International Journal of
Women's Health and Wellness

ORIGINAL ARTICLE

Magnitude of Home Delivery and Associated Factors among Antenatal Care Booked Mothers in Delanta District, South Wollo Zone, North East Ethiopia: A Cross-Sectional Study, March 2018

Tilahun Wodaynew*, Bekana Fekecha# and Biru Abdisa#

School of Nursing and Midwifery, Jimma University, Ethiopia
#Equally Contributed.

*Corresponding author: *Tilahun Wodaynew, School of Nursing and Midwifery, Jimma University, Ethiopia*

Abstract

Background: Home delivery is childbirth in a non-clinical setting that takes place in residence than in health institution. Globally, every day more than 800 women died due to complications during pregnancy or childbirth. In Ethiopia, few are known about the factors that affect women's place of delivery after utilization of antenatal care service. Therefore, the aim of this study was to assess the magnitude of home delivery and associated factors among antenatal care booked mothers in Delanta district, North east Ethiopia.

Methods: A community-based Cross-sectional study design was conducted from March 15 to 30, 2018. Multistage sampling methods were applied to select 576 respondents among mothers booked for antenatal care. Data was collected through face to face interview using pretested questionnaire. Epi-Data version 3.1 and statistical package for social science (SPSS) version 21 were used for data entry and analysis respectively. Binary and multivariable logistic regression analyses were used to identify any statistically significant association existed between dependent and independent variables. P-value < 0.05 was declared as statistical significance level.

Result: The prevalence of home delivery after ante natal care (ANC) follow up among mothers who gave birth in the last one year was 196 (35.2%). The factors associated with home delivery were age of the mothers between 20-24 years (AOR = 0.089, 95% CI [0.043, 0.184]), occupation of the mothers (AOR = 3.422, 95% CI [1.557, 7.524]), non-exposed to media (AOR =1.979, 95% CI [1.149, 3.410]), having first antenatal care) visit (AOR = 3.217, 95% CI [1.575, 6.570]) and distance (time taken) between 90-120 minutes to reach health facility on foot (5.459, 95% CI [1.681, 17.732]).

Conclusion and recommendation: The magnitude of home delivery after ante natal care follow up in Delanta district was high. Distance, age and occupation of the mothers, number of ANC visit and non-media exposure were statistically significant association with home delivery. The district should better enhances geographic access to a health facility, gives awareness on the importance of media exposure and the health professionals should visit mothers if they miss the next appointment in ANC follow up care.

Keywords

Home delivery, Associated factors, Antenatal care, Delanta district

Abbreviation

AIDS: Acquired Immune Deficiency Syndrome; ANC: Antenatal Care; AOR: Adjusted Odds Ratios; CI: Confidence Interval; COR: Crudes Odds Ratios; EDHS: Ethiopian Demographic and Health Survey; HIV: Human Immunodeficiency Virus; MMR: Maternal Mortality Rate (MMR); OR: Odds Ratio; PPH: Postpartum Hemorrhage; TBA: Traditional Birth Attendants; WHO: World Health Organization

Introduction

Maternal morbidity and mortality is a global health challenge and developing countries contribute most of the maternal death [1]. According to the Maternal Mortality Estimation Inter-agency Group, developing countries accounted for approximately 99% of global maternal deaths in 2015 with 66% of these deaths occurring in sub-Saharan Africa. Developing countries

accounted with the maternal mortality ratio (MMR) of 239 per 100,000 live births, 20 times higher compared to the developed regions (12 maternal deaths per 100,000 live births) [2]. Despite an apparent global improvement made over the last two and half decades, the worldwide MM dropped by about 45% in 2015, which is far from the decline targeted (75%) to be achieved by 2015 [2,3]. Similarly, a recent Ethiopian demographic health Survey indicates maternal mortality ratio (MMR) is 412 per 100,000 live births [4]. Moreover, despite Ethiopia's 71.8% decline in MMR between 1990 and 2015, the lifetime risk of maternal death remains alarmingly high with 1 in 64 women at risk of dying from maternal causes, taking into account other competing causes of death [5].

A vast majority of maternal deaths are due to preventable direct obstetric causes that can be detected and managed early during antenatal care (ANC) and intrapartum period by existing and well known medical interventions [6]. If home delivery is not conducted by professionals; it increases the risk of infection, postpartum hemorrhage (PPH), and transmission of HIV/AIDS to relatives or traditional birth attendants, who conduct deliveries without protective equipment's [7]. The burden of home delivery mainly that of unattended delivery is not only limited to maternal health problem, but it also ends up with perinatal and neonatal morbidity and mortality [8].

Ethiopia was a country where low proportion of reproductive age women visit skilled provider during pregnancy and childbirth [9]. Having antenatal care follow up does not mean that the deliveries of attended pregnancy will take place at health institution. A great majority (74%) of women nationwide gave birth at home even though 62% of women attend antenatal care [4]. Moreover, low proportion of births was assisted by skilled attendant in some 4 areas of the country [10-12].

A community based cross sectional study conducted in Anlemo District, Southern Ethiopia revealed that (49.3%) of mothers delivered at home while in Fogera district, Northwest Ethiopia, high magnitude of home delivery (68.4%) (6% were assisted by their relatives, 62.4% were attended by traditional birth attendants (TBAs)) took place at home among ANC booked women [13,14]. Another community-based quantitative cross sectional study was conducted in Debremarkos town revealed that (25.3%) of women were delivered at home among ANC booked women [15]. The discrepancy between the proportions of deliveries in the health facility and at least four antenatal cares were remarkably high in Ethiopia [16]. Thus suggest, there is a greater gap between antenatal care visiting and institutional delivery. Therefore, the aim of this study is to assess the magnitude of home delivery and associated factors among antenatal care booked mothers who gave birth in the last 12 months in Delanta district, South Wollo zone, north east Ethiopia.

