

Factors influencing women's choice of place of child delivery in rural Wondo Genet District, Southern Ethiopia.

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Abstract

Background - Pregnancy and childbirth complications are foremost cause of deaths and incapacity among mothers of the reproductive age group in developing countries. Around 99% of maternal mortality arisen in the low-resource settings area and most could have been avoided. Thoughtful approach for reducing maternal illness and deaths is ensuring that every baby is delivered in health institutions where a trained birth attendant will be present to take the delivery. In Ethiopia, nearly third-fourth of births occur without the help of a trained birth assistant. This study examined the factors that influenced or determined women's choice of place of child delivery in rural Wondo Genet District, Southern Ethiopia.

Method- A cross-sectional study design was employed and systematic sampling method used to select eligible women. Data cleaned, coded and entered into Epi Data 3.1 and analyzed using SPSS version 20. Bivariate and multivariate logistic regression used to identify statistically significant variables for the choice of place for delivery. Hosmer and Lemeshow- goodness of fit used to check data fitness for the model.

Result- a total of 402 women participated in this study. The following factors were statistically significant for the choice place of delivery Primary and above educational attainment of women, (AOR=0.14, CI, 0.03-0.68), income greater than 3000 ETB (AOR=8.35 CI, 3.6-19.4), four or more ANC frequency (AOR=4.14 CI, 2.0-8.6) and previous planned pregnancy (AOR=4.14 CI, 2.0- 8.6).

Conclusion- Prevalence of institutional delivery was 61.2%. Educational status and monthly income was a statistically important factor. Recommend that the district should work on disseminating appropriate information health to enhance the knowledge of the women and help them to take the initiative to visit health facility.

Introduction

Globally, Approximately 800 women die from pregnancy or childbirth-related complications every day. Almost all (99%) of these maternal deaths occurred in the low-resource settings area. Low resource setting area, particularly Sub-Saharan Africa and South Asia contributed around 88% of maternal deaths universally [1]. Out of ten countries which contributed 58% of the global maternal deaths reported in 2013, Ethiopia contributed (4%) of maternal deaths [2]. All Millennium development goal (MDG) regions of the world have experienced considerable reductions in maternal mortality even though it varies considerably[3].

Ethiopia is categorized as having very low utilization of health facility by a pregnant mother for childbirth compared with Kenya, Tanzania, and Uganda [4]. For all pregnant women, utilization of maternal health care services is a key proximate determinant of maternal and newborn outcomes, including maternal and infant morbidity and mortality [5].

Despite the fact that skilled delivery being one of the most important maternal health indicators. In Ethiopia, the majority of births occur without the help of a skilled assistant and mainly at home. Home deliveries tend to be unhygienic, unsupervised, associated with adverse infant and maternal outcomes and when intervention is required it is usually late. Nevertheless, there has been a significant advancement in the past 15 years in which the number of deliveries at a health facility is increasing, from 10% in 2000 to 26 % births reported in 2016 in the country [6].

Most studies agree that women with above primary educational attainments [1,6,14–15,17] women who are in the richest quintile 18–21, being resident of urban area [20–22], residing within walking distance from health facility [15] are important predictors for the women to practice facility-based childbirth. With regard to the obstetric history of the women, nulliparous women practice institutional delivery compared with multiparous women [16]. Having antenatal care (ANC) follow up during pregnancy and higher frequency of ANC visit [18–19,24] are a significant variable to encourage women to give birth in health facilities. Planned pregnancy also is an important determinant for choosing institutional delivery [19].

The most typical reasons given by mothers who practice out of facility childbirth are traditional belief, facility delivery is not necessary [10], religious practice during childbirth [14], previous safe home birth [20], prefer birth naturally [21] and traditional birth attendants (TBAs) are readily available [22].

Therefore the aim of this study was to assess the prevalence of institutional delivery and the determinants for the choice of place of delivery. Overall, the findings of this study will have important implications for health care planning, resource allocation, and policy planning mainly pertinent to the study area in the spectrum of health care system strength, support and development that hasten achievement of sustainable development goals (SDGs) particularly SDG 4 and 5 which are to ensure inclusive and equitable quality education and promote life-long learning opportunities for all and achieve gender equality and empower all women and girls respectively.

