Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Determinants of Skilled Birth Attendance Utilization Among Mothers Who Gave Birth In The Past 24 Months In Kembata Tembaro Zone

Eyassu Mathewos (eyumathi@gmail.com)
Wachamo University https://orcid.org/0000-0003-4137-1732
Belete Kassa
Angacha woreda health office

Research

Keywords: skilled birth attendant, utilization, Kembata Tembaro zone

Posted Date: April 20th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-391235/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Abstract

Background: *Skilled delivery is encouraged as a single most important strategy in preventing maternal and neonatal morbidity and mortality. It ensures safe birth, reduce both actual and potential complications and increase the survival of most mothers and newborns. Little is known on current factors that affect utilization of skilled birth attendance in the study area. Therefore this study was aimed identify determinants of skilled birth attendance utilization among women who gave birth in the last 24 months preceding the study*

Methods: *A community based cross-sectional study was employed among women who gave birth in the last 24 months prior to the survey in Kembata Tembaro zone from April 1 to 30, 2020. 624 study participants were recruited for the study as eligible study participants. Multi-stage stratified sampling was used to select three districts and one town administrative unit of the study area. The data were collected and verified for their completeness, edited, and coded. Multivariate analysis was performed using the back ward LR method to identify factors independently associated with dependent variable. Statistical significance was declared at p-value of less than 0.05 and the strength of statistical association was measured by adjusted odds ratios and 95% confidence intervals.*

Results: *In this study, 375(61.8%) women gave their last birth at health institutions being attended by skilled birth attendants. Place of residence [AOR (95% CI)=*0.33(0.215, 0.582)*], age at interview [AOR (95% CI=*3.41(1.572, 5.449)*], maternal education [AOR (95% CI)=*1.50(1.336, 4.193)*], history of still birth [AOR (95% CI)=*3.85(2.144, 6.905)*], maternal occupation [AOR (95% CI)=*3.35(1.793,6.274)*], husband occupation [AOR (95% CI)=*2.69(1.701,7.986)*], ANC visit [AOR (95% CI) =*4.62(3.124, 7.324)*], knowledge about obstetric complications [AOR (95% CI) =*3.10(1.371,5.214)*] and final decision maker about place of delivery [AOR (95% CI)=* 3.64(1.701,7.986)*] were significant with utilization of skill birth attendance.*

Conclusion: *In this study, about two fifth of the respondents were delivering in the home without using unskilled delivery attendant. Place of residence, age at interview, maternal education, history of still birth, maternal occupation, husband occupation, ANC visit, knowledge about obstetric complications and final decision maker about place of delivery were determinants of utilization of skilled attendant delivery.*

Background

According to the World Health Organization (WHO), “skilled birth attendants are accredited health professionals (such as midwives, doctors, or nurses) who have been educated and trained to proficiently manage normal (i.e., uncomplicated) pregnancies, childbirths and the immediate postnatal period, as well as handle the identification, management and referral of complications in women and newborns” (1). In an effort to reduce maternal mortality, the indicators of progress are proportion of births attended by skilled attendants and Maternal Mortality Ratio (MMR) (2). Skilled Birth Attendance (SBA) during labor, delivery and early post-partum period can significantly reduce both maternal and newborn morbidity and mortality by preventing or managing most obstetric complications (3). Providing skilled care at birth goes

hand in hand with the Sustainable Development Goals (SDGs) to reduce child mortality, particularly neonatal mortality (4). Since 2000, the United Nations' MDGs, which included a goal to improve maternal health by the end of 2015, has facilitated significant reductions in maternal morbidity and mortality worldwide (5). Despite more focused efforts made especially by low- and middle-income countries, targets were largely unmet in sub-Saharan Africa, where women are plagued by many challenges in seeking obstetric care (6).

Maternal mortality is unacceptably high and every day approximately 810 women died from preventable causes related to pregnancy and childbirth in 2017 (6). Sub-Saharan Africa and Southern Asia accounted for approximately 86% (254 000) of the estimated global maternal deaths in 2017 with sub-Saharan Africa alone accounting for roughly 66% (196 000) (7). Nearly 42.5% of infant deaths each year occur within the first week of life and are often due to a lack of or inappropriate care during pregnancy, delivery and the post-partum period (8). One third of nearly one million stillbirths occur during labour, and approximately 280,000 babies die of birth asphyxia soon after birth. About 60% of African women and their babies do not receive skilled care during childbirth and fewer receive effective postnatal care (9). This is also the crucial time for other interventions, especially prevention of mother-to-child transmission of HIV and initiation of breastfeeding (10).

In Ethiopia, poor access to SBAs is reflected by its MMR (11). According to the 2016 Ethiopian Demographic and Health Survey (EDHS), MMR was estimated to be 412 per 100,000 live births (12). Major causes of maternal deaths in Ethiopia are similar to most developing countries such as infection, hemorrhage, obstructed labor, abortion and hypertension that could be avoided if preventive measures were taken and adequate care is available particularly during pregnancy, childbirth and postpartum period through obstetric care services(13). Poor access to and use of skilled delivery services have been identified as a major contributory factor to high maternal and newborn mortality, which remains a major challenge to health systems and public health issue in the country (14).

Although skilled delivery has been promoted in Ethiopia, home delivery with traditional birth attendants is still common, primarily in rural area that is hard-to-reach (15). The 2016 EDHS showed that only 28% of live births in the 5 years before the survey were delivered by a skilled provider, 26% in the health facility whereas home delivery was 73% and 1% in other places. For rural women, the report showed that 80 percent of births to urban mothers were assisted by a skilled provider as compared to 21 percent in rural area. 80% of them delivered at home (16).

