

ASSESEMENT OF MATERNITY WAITING HOMES UTILIZAION,
PREGNANCY OUTCOMES,AND ASSOCIATED FACTORS AMONG
WOMEN WHO GAVE BIRTH IN JIMMA ZONE, SOUTH WEST-ETHIOPIA.



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Abstract

Background: Maternity waiting homes are defined as lodgings or accommodation close to a health facility where women can stay before and sometimes after they gave birth. Maternal waiting homes are considered as an intervention to contribute to increase the utilization of maternal health service particularly among women living in rural areas where distance, topography, road access are a barrier to timely arrival at the health facility. The purpose of the maternal waiting homes is to improve accessibility and reduce morbidity and mortality for mother and neonate when complications arise.

Objective: To assess factors associated with maternal waiting home utilization and pregnancy outcomes among Women who gave birth in Jimma zone, South West Ethiopia 2021.

Method: Cross-sectional study was conducted among mothers who gave birth within a year preceding the survey in the selected woredas. Multistage stratified sampling technique was used to select study participants. Purposive sampling techniques were used to select four woredas and simple random sampling technique was used to select the kebeles from the selected woredas. Quantitative data was collected using a structured interview based questionnaire to measure maternal waiting home utilization and pregnancy outcome among a total of 633 mothers. Data was entered into Epi data version 4.6 and analysed using SPSS version 21. Binary and multiple logistic regression analyses were carried out and variables with p-value < 0.25 were candidates for multiple logistic regression. Finally, a p-value of less than 0.05 declared the association.

Result: Maternal waiting home utilization among mothers was 24.8%. The main reason for not utilization was lack of awareness about the existence of MWHs. Autonomous decision making (AOR=5.11, 95%CI: 3.09, 9.57), knowledge about MWH utilization (AOR=6.59, 95%CI: 3.43, 8.09), and time taken to reach to the health facility (AOR =2.67, 95%CI: 1.19, 6) were significant predictors of maternal waiting home utilization. Maternal waiting home utilization (AOR= 2.4 95%CI: 1.27, 5.6), mode of delivery (AOR=2.37, 95%CI: 1.12, 4.99), and place of delivery (AOR=5.32, 95%CI: 1.63, 17.37) were significant predictors of pregnancy outcome.

Conclusion: Utilization of maternal waiting home was low 24.8%. Maternal waiting home utilizers had more favourable pregnancy outcome than those non-utilizers. Promotion of maternal waiting home utilization and institutional delivery were recommended

Key words: Maternal waiting homes, pregnancy outcomes, utilization.

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Table of contents

Contents

Abstract	I
Acknowledgement	II
Table of contents	III
List of figure	VI
List of acronyms.....	VII
Chapter 1: Introduction.....	1
1.1. Background.....	1
1.2. Statement of the problem.....	3
1.3. Significance of the study	5
Chapter 2: Literature review.....	6
Chapter 3: Objectives	12
3.1 General Objective:	12
3.2 Specific Objectives:	12
Chapter 4: Method and Materials.....	13
4.1. Study area and period.....	13
4.2. Study design.....	14
4.3. Population.....	14
4.3.1. Source population	14
4.3.2. Study population.....	14
4.4. Inclusion and exclusion criteria	14
4.5. Sample size and sampling techniques	14
4.5.1 Sample size determination	14
4.5.2. Sampling techniques	15
4.6. Study variables.....	17
4.7. Operational definition	17
4.8. Data collection tools and procedures	18
4.9. Data processing and analysis plan	18
4.10. Data quality control.....	18
4.11. Ethical consideration	19
4.12. Dissemination plan.....	19
Chapter 5: Result	20

Chapter 6: Discussion	30
Chapter 7: Conclusion and Recommendation	34
References.....	35
Annex I	40

List of tables

Table 1. Sample size determination for maternal waiting home utilization and associated factors, Jimma zone, 2021	15
Table 2. Socio-demographic characteristics of mothers in Jimma zone, 2021	20
Table 3. Obstetric characteristics of mothers in Jimma zone, 2021	21
Table 4. Personal factors of mothers in Jimma zone, 2021.....	21
Table 5. Facility related factors of mothers in Jimma zone, 2021.....	22
Table 6. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and MWH utilization in Jimma zone, 2021.....	24
Table 7. Bivariate logistic regression showing association between obstetric, personal and facility related characteristics and MWH utilization in Jimma zone, 2021	25
Table 8. Multiple logistic regression showing factors independently associated with MWH utilization among mothers in Jimma Zone, 2021.	26
Table 9. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and pregnancy outcome in Jimma zone, 2021	27
Table 10. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and pregnancy outcome in Jimma zone, 2021	28
Table 11. Multiple logistic regression showing factors independently associated with pregnancy outcome among mothers in Jimma Zone, 2021.....	29

List of figure

Figure 1 Conceptual frame work developed after reviewing different literatures, November 2020 11

Figure 2: Schematic presentation of sampling procedure 17

Figure 3. Reason for not using MWH among mothers in Jimma Zone, south west Ethiopia, August 2021..... 23

Figure 4. Facilitators for MWH utilization among mothers in Jimma zone, southwest Ethiopia, August 2021..... 23

List of acronyms

C/S: Caesarean Section

EDHS: Ethiopia Demographic and Health Survey

FMoH: Federal Ministry of Health

HIV: Human Immune Deficiency Virus

JZHO: Jimma Zone Health Office

LB: Live Birth

MDG: Millennium Development Goal

MMR: Maternal Mortality Rate

MWH: Maternal Waiting Home

SB: Still Birth

SSA: Sub Saharan Africa

SVD: Spontaneous Vaginal Delivery

UN: United Nations

WHO: World Health Organization

Chapter 1: Introduction

1.1. Background

Maternity waiting homes are defined as lodgings or accommodation close to a health facility where women can stay before and sometimes after they give birth. Women staying in MWHs are then able to easily access services for essential obstetric or new-born complications at the nearby facility[1].

An estimated 66% of global maternal deaths occur in sub-Saharan Africa (SSA), where a woman's lifetime risk of maternal death is 1 in 37, higher than the risk in all least developed countries, estimated at 1 in 56 and which is far higher as compared to the global estimate which is 1 in 190 [2].

The maternal mortality ratio and infant mortality rate remain unacceptably high in spite of the unreserved efforts made by the government and other partners, and among the unachieved Millennium Development Goals (MDGs) targets in Ethiopia. Studies show that the reduction in maternal mortality remains insignificant over the past three decades [3].

Underutilization of life-saving health services has been associated with poor maternal and newborn outcomes. However, multiple factors influence the use of maternal health services for women living in poor, remote communities[4]. In areas with high maternal mortality ratios, utilization of maternal health services is low. Low utilization of maternal health services is mainly a result of barriers to access and leads to high maternal and perinatal morbidity and mortality. Differences in utilization between high-and low-income countries are enormous, but differences are also encountered within countries. Access to maternity health services is a key indicator of maternal mortality. Besides the per capita gross national product, access to maternal health services is the only important predictor [5].

To reduce high maternal morbidity and mortality, World Health Organization (WHO) has been endorsed Maternity waiting homes (MWHs) as one component of a comprehensive package [6]. MWHs identified as an intervention to increase demand for maternity care services, improve geographic access to facility delivery, and address the second delay: delay in reaching a health facility, first identified by Thaddeus and Maine in the three-delay model [7]. The second delay- the delay in the ability to reach care-is fueled by factors that both directly and in directly influence a woman's ability to reach care, including long distance to facilities, geographical

barriers, poor road infrastructure, lack of transportation options, poor communication, and costs associated with delivery such as transportation and supplies [8].

MWHs are temporary shelters for pregnant women located near a hospital or health center. These shelters, also known as maternal waiting homes, waiting homes, or maternal waiting areas are available to pregnant women from rural areas or those at high risk of obstetric complications to help overcome distance and time barriers to the health center [9].

