last pregnancy (Bereket et al., 2013).

#### ***Precipitate labor***

Labor culminates in less than three hours (WHO, 2013).

#### ***Traditional birth attendants***

A birth attendant who initially acquired the ability by delivering babies herself or through apprenticeship with other TBAs (WHO/UNICEF/UNFPA, 2009).

#### ***Trained traditional birth attendants***

TBAs who have undergone subsequent training and integrated into formal health system (WHO/UNICEF/UNFPA, 2008).

#### **Attitude**

Attitude is an evaluative reactions to home delivery that includes beliefs and positive and negative feelings and it guides experiences and decide the effects of experience (Junayde et al., 2014).

#### ***Good attitude***

Good attitude- women who answers at least three or above five

(≥60%) of the questions.

#### ***Bad attitude***

Bad attitude - women who answers two and less than five (<60%) of the questions.

### **Data collection techniques and tools**

#### ***Quantitative***

Data were collected using a pre-tested structured questionnaire developed and adapted from EDHS and other published literatures. English language questionnaire were prepared and then it was translated to local language, Goffigna, before the data collection and again it was translated back to English to check its consistency. Data were collected through face-face interview with study subjects. A total of ten non-employed diploma level health worker data collectors and two degree level data supervisors were recruited for data collection.

#### ***Qualitative***

Semi-structured open ended and non-directive focus group discussion (FGD) guide was designed in order to triangulate responses obtained by the structured questionnaire on the socio-cultural and traditional practice of home delivery. The discussion in each of four groups was facilitated by principal investigator. Each group constituted ten people except women group which included only eight participants. A total of 38 discussants participated. 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.

### **Data quality assurance**

The quality of data were assured by properly designing and pre-testing of the questionnaire on 23 of the study subjects at kebele other than that selected (Shambara kankara). Both the interviewers and supervisors gained and assessed clarity, understandability and completeness of the questionnaire.

Training of the interviewers and supervisors on the objective of the study, how to conduct face to face interview and how to keep confidentiality of the information was conducted. Every day, 10% of the completed questionnaires were reviewed and checked for completeness and relevance by the supervisors and principal investigator and the necessary feedbacks were offered to data collectors in the next morning before the proceeding of the procedure.

### **Data processing and analysis**

Collected questionnaires were checked visually for completeness, coded and entered into EPI info 3.5.1 exported and analyzed in SPSS version 20.0 software package. Frequency run and double data entry on 10% of questionnaires were performed to check data entry errors.

Binary and multiple logistic regressions were run to assess the putative associations of various factors with home delivery. The outcome variable was dichotomous; thus, categorized as yes (coded 1) and no (coded 0). Only the explanatory variables that

resulted in the  $p$ -value  $\leq 0.25$  in the bivariate analysis were included in the multivariable analysis. Enter method of model building was applied. The fitness of the model was checked by Hosmer-Lemeshow goodness of fit test. The assumptions of logistic regression such as meaningful coding, checking multicollinearity presence of linear relationship between logit of dependent and independent variables were checked. The results were presented in the form of tables, texts, figures and summary descriptive and analytic statistics. The strength of association of predictor variables with home delivery were assessed using odds ratio and significance of variables were reported by using 95% confidence interval and  $p$ -values  $\leq 0.05$ .

For qualitative study, prior to analyzing the data, all FGDs were transcribed verbatim in Goffigna and then translated into English by the principal investigator and a research assistant to ensure fidelity. The data were analyzed using thematic manual analysis. Information from the interview consists of the discussants' description and explanation of their cultural and traditional childbirth practices and reason for giving birth at home. Raw notes and tape recordings were used to generate transcripts in the local language, Goffigna. The principal investigator and research assistant translated and transcribed the notes and recordings and read the transcripts many times in order to gain better understanding of the context, and then coding, identification categories and themes were carried out.

#### **Ethical clearance**

Ethical clearance was obtained from Institutional Review Board of College of Medicine and Health Sciences, Arba Minch University. Permission to conduct the study was also obtained from the Gamo-Gofa zone health department; Zala Woreda Health Office and respective kebeles. Informed consent was obtained from each study participant.

Each respondent was informed about the purpose of the study that the findings of the study will inform policy makers and other concerned bodies. Complete verbal consent was obtained before involvement of study subjects.

Study participants were also informed that all data obtained from them would be kept confidential by using codes instead of any personal identifier.