Based on National Reproductive Health Strategy, the country planned to increase the proportion of births attended by skilled health personnel either at home or in the facility to 60% (5). Despite the efforts being made by the Government and other stakeholders to mitigate the problems and subsequent consequences posed by SBA delivery, studies in different parts of the country are showing that most Ethiopian women are giving birth at home and skill birth attendance remains low (17, 18). To enhance utilization of SBA in the country, barriers during delivery among women need to be identified across the regions. Little is known on current magnitude of utilization of SBAs and its determinants in the study area. Therefore, this

study was aimed to assess extent of SBA utilization and attempts to explore its determinant that are assumed to be barriers among mothers who gave birth in the past 24 months in Kembata Tembaro zone, southern Ethiopia.

Methodology

Study area and period

A study was conducted in Kembata Tembaro Zone from April 1 to 30, 2020. The zone is located in S/N/N/P/R (South Nations, Nationalities and People republic) of Ethiopia and its capital town, Durame, which is located Southern, 293 kilometers away from Addis Ababa and western, 118 KM far from Hawassa, capital town of S/N/N/P/R government of Ethiopia. In this zone, there are 8 woreda health offices and 3 health administrative units, 1 general and 3 primary hospitals, 28 governmental and 3 non-governmental health centers, 136 health posts and 1170 different types of health professionals.

Study design

Community based cross-sectional study design was employed

Population

All women who gave birth in the last 24 months prior to the survey in the study area were the source population while selected women who had given birth in the last 24 months, irrespective of the outcome of the birth were included as study population

Sample size determination

To determine the sample size, two-population proportion formula was used and the following assumptions were considered. ANC visit during last pregnancy was considered as predictor factor for utilization of SBAs. Study subjects were categorized in to women who visited or not ANC during last pregnancy (19). ANC visit during last pregnancy gives the maximum sample size among other predictor variables such as having place of residence, educational status and etc. Based on the above assumptions and design effect of 1.5 and 5% non response rate, 624 study participants who gave birth in the past 24 months were selected for the study as eligible study participants.

Sampling procedures

Multi-stage stratified sampling was used to select three districts (Angacha, Doyogena and Kedida Gamela) and one administrative town, Durame from the total of eight districts and three administrative towns of the zone. First, the zone was stratified into rural districts and urban administrative towns, and then 15 kebeles were chosen by lottery method. House-to-house visit was carried out in selected kebeles to identify households with women who gave birth in the last 24 months prior to the survey and 13806 households were identified fulfilling eligibility criteria. By allocating the sample size proportionally to each kebele, systematic random sampling was used to select study subjects. If the houses were closed or the

mother was not present at the time of data collection, revisits were made until data collectors got the women for the data collection.

Operational definition

Skilled birth attendance delivery: The outcome variable, utilization of SBA delivery was assessed by asking the mother if she gave birth within the last 24 months assisted by professionally trained health worker having the essential midwifery skills to manage normal labour and delivery.

Knowledgeable on danger signs of pregnancy: A woman was considered as knowledgeable if she can mention at least three danger signs that could occur during pregnancy(17, 20)

Knowledgeable on danger signs of labour/childbirth: A woman was considered as knowledgeable if she can mention at least three danger signs that could occur during Labor/childbirth and not knowledgeable if otherwise (17, 20).

Knowledgeable on key danger signs of postpartum: A woman was considered as Knowledgeable if she can mention at least the three danger signs that could occur during postpartum period /after delivery and not knowledgeable if otherwise (17, 20).

Data collection procedures

Data were collected using self administered structured questionnaires that were developed after reviewing different relevant literatures (17, 19–22). Socioeconomic and demographic factors, obstetric factors (parity, complications experienced like prolonged labor and history of still birth), ANC follow up, husband factors (occupation and education), knowledge and attitude on key danger signs of pregnancy, and labor/childbirth were included as contents of the questionnaires. Six Bsc nurses and one health officer were recruited to collect the data and supervise the data collection process respectively. Two days training was provided concerning the purpose of study and method of data collection. The supervisors were informed about the strict supervision and cross-checking procedures about the data abstraction forms and completeness at the end of the day. The principal investigator supervised the overall activities.

Data Quality control

The quality of data was assured by proper designing of the questionnaires and by training the data collectors and supervisors for two days before the data collection. Every day after data collection, questionnaires were reviewed and checked to maintain its accuracy and completeness by the supervisors. The English version questionnaires were translated into Kambatissa and Amharic languages (local languages) and again translated back to English version and comparisons was made on the consistency of these versions. Data collection tools were pretested at 5% of sample and it was done to pretest the tool to identify any weakness in the structuring of the research instruments prior to its actual use in data collection. Following the pre-test, the tools were improved in terms of their clarity, understandability and simplicity in collecting the data required for the study.

Data management and statistical analysis

Data was checked for its completeness; edited, coded and cleaned then it was entered into Epidata 3.1 and exported to SPSS version 20 for analysis. Descriptive statistics was computed and results were presented by tables, graphs and numerical summary was used to present the quantitative results. Before bivariate analysis, all variables were checked by cross tabulation for fulfilling chi-squared test assumptions of 80% expected frequency greater than five and all cells expected frequency greater than one. Variables with p-value of < 0.25 in bivariate analysis were considered as candidates for multivariate analysis. Multivariate analysis was performed using back ward LR method to identify factors independently associated with dependent variable. Statistical significance was declared at P-value of less than 0.05 and the strength of statistical association was measured by adjusted odds ratios and 95% confidence intervals. Hosmer-Lemeshow goodness-of-fit statistics were used to check the goodness of fit of the model with a p-value of 10%

Results

Socio-demographic and socio-economic characteristics of the respondents

In this study, out of 624 study subjects sampled, 607 of them provided information with a response rate of 97.3%. About two third of study subjects were in the age range of 25–34 years with a mean and standard deviation age of 27.3 and 5.6 respectively and 479(68.6%) were residing in the rural area. Regarding educational level of respondents, about half, 306(50.5%) of them attended secondary and above school. (Table-1)

Obstetric characteristics of the respondents

Among the respondents, 187(30.8%) [Rural, 133(21.9%) and urban, 54(8.9%)] married before the age of 18. Regarding age at first pregnancy, 181(29.8%) respondents [rural, 145(23.9%) and urban, 36(5.9%)] were pregnant before the age of 20. More than half, 354 (58.3%) didn't follow up ANC during their last pregnancy and those who had ANC follow up history, only 192(31.6%) had four visits and above. Among the respondents, about half, 232(49.1%) reported that they gave their last birth at home and more than half, 168 (56.4%) were attended by TBAs. (Table-2) Regarding the reason for home delivery, nearly three fourth, 232(77.9%) of the respondents reported the main reason for home delivery as feeling of more comfortable. (Figure-1)

Accessibility characteristics of respondents

About half of study participants, 305(50.2%) had health facility within one to two hour distance while 220(36.2%) and 82(13.5%) had health facility within one hour and less than one hour distance respectively. Regarding availability of functional media, 351(57.8%) and 109(18%) had functional media (radio and/or television) but 147(24.2%) had no functional media at all.