The availability of MWHs has increase the provision of skilled delivery and postnatal care, referrals in case of complications, counselling for maternal and new born care including nutrition and early initiation of breastfeeding, family planning and social services. It also increases institutional deliveries and consequently decrease maternal mortality caused by the delay in reaching obstetric care [10].

1.2. Statement of the problem

Maternal health has become one of the major public health concerns for developing countries following the first safe motherhood conference held in Kenya in 1987 [11]. Globally, about 295,000 women died during and following pregnancy and childbirth in 2017. 94% of all maternal deaths occur in low and lower middle-income countries and most could have been prevented. SSA and Southern Asia accounted for approximately 86% (254 000) of the estimated global maternal deaths in 2017. SSA alone accounted for roughly two-thirds (196 000) of maternal deaths, while Southern Asia accounted for nearly one-fifth (58 000) [12].

Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy and most are preventable or treatable. Other complications may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman's care. According to 2014 WHO systematic analysis of global data on causes of maternal death 72.5% of 2,443,000 maternal deaths were due to direct obstetric causes (haemorrhage 27.1%, hypertension 14.0%, sepsis 10.7%, abortion 7.9%, embolism 3.2%, other 9.6%), and 27.5% were due to indirect causes (HIV-related 5.5%, pre-existing medical condition 14.8%, other 7.2%) [13].

According to 2015 WHO report Ethiopia is among ten countries accounting for nearly 59% of global maternal deaths [14]. Around 20,000 women lose their lives due to pregnancy related complications [15]. Even though health care services during pregnancy, delivery and after delivery plays a crucial role in reducing maternal and infant mortality, the coverage of institutional delivery is very low in Ethiopia reaching only 26%. For women living in rural areas access to a health facility is very difficult due to many reasons. EDHS 2016 report indicated that 50% of reproductive age women have lack of access to health facilities due to distance [16]. One of the targets of the Government of Ethiopia for the year 2020 is to increase deliveries attended by skilled health professionals to be 90% and to reduce institutional maternal mortality rate to be less than one percent in 2020 [17].

Interventions for the prevention of maternal mortality are as varied as its causes, for example maternity waiting homes are residential facilities located near a hospital or a health center to

accommodate women in their final weeks of pregnancy to bridge the geographical gap in obstetric care between rural and urban areas and areas with poor access to facilities [18].

MWHs play important role in improving access to skilled birth attendance and improving maternal and new born health outcomes, however, its utilization was prevented by several factors; women's lack of decision-making autonomy, gender inequalities, low socioeconomic status, socio-cultural, non-availability of funds to buy the requirements for the baby and mother to use during labour at the clinic, concerns about a relative to remain at home and take care of the children and concerns about the poor state and lack of basic social and healthcare needs in the MWHs—like adequate sleeping space, beddings, water and sanitary services, food and cooking facilities as well as failure by nurses and midwives to visit the mothers staying in the MWHs to ensure their safety prevent women from using MWHs [19].

This strategy has shown a significant improvement in maternal and new born health outcomes and reduction in maternal and perinatal mortality in different countries. Despite studies showed that utilization of MWH reduce maternal and neonatal mortality, to the investigator knowledge there is no research done in the study area about factors associated with utilization of MWH and its relation with pregnancy outcome. Therefore, this study aims to assess MWHs utilization; its relation with pregnancy outcomes and associated factors among women who gave birth in Jimma zone. In general, this understanding is important as it will provide a starting point for interventions focusing on improving the utilization of MWHs and pregnancy outcome in Ethiopia.

1.3. Significance of the study

The finding of this research will help policy makers to design different interventions for the improvement of pregnancy outcome by aligning the maternal waiting home utilization with the continuum of care that given at the health facilities.

The findings of this study will provide health managers to plan and implement appropriate interventions for the utilization of MWHs and better pregnancy outcomes. In addition, it might help to reduce maternal deaths through utilization of maternal waiting homes and enhance health and survival of new born child. The results of this study will also make an important contribution to other studies in similar areas.

Generally, this study helpsto give recommendations on appropriate strategies, program implementation considerations by policymakers, program partners, different stakeholders, health offices at different levels, and health care providers at health facilities in improving the service delivery given at the health facilities for the improvement of MWH utilization and pregnancy outcome.

Chapter 2: Literature review

The establishment of MWHs for pregnant women to reduce obstetric complications is not a new idea. In Europe, different voluntary organizations have provided shelter for single mothers in an effort to reduce maternal and neonatal death secondary to pregnancy related complications. In 1960s, WHO had started to promote the use of MWHs to increase access to emergency obstetric care (EmOC). In Ethiopia the construction of few MWHs were started in 1980s. However, expansion to wider geographic areas and lower level health facilities is a very recent initiative [2].

Maternal waiting homes provide the opportunity for high risk women to come closer to hospital with essential obstetric facilities during their final week of gestation. In addition to decreasing maternal and neonatal mortality, the purpose is extended to the improvement of maternal and neonatal health. Furthermore, women will get education and counseling concerning pregnancy related complications, delivery, and neonatal care during their stay [14].

2.1 Utilization of maternity waiting homes

The level of Utilization of MWHs is globally very low. One systematic review and meta-analysis study was conducted in African countries on the significant association between MWH utilization and perinatal mortality indicated that from the selected mothers from ten African countries, 31.2% of mother were utilized, this result showed that the utilization of MWHs among pregnant women is still low [20].

Another study conducted in Zambia to assess factors associated with MWHs utilization, the findings showed the utilization was very low and only 23.8% of the respondents stayed at the MWH before delivery [19]. Other study conducted in Tanzania showed that one third (31.3%) of mother utilized MWH prior to their delivery [21]. A cross-sectional study conducted in Merti District of Kenya in 2017 to assess the knowledge, attitude and utilization of women of child bearing age towards a maternity waiting home, the finding indicates that the level of utilization was very low (39.1%) [22].

A Comparative cross-sectional study done in Jinka southern regional state of Ethiopia in 2017 to assess the role of maternal waiting home in improving obstetric outcome, the result indicates

only 16.7% admitted or utilized MWHs [23]. A cross-sectional study conducted in Jimma zone on pregnant women to assess intention to use maternity waiting home revealed that about 38.7% respondents had past experiences on MWH [24].

2.2 Factors associated with utilization of MWHs

Different literatures showed the utilization of maternal waiting homes were not highly encouraged among pregnant women even though MWHs are constructed in different health facilities. Despite a woman willing to stay at MWH, different factors prevent a woman from staying at an MWH such as socio demographic, socioeconomic, personal, obstetrics, and facility related factors.

2.2.1 Socio demographic and socio economic factors

A study done in Malawi indicated that about 38% of women in the sample were aged 20-24 years, 24% of women 25-29 age group utilized the MWHs [25]. Another study conducted in Liberia on maternal waiting homes and traditional midwives the result revealed that the highest proportion of the respondents, 33.6 % were aged between 26 – 30 years [26]. About half of the respondents, 51.3% had no formal education while 33.1% had attained primary school level. Majority 83.07% of the Mothers in Merti Sub County were Housewives. Most, 351 (91.4%), of the respondents were Muslims. Majority, 80.2%) of the mothers were in a monogamous type of marriage. Almost two thirds, 63.3%, of their husbands were pastoralists [22].

In addition, other study shows key characteristics of mothers associated with health facility and MWH use in the sample. Mothers who completed primary schooling or more had slightly higher utilization of MWHs when compared to mothers who had no education. Mothers who were not married had lower utilization of MWH when compared to married women [12].

Multilevel cross sectional analysis was done in Jimma on factor associated with MWHs use indicated that women's occupation was associated with MWHs utilization. In this study, MWH utilization of housewives were more than women who had occupation outside their home and women describe that having a companion to help them to reach the health facilities when they were pregnant or for delivery had more utilization of MWHs than women who didn't have this form of social support [10].