## **RESULTS**

### **Socio demographic characteristics**

All 447 women of child bearing age were used for the study and participated with the response rate of 100%. Among the respondents, 159 (35.6%) were within the age range of 25 to 29 years, 396 (88.6%) were house wives, 187 (41.8%) had followed no formal education, 443 (99%) were Gofa ethnic, 333 (74.5%) were protestant and 437 (97.8%) were married. Concerning the educational status of respondents' husband, 135 (30, 2%) could read and write, 249 (47%) were average monthly income earners of less than 250 Ethiopian Birr (EB), with mean and standard deviation of  $489.6 \pm 32.3$ , respectively.

The mean family size is 4.3, where 266 (59.5%) were greater than or equal to five. About 258 (57.7%) of the respondents made decision by themselves concerning

place of delivery (Table 1).

### **Prevalence and reasons of home delivery**

Three hundred and two (67.6%) gave birth at home for their last pregnancy and the rest, 145 (32.4%) at health facility. Among the 302 mothers who gave birth at home, 78 (24.5%) gave birth at home due to preference of TBAs followed by 70 (23.2%) because it was their usual practice (Figure 1 and Table 3).

### **Obstetric and maternal characteristics of respondents**

Among all the 447 respondents, 240 (53.7%) were at the age range of less than or equal to 20 years at their first pregnancy. From 447 respondents, 337 (75.6%) attended ANC, from which 218 (64.7%) followed about four and above visits, 175 (52%) started ANC at the second trimester, 216 (63.8) attended at health post. From all women included in the study, 182 (40.72%) had a history of 2 to 4 pregnancy, while 104 (76.7%) had come across pregnancy problem at their last pregnancy, about 248 (55.5%) planned their last pregnancy (Table 2).

Regarding labor time, 240 (53.7%) respondents' labor lasted for 2 to 5 h. Among the 302 mothers who gave birth at home for their last pregnancy, about 74 (24.5%) that delivered at home, were assisted by TBAs (Table 3).

### **Home delivery and associated factors**

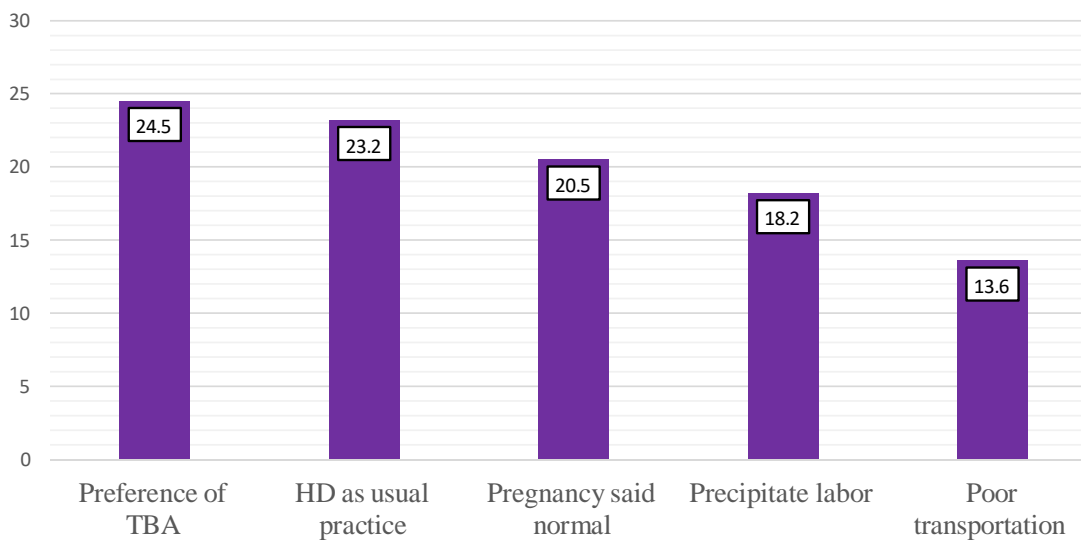
The factors that were found to be associated with home delivery were place of residence, attitude of the mother, educational status of the mother, the time to reach the health facility, family size, age of the mother and number of ANC visits. As compared to urban residents, rural dwellers were 5 times to deliver at home (AOR = 5, 95% CI = 2.2, 12).