Methodology

Study area and population

Wondo Genet District is found in [Sidama Zone, Southern Nations, Nationalities, and Peoples' Region](#) (SNNPR) of [Ethiopia](#). Wondo Genet District is 275 km far from the capital city of Ethiopia, Addis Ababa. The district is bordered on the south by [Malga](#), on the west by [Hawassa Zuria](#), and on the north and east by the [Oromia Region](#). The district has five health centers and 16 health posts. The total population is 156,017 with 76,760 males and 79,257 females. The total number of women in reproductive age in the district is 27,334 and number of pregnant women was 5,398 of this 85% of women had at least one ANC follow up. The source population of the study was all mothers who gave birth 12 months prior to the study in district.

The study population of this study was all mothers who have given birth 12 months prior to the study and mothers who visited the facility during the time of data collection in Wondo Genet District.

Study design and sample size determination

The institution-based cross-sectional study design was employed to assess the determinants for the choice of place of delivery among mothers and to determine the prevalence of institutional delivery who gave birth one year prior to data collection. The study period was from June to August 2017.

A single population proportion formula (EPI info 3.5.1) was used to estimate the sample size required for the study. The following assumptions were made to estimate sample size using 38% prevalence of institutional delivery (7) from the previous study and 95% confidence interval, 5% precision, and a 10% non-response rate. Therefore considering 10% non-response rate final sample size was 402.

The simple random sampling method was used to select eligible mothers for the study. Proportional allocation of the sample was employed for each health centers to ensure representation of the source population.

Data collection tools

The standard and structured questionnaire used for data collection. The data collected through an interview-administered questionnaire. The questionnaire was prepared in English and then translated by language experts into Amharic, then back-translated into English to check for consistency of meaning.

The main components of the questionnaire were socio-demographic characteristics, ANC and pregnancy outcome, maternal service-related, and the reason for choosing home delivery. The pre-test was conducted in Yirgalem town on 5% (20 mothers) of the sample size and adjustment was made accordingly. The data was collected by 10 trained data collectors, who were first degree holders in health sciences with previous experience in data collection. For all of the data collectors, to ensure the quality of the data, one-day training was given. Inspection for completeness of questionnaires was carried out.

Data management and analysis

Data were cleaned, coded and entered into Epi data version 3.02 and analyzed using SPSS version 20 for descriptive and inferential statistics. To explain the study population in relation to relevant variables, descriptive statistics like frequency distribution table, and summary measures were computed. To identify statistically significant variable for the choice of place of delivery, a bivariate analysis was made for each independent variable to outcome variable separately. And those variables with p-value < 0.3 in bivariate analysis were imported to multiple logistic regressions. In multiple logistic regressions those variables with a p-value < 0.05 considered as statistically significant variables for the choice of place of delivery and presented with 95%CI and AOR.

To explain the above paragraph, a statistical model specified by Hosmer and Lemeshow- goodness of fit was assumed:

$$\ln\left(\frac{P}{1-P}\right) = \alpha + \sum_{i=1}^n \beta_i X_i$$

Whereby P is a probability of delivering an institution in most recent birth, α and β are estimated regression coefficients and X_i are various explanatory variables. Odds Ratio (OR) i.e., $\text{Exp}(\beta)$ for each category of explanatory variables were also estimated along with their 95% Confidence Intervals (CI) and the effect of a category on the likelihood for delivery in a health facility was considered significant ($p < 0.05$) when estimated CI does not contain 1.

Results

Socio-demographic characteristics

A total of four hundred two (402) women who give birth one year prior to the survey were included in the study. More than half, 246 (61.2%) of the women were in the age group of 25-34 and One-third, 133 (33.1%) of them were in the age group of 18-24. The mean age of the participants was 25.87 (SD±4.34). Nearly one-third 31.3% (126) of the women have 2 children.