Other study done in Nicaragua indicated that 26% of the women in the sample report that their husbands make all major household decisions, including those related to their wives' healthcare [27]. A study conducted in Ethiopia showed that, women stayed at the MWHs reported that decision to come to the MWHs was made mainly by a joint discussion with family/husband (46%). Decision-making to be admitted to MWHs, by the woman herself was made in 16% of the cases. In-depth interview participants also replied that the decision to come to MWHs was mainly made with husband [18].

A cross-sectional study done in Ethiopia on women staying at the waiting homes to assess the situation, women's experiences and challenges found that the commonest factors for not using MWH were absence of caretakers for children (68%) [28]. Another study conducted at Eastern Gurage region of Ethiopia indicated that women's lack of decision-making autonomy, low socioeconomic status, and socio-cultural norms prevent them from utilising the MWHs [29].

The situation, experiences and challenges of women's who utilized MWHs in various regions in Ethiopia showed 33% of MWHs utilizers experienced refusal of admission by the husband due to concern of work burden and family care [30]

2.2.2 Facility related factors

Different factors affect the utilization of MWHs. For instance, knowledge, accessibility, cost, distance, lack of transportation and other factors are identified as a barrier that limits the utilization of MWH[29].

2.2.2.1 Accessibility

A retrospective cohort study conducted in rural hospitals Ethiopia on the role of MWHs in reducing maternal mortality and stillbirths in high risk women indicated that 78.4% of pregnant mothers reported lack of transport/long distance as a challenge to utilization of MWH. In this study the costs of transport for an average 40 km and a long journey (200 km) by day were 6 USD and 30 USD respectively, whereas the similar journeys by night cost 36 USD and 180 USD respectively. Many women who did not live near a road were carried by stretcher, sometimes aided by a donkey or mule until they reached a road or truck that could be used by a vehicle. 73 % of non MWH women reported that the cost of transport was the cause of their delay in coming

to hospital [6]. The costs of transport to the district hospital by tractor vary from 0.10 USD for villages very close to the district hospital 1.50 USD for the villages' 29 kilo meters away [32].

A study done in Zambia revealed that most MWH users were provided with some simple bedding and about 72 % were given some food during their stay. However, clean water, lightning, bathing facilities and coffee ceremony (an important cultural routine in households that create a home like environment at MWHs) services were not widely available. Just over a quarter of the women said family visit were permitted during their stay [33]. Mothers who lived 15 km from the health facility or greater were more likely to use a MWH when compared to women who lived within 9.5-9.9 km of the nearest health care facility [34].

2.2.3 Obstetric factor

A retrospective cohort study conducted at different hospitals in Ethiopia from 1987 to 2008 showed that 38.5 % of women admitted at MWHs required delivery by cesarean section indicating their high risk status, 20.3 % as compared to those admitted directly. Vacuum delivery was more common in the non-MWH group [6].

Another study conducted in Zambia showed that MWH utilizers were more often nulliparous and they also had history of previous caesarean section more frequently. Only 17% of the utilizers had no maternal risk factors as compared to 47% of non-utilizers. Breech or transverse presentation occurred more frequently in the utilizers group [35].

2.2.4 Personal factors

2.2.4.1 Knowledge

A cross-sectional study design conducted in Merti District of Kenya to assess the knowledge, attitude and utilization of women of child bearing age towards skilled delivery services in a maternity waiting home, the finding indicates that two thirds (66.4%) of the mothers were not aware of the presence of the maternal waiting home [22].

In Kenya, awareness about the existence of the MWH appeared to be a barrier as 72% of pregnant women did not know about the existence of the MWH [31].

2.3. Pregnancy outcomes

One systematic review and meta-analysis study was done in six African countries (Eretria, Ethiopia, Liberia, Malawi, Zambia, and Zimbabwe) to assess the effects of MWHs on stillbirth five studies are pooled and the occurrences of stillbirth among non-users are more than ten times as compared to users [36].

In 1994, Chandramohan evaluated a MWH over a two year period. They compared the outcome of delivery on women who had stayed in the MWH to women who had not. They found that the perinatal death rate per 1000 births was 19.1 in the users group compared to 32.2 amongst the non-users [37].

In 1990, a hospital based prospective cohort was conducted at Atat hospital with objective of MWHs effects on perinatal and maternal outcome was done and the study showed that the perinatal mortality among mothers who utilized MWHs were ten times more than non-utilizers; about 28 and 254 perinatal death per 100,000 live births [38].

Conceptual frame work

After reviewing different literatures this Conceptual frame work has been developed (13, 19, 21, 22, 23, and 25),

External variable Utilization Outcome

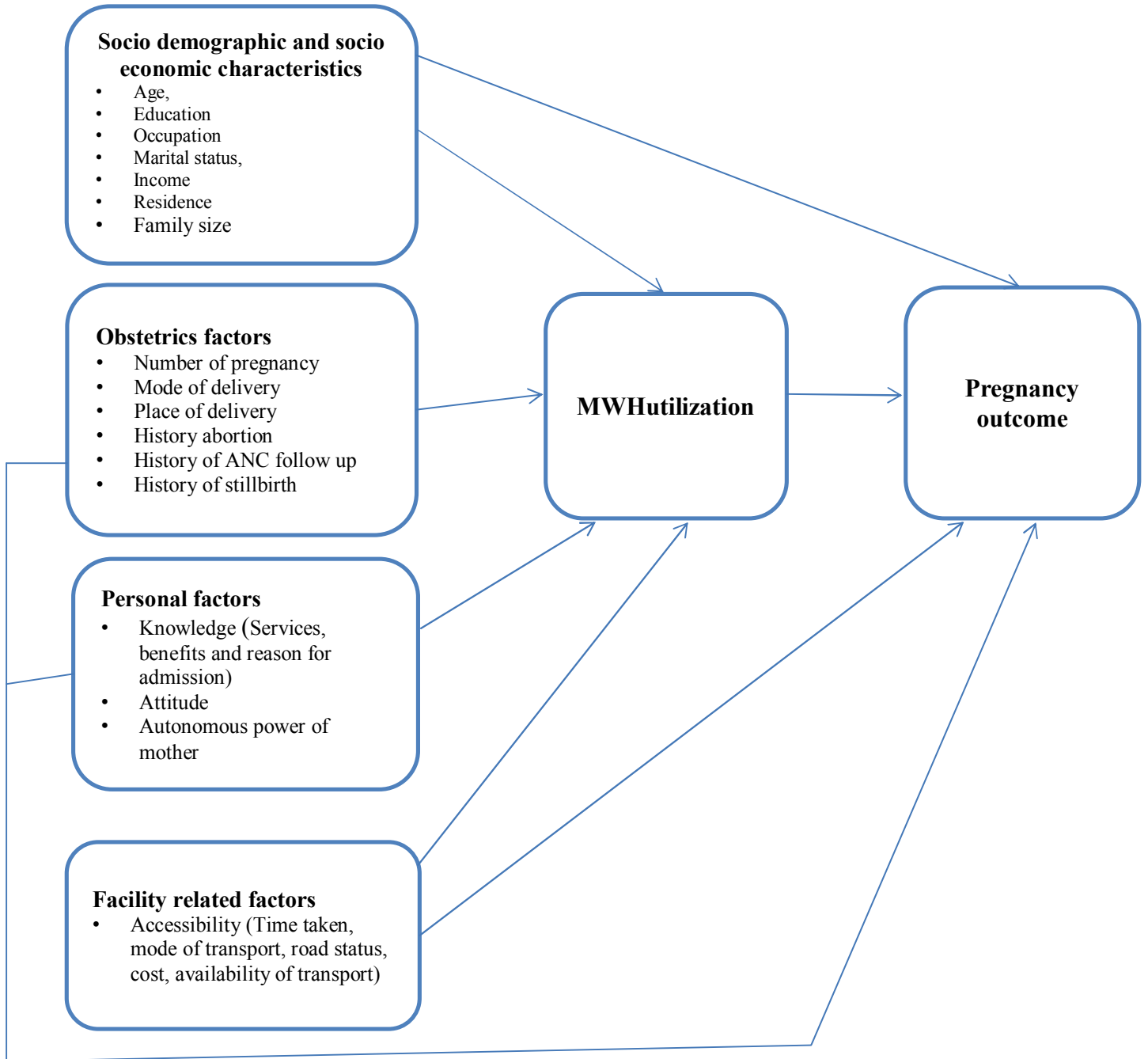


Figure 1 Conceptual frame work developed after reviewing different literatures, August 2021

Chapter 3: Objectives

3.1 General Objective:

- To assess factors associated maternal waiting home utilization and pregnancy outcomes among mothers who gave birth in the last twelve months in Jimma Zone, Ethiopia 2021.