Mother's educational status was associated with home delivery. Mothers whose educational status of read and write only were 5.8 times likely to deliver at home as compared to mother who had secondary and above education (AOR = 5.8, 95% CI = 2.86, 11.8). Attitude of the mother was another strong predictor of home delivery, mothers with bad attitude were 3.7 times likely to deliver at home as compared to mothers with good attitude (AOR = 3.7, 95% CI = 2.2, 6.2).

Mothers who had needed more than 2 h to get to the nearest health facility were 4.5 times likely to deliver at home than those who needed less than one hour (AOR = 4.5, 95%CI = 2.2, 9). Mothers from family size of greater than or equal to five were likely four times to give birth at home as compared to family size less than or equal to four (AOR = 3.9, 95%CI = 2, 16.7). Mothers with age greater than or equal to 30 years were 2.8 times likely to

**Table 1.** Socio-demographic characteristics of the respondents, Zala District, Southern Ethiopia, April 2015 (n=447).

Variables	Category	Frequency	Percent
Age of the Mother	<25	147	32.9
	25-29	159	35.6
	≥30	141	31.5
Occupation of the mother	Government worker	51	11.4
	House wife	396	88.6
Average monthly Income Ethiopian Birr (EB)	<250	210	47
	250-499	92	20.6
	500-750	71	15.9
	>750	74	16.6
Ethnicity	Gofa	443	99
	Gamo	4	1
Religion	Orthodox	89	19.9
	Protestant	33	7.4
	Others	25	5.6
Marital status	Married	437	97.8
	Separated/widowed/divorced	10	2.2
Educational status of the mother	No formal education	187	41.8
	Primary	182	40.7
	Secondary and above	78	17.4
Educational Status of the Father	Cannot read & write	129	28.9
	Read and write only	135	30.2
	Primary	100	22.3
	Secondary and above	83	18.6
Family size	≤4	181	40.5
	≥5	266	59.5
Making final decision of delivery	Mother	258	57.7
	Both (father & mother)	142	31
	Family	47	10.5



**Figure 1.** Reasons for home delivery among respondents in Zala Woreda, Southern Ethiopia, April 2015. (n= 302).

**Table 2.** Maternal and obstetric factors of respondents, Zala District, Southern Ethiopia, April 2015. (n= 447).

Variables	Category	Frequency	Percent
Home delivery	Yes	302	67.6
	No	145	32.4
Age of the mother at first pregnancy	≤20	240	53.7
	>20	207	46.3
No of ANC visits (n = 337)	≤2	41	12.2
	3	78	23.3
	≥4	218	64.7
Health facility where ANC follow up (n= 337)	Health post	216	63.80
	Health center	102	30.20
	Hospital	19	6.00
Time when ANC follow up started (n= 337)	First trimester	152	45
	Second trimester	175	52
	Third trimester	10	3
ANC status	Attended	337	75.6
	Not attend	110	24.4
Gravidity	1 pregnancy	103	23.04
	2-4 Pregnancy	182	40.72
	≥5 pregnancy	162	36.24
Labor time	≤1 hour	65	14.5
	2-5hour	240	53.7
	>5hour	142	31.8
Women who faced pregnancy problem of last pregnancy	Yes	104	76.7
	No	343	23.3
Who assisted at home (n= 302)	TBAs	222	73.5
	Relatives	64	21.2
	No one	16	5.3
Plan last pregnancy	Yes	248	55.5
	No	199	44.5

deliver at home as compared to mothers with the age of less than 25 years (AOR = 2.8: 95% CI = 1.2, 6.5). Mothers who followed ANC are about 3 times or less than 6 times likely to give birth at home as compared to mothers who attended ANC about four and above (AOR = 3, 95%CI = 1.3, 8.5) (Table 3).

### Thematic analysis

Theme one indicates the preference of TBAs by women because of their assistance of birth at home. Theme two shows cultural and traditional beliefs that hamper home delivery. Theme three dictates problems and barriers related to facility delivery. Theme four indicates problems and attitudes related to facility based services. Some service users disseminate bad message of services they

received from health facility that enhances giving birth at home. Overall, four themes, eight categories and 21 codes were organized (Table 4).

## DISCUSSION

### Prevalence of home delivery

The study showed the prevalence of home delivery is 67.6% among women of child bearing age who gave birth in the preceding two years prior to data collection which was comparable to the study conducted in Kenya, where 66.7% of women gave birth at home (Bisrat and Negash, 2014). The study had higher prevalence as compared to MDG targets. To ensure reduction of maternal mortality, the international community in general and Ethiopia in

**Table 3.** Bivariate and multivariable analysis of factors associated with home delivery among respondents, Zala Woreda Southern Ethiopia, April 2015 (n = 447).