Method

Study area and study period

Delanta district is located in South Wollo zone, the Amhara regional state of Ethiopia which lies between 11°29' 29.82" to 11°41' 25.53" N and 39°02' 19.19" to 39°14' 05.04" E with an altitude ranging from 1500 to 3819 meter above sea level at the bottom of the valleys (Gosh Meda) and the top of the mountain (Mekelet) respectively. It is situated about 499 km north of Addis Ababa and 98 km northwest of Dessie town in south Wollo zone. Based on the 2007 national census, Delanta district has 145,286 total populations out of which 28,285 are the total number of women of child bearing age (15-49 years). Majority of the populations are farmers and Christians. The woreda has one town with two kebeles and 32 rural kebeles (small administrative unit). In addition, there are one primary hospital, 6 health centers, and 32 Health posts in 32 kebeles. The study was conducted from March 15 to 30, 2018.

Study design

A community-based cross-sectional study design was conducted.

Population

Source population: All child bearing mothers (15-49 years of age) who were booked for ANC and gave birth in the last one year in Delanta district, south Wollo zone, north east Ethiopia.

Study population: All sampled Antenatal Care Booked mothers who gave birth within one year (12 months) before data collection period in the selected kebeles.

Sample size and sampling procedure

Sample size: The sample size was determined by using a single population proportion formula considering the following assumptions: expected proportion of home delivery after booked for ANC (25.3%) from previous study in Debre Markos [15], 95% confidence interval and a margin of error of 5%.

Z α/2 = Confidence interval at 95% level (1.96)

D = is the degree of precision (marginal error) 5%

$$n = \frac{\left(Z_{a/2}\right)^2 p\left(1-P\right)}{d^2}$$

Substitute the values in to the formula:

N = (1.96)²0.253(1- 0.253)/(0.05)² = 290. Since the source population was less than 10,000, using the correction formula:

$$nf = \frac{n}{1+\frac{(n)}{N}} = \frac{290}{1+\frac{(290)}{2759}} = 262$$

Wodaynew et al. Int J Womens Health Wellness 2018, 4:086

• Page 2 of 11 •

Using the above assumptions and considering design effect of 2 and 10% non-response rate:

The required final sample sizes became 576.

Sampling technique and procedure: Multistage sampling method with stratification of the district into rural and urban areas was used based on residence. Delanta district has 32 rural and 2 urban kebeles, from those by taking 30% of the total kebeles (nine kebeles from the rural and one kebele from the urban) were selected by simple random sampling method. Those selected kebeles are named as (Arka, Goshmeda, Chewkutir, Chewdinga, Tardat, Ambaye, Asim, Tikurena, Ambaye and Ziban). The sample size was distributed to the ten kebeles by proportionate allocation to the size of their population. Mothers in the sampled kebeles selected by using simple random sampling technique (lottery method) based on the sampling frame obtained from health center and health extension workers.

Data collection tools and procedures

Data was collected using pretested, structured and semi-structured interviewer-administered questionnaire. The questionnaire was adapted from previous research [15]. Two days training were given for data collectors and supervisors. The questionnaire was administered through face to face interview by six [6] trained clinical nurses who were not working in the study area, and the data collection were strictly supervised by two bachelor health professionals (BSc. Nurse). Data was collected on daily basis (by using guidance from the selected kebeles who assist the data collectors) for the period of two weeks starting from March 15-30, 2018. Respondents who refused to participate in the study were included in the non-response rate and mothers in the next household would be considered in place of those who were not available upon frequent visits during data collection. Daily meeting was conducted between data collectors, supervisors and principal investigator for discussion regarding presenting difficulties and to assess the progress of data collection.

Data quality control

Data quality was ensured during data collection, coding, entry and analysis. The questionnaire translated to Amharic (local language) to obtain data from the study participants and to ensure understandability and clarity the contents properly. The questionnaire was back translated to English by an independent translator (language expert) to check the conceptual consistency of items. Prior to the actual data collection activities (one week prior to data collection), the instrument was pre-tested on 29 mothers (5% of sample size) from Dawunt district. After completing the pretest of the questionnaire, necessary changes (removal of some repeated questions and skipping patterns) was made based on the information obtained from participants to make questions more understandable and cronbanch alpha was done (which was 0.81). The completeness of the questionnaire and accuracy of the information recorded was checked at the end of each day by supervisors and principal investigator. Completeness of the collected data was finally reviewed by principal investigator prior to data entry.

Data processing and analysis

The data was entered by using the software Epi data version 3.1 and exported to Statistical Package for Social Sciences (SPSS) version 21 for analysis. All required variable recoding and transformation was done before the final data analysis. Binary logistic regression and multivariable logistic regression model used to identify any statistically significant association existed between dependent and independent variables. Variables having p-values less than 0.25 in the Binary analysis was fitted in to the multivariable logistic regression model. Ninety five percent confidence interval of odds ratio was computed and variable having P-value less than 0.05 in the multivariable logistic regression analysis was considered as significant associated factors for home delivery. Finally, findings were presented in text, tables and graphs.

Ethical consideration

The study was conducted after getting Ethical clearance from the Institutional Review Board of Institute of health, faculty of health science in Jimma University. Official letter of cooperation was also obtained from the health office of Delanta district and from all sampled Kebeles through a formal letter. Participants in the study were asked only on the voluntary basis. Written informed consent was obtained from each participant prior to the interview to confirm willingness after explaining the objective of the study. No personal identifiers of the study participants were undertaken hence all information obtained from the study participants had kept strictly confidential.

Result dissemination plan

A copy of the final report of this study will be given to school of Nursing and Midwifery, Institute of health, Faculty of Health science, Jimma University and Delanta district Health office. The findings will be presented in different seminars, meetings and workshops and may also be made publically accessible through publications in international reputable journals.