3.2 Specific Objectives:

- To determine the level of maternity waiting home utilization among mothers who gave birth in the last twelve months in Jimma Zone, Ethiopia 2021
- To identify factors associated with maternal waiting home utilization among mothers who gave birth in the last twelve months in Jimma Zone, Ethiopia 2021
- To assess pregnancy outcomes among mothers who gave birth in the last twelve months in Jimma Zone, Ethiopia 2021
- To identify factors associated with pregnancy outcome in the last twelve months in Jimma Zone, Ethiopia 2021

Chapter 4: Method and Materials

4.1. Study area and period

The study was conducted in Jimma Zone, from May to June 2021. Jimma zone is one of the 22 zones of Oromia Regional State, which is found at 357 km from Addis Ababa. The zone has 3,399,784 population (49.3% are males and 50.7% females) and an area of 15,568.58 km². The zone has 21 woredas and 1 town administration. It has five primary hospitals, 122 health centers, and 566 health posts of which 513 of them are rural and 53 of them are urban. The study areas are, Dedo, Mencho, Omonada, and Omobeyam woredas. In the four study areas, 25 health centers and 2 primary hospitals are found.

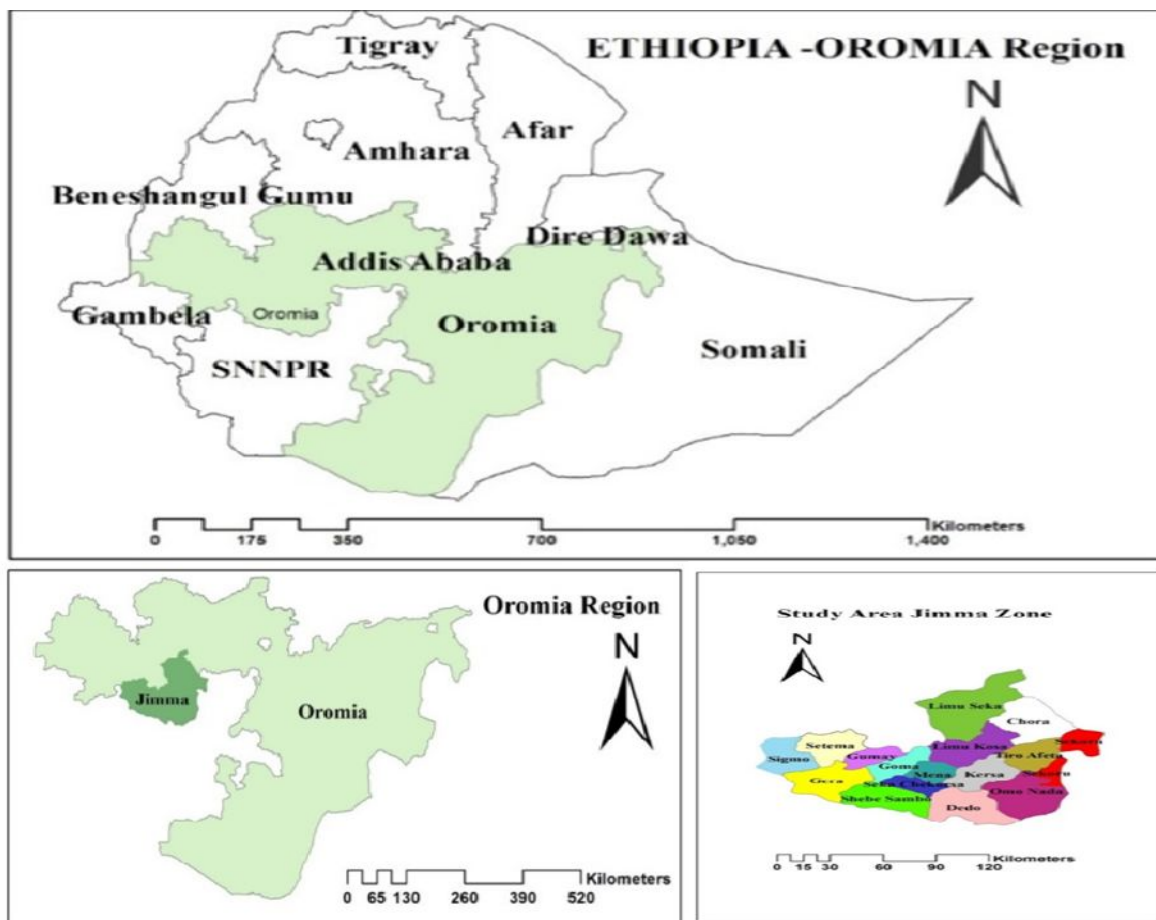


Figure1: Map of Ethiopia, Oromia, and Jimma zone(source JZHO)

4.2. Study design

A community based, cross-sectional study design was employed.

4.3. Population

4.3.1. Source population

All women who gave birth in the last 12 months in Jimma zone was considered as a source population.

4.3.2. Study population

All women who gave birth in the last 12 months in the selected four woredas of Jimma zone.

4.4. Inclusion and exclusion criteria

Inclusion

- All mothers who gave birth in the past 1 year regardless of new born outcome and residing in the study area was included.
- Mothers who stayed in the study area for the last one year

Exclusion

- Mothers who are critically ill or who have known mental illness

4.5. Sample size and sampling techniques

4.5.1 Sample size determination

- Sample size is determined for the third objective using single population proportion formula based on the following assumptions.

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

Where n is sample size, P (proportion of mothers with favorable birth outcome) in the study sites and d is the margin of error. The following assumptions were used. P was taken to be 50 % [$p=0.5$ because to get maximum sample size]. Allowing 5% for expected margin of error (d) and 95% ($Z_{\alpha/2}=1.96$) confidence level, the required sample size n will be 384. With 10% non-response rate the total sample size will be 422. Considering design effect 1.5 (Since there is no previous information from other studies). Therefore, the final sample size was 633.

- Sample size calculation for the first and second objectives using Epi Info 7 software for MWH utilization and associated factors from different literatures. Age of woman and distance from health facility with power 80% were considered for sample size calculation.

Table 1. Sample size determination for maternal waiting home utilization and associated factors, Jimma zone, 2021

Population		Proportion	Sample size	10% non response	Final Sample size	Reference
MWH utilization		P1=31.3 %	495	50	545	[21]
Age of woman	< 35	43 %	311	31	342	[39]
	≥ 35	7 %				
Distance from health facility	<60	8.3%	462	46	508	[21]
	>60	61.3%				

Thus, objective three sample size is taken as a final sample size as it was greater than objective one and two sample size.

4.5.2. Sampling techniques

Multistage stratified sampling technique was used to select the study participants. From a total of 21 woredas found in Jimma zone, 4 woredas were selected purposively. According to Jimma Zone Health Office (JZHO) data, the woreda had the largest number of population as compared to other woredas and more MWHs are available in these woredas. In the four woredas, a total of 105 kebeles were found. Simple random sampling technique was used to select 30% of kebeles from each district and 32 kebeles were included in the study. The sample size was proportionally allocated for each of the selected kebeles based on the number of mothers who had children less than 1 year. Sampling frame was prepared together with health extension workers by reviewing delivery registers and identifying mothers who gave birth within the last 12 months. Applying sampling frame, simple random sampling technique was used to select study participants from each of the selected kebeles. Then Computer generated random number was employed to select study participants. The selected mothers were located and data was collected accordingly.