Variable	Category	Home Delivery		COR 95%CI	Sig.	AOR 95% CI	Sig.
		Yes	No				
<b>Place of residence</b>							
	Rural	287	115	4.99 (2.6, 9.6)	0.001	5.13(2.2, 12)	0.001
	Urban	15	30	1		1	
<b>Attitude</b>							
	Bad	238	61	5(3.3, 7.9)	0.001	3.74(2.2, 6.2)	0.001
	Good	64	84	1		1	
<b>Mother education</b>							
	No formal education	156	31	9(4.9,16.4)	0.001	5.8(2.86, 11.8)	0.001
	Primary	118	64	3.29(1.89, 5.73)	0.001	2.85(1.45, 5.6)	0.001
	Second. & above	20	50	1		1	
<b>Time to reach health facility</b>							
	Greater than 2 hr.	165	54	6(3.3, 10.9)	0.001	4.5(2.2, 9)	0.001
	1 to 2 hr.	90	22	4.5(2.7, 7.3)	0.001	4(2.23, 7.2)	0.001
	Less than 1 hour	47	69	1		1	
<b>Family Size</b>							
	≥5	207	59	1		1	
	≤4	95	86	3.2(2.12, 4.79)	0.001	3.9(2, 16.7.7)	0.001
<b>Age of the Mother</b>							
	≥30	103	38	1.3(0.77, 2.3)	0.306	2.78(1.2, 6.5)	0.017
	25 – 29	100	59	0.76(0.44, 0.9)	0.04	1.4(0.7, 2.8)	0.32
	<25	99	48	1		1	
<b>Number of ANC visits</b>							
	≤ 2	29	12	2.5(1.2, 5.3)	0.011	3(1.3, 8.5)	0.023
	3	58	20	3(1.7, 5.4)	0.672	6(1.2, 31)	0.029
	≥ 4	106	112	1		1	

particular set a target of SBA 90% in 2015 through the reduction of extent of home delivery less than 10% (MDG Rport, 2014). The prevalence is slightly higher as compared to other findings from Haramaya Woreda, Oromia region, Goba woreda, India, Malawi, Nigeria, Ghana and Tanzania where the magnitude of the prevalence is 58, 53, 31, 29, 40, 48 and 44%, respectively (Folashade et al., 2013; Geeta et al., 2011; Lily et al., 2013; Amon et al., 2014; Daniel and Desalegn, 2014; Haymanot and Agumasie, 2013; Kihulya and Elia, 2015).

The probable reason for the difference may be socio-economic and cultural factors that may vary among the studies. Cultural and traditional factors play a great role that enhances giving birth at home. TBAs are preferred by women for their birth assistance at home. Women believe as delivering a child is something that needs

confidentiality. TBAs are culturally and traditionally trusted as they are more intimate within the community to sense and feel their privacy as mentioned by some of FGD discussants.

*"The ... reason they like me is I help them at their home. They believe that delivery is something secret and prestigious. Imagine while a woman gives birth, she experiences a bloody condition which she thinks nobody should see other than her intimate family or me.*

*Giving birth at health facility means inviting many people to carry her there, where no other transport facility is accessible. How can people carry this bloody mother? And why do they carry her if she had normal pregnancy and delivery? In this case, women feel disgusted and ashamed if they give birth at health facility. So home is the best place for giving birth..."(A 48 year old female*

**Table 4.** Connecting the codes, categories and identifying themes of all four FGDs in relation to perception towards home delivery among women in Zala Woreda, April, 2015 (n=38).