Knowledge on key obstetric danger signs during pregnancy, labor and child birth, and after delivery

In this study, 289(47.6%), 498(82.0%), 326(53.7%), 252(41.5%), 208(34.3%) and 310(51.1%) mentioned Severe headache, blurred vision, Vaginal bleeding, Severe abdominal pain, Loss of consciousness and Convulsion during pregnancy respectively. Regarding danger signs during labour and child birth, 421(69.4%), 539(88.8%), 559(92.1%), 425(70%) and 369(60.8%) mentioned severe vaginal bleeding, prolonged labor, retained placenta, loss of consciousness and convulsion respectively. Moreover, 538(88.6%), 460(75.8%), 424(69.9%), 325(53.5%) and 356(58.6%) mentioned retained placenta, excessive bleeding, abdominal pain, vaginal discharge and severe headache respectively. Based on above signs, about half, 315(51.9%) respondents were knowledgeable on obstetric complications related to Labor and child birth. (Table-3)

Women's, husbands' and family related factors

Regarding decision on place of delivery, about two fifth of the respondents, 256(42.2%) reported that the decision was made by themselves [urban 75(39.3) and rural 181(43.5)]. Regarding mothers' preferences about place and attendant of delivery, more than half, 347(57.2%) and 279(46%) preferred home delivery and SBAs respectively (Table-4)

Utilization of skilled attendance delivery

In this study, 309(50.9%) women gave their last birth at health institutions being attended by skilled birth attendants [Urban, 134(43.4%) and rural, 175(56.6%). (Figure-1)

Determinants of skilled birth attendance utilization

Among the variables in bivariate analysis, 14 of them had a p-value of less than 0.25; hence they were candidates for multivariate analysis. They were again entered in to multiple logistic regression models to obtain variables which were independently associated with outcome variable, utilization of skilled birth attendance. The variables with p-value of less than 0.05 in multivariate analysis were taken as significant predictors of outcome variable.

Therefore, the final model showed that there was statistically significant association between ANC follow up and utilization of SBA delivery (p-value < 0.001) so that, mothers who had at least four ANC visits were 4.62 times more likely to utilize skilled birth attendance than those who had less than four ANC visits during their last pregnancy [OR (95% CI) = 4.62(3.12, 7.32)]. In this study, it was found that there was negative association between place of residence and utilization of skilled birth attendance (p < 0.001). Mothers who lived in rural area were 67% less likely to utilize SBA than those who lived in urban area [OR (95% CI) = 0.33(0.22, 0.58)]. (Table-5)

Discussion

Delivery assisted by skilled providers is the most proven intervention in reducing maternal mortality and one of the targets of United Nations' (UN) Sustainable Development Goals (SDG) (23). This community-based study identified very important determinants that are related to skilled birth attendant utilization among study subjects. The findings of the study revealed that the proportion of women who delivered in the facility assisted by skilled birth attendant was 51.8%. This finding is higher than study conducted in different parts of Ethiopia (17, 19, 24, 25). This might be because of increasing in functions of multipurpose health extension workers on improvements in ANC follow up and facilitating a referral services to HCs and hospitals for delivery service assisted by skilled healthcare provider. Health extension workers improved the utilization of maternal health services including skilled birth attendance delivery by bridging the gap between communities and health facilities (26). However, it was lower than study conducted in rural southern Ghana where 68.8% mothers were assisted by skilled person during their last delivery (27). The difference could be explained by the fact that women in those countries had better socio-economic status.

In this study, place of residence was statistically significant and negatively associated with outcome variable. The result showed that mothers who lived in rural area were less likely to utilize skilled birth attendant than those who lived in urban area. This finding is supported with studies conducted in different regions of the country (17, 19, 22, 25, 28–30). The possible reason might be prevailing of traditional thinking/views, presence of low education and income, lack of awareness on maternal health services like ANC, birth preparedness and complication readiness, remoteness/lack of transportation to the health facility for mothers in rural than urban area (31). History of still birth was another predictor of utilization of SBA. This study revealed that mothers who had previous history of still birth were more likely to utilize SBAs than mothers who didn't have still birth. The finding from cross-sectional survey conducted in Dembecha district of Northwest Ethiopia shows the negative association (24). The possible reason might be the fact that ladies who had still birth in their life time may have a fear to develop the complication during the delivering of their child and prefer skilled provider to give birth in the health facility.

Older women were more likely to give birth assisted by skilled birth attendants than young women. This finding is similar with study done in rural residents of Southern Ghana (27). However, the finding opposes other studies conducted in Raya district of North Ethiopia and Ghana which found as young women were more likely to utilize SBA than older women (19, 32). This might be older women were able to consider that giving birth at home is risky as they had experienced previously and they might get additional information regarding risk of home delivery with TBAs during different visits (child care, immunization services and etc) to health facilities. The higher age of women can influence their status in the society which has been found to increases the ability of decision making (33).

Mothers' educational status was other predictor of utilization of skilled birth attendant which was statistically significant. Mothers who had ability to read and write as well as mothers who learned secondary and above were more likely to utilize SBA than those who were unable to read and write. This finding is consistent with report from EDHS 2016 which found strong correlation between mothers'

educational status and skilled birth attendant delivery. EDHS 2016 found 17% of births to mothers with no education were assisted by a skilled provider as compared to 93% and 92%, respectively of births to mothers with more than a secondary education (16). This might be because of educated women are likely to make their own healthcare decisions more and seek proper health care than their counterparts. In this study, parity was negatively associated with SBA utilization.