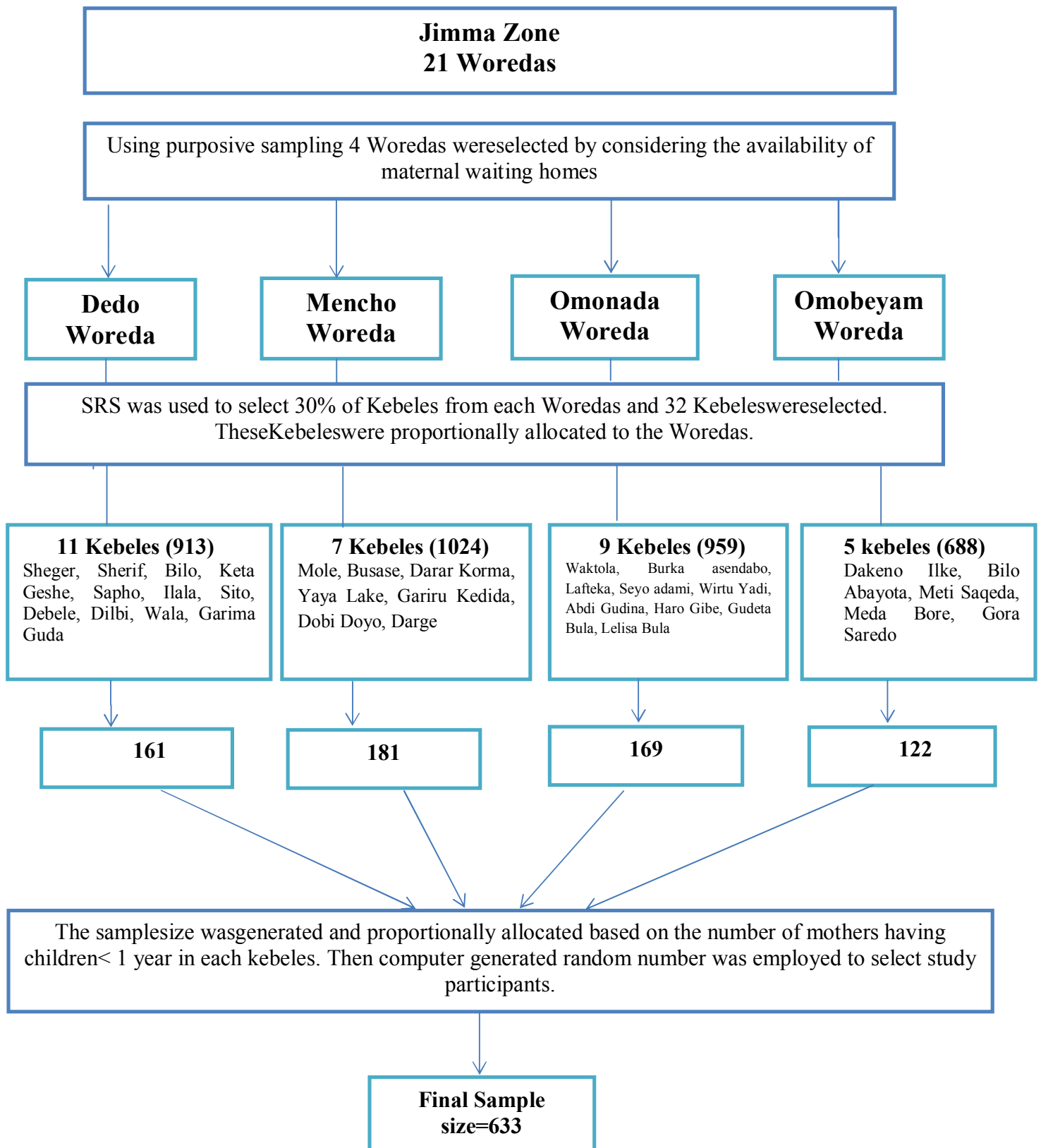


Figure 2: Schematic presentation of sampling procedure

4.6. Study variables

Dependent variables: Pregnancy outcomes, utilization towards MWHs

Independent variables

Socio-demographic: Age, religion, marital status, residence, and family size.

Socio economic factors: Income, social support, educational status, occupation

Facility related factors: Distance of the facilities, availability of transport, road status, transportation cost.

Obstetrics factors: Number of pregnancy, number of children, mode of delivery, and history of abortion, stillbirth and ANC follow up.

Personal factors: Knowledge about MWH service, attitude towards MWHs, and decision making autonomy of the women.

4.7. Operational definition

Knowledge of mothers about MWH service: It was measured based on the three questions about MWH service. A mother is considered as knowledgeable if she knows the services that are given, the benefits and the reason for admission at MWH facility.

Maternity waiting home utilization: It was coded 1 if the mothers had utilized the MWHs and delivered at the health facility regardless of duration of stay and coded 2 if Mothers who never been utilized the MWHs.

Pregnancy outcomes: It was measured based on two options as favourable birth outcome [live birth], and adverse birth outcome [Still birth].

Time to reach to the nearby health facility: - This was coded 1 if mothers reported the time taken to reach to the nearby health facility is less than 60 minutes otherwise, otherwise it will coded 2.

Availability of transport service from home to the nearest health facility

It was coded 1 if the mothers reported that getting transport service from home to the nearest health facility was sometimes; otherwise, it will coded 2.

Attitude towards MWH: - Attitude of the mothers towards MWH is measured by 8 items on likert scale ranging from 1 = Agree to 3 = Disagree.

Favourable attitude:-Those who obtain \geq the mean score on the attitude questions.

Not favourable attitude: - Those who obtain $<$ mean score on the attitude questions.

Decision making autonomy: It was measured based on the three questions. If the Mothers responded at least two questions out of three as they decide alone or jointly with husband was considered as they have decision making power otherwise, not.

Social support: It was measured by six items on two scale measurement of (Yes and No). Those who scored above mean were taken as good experience.

4.8. Data collection tools and procedures

Considerable attention was given to obtain valid and reliable information that suits the objective. Data was collected using pretested, structured interviewer administered questionnaire. The questionnaire for data collection was prepared after reviewing different literatures relevant to the study and adapted to the local situation.

In order to keep participants anonymity, privacy and cultural integrity; four female 10th grade students who could speak the local language was selected as an enumerator. Females are selected because, they could understand and participants would forward their opinion without being embarrassed and fear of the breach of their secret.

4.9. Data processing and analysis plan

All the information from questionnaire interview was checked for completeness, consistency and clarity and was coded and entered in to Epi data 4.6 and was exported to version SPSS version 21 for analysis. Data was cleaned and explored for outliers, missed values and any inconsistencies. Descriptive statistics like frequency tables, graphs and descriptive summaries was used to describe the study variables. An odds ratio (95% confidence intervals) and Binary Logistic regression analysis was used to assess the association of independent variables with the outcome variable and p value < 0.25 was candidates for multiple logistic regression and P value < 0.05 were considered statistically significant in all tests of significance. Model fitness checked by using Hosmer and Lemeshow test with 5 degree of freedom.

4.10. Data quality control

Data quality was assured through training of data collectors, pretesting questionnaire, and continuous supervision at the time of data collection. Data collectors were trained by the principal investigator for two days on how to fill questionnaires. Additionally the questionnaire

primarily available in English language was translated into local language (Afaan Oromo) then back to English. To assess reliability Cronbach's alpha was checked and it was greater than the cutoff point 0.7. Furthermore, the supervisor team was available at the time of data collection to clarify certain possible misunderstandings. The questionnaire was pre tested among 5% of women in Seka district before actual data collection. The data was checked each day for completeness and consistency during data collection, at a stage before data entry by supervisors and principal investigator. Double data entry will also be done to avoid or minimize data entry errors.