There were 281 (69.9%) women of Sidama ethnic group and the majority 319(79.4%) of women were of the Protestant religion. The median monthly income of the respondents was 3000 ETB with (IQR 1500-5000 ETB) (which is nearly equal to the 128.73US dollar).

More than half 216 (53.7%) of the respondents were rural residents and also more than one-third of women 147 (36.6%) were not able to read and write. From every 10 women, four women were housewives 249 (61.9%). More than 75% of women had access to media (majorly television and radio). (**Table 1**)

Out of the total 402 women who participated in the study, 246 (61.2%) women gave birth in health institution whereas 156 mothers gave birth at home (**Figure 1**).

Women's reasons for delivering at home

The major women's reasons for home delivery were the experience of sudden onset of labor and customary to deliver at home or unnecessary to deliver in health facility accounted for 88 and 74 (n=156) respectively(**Table 2**).

Table-2 Distribution of women's reason to give birth out of health institution in Wondo Genet District, Ethiopia 2017 (n=156)

Reasons	Frequency	Percent (%)
Sudden onset of labor	88	56.40%
unnecessary to deliver in a health facility	74	47.40%
Previous safe home birth	53	34.00%
Family or husband do not allow	49	31.40%
Too far or no transportation	48	30.80%
The absence of a female health worker	46	29.50%
Too much cost to deliver in the health facility	2	1.30%

(This table is multiple response sets, therefore, percent of the case do not add to 100%, percent of the case is n\|f)

Antenatal Care and Pregnancy Outcome

Regarding birth outcome, 388 (96.5%) women experienced normal birth outcome for their last delivery. More than half 226 (56.2%) of women decided the place of delivery by themselves and followed by the husband giving the decision where the women should give birth [89 (22.1%)]. One fourth, 143(25.3 %*) of the women reported a decrease in fetal movement as a danger sign of pregnancy and followed by 124 (21.9%) reporting vaginal bleeding and also 158(39.3%) women did not know any of the danger signs during pregnancy. Majority of the women 342(85.1%) had ANC visit at least once and more than four in ten 158(46.2%) had ANC visit 4 times during pregnancy for their most recent live birth. Among these, 288 (71.6%) and 39(9.7%) women had their ANC follow up in the second and first trimester respectively

Nearly from every ten women, eight women (79.6%) got advice about the importance of institutional delivery during their ANC visit. With regard to the perceived level of satisfaction during ANC care, 294 (73.1%) women reported that they were satisfied.

Approximately three fourths 299 (74.4%) women believed that the information given to health professional during service were kept confidential and 293 (72.9%) women considered providers maintained the privacy of the clients during care (**Table 3**).

Table 3: Antenatal Care and Pregnancy Outcome of women for the choice of place of delivery in Wondo Genet District, Ethiopia 2017.

Determinants of institutional delivery

On bivariate logistic regression analysis, each independent variable was entered with the outcome

Variables	Categories	No_ (%)
Past birth outcome	Normal	388(96.5)
	Abnormal	14(3.5)
Last pregnancy planned	Yes	324(80.6)
	No	78(19.4)
Number of living children	1-2	199 (49.5)
	3-4	133 (33.1)
	>4	70 (17.4)
History of stillbirth	Yes	34(8.5)
	No	368(91.5)
History of abortion	Yes	42(10.4)
	No	360(89.6)
Antenatal care visit for last pregnancy	Yes	342(85.1)
	No	60(14.9)
First antenatal care booking (n=342)	< 4 months	39(9.7)
	4-6 months	288(71.6)
	>6 months	8(2.3)
	I do not know	7(2)
Frequency of ANC visit(n=342)	1-3 times	184(53.8)
	4 and more	158(46.2)

variable to see their association. Variables which fulfilled all the assumptions were selected by the model for multiple logistic regression. This study revealed that women who were unable to read and write were seven times less likely to give birth in a health facility compared to women who have secondary and above educational attainment[AOR=0.14, CI, 0.03-0.68].