Result

Sociodemographic characteristics of the study participants

From a total of 576 study participants, 557 of them who had booked for antenatal care visit for their last pregnancy and gave birth within 1 year prior to the survey were interviewed which makes response rate of 96.7%. About 193 (34.6%) of the mothers were between the ages of 25 to 29 years. About 487 (87%) of the moth-

Table 1: Socio-demographic characteristics of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

Variables	Frequency (n = 557)	Percentage (%)
Mothers age		
15-19	26	4.7
20-24	119	21.4
25-29	193	34.6
30-34	92	16.5
>= 35	127	22.8
Religion		
Orthodox	492	88.3
Protestant	10	1.8
Muslim	55	9.9
Ethnicity		
Amhara	549	98.6
Tigre	8	1.4
Marital status		
Single	26	4.7
Married	486	87.3
Widowed	13	2.3
Divorced	17	3.0
Separated	15	2.7
Occupation of the mothers		
House wife	206	37
Government employee	98	17.6
Nongovernmental employee	45	8
Private Business	36	6.5
Student	30	5.4
Farmer	142	25.5
Household income in birr per month		
<= 500	15	2.7
501-1000	35	6
1001-1500	72	13
1501-2000	83	15
2001-2500	98	18
2501-3000	104	18.6
> 3000	121	21.7
I don't know	29	5
Occupation of the husbands		
Farmer	322	57.8
Government employee	137	24.6
Nongovernmental employee	15	2.7
Student	13	2.3
Private business	70	12.6
Residency of the mothers		
Urban	70	13
Rural	487	87
Mather's educational Level		
Don't read and write	168	30.2
Read and write	137	24.6
Primary education	77	13.8
Secondary education	81	14.5
Above secondary	94	16.9
Husbands' Educational Level		
Don't read and write	111	19.9
Read and write	157	28.3
Primary education	72	12.9
Secondary education	76	13.6
Above secondary	141	25.3

Table 2: Reasons for delivering at home among mothers who gave birth in Delanta district, south Wollo, north east Ethiopia, March 2018.

Home delivery reasons	Frequency (n = 196)	Percent (%)
Institutional delivery is not necessary		
Yes	18	9.2
No	178	90.8
Home delivery is our culture		
Yes	61	31.1
No	135	68.9
Institutional delivery is too costly		
Yes	6	3.0
No	190	97
Health professionals do not allow family members to accompany in labor ward		
Yes	19	9.7
No	177	90.3
Dislike behaviors of health workers at health institution		
Yes	21	10.7
No	175	89.3
Too far health facility and lack of transport		
Yes	86	43.9
No	110	56.1
More trust on TBA/relatives than health workers		
Yes	11	5.6
No	185	94.4
Poor quality of service in health institution		
Yes	18	9.2
No	178	90.8
Labor was simple and fast		
Yes	104	53.1
No	92	46.9
Wishes to deliver at home where relatives are nearby		
Yes	19	9.7
No	177	90.3
Husband/family don't allow		
Yes	16	8.2
No	180	91.8

ers were rural in residency while the remaining 70 (13%) were from Urban. Most 549 (98.6%) of the mothers belongs to Amhara by ethnicity and 492 (88.3%) Ethiopia orthodox tewahido by religion. Regarding the marital status, 486 (87.3%) of the mothers were married. With regard to occupation, majority of the mothers and their husbands were house wife 206 (37%) and farmer 322 (57.8%) respectively. Concerning the educational level, 168 (30.2%) of the mothers were not educated but majority 157 (28.2%) of their husbands could read and write (see on Table 1).

Home delivery and reasons given

The prevalence of home delivery after ante natal care follow up among mothers who gave birth in the last

one year was 196 (35.2%). Of the total home deliveries, 128 (65.3%) of them were assisted by non-traditional birth attendants and 68 (34.7%) of these deliveries were attended by relatives. Mothers gave a variety of reasons for using home delivery. Among these labor was simple and fast 104 (53.4%), Too far health facility and lack of transport 86 (43.9%) and Home delivery is our culture 61 (31%) were leading reasons (see on Table 2).

The majority 525 (94.3%) of the mothers had geographic access for health facility in the Village, among these 378 (73.5%) could be reached within 30-60 minutes on foot (see on Figure 1). Nearly half (49.7%) of the mothers were exposed to at least one means of media per week (see on Table 3).

Past obstetrics characteristics of the respondents

About 335 (60.1%) of mothers were married when they were between 15-19 years of age while 242 (43.4%) of the mothers had their first pregnancy between the ages of 20-24 years and majority of the participants 305
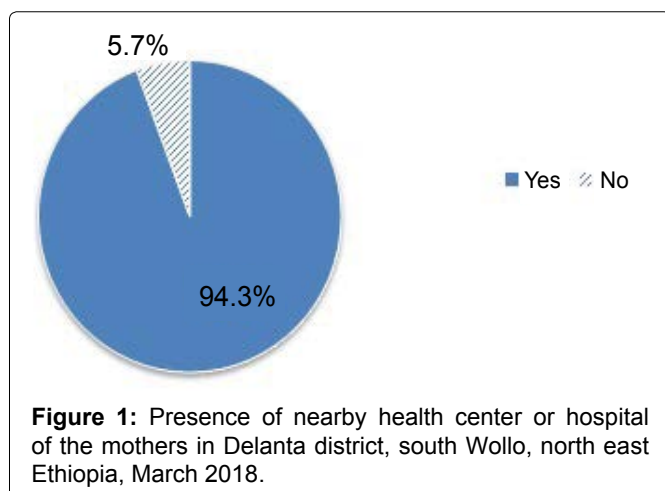

Figure 1: Presence of nearby health center or hospital of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

Table 3: Distribution of media exposure among mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

Media exposure	Frequency (n = 557)	Percent (%)
Reads a newspaper at least once a week		
Yes	12	2.2
No	545	97.8
Watches television at least once a week		
Yes	80	14.3
No	477	85.7
Listens radio at least once a week		
Yes	140	25.1
No	417	74.9
Accesses all three media at least once a week		
Yes	45	8.1
No	512	91.9
Accesses none of the three media at least once a week		
Yes	265	47.6
No	292	52.4

(54.8%) and 309 (55.5%) had 2-4 number of gravidity and parity respectively. 418 (75%) of the mothers had no previous history of prolonged labor (Figure 2 and Table 4).