4.11. Ethical consideration

Ethical clearance was obtained from Jimma University Institute of Health Ethical Review Board. Also, administrative clearance was secured from Jimma Zone Health Office, Dedo, Woreda Health Office, Mencho Woreda Health Office, Omonada Woreda Health Office, and Omobeyam Woreda Health Office. Since the subject of the study could raise sensitive cultural and ethical issues, care was taken in designing a questionnaire and selecting enumerators. Interviewers were strictly trained and reminded to keep the local cultural norms. The objective of the study, the benefits and the harms were briefly explained for the study participants. Participation in the study will totally be on a voluntary basis and oral informed consent was obtained from each participant. The participant's right to withdraw at any time during the interview was protected. To ensure confidentiality the data was used only for the purpose of the study with anonymity. The completed questionnaire was kept in a secured place for at least five years and then it was shared for the public.

4.12. Dissemination plan

The findings of this study will be presented in postgraduate student defence. A copy of the result of this study was handed over to Jimma University, Jimma Zone health office, and the four Woreda Health Offices, and also for other concerned bodies. A manuscript will be prepared and efforts will be made to publish the findings on high impact journals.

Chapter 5: Result

5.1 Socio-demographic and socio economic factors

633 women were interviewed and yield a response rate of 100%. The mean (95%CI) age of the women was 27.91 (27.48, 28.33) years. 518 (81.8%) of the respondents resides in ruraland 115 (18.2%) of them were living in semi-rural.Of the total, 246 (38.8%) of the respondents, can't read and write followed by 229(36.2%), can read and write whereas158(25%) had formal education. 313 (49.5%) of mothers occupation was housewife whereas 245 (38.7%) of them were farmers. Mothers whose income level less than 2250 birr per month which is the mean value of the overall monthly income of the mothers were 515 (81.4%) (Table 2).

Table 2. Socio-demographic and socio economic characteristics of mothers in Jimma zone, 2021

Variable	Category	Frequency	Per cent (%)
Age	15-19	36	5.7
	20-24	142	22.4
	25-29	197	31.1
	30-34	170	26.9
	>35	88	13.9
Religion	Muslim	548	86.6
	Christian	85	13.4
Marital status	Married	603	95.3
	Unmarried	30	4.7
Residence	Rural	518	81.8
	Semi-rural	115	18.2
Family size	≤ 4	317	50.1
	≥ 5	316	49.9
Maternal education	Can't read and write	246	38.8
	Read and write	229	36.2
	Formal education	158	25
Husband education	Can't read and write	144	23.9
	Read and write	272	45.1
	Formal education	187	31
Mother occupation	Housewife	313	49.5
	Farmer	245	38.7
	Merchant	64	10.1
	Government employee	11	1.7
Husband occupation	Farmer	405	67.2
	Merchant	160	26.5
	Government employee	38	6.3
Monthly income in Birr	< 2250	515	81.4
	≥ 2250	118	18.6

5.2 Obstetrics factors

585 (92.4%) of mothers had more than one pregnancy, 505 (79.8%) of the women have no previous history of stillbirth. 591 (93.4%) of them reported that they don't have a previous history of abortion, and 557 (88%) mothers had previous ANC follow up. Regarding mode of delivery, 581 (91.8%) of the women delivered through spontaneous vaginal delivery (Table 3).

Table 3. Obstetric characteristics of mothers in Jimma zone, 2021

Factor	Variable	Frequency	Percent
Gravidity	Primigravida	48	7.6
	Multigravida	585	92.4
History of stillbirth	Yes	128	20.2
	No	505	79.8
History of Abortion	Yes	42	6.6
	No	591	93.4
ANC follow up	Yes	557	88
	No	76	12
Mode of delivery	Spontaneous vaginal delivery	581	91.8
	Others*	52	8.2
Place of delivery	Home	85	13.4
	Health facility	548	86.6

Cesarean section, instrumental delivery*

5.3. Personal factors

589 (93%) of the respondents reported they were autonomous in making their health care decision, 420 (66.4%) of them had favourable attitude towards MWH utilization, and 236 (65.5%) of them are knowledgeable about MWH utilization (Table 4).

Table 4. Personal factors of mothers in Jimma zone, 2021

Factor	Variable	Frequency	Percent
Decision making	Autonomous	589	93
	Not autonomous	44	7
Attitude	Favourable	420	66.4
	Unfavourable	213	33.6
Knowledge	Knowledgeable	236	65.6
	Not knowledgeable	124	34.4
Social support	Good	120	19
	Poor	513	81

5.4. Facility related factors

374 (59.1%) of mothers revealed that time taken from home to health facility is less than 60 minute and 377 (59.6%) of them were walking on foot to reach to the health facility. With regard to road status, 350 (55.3%) of them were reported that the road status to reach to the health facility were inconvenient. Regarding cost of transportation, 533 (84.2%) of the respondents revealed that no transportation cost whereas 58 (9.2%) of them reported the cost is affordable (Table 5).

Table 5. Facility related factors of mothers in Jimma zone, 2021

Factor	Variable	Frequency	Percent
Time taken	< 60	374	59.1
	> 60	259	40.9
Mode of transport	On foot	377	59.6
	Other means	256	40.4
Availability of transport	Not available	487	76.9
	Available	146	23.1
Cost of transportation	Affordable	58	9.2
	Not affordable	42	6.6
	Free of charge	46	7.3
	Not available	487	76.9
Road status	Inconvenient	350	55.3
	Convenient	283	44.7

5.5. Maternal waiting home utilization

Regarding maternal waiting home utilization 157(24.8%) of the respondents have ever used MWH. The major reason suggested by respondents for not using MWH was lack of awareness about the existence of MWH 209(33%) followed by not refereed or transferred to the MWH 117 (18.5%). Facilitators for MWH utilization were counselling by healthcare providers during ANC follow up 119(18.8) followed by perceived quality of care and awareness of high risk status both at 19(3%). (Figure 3 & 4).

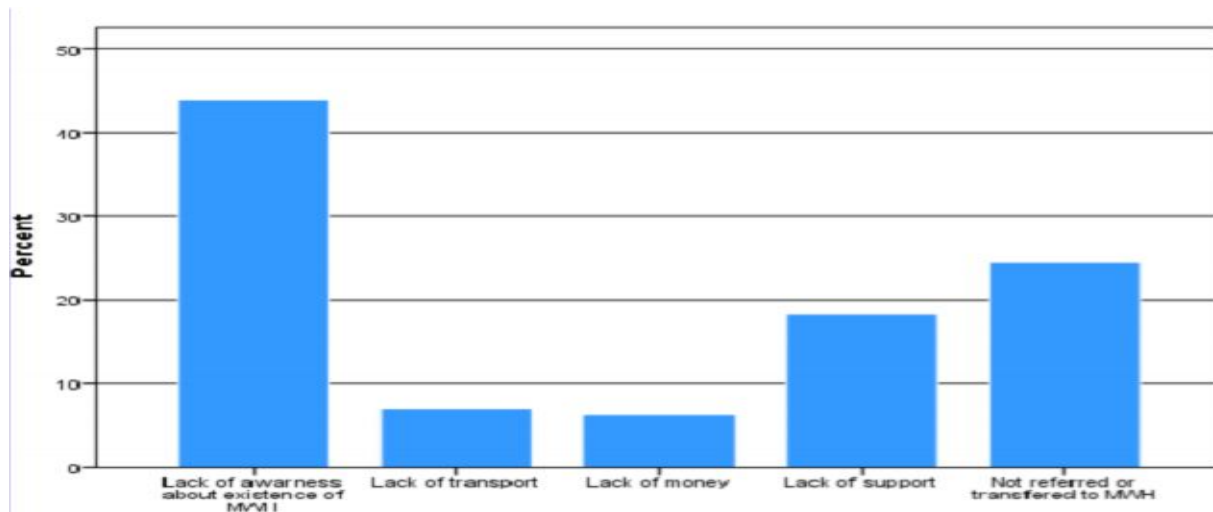


Figure 3. Reason for not using MWH among mothers in Jimma Zone, south west Ethiopia, August 2021