Maternal occupation is an important predictor of utilization of SBAs. The study showed that both the government employees and merchants were more likely to utilize skilled birth attendance delivery than house wives. It was supported by study conducted in Northern Ethiopia and rural area of southern Ghana, which showed an important association between occupational status of mothers and utilization of SBA delivery (19, 21). Mothers with government employed husband were also more likely to utilize skilled birth attendance delivery than farmers. This finding was supported with study done in Gamo Gofa zone, southern Ethiopia (20). The possible reason might be due to the fact that those government employee and merchant ladies and their husbands might have more income and awareness for identifying skilled provider and place of delivery, searching for money for incurred costs, finding transportation, and other things which may contribute to home delivery.

In this study, it was found that ANC visit during last pregnancy of the respondents was significant with utilization of skilled birth attendance delivery. Women who had ANC visit with skilled professional during their last pregnancy were more likely to deliver in health facility with skilled birth attendant than those who had no visit. This finding was also supported with the report from EDHS of 2011 and other studies conducted in different part of Ethiopia (17, 19, 28, 34). This might be women during Antenatal care (ANC) follow up can obtain counseling services on birth preparedness including place of delivery and selection of birth attendant and complication readiness. Antenatal care (ANC) from a skilled provider is important to monitor pregnancy and reduce morbidity and mortality risks for both the mother and child during pregnancy, delivery, and the postnatal period so that those mothers who had history of ANC follow up can easily give attention to deliver in the HF with SBAs (16).

Knowledge regarding health problems during pregnancy and child birth was other important predictor of skilled birth attendance delivery. Those respondents who had knowledge were more likely to utilize skilled birth attendance delivery as compared to those who didn’t have knowledge on danger sign of pregnancy and child birth. It is consistent with studies conducted Raya district of North Ethiopia and Gura Dhamole Woreda, Bale zone, southeast Ethiopia (17, 19). Women can take action by seeking appropriate health care by recognizing danger signs during pregnancy which can help them to deliver in the health facility with skilled birth attendant (35).

Moreover, Final decision maker about place of delivery in last pregnancy was another important predictor which is significantly associated with utilization of skilled attendant delivery. Respondents who jointly (both wife and husband) decided about place of delivery were more likely to utilize SBA delivery as compared to respondents who decided herself about place of delivery. This finding is supported with different studies conducted(17, 19, 24, 28, 36). If women are encouraged by husbands, they would also

get financial and other social supports to go to health facility which will allow them to have health provider assisted delivery (37). In contrast to this, studies conducted in western Ethiopia have showed that women whom the decision on place of delivery made by themselves were two times more likely gave birth in health institution with SBA compared to mothers whom decision made by others on place of delivery(38).

Limitations Data was collected from mothers about their experience since 24 months that might lead to a recall bias. Due to the cross-sectional study design, no causal inferences can be made regarding the temporal association between the potential factors and utilization of SBAs

Conclusion

In this study, about half of the study subjects gave birth in the HF attended by skilled birth attendants. Women's place of residence were negatively associated while maternal education, maternal and husband occupation, Age at interview, ANC visit, knowledge about obstetric complications during and after child birth, final decision maker about place of delivery and history of still birth were positively associated with outcome variable, utilization of SBA.

Abbreviations

ANC- Antenatal Care

CI- Confidence Interval

DHS-Demographic Health Survey

EDHS- Ethiopian Demographic Health and Survey

ETB-Ethiopian Birr

FMOH -Federal Ministry of Health

MDGs- Millennium Development goals

MMR- Maternal Mortality Ratio

PNC- Postnatal Care

SBA- Skilled Birth Attendants

SPSS -Statistical Package for Social Sciences

TBA-Traditional Birth Attendant

WHO-World Health Organization

Declarations

Ethics Approval and consent to participate

Ethical approval of this study was obtained from the institutional review board of Pharma College of Hawassa campus and SNNPR health bureau research and technology core process. Then data was collected after getting written consent from Kembeta Tembero Zone health department. After clear discussion about the actual study or explaining of purpose of the study, verbal informed consent was obtained from each study subjects and privacy was maintained during data collection.

Consent for publication: "Not applicable"

Availability of data and materials

The data sets used and/analyzed during this study are available from the corresponding author up on reasonable request.

Competing interests

The authors declare that they have no competing interests

Funding: The authors received no funding for the present study.

Authors' contributions

EM carried out the conception and design, developed the methodology, carried out the analysis, and prepared the manuscript. BK participated in the acquisition of data, carried out the analysis, participated in interpretation of data and drafting. Both read, revised, and approved the manuscript for publication.

Acknowledgements

It gives our pleasure to express our heartfelt gratitude to Pharma College, Hawassa Campus and SNNPR health bureau research and technology core process for approval of ethical clearance and technical support. We wish to express our appreciation to all who made their effort for the accomplishment of this research project possible. We also acknowledge our study participants for providing the necessary information and the data collectors for collecting the data carefully.

References

1. WHO, UNICEF, UNFPA, The World Bank TUNPD. Trends in Maternal Mortality : 1990 to 2013. 2013.
2. UNITED NATIONS. The Millennium Development Goals Report. 2007.
3. Graham WJ, Bell JS. Can Skilled Attendance at Delivery Reduce Maternal Mortality in Developing Countries ? 2018.