Regarding their last pregnancy, 452 (81%) mothers reported that their last pregnancy were planned (see on Figure 3).

Majority (68.9%) of the mothers attend ANC visits at health center (see on Figure 4). Only 139 (25%) of the mothers were attended four and above visits of antenatal care (see on Figure 5). About 185 (33.2%) of the mothers visited first ANC between 16-20 weeks (see on Table 5).

Perceived characteristics of ANC and knowledge of the participants

The majority 502 (90.1%) and 494 (88.7%) of the

Table 4: Distribution past obstetrics history of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

Variables	Frequency (n = 557)	Percent (%)
Age at first marriage		
15-19	335	60.1
20-24	133	23.9
25-29	23	4.1
30-34	1	-
I don't know	65	11.7
Age at first pregnancy		
15-19	182	32.7
20-24	242	43.4
25-29	65	11.7
30-34	1	-
>= 35	2	-
I don't know	65	11.7
Gravida of the mothers		
1	168	30.2
2-4	305	54.8
5 and above	84	15.1
Parity of the mothers		
1	167	30.0
2-4	309	55.5
5 and above	81	14.5
Have you experienced prolonged labor?		
Yes	139	25
No	418	75

Table 5: The gestational age at first ANC visit of the mothers in Delanta district, South Wollo, north east Ethiopia, March 2018.

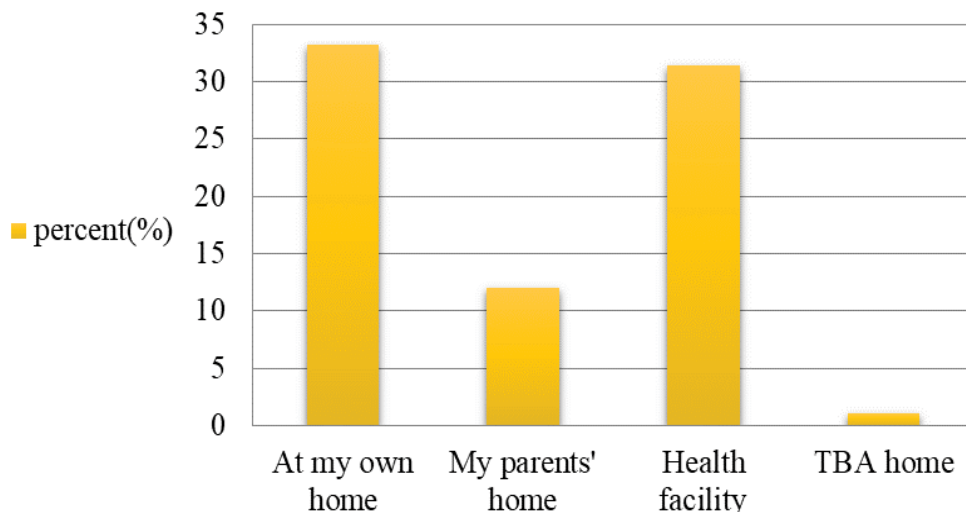| Variable	Frequency	Percent (%)
Gestational age at first ANC visit?		
< 16 weeks	172	30.9
[16-20] weeks	185	33.2
[20-24] weeks	97	17.4
[24-28] weeks	46	8.3
[28-32] weeks	29	5.2
>= 32 weeks	17	3.1
I don't know	11	2.0

Figure 2: Birth place of previous last child of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.
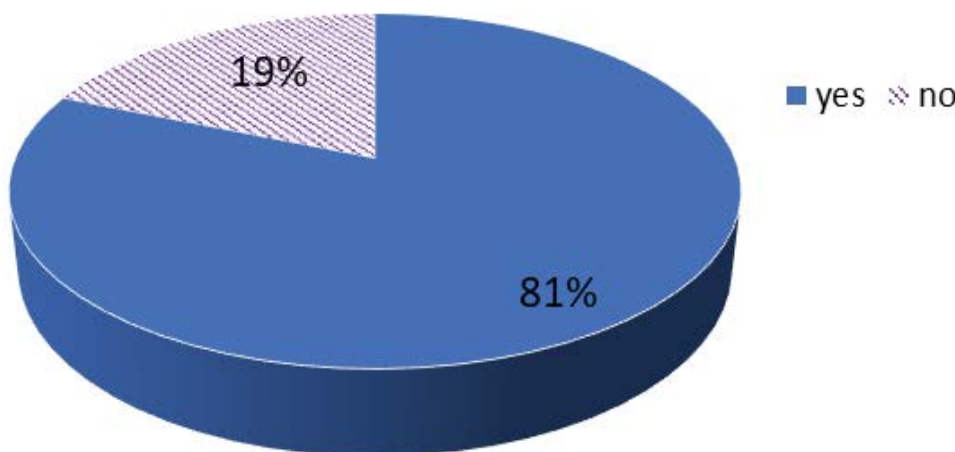