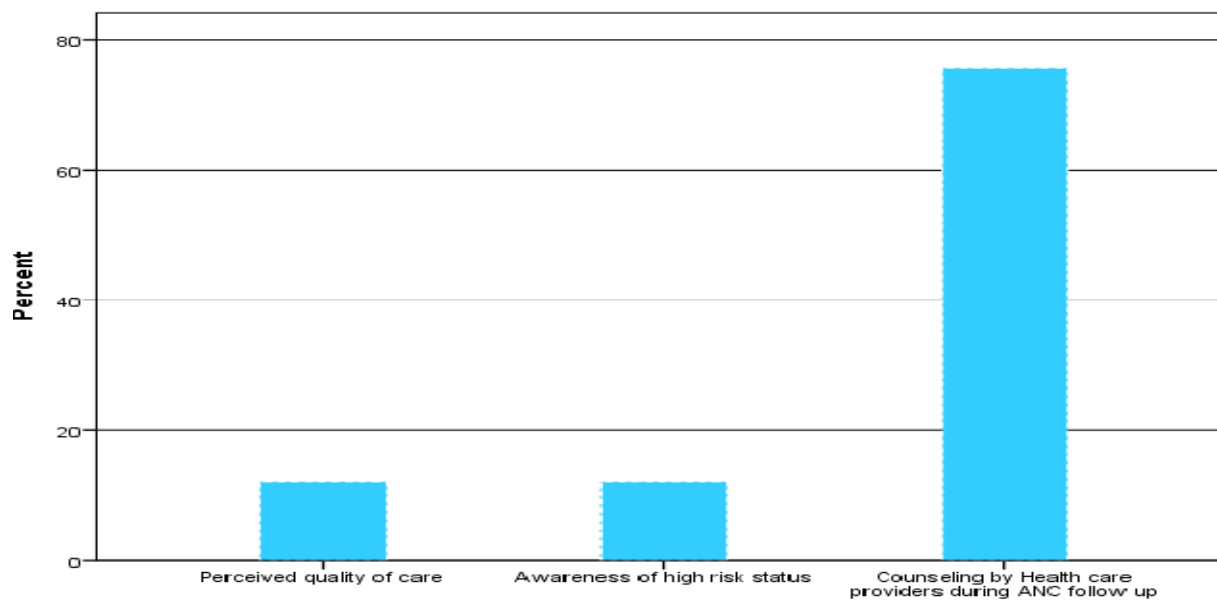


Figure4. Facilitators for MWH utilization among mothers in Jimma zone, southwest Ethiopia, August 2021

5.6. Factors related with MWH Utilization

Variables having P-value < 0.25 in bivariate analyses; Age, residence, family size, mother education & occupation, husband education & occupation, income, gravidity, history of stillbirth, ANC follow up, mode of delivery, place of delivery, decision-making autonomy, attitude, knowledge, time taken to reach the health facility, mode of transport, frequency of availability, road status was selected as candidate for multiple logistic regression analyses (Table 7 & 8).

Table 6. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and MWH utilization in Jimma zone, 2021

Variables		MWH Utilization		COR (95% CI)	P-Value
		Not Utilized	Utilized		
Age	15-19	33(6.9)	3(1.9)	4.32(3.37,6.18)	< 0.001
	20-24	110(23.1)	32(20.4)	3.44(2.32,5.10)	
	25-29	148(31.1)	49(31.2)	3.02(2.19,4.17)	
	30-34	122(25.6)	48(30.6)	2.54(1.82,3.55)	
	≥ 35	63(13.2)	25(15.9)	1	
Residence	Rural	396(83.2)	122(77.7)	1	< 0.001
	Semi-rural	80(16.8)	35(22.3)	2.29(1.54,3.4)	
Family size	≤ 4	240(50.4)	77(49)	1	< 0.001
	≥ 5	236(49.6)	80(51)	2.95(2.29,3.80)	
Mother education	Cannot read and write	178(37.4)	68(43.3)	1	< 0.001
	Read and write	163(34.2)	66(42)	2.47(1.86, 3.28)	
	Formal education	135(28.4)	23(14.6)	5.87(3.77, 9.13)	
Husband education	Cannot read and write	95(21.2)	49(31.6)	1.94(1.37, 2.74)	< 0.001
	Read and write	204(45.5)	68(43.9)	3(2.28, 3.95)	
	Formal education	149(33.3)	38(24.5)	1	
Mother occupation	Housewife	228(47.9)	85(54.1)	2.68(2.09, 3.44)	< 0.001
	Farmer	191(40.1)	54(34.4)	3.54(2.62, 4.78)	
	Merchant	49(10.3)	15(9.6)	3.27(1.83, 5.83)	
	Government employee	8(1.7)	3(1.9)	1	
Husband occupation	Farmer	296(66.1)	109(70.3)	1	< 0.001
	Merchant	121(27)	39(25.2)	3.10(2.16,4.45)	
	Government employee	31(6.9)	7(4.5)	4.43(1.95,10.06)	
Income	< 2250	398(83.6)	117(74.5)	1	< 0.001
	≥ 2250	78(16.4)	40(25.5)	1.95(1.33, 2.86)	

Table 7. Bivariate logistic regression showing association between obstetric, personal and facility related characteristics and MWH utilization in Jimma zone, 2021

Variables		MWH utilization		COR (95% CI)	P-Value
		Not utilized	Utilized		
Gravidity	Primigravida	44(9.2)	4(2.5)	6.8(3.95,23.61)	< 0.001
	Multigravida	432(90.8)	153(97.5)	1	
History of still birth	Yes	101(21.2)	27(17.2)	3.74(2.45,5.72)	< 0.001
	No	375(78.8)	130(82.8)	1	
History of abortion	Yes	30(6.3)	12(7.6)	2.5(1.28,4.88)	.007
	No	446(93.7)	145(92.4)	1	
ANC follow up	Yes	404(84.9)	153(97.5)	2.64(2.19, 3.18)	< 0.001
	No	72(15.1)	4(2.5)	1	
Place of delivery	Home	85(17.9)	0(0)	1	< 0.001
	Health facility	391(82.1)	157(100)	2.49(2.07,3.0)	
Decision making	Autonomous	438(92)	151(96.2)	6.33(2.68, 14.98)	< 0.001
	Not autonomous	38(8)	6(3.8)	1	
Attitude	Favorable	268(56.3)	152(96.8)	1.76(1.45, 2.15)	< 0.001
	Unfavorable	208(43.7)	5(3.2)	1	
Knowledge	Knowledgeable	83(40.9)	153(97.5)	4.67(1.08,6.24)	< 0.001
	Not knowledgeable	120(59.1)	4(2.5)	1	
Time taken	< 60	322(67.6)	52(33.1)	1	.002
	> 60	154(32.4)	105(66.9)	1.47(1.14,1.88)	
Mode of transport	On foot	279(58.6)	98(62.4)	1	< 0.001
	Other means	197(41.4)	59(37.6)	3.34(2.5,4.47)	
Availability of transport	Not available	358(75.2)	129(82.2)	1	< 0.001
	Available	118(24.8)	28(17.8)	4.21(2.79,6.36)	
Road status	Inconvenient	257(54)	93(59.2)	1	< 0.001
	Convenient	219(46)	64(40.8)	3.42(2.59,4.52)	

In multiple logistic regression analyses, after adjusting for potential confounders, autonomous decision making, knowledge about the MWH utilization, and time taken to reach to the health facility were found to be predictors of MWH utilization. Model fitness checked by using Hosmer and Lemeshow test with 5 degree of freedom and significance level of 0.981 for MWH utilization. Multi collinearity between different predictor variables were checked using variance inflation factor and maximum VIF was 3.05.