4. World Health Organization(WHO). Monitoring Health for the Sustainable Development Goals (SDGs). 2016.
5. IEG World Bank/IFC/MIGA. Delivering the Millennium Development Goals To Reduce Maternal and Child Mortality:A Systematic Review of Impact Evaluation Evidence. 2016.
6. World Health Organization(WHO). Maternal mortality. 2019.
7. WHO, Unicef, UNIFPA, World Bank Group UN. Trends in 2000 to 2017 Trends in Maternal Mortality : 2000 TO 2017. 2017.
8. Darmstadt GL, Cc A, Cousens S, Sibley L, Bhutta ZA. 60 million non-facility births : Who can deliver in community settings to reduce intrapartum-related deaths ? Int J Gynaecol ogy Obstet. 2012;107(Suppl 1).
9. Pearson L, Larsson M, Fauveau V, Standley J. Opportunities for Africa's Newborns. 2020. 64-75 p.
10. WHO(World Health Organization), USAID, UNFPA, unicef S the children. Opportunities for Africa ' s Newborns:Practical data, policy and programmatic support for newborn care in Africa. 2018.
11. Yifru B, Berhan Y, Berhan A. Review of maternal mortality in Ethiopia: A story of the past 30 years. Ethiop J Heal Sci. 2013;
12. Central Statistical Agency (CSA) [Ethiopia] and ICF. Ethiopia Demographic and Health Survey 2016. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF. 2016;
13. Sageer R, Kongnyuy1 E, Adebimpe2 WO, Omosehin1 O, & EAO, […], et al. Causes and contributory factors of maternal mortality: evidence from maternal and perinatal death surveillance and response in Ogun state, Southwest Nigeria. BMC Public Heal. 2017;17(160).
14. Africa Progress Panel. Maternal Health: Investing in the Lifeline of Healthy Societies & Economies. 2010.
15. Mekdes Gurara VD. Traditional birth attenndants' roles and homebirth choices in Ethiopia. Women and Birth. 2020;33(May 2015):e464–72.
16. Central Statistical Agency (CSA) [Ethiopia] and ICF, Addis Ababa E. Ethiopian Demographic and Health Survey: Key Indicators. 2016.
17. Ayele GS, Melku AT. Utilization of skilled birth attendant at birth and associated factors among women who gave birth in the last 24 months preceding the survey in Gura Dhamole Woreda , Bale zone , southeast Ethiopia. BMC Public Health. 2019;19(1501):1–14.
18. Kea AZ, Tulloch O, Datiko DG, Theobald S, Kok MC. Exploring barriers to the use of formal maternal health services and priority areas for action in Sidama zone , southern Ethiopia. BMC Pregnancy Childbirth. 2018;18:1–12.
19. Tadese F, Ali A. Determinants of Use of Skilled Birth Attendance among Mothers Who Gave Birth in the Past 12 months in Raya Alamata District , North East Ethiopia Clinics in Mother and Child Health. Clin Mother Child Heal Tadese. 2014;11(2):9–15.
20. Mensa M, Belijo MN. Status of Skilled Birth Attendance Utilization and Determinants Among Women of Child Bearing Age in Chencha Woreda , Gamo Gofa Zone , Southern. Junier Online J Case Stud.

2017;4(3).
21. Manyeh AK, Akpakli DE, Kukula V, Ekey RA. Socio - demographic determinants of skilled birth attendant at delivery in rural southern Ghana. BMC Res Notes. 2017;(July).
22. Markos D, Odo DB, Shifti DM. Institutional Delivery Service Utilization and Associated Factors among Child Bearing Age Women in Goba Woreda , Ethiopia Institutional delivery service utilization and associated factors among child bearing age women in Goba Woreda , Ethiopia. 2014;(October).
23. WHO, UNFPA, UNICEF, ICM, ICN F and I. Definition of skilled health personnel providing care during childbirth : the 2018 joint statement by WHO , UNFPA , UNICEF ,. 2018.
24. Kidanu S, Degu G, Tiruye TY. Factors influencing institutional delivery service utilization in Dembecha district , Northwest Ethiopia : A community based cross sectional study. BMC Reprod Heal. 2017;1–8.
25. Abdella Amano, Abebaw Gebeyehu ZB. Institutional delivery service utilization in Munisa Woreda. 2012;
26. Jackson R, Hailemariam A. The Role of Health Extension Workers in Linking Pregnant Women With Health Facilities for Delivery in Rural and Pastoralist Areas of Ethiopia. Ethiop J Health Sci. 2016;26(5).
27. Manyeh AK, Akpakli DE, Kukula V, Ekey RA, Bana SN, Adjei A, et al. Socio - demographic determinants of skilled birth attendant at delivery in rural southern Ghana. BMC Res Notes. 2017;2017:1–7.
28. Fekadu M, Regassa N. Skilled delivery care service utilization in Ethiopia : analysis of rural-urban differentials based on national demographic and health survey (DHS) data. 2014;14(4).
29. Ayele DZ, Belayihun B, Teji K, Ayana DA. Factors Affecting Utilization of Maternal Health Care Services in Kombolcha District , Eastern Hararghe Zone , Oromia Regional State , Eastern Ethiopia. Hindawi. 2014;2014(2001).
30. Addisalem Fikre MD. Prevalence of institutional delivery and associated factors in Dodota Woreda. 2012.
31. Mulder S. Midwifery in Rural India: A study of traditional birth attendants in Tamil Nadu, India. Aust cllege midwives Inc. 1995;(March).
32. Dickson KS, Amu H. Determinants of Skilled Birth Attendance in the Northern Parts of Ghana. 2017;2017.
33. ekonnen, Yared and AM. Utilization of Maternal Health Care Services in Ethiopia. Calverton, Maryland, USA: ORC Macro. 2002.
34. Central Statistical Agency (CSA) [Ethiopia] and ICF, Addis Ababa E. Ethiopian Demographic and Health Survey 2011: Key Indicators. 2011.
35. Mwilike B, Nalwadda G, Kagawa M, Malima K, Mselle L, Horiuchi S. Knowledge of danger signs during pregnancy and subsequent healthcare seeking actions among women in Urban Tanzania : a cross-sectional study. BMC Pregnancy Childbirth. 2018;18(4):1–8.
36. Soe M, Chamroonsawasdi K. Rate of Utilization of Skilled Birth Attendant and the Influencing Factors in an Urban Myanmar Population. Asia-Pacific J Public Heal. 2015;(January).