Women with average monthly income of more than 3000 ETB were eight times more likely to deliver in a health facility compared to women with a monthly income of less than 3000 ETB [AOR=8.35 CI, 3.6-19.4]. Planned pregnancy was an important predictor of institutional delivery. Table 4 showed that the odds of giving birth in a health facility are nearly three times higher among women who have planned pregnancy compared to women whose pregnancies were not planned [AOR=2.6 CI,1.2-6.6].

Direct relationship was observed between frequency of ANC follow up and institutional delivery which means women who have ANC follow up of four and more times were four times more likely to deliver in health facilities compared to mothers who have ANC follow up of less than four times [AOR=4.14 CI,2.0-8.6].(Table 4)

Discussion

The study investigated 402 women who had delivered within the preceding 12 months in the Wondo Genet District of Ethiopia to assess determinants of choice of place of delivery. About three-fifths (61.2%) delivered in health facilities while the remaining two-fifths (38.8%) delivered at home. Women were more likely to choose to have facility delivery if the level of education was secondary level of education or higher; if the average monthly income was > 3,000 ETB (US\$ 128.73); if the pregnancy was planned; if they had 4 or more antenatal visits and if they lived less than 5 km from the health facility. Being unable to read or write strongly influenced the decision to deliver at home.

Regarding the age of respondents, 61.2% of women were in the age group of 25–34 years. This is nearly similar to a study done in rural Bangladesh[23] and a study conducted in Tanzania[24]. But it is higher than a study done in rural Kenya which found 40% of women aged 25–34 years old [25]. This variation may be due to the latter study having very large sample size which may result in a large number of other age group women and the other explanation for the discrepancy may be due to the latter study being a community-based study.

Concerning the educational status of women, the current study showed 36.6% of women were not able to read and write and did not attend formal education. This is very high compared to a study done in northern Ibadan, Nigeria in which only 17.7% of women had no formal education[26]. The explanation for this difference can be sample size difference the, later study used only 231 participants and the other reason may be the later study is done in government and a private hospital in which more educated women can be found while the present study is done at district level. The literacy level of reproductive age of women of the two countries vary considerably hence this can be also the other reason for the difference[27].

The current study found 85.1% of women have ANC visit at least once. This is relatively comparable with a study done in Dodota District, Oromia region which found 82% of women had ANC visit for their recent pregnancy[28]. But this finding is higher than a study done in Sekela District, Northwest Ethiopia which found only 44 % of women had one ANC visit [8]. This discrepancy may be due to time variation between the two studies. Currently, women's knowledge of the importance of having ANC visit is relatively better

and also currently women have better access to information and media, therefore they are more likely to be better informed and educated. The other reason may be the latter study (study done in Sekela District) was a community-based study in which there will be a lesser chance of finding women who have a history of ANC visit.

The present study found the prevalence of institutional delivery for the district was 61.2% which is higher than the study done in the Gurage zone which was 31% [29]. This difference may be due to study time difference (5 year), the time difference may affect the prevalence of institutional delivery as in recent times, government and non-government bodies have given more emphasis for pregnant women to reduce maternal complication and death and the other reason can be because it was community-based study in which high number of mother who delivers home can be found in the community. This figure is higher than national demographic health survey, EDHS 2016 in which reported institutional delivery as 26%. The difference may be due to EDHS requesting for women's experience 5 years prior to the survey, thus retrospective assessment of their place of delivery may be affected by time variation.

Beside this EDHS used household survey in which a large number of a mother who delivered at home may be found but current study used institution based assessment.

The prevalence of institutional delivery in this study was lower than a study done in three districts of Tanzania, which found that 74.5% of the women deliver in a health facility[11]. This difference may be due to the difference in socio-demographic characteristics of respondents.

The high prevalence of institutional delivery in this study may be attributed to all service and care related to delivery being totally free of charge in all levels of governmental health facility throughout the country.

The present study found that secondary and above educational attainment of the women was a significant determinant of institutional delivery. This finding is consistent with other studies in which relatively educated women consistently utilize health facility for delivery[10,8,25,28] As most literature indicated, educated women might have access to modern information particularly related to the importance and safety of institutional delivery, have access and control to resources, and have the power to make decision at household level.