Figure 3: Distribution of last planned pregnancies of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.
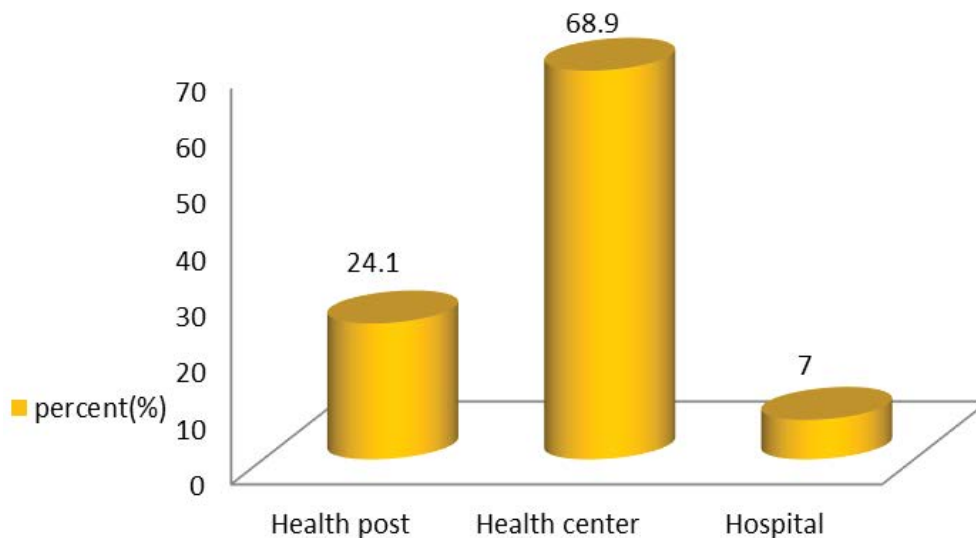

Figure 4: Place of ANC visit of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

mothers reported that they received an explanation from health care providers about their health condition and what to expect during labor and delivery respectively. Similarly, 516 (92.6%) and 498 (89.4%)
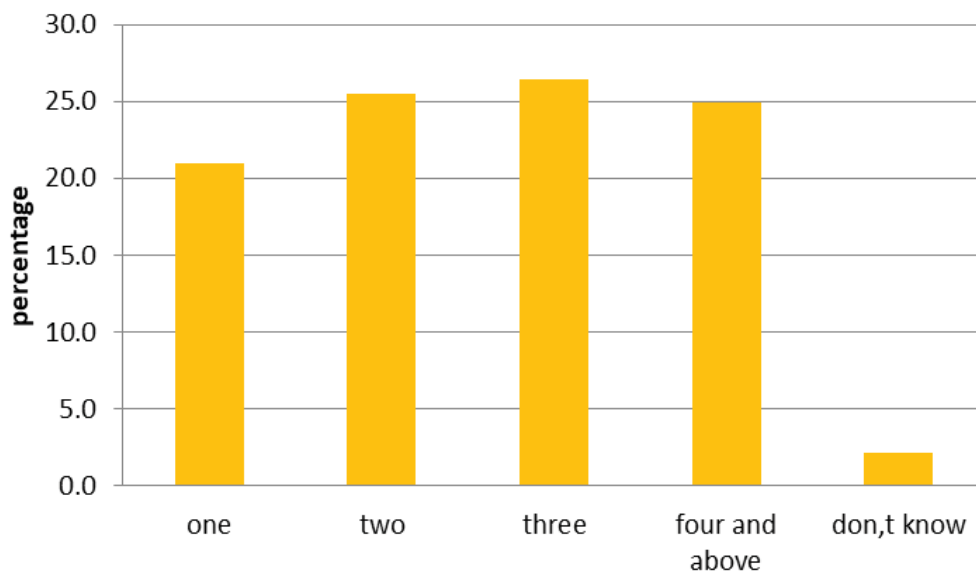
Figure 5: Number of ANC visits of the mothers in Delanta district, south Wollo, north east Ethiopia, March 2018.

Table 6: Counseling and communication with health providers during ANC among mothers in Delanta district, south Wollo, north east Ethiopia March 2018.

Variables	Frequency (n = 557)	Percent (%)
Did the providers explain your health condition with terms that you able to understand?		
Yes	502	90.1
No	55	9.9
Did the providers explain what to expect during labor and delivery?		
Yes	494	88.7
No	63	11.3
Did the health providers listened to your questions or concerns?		11.7
Yes	480	86.2
No	77	13.8
Did the providers respect you?		
Yes	516	92.6
No	41	7.4
Did the provider kept protected your privacy during the examinations?		
Yes	498	89.4
No	59	10.6
How long was the time you spent in waiting to get ANC services?		
< 30 minute	460	82.6
30-60 minute	66	11.8
I don't know	31	5.6
Did you get advice about the need to have delivery at health facilities?		
Yes	541	97.1
No	16	2.9
When did you get the advice?		
During ANC visit	319	57.3
During home visit by HEW	209	37.5
During contact with TBA	29	5.2

reported that they received respect and privacy from the service provider during antenatal care respectively (see on Table 6).

Among 34 knowledge questions mothers were asked on danger sign, maternity services, and complications during pregnancy and delivery. The respondents classified as had good knowledge and poor knowledge, taking the mean score (10.6) as differentiation for knowledge. 263 (47.2%) of the mothers had good knowledge, while 294 (52.8%) of them had poor knowledge.

Maternal decision power on health care

459 (82.4%) of mothers reported that they have discussed with their husbands about the place of delivery and majority 403 (72.4%) of them preferred to deliver at health facility while comparably 425 (76.3%) of husbands preferred the same place. Regarding delivery attendant 54 (9.7%) of mothers and 59 (10.6%) of husbands preferred non- trained TBA and one of family members respectively. 378 (67.9%) of the final decision regarding the place of delivery was given by both the mothers and their husbands, while 107 (19.2%) of the mothers gave decision by themselves on the place of delivery. 116 (20.8%) and 402 (72.2%) of a financial decision for costs related to pregnancy and delivery were decided only by their husbands and both the mothers and their husbands respectively.