37. Bernis L De, Sherratt DR, Abouzahr C, Lerberghe W Van. Skilled attendants for pregnancy , childbirth and postnatal care. Br Med Bull. 2003;67:39–57.
38. Tekelab T, Yadecha B, Melka AS. Antenatal care and women ' s decision making power as determinants of institutional delivery in rural area of Western Ethiopia. BMC Res Notes. 2015;8:1–8.

Tables

Table 1 Socio-demographic and socio-economic characteristics of study participants in Kembata Tembaro zone, 2020

Variables (n=607)	Category of characteristics	ANC follow up					
		Yes		No		Total	
		N	%	N	%	N	%
Age categories in years	15-24	57	9.4	81	13.3	138	22.7
	25-34	252	41.5	143	23.6	395	65.1
	35 and above	34	5.6	40	6.6	74	12.2
Mother's educational status	Unable to read and write	5	0.8	22	3.6	27	4.4
	Read and write only	89	14.7	185	30.5	274	45.1
	Secondary and above	249	41	57	9.4	306	50.5
Husband's educational status	Unable to read and write	7	1.2	15	2.5	22	3.6
	Read and write only	75	12.4	142	23.4	217	35.8
	Secondary and above	261	42.9	107	17.6	368	60.6
Residence	Urban	121	19.9	70	11.5	191	31.5
	Rural	222	36.6	194	32	416	68.5
Mother's occupational status	House wife	175	28.8	197	32.5	372	61.3
	Merchant	118	19.5	50	8.2	168	27.8
	Employee(government/private)	50	8.2	17	2.8	67	10.9
Husband Occupational status	Farmer	199	32.9	154	25.4	353	58.2
	Employee(government/private)	48	7.9	25	4.1	73	12
	Merchant	80	13.2	75	12.4	155	25.5
	Daily laborer	16	2.6	10	1.6	26	4.3
Ethnicity	Kembata	254	41.8	191	31.5	446	73.5
	Amhara	38	6.3	31	5.1	69	11.4
	Guraghe	32	5.3	20	3.3	52	8.6
	Others (#)	19	3.1	21	3.5	40	6.6
Religion	Protestant	298	49.1	206	33.9	504	83.1
	Orthodox	23	3.8	35	5.8	58	9.5
	Muslim	15	2.5	17	2.8	32	5.3
	Others(*)	7	1.2	6	1	13	2.1

Exposure to media	Radio	229	37.7	122	20.1	351	57.8
	Television	77	12.7	32	5.3	109	18.0
	Not exposed	37	6.1	110	18.1	147	24.2
Parents monthly income in ETB	Below 500	194	32.0	213	35.1	407	67.1
	501-999	91	15.0	36	5.9	127	20.9
	1000-1499	45	7.4	8	1.3	53	8.7
	≥ 1500	13	2.1	7	1.2	20	3.3
Number of family members	One	7	1.2	6	1	13	2.1
	Two	20	3.3	12	2	32	5.3
	Three	83	16.7	32	5.3	115	18.9
	Four	90	14.8	41	6.8	131	21.6
	More than four	143	23.6	173	28.5	316	52.1

Note: - Others (#) indicates Oromo, Tigre, Hadiya and Wolaita ethnicity and

Others (*) indicates Adventist, Hawarat and catholic religion followers

Table 2: Last Obstetric characteristics of respondents by residential area, Kembata Tembaro zone Southern Ethiopia, 2020

Variables	Category of characteristics	Rural		Urban		Total	
		N	%	N	%	N	%
Age at first marriage	<18 years	133	21.9	54	8.9	187	30.8
	≥18 years	283	46.6	137	22.6	420	69.2
Age at first Pregnancy	< 20 years	145	23.9	36	5.9	181	29.8
	≥20	271	44.6	155	25.5	426	70.2
Gravidity	1	100	16.5	21	3.5	121	19.9
	2-4	120	19.8	103	17	223	36.7
	≥5	196	32.3	67	11	263	43.3
Parity	1	117	19.3	34	5.6	151	24.9
	2-4	68	11.2	133	21.9	201	33.1
	≥5	231	38.1	24	3.9	255	42
History of abortion	Yes	47	7.7	18	3	65	10.7
	No	369	60.8	173	28.5	542	89.3
History of still birth	Yes	47	7.7	6	1	53	2.1
	No	409	67.4	185	30.5	554	97.9
Last pregnancy planned	Yes	102	16.8	99	16.3	201	33.1
	No	314	51.7	92	15.2	406	66.9
Birth preparation	Yes	83	13.7	132	21.7	215	35.4
	No	333	54.9	59	9.7	392	64.6
ANC visit during last pregnancy	Yes	271	44.6	154	25.4	425	70.0
	No	102	16.8	80	13.2	182	30.0
ANC frequency (n=198)	< 4 visit	141	23.2	92	15.2	233	38.4
	≥ 4 visit	90	14.8	102	16.8	192	31.6
Place of delivery within the last 24 months	Health facility	175	56.6	134	43.4	309	50.9
	Home	215	35.4	37	6.1	298	49.1
Assistance during home delivery	My mother	19	3.1	10	1.6	49	16.4
	TBA	151	24.9	17	9.4	168	56.4
	Other family member	45	7.4	10	1.6	81	27.2

Duration of last labor	<12 hrs	98	16.1	58	9.6	156	25.7
	12-24 hrs	211	34.8	108	17.8	329	54.2
	>24 hrs	107	17.6	25	4.1	122	20.1
PNC visit after last delivery	Yes	64	10.5	98	16.1	401	66.1
	No	352	58	93	15.3	206	33.9
Experience adverse pregnancy outcome	Yes	73	12	35	5.8	108	17.8
	No	343	56.5	156	25.7	499	82.2

Table 3: Knowledge status of respondents on key obstetric danger signs during pregnancy, labor, and child birth and after delivery in Kembata Tembaro zone, 2020