Average monthly income of more than 3000 ETB was an important predictor of institutional delivery in this study. Women who have an average monthly income of greater than the median income of the respondents were eight times more likely to deliver in a health facility. This is consistent with many other studies [11 13, 17, 18]. All these studies found that women with better economic status were more likely to deliver in a health facility.

It is understandable that socioeconomic difficulty can have an undesirable effect on maternal health and that indicators such as level of household wealth and level of education are associated with women's utilization of all maternal health care services; women with better income take advantage to visit health facility for maternal and other health services [14].

The present study found that the odds of giving birth in health institution are four times higher among mothers who have planned pregnancy than mother who has an unplanned pregnancy. This is similar to study done in Addis Ababa which found the odds of giving birth in a health facility is 2 times higher among mother who has planned pregnancy (AOR = 2.11) compared to mothers with an unplanned pregnancy [30]. But a study done in Bahir Dara city administration found that planned pregnancy is not a statistically significant factor for institutional delivery[31]. When women have planned a pregnancy, it is believed that they will be ready economically and psychologically. Therefore the women take the initiative to deliver in the health facility and to have a healthy baby. Beside this woman with planned pregnancy are more likely to be educated and have better accesses to information which may lead to facility delivery.

Despite the significant findings made in our study, the limitation of the data used is worth mentioning. Thus, by relying on a cross-sectional data, it is impossible to account for unobserved heterogeneity. Moreover, associations found between the dependent and the explanatory variables may vary over time.

Women could participate in this study if they had delivered within 12 months, there is the possibility of recall bias in that the women might not have been able to remember circumstance surrounding an event that happened several months prior to the survey.

Conclusion

The prevalence of women gave birth in health institution was 61.2% in study area. The factors associated with institutional delivery were women's educational status, the average monthly income of the family, the frequency of ANC, planned pregnancy and were important determinants of institutional delivery in the current study. Therefore; we recommended to the district health office should work on myth and misconception about institutional delivery. Appropriate information, education, and communication is a vital strategy to enhance the knowledge of the women and help them to take the initiative to visit health facility. Since most rural women have given birth in their home, more emphasis should be given for women who reside in rural areas. Women's education is vital for empowering women which enable them to take a positive step for their maternal and family health. Enhancing the existing adult education program also should be considered as an interventional method for addressing illiterate mothers. The district should utilize intensively health extension workers to disseminate information about the relevance of facility-based delivery for childbearing mothers by giving more emphasis to rural residents. In addition to this, the district can use selected groups in the community like religious leaders, husbands, community elders to bridge the knowledge gap.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the University of Ibadan, University College Hospital (UCH) ethical committee and ethics referral No_ UI/EC/17/0015. The study subjects provided written consent to

participate in the study after receiving information about the purpose of the study, risks and benefits, and their rights. Assurance of privacy during the interview and confidentiality of information was given.

Consent for publication

“Not applicable”.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interest

The authors declare that they have no competing interests.

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Author's contribution

All the authors contributed substantially to this manuscript. Author 1.HU: Initiated the research, wrote the research proposal, conducted the research, did data entry, analysis and wrote the manuscript. Author 2 TT supervised the research from proposal to the final manuscript and participated in data entry, data analysis, write up and edited manuscript. Both authors read and approved the final version of this manuscript and have equally contributed to its content.

Abbreviations

ANC – Ante Natal Care, EDHS- Ethiopian Demographic Health Survey, ETB- Ethiopian Birr, ICPD – International Conference on Population Development, MMR – Maternal mortality ratio, MDG – Millennium Development Goals, PAULESI- Pan African university life and earth science institute, SBAs – Skilled Birth Attendants , SSA- Sub Saharan Africa, SDG- Sustainable Development Goals, SPSS – Statistical Package for Social Science, TBA – Traditional Birth Attendants, UNFPA – United Nations Fund for Population Activities, WHO – World Health Organization.