Factors associated with home delivery

In Bivariable logistic regression maternal age, maternal occupation, husband occupation, maternal residence, maternal educational level, husband educational level, distance (time taken) to reach of health facility on foot, non-media exposure, number of delivery, experience of prolonged labor, planned pregnancy, number of ANC visit completed, maternal knowledge, privacy during ANC examination, waiting time to get ANC services in minutes and decision maker on cost needed for referral were the factors found to have Statistically significant association with home delivery.

Table 7: Factors associated with home delivery among mothers in Delanta district, south Wollo, north east Ethiopia, March 2018 (from multivariable logistic regression analysis).

Variables	Place of delivery		COR	AOR	P-value
	Home delivery	Health facility	(95% CI)	(95% CI)	
Age of the mothers					
15-19	15	11	0.539 [0.226, 1.286]	0.417 [0.142, 1.230]	0.113
20-24	19	100	0.075 [0.040, 0.140]**	0.089 [0.043, 0.184]	0.001*
25-29	18	175	0.041 [0.022, 0.076]	0.042 [0.020, 0.089]	0.102
30-34	53	39	0.538 [0.305, 0.946]	0.373 [0.183, 0.759]	0.206
>= 35	91	36	1	1	
Occupation of the mothers					
Housewife	108	88	7.364 [3.914, 13.85]**	3.422 [1.557, 7.524]	0.002*
Farmer	40	96	2.875 [1.477, 5.596]	1.476 [0.634, 3.439	0.367
Nongovernment employee	12	41	0.585 [0.181, 1.890]	0.312 [0.081,1.207]	0.092
Private business	10	30	1.200 [0.423, 3.406]	1.104 [0.327, 3.729]	0.873
Student	12	22	4.909 [2.116, 11.388]	5.290 [1.674,22,16.71]	0.205
Government employee	14	84	1	1	
Number of ANC visit received?					
One	74	61	3.7 [2.240, 6.265]**	3.217 [1.575, 6.570]	0.001*
Two	56	83	1.860 [1.104, 3.136]	1.066 [0.515, 2.205]	0.863
Three	31	105	0.932 [0.536, 1.621]	0.552 [0.264, 1.157]	0.115
I don't know	11	11	3.088 [0.934, 10.211]	4.663 [1.020, 21.329]	0.47
Four and above	34	101	1	1	
How much time it take to reach Health facilities = 525					
< 30 minutes	45	145	1	1	
30-60 minutes	49	125	1.310 [0.823, 2.087]	0.625 [0.333, 1.173]	0.143
60-90 minutes	31	32	3.186 [1.755, 5.783]	1.604 [0.682, 3.774]	0.279
90-120 minutes	21	11	8.633 [3.58, 20.814]**	5.459 [1.681, 17.732]	0.005*
> 120 minutes	22	21	3.759 [1.916, 7.375]	1.379 [0.384, 4.955]	0.622
I don't know	12	11	3.289 [1.168, 9.261]	2.120 [0.864, 5.201]	0.101
Media exposure at least once a week					
No	129	151	2.678 [1.865, 3.845]**	1.979 [1.149, 3.410]	0.014*
Yes	67	210	1	1	

Notes: * = P < 0.05 values indicate statistically significant associations on multivariable analysis.

** = P < 0.01 values indicate statistically significant associations on Bivariable analysis.

1 = Reference.

From the multivariate analysis, variables with p- value less than 0.05 were used to fit the final multivariable logistic regression model. At multivariable logistic regression analysis by using backward likelihood ratio and after adjusting for each other, revealed that five variables that were independent predictors for the magnitude of home delivery were maternal age (AOR = 0.089, 95% CI [0.043, 0.184]), number of ANC visit (AOR = 3.217, 95% CI [1.575, 6.570]), Occupation of the mothers(AOR = 3.422, 95% CI [1.557, 7.524]), time taken to reach Health facilities on foot (5.459, 95% CI [1.681, 17.732]) and non-media exposure (AOR =1.979, 95% CI [1.149, 3.410]).

Mothers who were between 20-24 years old were 91% less likely to deliver at home than mothers having age of greater than 35-years-old (AOR = 0.089, 95% CI [0.043, 0.184]). Mothers whose occupation housewife were 3.4 times more likely to deliver in their home than mothers who were government employee (AOR = 3.422, 95% CI [1.557, 7.524]). Mothers who were visited ANC once time were 3 times more likely to deliver at home than mothers who had four and above ANC visit (AOR = 3.217, 95% CI [1.575, 6.570]). Mothers who were traveling to reach health facility on foot between 90-120 minutes were 5.5 times more likely gave birth at home than mothers who were traveling to reach health facility on foot within 30 minutes (AOR = 5.459, 95% CI [1.681, 17.732]). Mothers who were not exposed to media once a week were two times more likely to give delivery at home than mothers who were exposed to media once a week (AOR = 1.979, 95% CI [1.149, 3.410]) (on Table 7).

Discussion

This community based cross sectional study has

Wodaynew et al. Int J Womens Health Wellness 2018, 4:086

• Page 8 of 11 •

attempted to assess the magnitude of home delivery and associated factors among ANC booked mothers and gave birth in the last 12 months preceding the survey. The study results showed that the magnitude of Home delivery was 196 (35.2%) of total study participants given delivery at home after having ANC visit. The magnitude of home delivery in this study lower than delivery conducted by unskilled provider in 2016 EDHS report (72.3%) National and 72.3% of Amhara region [4]. The possible reason for the variation might be due to the fact that difference in study area and source of population in addition to this; currently the government and other supporting organizations are working strongly to increase institutional delivery service utilization.