Variables	Category	Frequency	Percent
Knowledge on danger signs related to pregnancy	Knowledgeable	261	43.0
	Not knowledgeable	195	32.1
Knowledge on obstetric complications related to labour and child birth	Knowledgeable	315	51.9
	Not knowledgeable	292	48.1
Knowledgeable on danger signs related to postpartum	Knowledgeable	287	47.3
	Not knowledgeable	320	52.7

Table 4: Preferences of the respondents, their husbands and mothers about place and attendant of delivery during their last pregnancy

Variables (N=607)		Rural	Urban	Total
		N (%)	N (%)	N (%)
Final decision maker about place of delivery	My self	181(43.5)	75(39.3)	256(42.2)
	My husband	65(15.6)	46(24.1)	111(18.3)
	Both of us	147(35.3)	60((31.4)	207(34.1)
	Others	23(5.5)	10(5.2)	33(5.4)
Preference of your mother about place delivery	Home delivery	305(73.3)	42(22)	347(57.2)
	Institutional delivery	91(21.9)	135(70.7)	226(37.2)
	I don't know	20(4.8)	14(7.3)	34(5.6)
Preference of your mother about attendant of delivery	SBAs	133(31.9)	121(63.4)	254(41.8)
	TBAs	247(59.4)	32(16.8)	279(46)
	Relatives	20(4.8)	26(13.6)	46(7.6)
	Others	16(3.8)	12(6.3)	28(4.6)
Preference of your husband about place of delivery	Home delivery	287(69)	157((82.2)	444(73.1)
	Institutional delivery	98(23.6)	24(12.6)	122(20.1)
	I don't know	31(7.5)	10(5.2)	41(6.8)
Preference of your husband about attendant of delivery	SBAs	201(48.3)	135((70.7)	336(55.3)
	TBAs	167(40.1)	32(16.8)	199(32.8)
	Relatives	30(7.2)	21(11)	51(8.4)
	Others	18(4.3)	3(1.6)	21(3.5)

Table 5: Multivariable logistic regression analysis of determinants of skilled birth attendance delivery among mothers who gave birth in the past 12 months in Kembata Tembaro zone, South Ethiopia, 2020

Variables		Not utilized	utilized	COR	AOR(95% CI)
Name	Category	N (%)	N (%)		
Place of residence	Urban	37(19.4%)	154 (80.6%)	1	1
	Rural	215(51.7%)	201(48.3%)	0.23	**0.33**(0.22,0.58)*
ANC follow up	≥4 times	147(66.1%)	45(33.9%)	1	1
	<4 times	77(30.4%)	156(69.6%)	6.62	**4.62**(3.12,7.32)*
Overall knowledge on obstetric complications	No	160(35.5%)	132(64.5%)	1	1
	Yes	101(27.4%)	214(72.6%)	2.57	**3.10**(1.37,5.21)*
Occupational status of mother	House wife	224 (60.2%)	148(39.8%)	1	1
	Government employee	22(32.8%)	45(67.2%)	3.09	**3.35**(1.79,6.27)*
	Merchant	85(50.6%)	83(49.4%)	1.48	**1.69**(1.70,5.99)*
Occupational status of husband	Farmer	220(62.3%)	133(37.7%)	-	1
	Government employee	22(30.1%)	51(69.9%)	3.83	**3.15**(1.79,6.27)*
	Merchant	87(56.1%)	68 (43.9%)	1.29	**2.69**(1.79,7.09)*
	Daily laborer	12(46.2%)	14(53.8%)	1.93	0.33(0.14,0.81)
Number of family members	One	7(53.8%)	6(46.2%)	1.01	1.44(0.26,2.74)
	Two	15(46.9%)	17(53.1%)	1.34	1.21(0.17,4.18)
	Three	47(40.9%)	68(59.1%)	1.71	2.05(0.08,1.92)
	Four	99(75.6%)	32(24.4%)	0.38	1.51(0.76, 2.99)
	More than four	171(54.1%)	145(45.9%)	1	1
Age at interview	15-24	81(58.7%)	57(41.3%)	1	1
	25-34	175(44.3%)	220(55.7%)	1.79	**3.41**(1.57,5.45)*
	35 and above	42(56.8%)	32(43.2%)	1.08	0.88(0.37,2.10)
Educational status of mother	Unable to read and write	16(59.3%)	11(40.7%)	1	1
	Read and write	114(41.6%)	160(58.4%)	2.04	2.76(0.41,4.81)

	Secondary and above	100(34.6%)	206(65.4%)	3.00	**1.50**(1.34,4.19)*
Educational status of husband	Unable to read and write	14(63.6%)	8(36.4%)	1	1
	Read and write	103(47.5%)	114(52.5%)	1.94	1.45(0.21,3.81)
	Secondary and above	171(46.5%)	197(53.5%)	2.02	2.17(0.54,4.19)
Final decision maker about place of delivery	Myself	154(60.2%)	102(39.8%)	1	1
	My husband	58(52.3%)	53(47.7%)	1.38	3.33(0.79,2.27)
	Both of us	77(37.2%)	130(62.8%)	2.55	**3.64**(1.70,7.99)*
	Others	16(48.5%)	17(51.5%)	1.60	0.33(0.14, 0.81)
History of still birth	No	367(66.2%)	187(33.8%)	1	1
	Yes	16(30.2%)	37(69.8%)	4.54	**3.85**(2.14,6.91)*
Parity	1	72(47.7%)	79(52.3%)	1	1
	2-4	121(60.2%)	80(39.8%)	0.60	0.35(0.29,1.67)
	≥5	127(49.8%)	128(50.2%)	0.92	0.69(0.20,2.79)
Time taken to nearby health facility	≤30minute	119(39.9%)	179(60.1%)	2.43	3.85(0.14,2.91)
	>30minute	191(61.8%)	118(38.2%)	1	1
Experience on adverse pregnancy outcome	No	265(53.1%)	234(46.9%)	1	**1**
	Yes	58(53.3%)	50(46.3%)	0.98	0.72(0.43, 2.82)