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Tables

Table-1: Socio-demographic characteristics of women in Wondo Genet district, Ethiopia 2017.

(n= 402)

Variables	Categories	Frequency (%)
Age groups	18-24	133 (33.1)
	25-34	246 (61.2)
	>35	23 (5.7)
Place of residence	Rural	216 (53.7)
	Urban	186 (46.3)
Marital status	Married	398 (99)
	Divorce	2 (0.5)
	Widowed	2 (0.50)
Religion	Protestant	319 (79.4)
	Orthodox	49 (12.2)
	Muslim	33 (8.2)
	Others*	1(0.2)
Ethnicity	Sidama	281(69.9)
	Wolaita	17(4.2)
	Amhara	37(9.2)
	Gurage	27 (6.7)
	Oromo	34(8.5)
	Others *	6(1.5)
Educational status of women	No formal education	147(36.6)
	Primary education	191(47.5)
	Secondary and above	64(15.9)
Educational status of husband	No formal education	79(19.7)
	Primary education	225(56)
	Secondary and above	98(24.4)
Occupation status of women	Housewife	249(61.9)
	Farmer	90(22.4)
	Government employee	63(15.7)
Occupation status of husband	Farmer	178(44.3)
	Government employee	61(15.2)
	Merchant	163(40.5)
Access to media	Yes	304(75.6)
	No	98(24.6)

(*Religion other=Catholic, *Ethnicity other= Kenbata and Hadiya)

Table 4: Multiple logistic regression analysis for the choice of place of delivery among mothers in Wondo Genet District, 2017

Variables	Institutional delivery	Home delivery	COR, 95% CI	AOR, 95% CI	P-Value
Age (in years)					
18-24	97	36	5.05 (1.97, 12.9)	1.69(0.3, 9.5)	0.55
25-34	141	105	2.52 (1.03, 6.16)	1.67(0.35, 7.9)	0.52
≥35(ref)	8	15	1	1	
Place of residence					
Urban	152	34	5.802 (3.7, 9.2)	2.0(0.93, 4.46)	0.07
Rural (ref)	94	122	1	1	
Educational status of women					
Not able to read and write(ref)	61	86	0.047(.016, .13)	0.14(0.03, 0.68)	0.015*
Primary and above	125	66	0.12(.044, 0.36)	0.24(0.05, 1.0)	0.06
Secondary and above	60	4	1	1	
Occupation status of women					
House wife (ref)	133	116	1	1	
Farmer	61	29	1.83(1.1, 3.0)	1.43(0.6, 3.46)	0.42
Government employee	52	11	4.12(2.0, 8.2)	0.82(0.3, 2.3)	0.72
Average monthly income					
≤ 3000 ETB (ref)	88	146	1	1	

> 3000 ETB	158	10	26.2(13.1, 52.35)	8.35(3.6, 19.4)	.000*
Access to media					
Yes	216	88	5.56 (3.38, 9.13)	1.5(0.63, 3.5)	0.35
No (ref)	30	68	1	1	
Last pregnancy planned					
Yes	224	100	5.7(3.3, 9.85)	2.6(1.1, 6.6)	0.042*
No (ref)	22	56		1	
Number of living children					
1-2	148	51	6.77(3.7, 12.36)	2.9(0.94, 9.5)	0.06
3-4	77	56	3.2(1.73, 5.94)	1.75(0.58, 5.2)	0.32
>4	21	49	1	1	
The frequency of ANC visit					
1-3	102	82	1	1	
4 and more	140	18	6.25(3.53, 11.06)	4.14(2.0, 8.6)	0.000*
Distance from a health facility					
< 5 km	172	50	13.07(6.08, 28.1)	2.0(0.6, 7.2)	0.0251*
5 to 10 km	64	68	3.57(1.65, 7.77)	0.6(0.18, 2.2)	0.495

>10 km(ref)	10	38	1	1	
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(* is p <0.05 is significant,)