The magnitude of home delivery in this study is also lower than the studies which were done in fogera district, north west Ethiopia, Anelemo woreda (49.3%) and Arbaminch Zuria district in southern Ethiopia (75.2%) [13,14,17]. This might be due to the fact that maternal health is one of the sustainable development goal in which a lot of contributions had been made by the government and non-governmental organization to change the awareness of women's and communities' on the utilization of institutional delivery which might result in this study decreased home delivery than these studies mentioned above. The magnitude of home delivery in this study is also lower than the studies done in other developing countries conducted in Nigeria (40%) and Kenya (51.8%) [18,19]. This could be due to the presence of a difference in the health Service delivery system, socio-cultural difference, economic or study area setting difference. But this result is higher in the study conducted in Debre Markos town (25.3%), in northern west Ethiopia and shashemen (19%) in central part of Oromia region, Ethiopia [15,20]. This might be due to difference in study area and in addition the difference in source population since these studies were conducted at zonal level and this study conducted at Woreda level.

Age of the mothers was one of the predictor for home delivery; Mothers who were between 20-24 years old were 91% less likely to deliver at home than mothers having age greater than 35-years-old (AOR = 0.089, 95% CI [0.043, 0.184]. This finding is similar with the findings reported in the studies conducted in Banja district in Awi zone, Dejen and Benchi-maji zone. The possible explanations might be that younger mothers are more likely to be educated and got better access of information to utilize modern health care facilities than home [12,21,22].

Number of antenatal care visit had a strong significant association with home delivery. Mothers who were visited ANC once time were about three times more likely to deliver at home than mothers who had four and above ANC visit (AOR = 3.217, 95% CI [1.575, 6.570]. This result is in line with studies done in Dejen and fogera

[14,21]. This probably due to the fact that mothers who had one ANC visit didn't have better number of contact with skilled health care provider during pregnancies, especially on the place of delivery in later gestational age and with increased number of ANC visits, which gave chance for the mothers to know more about the importance of skilled attendant during childbirth and because of this, they couldn't have influenced their decision to deliver in health facility. Hence, ANC is the most favorable contact point for mothers to get more information about the risks and problems they may encounter during delivery.

Traveling time (distance) needed to reach to the nearby health institution which was another factor associated with home delivery. Mothers who were traveling to reach health facility on foot between 90-120 minutes were 5.5 times more likely gave birth at home than mothers who were traveling to reach health facility on foot within 30 minutes (5.459, 95% CI [1.681, 17.732]). This result was consistent with Debre markos, Arbaminch, chiha district and Dangila [15,17,23,24]. The probable reason might be due to the fact that, When the health institution is found more farther, the cost needed to get the health care services would like to be also increase and she might not get better social support and transportation because people is travelled a long distance accompanying or carrying her. Walking a long distance is difficult in labor and impossible if labor start at night and means of transport are often not available and they enforced to choose home delivery. Besides this, far distance and lack of transport were the mothers' reason for home delivery.

Occupations of mothers were also another factor associated with home delivery. Mothers whose occupation housewife were three times more likely to deliver in their home than mothers who were government employee (AOR = 3.42, 95%, CI [1.557, 7.524]). This is in agreement with the studies done on gozamin district northwest Ethiopia and west pokot in Kenya [25,26].

The possible explanation might be housewife had less awareness regarding complication of pregnancy and unaware of dangerous situations during child birth since they spend most of their time at home and the other possible reason might be the mothers' labor were simple and fast in this study.

Mothers who were not exposed to media once a week were two times more likely to give delivery at home than mothers who were exposed to media once a week (AOR = 1.979, 95% CI [1.149, 3.410]). This is consistent with the studies done in Debre markos and Ethiopia. This could be due to the fact that mothers who have not media exposure didn't attend the awareness information on the importance of institutional delivery because mass media are effective in information dissemination, which could facilitate behavioral changes

Wodaynew et al. Int J Womens Health Wellness 2018, 4:086

• Page 9 of 11 •

that might be allowing mothers for the acceptance and utilization of maternal health service. Media also have the ability to change the attitudes of mothers and communities used to have on home delivery, consequently mothers who were not exposed to any source of media might be continued having home delivery [15,27,28].

Strength and Limitation of the Study

The main strength of this study is that, being community based, it could reflect the actual experience of the mothers during the study period (including both urban and rural areas). The findings of this study used a semi-structured questionnaire and findings are generalizable to the woreda. However, cross sectional nature of the study and the study included mothers who gave birth one year preceding the survey, there might be a recall bias.

Conclusion and Recommendation

The magnitude of home delivery in this study among mothers who were booked for antenatal care and gave childbirth within 1 year prior to survey time was high. Distance (time taken) to reach health facility on foot, age and occupation of the mothers, number (frequency) of ANC visit and non-media exposure are found to have statistically significant association with home delivery. The district health office considers and implement WHO recommendation that all pregnant mothers should be visited if they miss the next appointment in ANC follow up care. They Create or give awareness on the importance of media and promotion of institutional delivery service utilization through mass media. The district should better enhance geographic access to a health facility. Health professionals and health extension workers should give awareness on institutional delivery and on birth preparedness to deliver at health facility even on the sudden onset of labor and should give special attention and follow mothers who are housewife and living far distance. Researchers will do prospective (follow up) and case control study.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

Tw involved in designing of the study, data collection, data analysis, drafting and critically reviewing the manuscript. Likewise, BF and BA commented in designing of the study, analysis of the data and critically reviewing the manuscript. All authors read and approved the final manuscript.

Consent for Publication

Consent for publication is not applicable since there are no details, images, or videos relating to an individual person in this study.