Note: * *Indicates statistically significant at p<0.05*

Hosmer and Lomeshow Test, p=0.407, the model was adequately fit the data

Figures

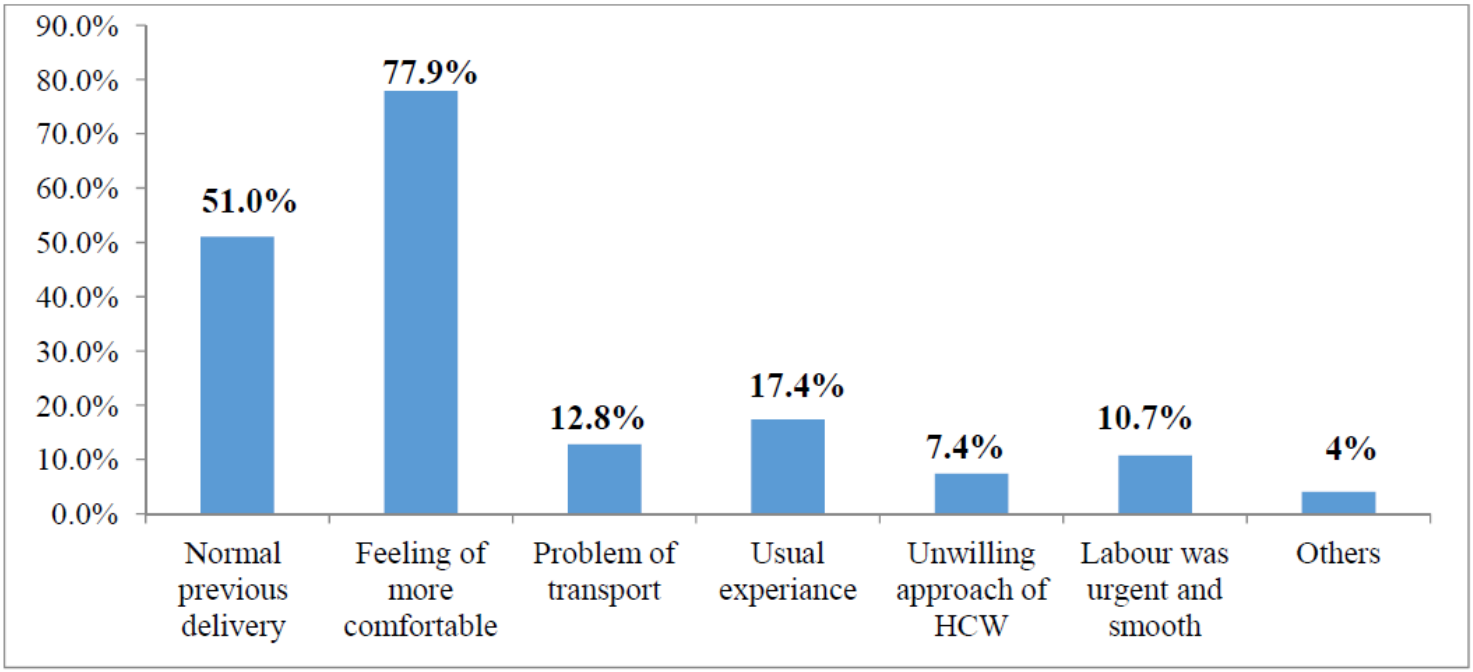


Figure 1

The reasons for home delivery among the respondents in Kembata Tembaro zone, South Ethiopia

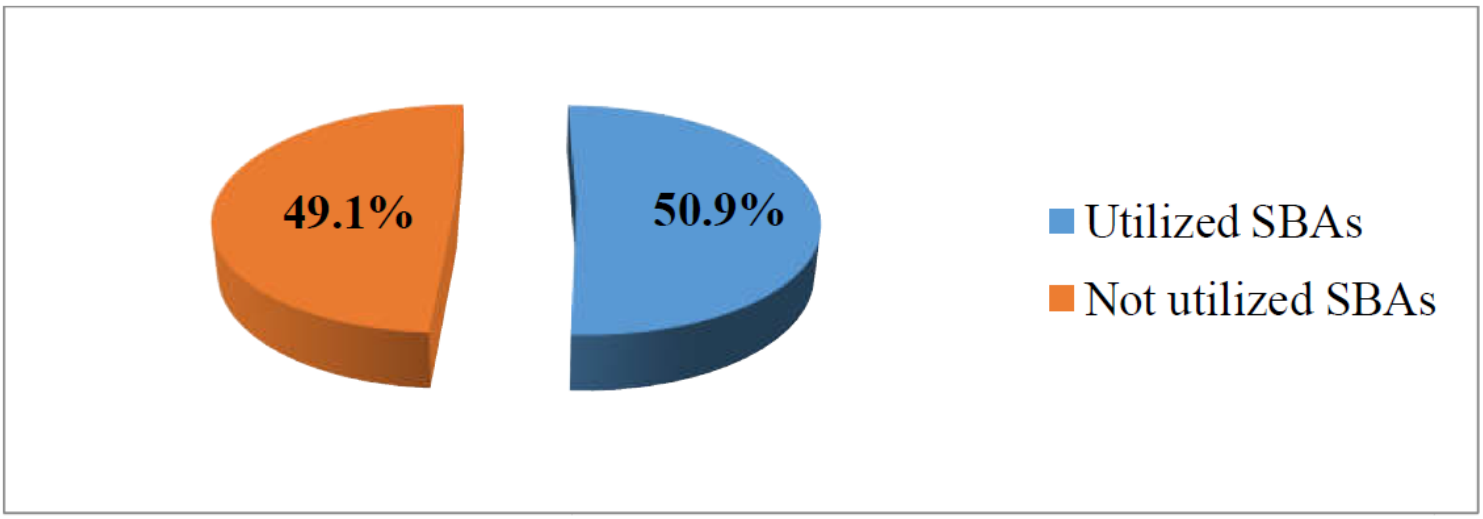


Figure 2

Utilization of SBAs of study subjects in Kembata Tembaro zone, 2020