Figures

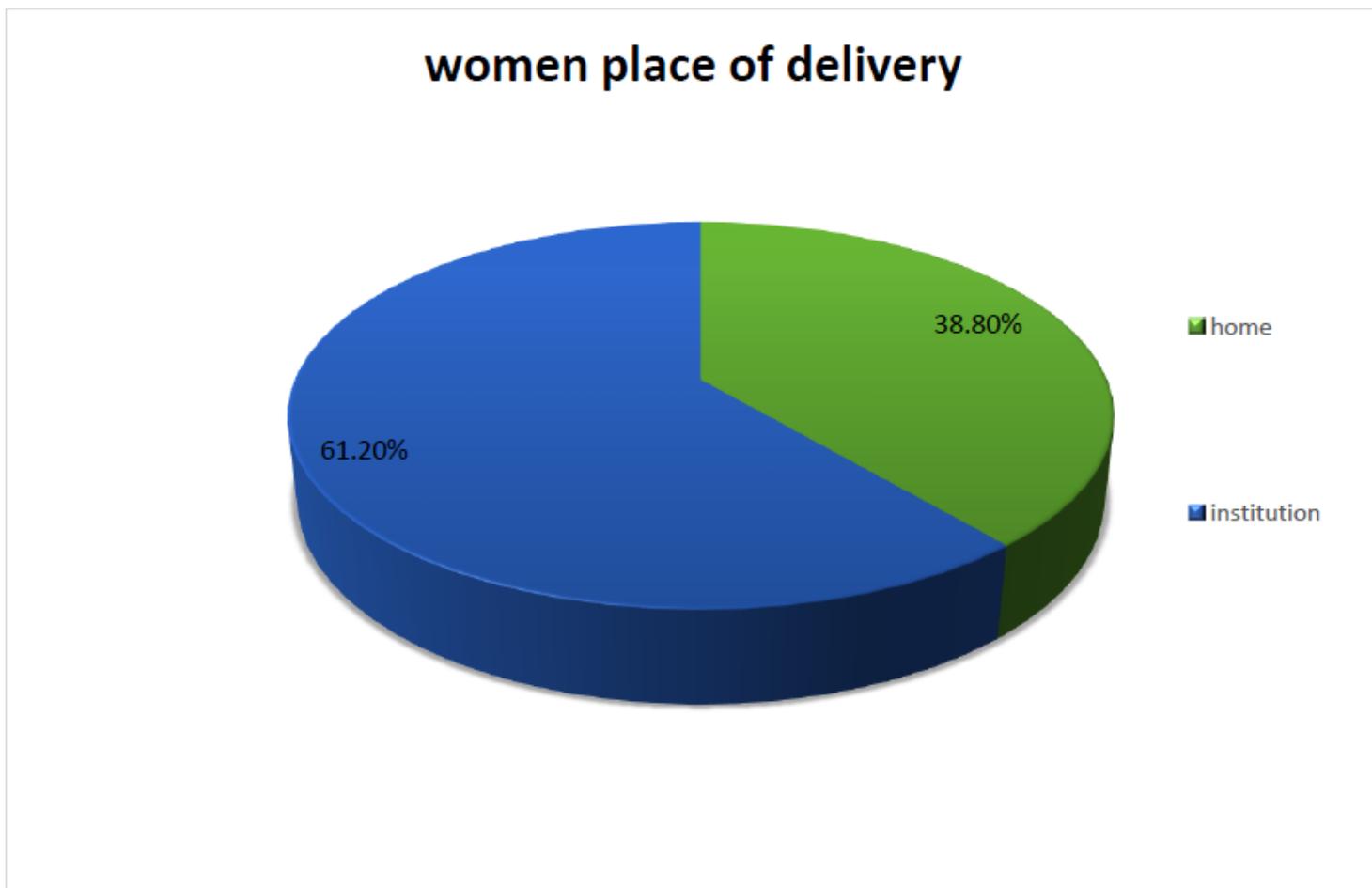


Figure 1

Women's place of childbirth in Wondo Genet District, Ethiopia, 2017