Codes	Categories	Themes
Being comfortable at home and needs assistance by only TBA Giving birth is secrete and prestigious which only TBAs consider this TBAs are trusted by the community Home delivery is habitual process and no need of health facility Women like the approach of TBA because they feel and sense poor living condition Community develop shame if educated people observe their poor living condition	TBA arrive home  Treatment approach of TBAs	Preference of TBAs because they give birth at home
Previous generation born at home Health facility is for sick people Complicated delivery is due to punishment of misbehavior Sanctioning and denying service if the facility served adulterated women Influence of culture ( <i>Zima</i> culture)	Community perception	Cultural beliefs
Placenta should be buried in the garden Complicated delivery is due to punishment for misbehavior	Pressure from community's culture	
Cheap service of TBAs Formal and informal expenses during referrals	Cost	Facility service problems
Health facility is far from the dwelling Lack of road access	Accessibility	
Bad message from women who seek care from health facility concerning lying position, Some women do not need to be served by male midwives	Negative message	Previous service attitude
Referred mothers are exposed to surgical procedure	Bad attitude to facility service	

*TBAs from Melabayisa village).*

However, the finding is lower as compared to similar studies conducted in Ethiopia at Kembata-Tembaro zone (84%), Awi zone (84.3%), Munisa woreda (87.7%) and Dodota woreda (81.8%) (Abdella et al., 2012; Fikre and Demissie, 2012; Alemaw et al., 2014; Solomon et al., 2013). This might be due to time gap among the studies. Recently, the local government in line with national

government is implementing the reduction of home delivery in order to achieve the goal of reduction of maternal mortality through promotion of institutional delivery.

#### **Associated factors**

Rural residents were 5 times higher chance of delivering at home as compared to urban residents

(AOR = 5, 95% CI = 2.2, 12). The study is in agreement with similar cross-sectional study conducted in Sekela district in North west Ethiopia and Meta-analysis conducted by Hawassa University where rural residents were five to ten times likely to deliver at home, respectively (Yifru and Asres, 2014; Alemayehu and Fekadu, 2012). Another similar studies support this findings (Geeta et al., 201; Lily et al., 2013; Abdella et al., 2012; Daniel and Desalegn, 2014). The higher

proportion of rural dwellers that give birth at home is probably due to inadequate availability of transportation, poor accessibility to health services, the lower chance of being educated, poor living standard as well as cultural beliefs, attitudes, and community preference that favor giving birth at home. Based on the survey from FGD, TBAs are accepted by the community for the reason of their way of approach and treatment they give for the laboring women. They undertake this service based on the societal living standard and way of life in the community.

*"Mothers are more interested in my service because they like my approach and treatment. Imagine, our community is living in rural area, poor, having lower living standard, wearing dirty clothes, their home is not clean, they feel ashamed if the health worker attends and looks at this things. This is why they like me than health workers. They feel more comforted if I are with them while they are in labor" (A63- year old TBA from Gaysa village)".*

Mothers' education is found to be predictor of home delivery in which mothers with no formal education were about six times more likely to give birth at home as compared to those mothers who had attended secondary education or more (AOR = 5.8, 95% CI = 2.86, 11.8). The finding is comparable with the study conducted in Bahirdar which is in Ethiopia, where mothers with no formal education were more than four times more likely to deliver at home than those educated mothers. Other similar studies conducted in Awi zone Northern Ethiopia, East Wollega zone- Western Ethiopia, Afar regional state, Hawassa University-Ethiopia, Dodota woreda-Oromia region- Ethiopia, India and Tanzania support this finding (Geeta et al., 2011; Amon et al., 2014; Feleke et al., 2012; Yifru and Asres, 2014; Alemaw and Mekonnen, 2014; Tesfaye and Gebi, 2014; Medhanit, 2012). The non-educated women might not have a decision-making power on seeking health services, or have ability to travel outside the home; they are more exposed to family pressure and cultural influences. The time spent to reach the nearest health facility is another significant predictor of home delivery. Women whose residence is 2 or more hours of walking distance to the nearest health facility are 4.5 times more likely to deliver at home as compared to those whose residence is one hour or less to the nearest health facility (AOR = 4.5, 95% CI = 2.2, 9). The study is consistent with findings from Bahirdar- Ethiopia, Arbaminch Zuria- Ethiopia, Kenya, Bangladeshi (Worku et al., 2013; Emily et al., 2014; Gistane et al., 2015; Saraswoti et al., 2012). Long time and farther distance coupled with lack of transportation may reduce access to maternal service (ANC, delivery) utilization and preventing availability of adequate information. Pregnant mother might be disinterested to walk far distance which might influence them to opt for delivery at home. The qualitative study also found consistent explanation.

Transportation problems and distance as well as challenging and difficult roads are the main issues that contribute to home delivery. The location of health facility from the community's dwelling is the main factor as six of the FGD discussants suggested.