Author Details

Tilahun Wodaynew is lecturer of maternal health nursing in Jimma University, Bekana Fekecha is assistant professor of in maternity health Nursing and PHD follower in Jimma University and Biru Abidisa is lecturer of clinical midwifery in Jimma University. All authors are currently staff members of school of Nursing and Midwifery in Jimma University.

References

1. WHO (2012) Maternal mortality.

2. WHO, UNICEF, UNFPA WBG and the UNPD (2015) Trends in maternal mortality: 1990 to 2015.

3. WHO, UNICEF, UNFPA WBG and the UNPD (2013) Trends in maternal mortality: 1990 to 2013.

4. Central statistical agency (2016) Ethiopia Demographic and Health Survey, key indicator report. 136.

5. Report S, By S (2016) Executive FOR, Ministry of Health R. Federal Democratic Republic Ethiopia. 16.

6. (2010) Federal Democratic Republic of Ethiopia Ministry of health. Management protocol on selected obstetrics topics (FMOH). 8-14.

7. Belemsaga DY (2015) A review of factors associated with the utilization of healthcare services and strategies for improving postpartum care in Africa. Afrika Focus. 28: 83-105.

8. Chinkhumba J, De Allegri M, Muula AS, Robberstad B (2014) Maternal and perinatal mortality by place of delivery in sub-Saharan Africa: A meta-analysis of population-based cohort studies. BMC Public Health 14: 1014.

9. Wang W, Alva S, Wang S, Fort A (2011) Levels and trends in the use of maternal health services in developing countries. DHS Comparative Reports 26: 2-6.

10. Tsegay Y, Gebrehiwot T, Goicolea I, Edin K, Lemma H, et al. (2013) Determinants of antenatal and delivery care utilization in Tigray region, Ethiopia : A cross-sectional study. Int J Equity Health 12: 30.

11. Awoke W, Muhammed J, Abeje G (2013) Institutional delivery service utilization in Woldia, Ethiopia. Sci J Public Heal 1: 18-23.

Wodaynew et al. Int J Womens Health Wellness 2018, 4:086

• Page 10 of 11 •

12. Wolelie A, Aychiluhm M, Awoke W (2013) Institutional delivery service utilization and associated factors in Banja District, Awie Zone, Amhara Regional. Open J Epidemiol 4: 30-35.

13. Shabeza AI, Tilahun BH, Markos SJ, Eshetu Y (2017) Analyzing prevalence of home delivery and associated factors in Anlemo District, Southern Ethiopia. Int Ann Med 1: 1-6.

14. Endalkachew D, Alemtsehay M, Gedefaw A (2014) Place of delivery after antenatal care : The case of Fogera District, North West, Ethiopia. J Gynecol Obstet 2: 1-6.

15. Habtamu KK, Zerfu ME, Temesgen WG, Melese SD (2016) Home delivery among antenatal care booked women in their last pregnancy and associated factors: Community-based cross sectional study in Debremarkos town, North West Ethiopia, January 2016. BMC Pregnancy Childbirth 17: 1-5.

16. Berhan Y, Berhan A (2014) Antenatal care as a means of increasing birth in the health facility and reducing maternal mortality: A systematic review. Ethiop J Health Sci 24: 93-104.

17. Gistane A, Maralign T, Behailu M, Worku A, Wondimagegn T (2015) Prevalence and associated factors of home delivery in Arbaminch Zuria district, Southern Ethiopia. Sci J Public Heal 3: 6-9.

18. Envuladu EA, Agbo HA, Lassa S, Kigbu JH, Zoakah AI (2013) Factors determining the choice of a place of delivery among pregnant women in Russia village of Jos North, Nigeria: Achieving the MDGs 4 and 5. Int J Med Biomed Res 2: 23-27.

19. Wanjira C, Mwangi M, Mathenge E, Mbugua G, Ng'ang'a Z (2011) Delivery practices and associated factors among mothers seeking child welfare services in selected health facilities in Nyandarua South District, Kenya. BMC Public Health 11: 360.

20. Teklemariam G, Biresaw W, Mekdes K, Besufekad B (2016) Home delivery and associated factors among reproductive age women in Shashemene Town, Ethiopia. J Womens Heal Care 5: 1-4.

21. Melaku D, Temesgen G, Tebikew Y, Yewbmirt S, Mulugeta A, et al. (2016) Determinants of institutional delivery among mothers who gave birth in the last one year in Dejen Woreda, Ethiopia. J Fam Med Heal Care 3: 45-51.

22. Fira A, Tariku TB (2016) Delivery site preferences and associated factors among married women of child bearing age in Bench Maji Zone, Ethiopia. Ethiop J Health Sci 26: 45-54.

23. Yeshalem MD, Gebremedhin BG, Azezu AN (2016) Factors associated with institutional delivery in Dangila district, North West Ethiopia: A cross-sectional study. Afr Health Sci 16: 10-17.

24. Habte F, Demissie M (2015) Magnitude and factors associated with institutional delivery service utilization among childbearing mothers in Cheha district, Gurage zone, SNNPR, Ethiopia: A community based cross sectional study. BMC Pregnancy and Childbirth 15: 1-5.

25. Ogolla JO (2015) Factors associated with home delivery in West Pokot County of Kenya. Adv Public Heal 2015: 1-6.

26. Mekonnen Y, Ayichiluhm M, Dejenu G (2015) Prevalence and determinants of home birth after antenatal care attendance in Gozamin District, Northwest Ethiopia. Heal Sci J 9: 1-7.

27. Resom T, Alemseged A, Kalayu K, Mussie A, Gebrezigabiher Y (2014) Determinant factors of home delivery among women in Northern Ethiopia: A case control study. BMC Public Health 17: 1-8.

28. Alemi K, Kalkidan H, Aderajew NT (2016) Factors associated with institutional delivery service utilization in Ethiopia. Int J Womens Health 8: 463-475.