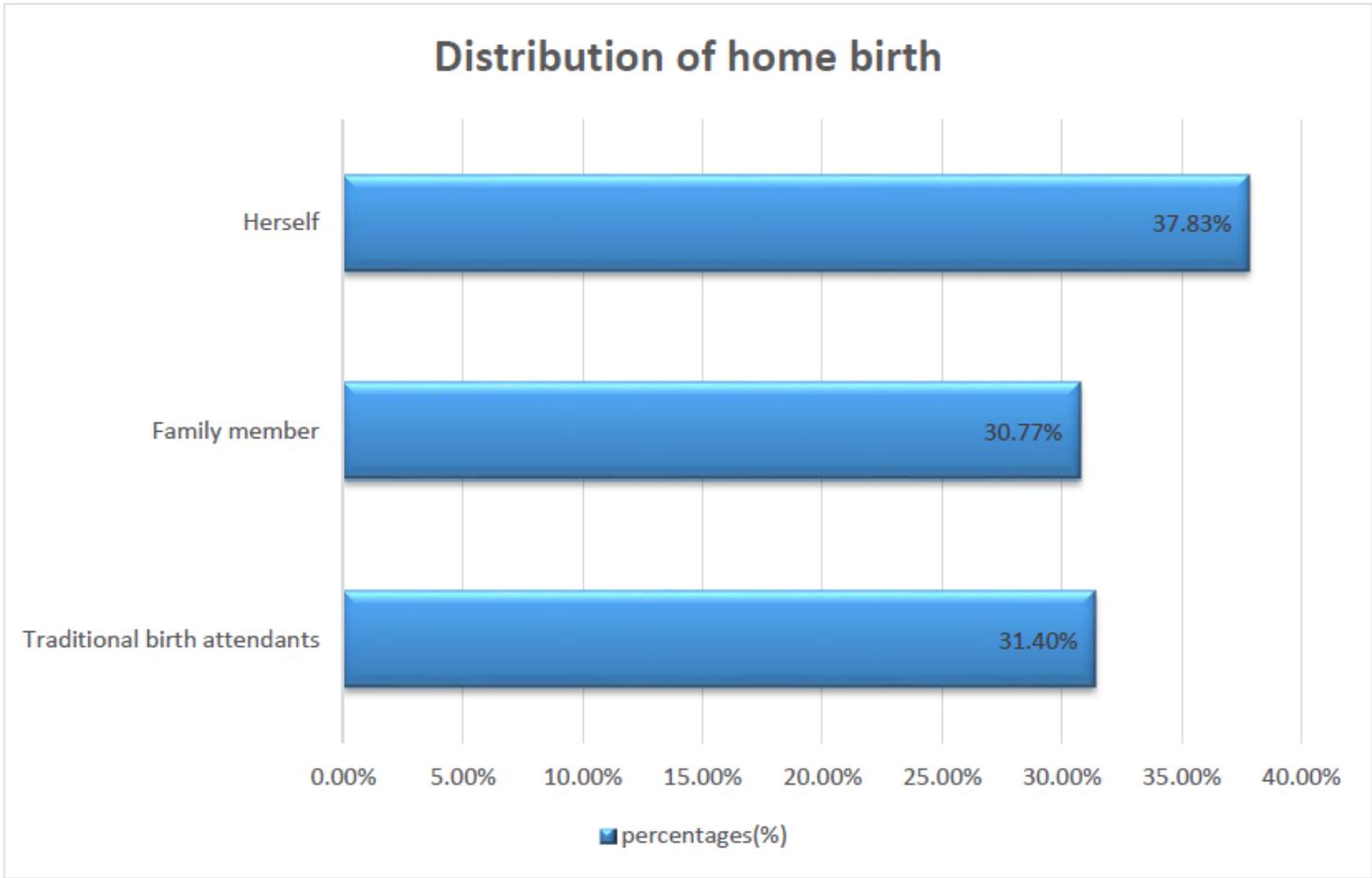


Figure 2

Distribution of women who attended a home birth in Wondo Genet District, Ethiopia 2017