*"The challenge we face during delivery is transportation problem. Health facilities are located far distance from our dwelling. During labor, we are expected to be carried by the people to health facilities for more than four hours. It needs labor force which is sometimes difficult to get" (A 70 year-old female TBA from Gaysa village).*

Mother with the age of 30 years or more were 2.8 times more likely to give birth at home as compared to mother with the age of below 25 years old (AOR = 2.78, 95%CI = 1.2, 6.5). The finding coincides with previous studies. According to study from Munisa woreda Oromia regional state, mothers 35 years old were about 6 times more likely to give birth at home than mothers aged 20 years or lower (Amon et al., 2014). This finding was also in line with studies done in North Gondar Zone, Nigeria, Kenya and sub-Saharan Africa (WHO, 2008; Alemaw, 2014; Cheryl et al., 2013; Alexandra, 2010). The possible explanation for this could be that older woman tended to consider giving birth at home to be not as risky as it has been their usual experience. Besides, older woman belong to a more traditional cohort, thus less likely to be educated and influences them to utilize modern health facilities as compared to younger women. However, disagreement arises with other studies which found that older women may become knowledgeable during successive ANC visits on the benefits of health facility deliveries. Obstetric complications may increase with age as a result older women are less likely to give birth than younger women (Gabrysch and Campbell, 2009; Seifu et al., 2014). Number of ANC visits is found to be a significant predictor of giving birth at home. Women who attended two or less times were about 3 times more likely to deliver at home as compared to 4 or more family members (AOR = 3, 95% CI= 1.3, 8.5). The study is congruent with the finding obtained from Western Ethiopia where women who did not attend ANC were about 6 times more likely to give birth at home as compared to women who attended 4 times and more (Kihulya and Elia, 2015). Similar comparable findings from Oromia regional state, Tanzania, Nigeria and Nepal were found (Syhareun et al., 2009; Geeta et al., 2011; FelekeH et al., 2012; Alemaw et al., 2014; Gistane et al.2015). The possible reason may be women who made lower visits would be less likely to get adequate information and counseling about advantages of delivering at health facility which favors them in experiencing home delivery. Nonetheless, some studies argue that ANC would have an inverse association with home delivery as women who are told their pregnancy is fine may feel encouraged to deliver at home (Envuladu et al., 2009).

Attitude towards maternal service is a significant predictor of home delivery where mothers with bad attitude were 3.7 times more likely to deliver at home as compared to mothers with good attitude (AOR =3.7, 95% CI =2.2, 6.2). This findings fits reports from Sekela district North-West Ethiopia and Bahirdar Ethiopia where mothers with unfavorable attitude were 6 and 4.4 times as likely to deliver at home respectively (Fantu et al., 2012; Alemayehu et al., 2012). More women choose home delivery because of the negative information they get from women who were delivered in the health facility. The embarrassments they face during delivery process prevent them from seeking the service in the health facility, which in turn leads to giving birth at home as suggested by four FGD discussants.

*"The ... factor that favors home delivery is the bad message of mothers who previously gave birth at health facility. Delivery process makes mothers expose their secret body parts and makes them to lie in a coach raising or elevating their her legs at supine position and they do not like to be embarrassed" (65 year-old elderly man from Berawiga village).*

Women refuse facility delivery for fear of surgical procedure and operation which prevents them from not utilizing the service in health facilities One FGD participant stated:

*"I think the main reason that women prefer home delivery is that women believe they would experience a surgical procedure if they attend hospital or health center (A 60 year elderly man from Odashabe village)"*

### **Strength and limitation of the study**

The study triangulates both quantitative and qualitative design that widens the scope of the study and one method counterbalance the shortcomings of the other method. Besides, the selection bias is minimized as community based study and probability sampling was applied. All these could increase the accuracy and contribute greater confidence in the generalizability of findings.

However, the cross sectional nature of the study does not allow establishing causality of associations and the results should be interpreted cautiously. Recall bias cannot be ruled out about events that took place further from the period of data collection. Social desirability bias may also be a problem.

### **Conclusion**

This study revealed that the prevalence of home delivery among women of child bearing age who gave birth in the preceding two years prior to data collection seemed to be

higher. Factors that were significantly associated with home delivery include place of residence, age of the mother, the average walking time to reach the nearby health facility, number of ANC visits and family size.

Socio-cultural factors such as attitude of the mother to maternal service utilization was also found to be a significant predictor of home delivery.

### **CONFLICT OF INTERESTS**

The authors declare that they have no conflict of interests.

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