Mothers, who were autonomous in making their health care decisions were 5 times more likely to utilize MWH than those who were not autonomous (AOR=5.11, 95% CI: 3.09-9.57). Women who are Knowledgeable were 7 times more likely to utilize MWH than mothers who are not Knowledgeable (AOR=6.59, 95% CI: 3.43-8.09). Mothers who reported that time taken to reach to the health facility were 3 times more likely to utilize MWH service than their counterparts (AOR=2.67, 95% CI: 1.19, 6) (Table 8).

Table 8. Multiple logistic regression showing factors independently associated with MWH utilization among mothers in Jimma Zone, 2021.

Variables		MWH Utilization		Odds Ratio (95% CI)		P value
		Not utilized	Utilized	COR	AOR	
Decision making	Autonomous	438(92)	151(96.2)	6.33(2.68, 14.98)	5.11(3.09,9.57)*	0.001*
	Not autonomous	38(8)	6(3.8)	1		
Knowledge	Knowledgeable	83(40.9)	153(97.5)	4.67(1.08,6.24)	6.59(3.43,8.09)*	0.03*
	Not knowledgeable	120(59.1)	4(2.5)	1		
Time taken	< 60	322(67.6)	52(33.1)	1	2.67(1.19,6)*	
	> 60	154(32.4)	105(66.9)	1.47(1.14,1.88)		0.02*

COR=Crude odds ratio; AOR=Adjusted odds ratio; CI=Confidence Interval

*Statistically significant $p \leq 0.01$, 1-Reference

5.7. Factors related with pregnancy outcome

Variables having P-value < 0.25 in bivariate analyses; Age, residence, family size, mother education & occupation, husband education & occupation, income, gravidity, history of abortion, ANC follow up, mode of delivery, place of delivery, decision making autonomy, attitude, knowledge, time taken to reach the health facility, mode of transport, cost of transport, frequency of availability, road status were selected as candidate for multiple logistic regression analyses (Table 10 & 11).

Table 9. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and pregnancy outcome in Jimma zone, 2021

Variables		Pregnancy Outcome		COR (95% CI)	P.Value
		Stillbirth	Alive		
Age	15-19	10(15.6)	26(4.6)	2.6(1.25,5.39)	0.010
	20-24	13 (20.3)	129(22.7)	9.92(5.61,17.55)	<0.001
	25-29	18(28.1)	179(31.5)	9.94(6.13,16.15)	<0.001
	30-34	14(21.9)	156(27.4)	11.14(6.45,19.25)	<0.001
	≥ 35	9(14.1)	79(13.9)	1	
Residence	Rural	56(87.5)	462(81.2)	1	<0.001
	Semi-rural	8(12.5)	107(18.8)	13.38(6.52,27.43)	
Family size	≤ 4	26(40.6)	291(51.1)	1	<0.001
	≥ 5	38(59.4)	278(48.9)	7.32(5.21,10.27)	
Mother education	Cannot read and write	24(37.5)	222(39.0)	1	<0.001
	Read and write	24(37.5)	205(36.0)	8.54(5.6,13.04)	
	Formal education	135(28.4)	23(14.6)	8.88(5.29,14.88)	
Husband education	Cannot read and write	14(23.7)	130(23.9)	9.29(5.35,16.12)	<0.001
	Read and write	24(40.7)	248(45.6)	10.33(6.8,15.71)	<0.001
	Formal education	21(35.6)	166(30.5)	1	
Mother occupation	Housewife	29(45.3)	284(49.9)	1	
	Farmer	29(45.3)	216(38.0)	7.45(5.06,10.98)	<0.001
	Merchant	4(6.3)	60(10.5)	15(5.45,41.27)	<0.001
	Government employee	2(3.1)	9(1.6)	4.5(0.97,20.83)	0.054
Husband occupation	Farmer	43(72.9)	362(66.5)	1	<0.001
	Merchant	13(22)	147(27)	11.31(6.41,19.94)	
	Government employee	3(5.1)	35(6.4)	11.67(3.59,37.93)	
Income	< 2250	56(87.5)	459(80.7)	1	
	≥ 2250	8(12.5)	110(19.3)	13.75(6.71,28.18)	<0.001

Table 10. Bivariate logistic regression showing association between socio demographic & Socio economic characteristics and pregnancy outcome in Jimma zone, 2021

Variables		Pregnancy Outcome		COR (95% CI)	P.Value
		Stillbirth	Alive		
Gravidity	Primigravida	6(9.4)	42(7.4)	7(2.98,16.47)	<0.001
	Multigravida	58(90.6)	527(92.6)	1	
History of abortion	Yes	5(7.8)	37(6.5)	7.4(2.91,18.83)	<0.001
	No	59(92.2)	532(93.5)	1	
ANC follow up	Yes	48(75)	509(89.5)	1	<0.001
	No	16(25)	60(10.5)	3.75(2.16,6.51)	
Mode of delivery	Spontaneous vaginal delivery	54(84.4)	527(92.6)	1	<.001
	Others	10(15.6)	42(7.4)	4.2(2.11,8.37)	
Decision making	Autonomous	4(6.3)	147(25.8)	1	<0.001
	Not autonomous	60(93.8)	422(74.2)	7.8(3.07,19.79)	
Attitude	Favourable	28(43.8)	185(32.5)	10.68(7.58,15.01)	<0.001
	Unfavourable	36(56.3)	384(67.5)	1	
Knowledge	Knowledgeable	11(52.4)	225(66.4)	1	<0.001
	Not knowledgeable	10(47.6)	114(33.6)	11.4(5.97,21.76)	
Place of delivery	Home	16(25)	69(12.1)	1	<0.001
	Health facility	48(75)	500(87.9)	10.42(7.75,14.01)	
MWH Utilization	Yes	5(7.8)	152(26.7)	7.07(5.38,9.28)	<0.001
	No	59 (92.2)	417(73.3)	1	
Travel time	< 60	40(62.5)	334(58.7)	1	<0.001
	> 60	24(37.5)	234(41.1)	9.79(6.43,14.9)	
Mode of transport	On foot	37(57.8)	340(59.8)	1	<0.001
	Other means	27(42.2)	229(40.2)	8.48(5.69, 12.64)	
Frequently available	Not available	52(81.3)	435(76.4)	1	<0.001
	Available	12(18.8)	134(23.6)	11.17(6.19, 20.16)	
Cost of transportation	Affordable	5(7.8)	53(9.3)	10.6(4.24, 26.52)	<0.001
	Not affordable	5(7.8)	37(6.5)	7.4(2.91,18.83)	
	Free of charge	54(84.4)	479(84.2)	1	
Road status	Inconvenient	41(64.1)	309(54.3)	1	<0.001
	Convenient	23(35.9)	260(45.7)	11.3(7.38, 17.32)	

In multiple logistic regression analyses, after adjusting for potential confounders, MWH utilization, mode of delivery, attitude of mothers, and place of delivery were found to be predictors of pregnancy outcome. Model fitness checked by using Hosmer and Lemeshow test with 5 degree of freedom and significance level of 0.562 for pregnancy outcome.

Mothers who utilized MWH were 2 times more likely to have favourable pregnancy outcome than their counterparts (aOR=2.4, 95%CI; 1.27, 5.6). In addition, mothers who deliver through a caesarean section or instrumental delivery were 2 times more likely to have favourable birth outcomes than those who delivered by spontaneous vaginal delivery (aOR=2.37, (95%CI: 1.12,4.99). Mothers who deliver the health facility were 5 times more likely to have favourable birth outcome than those who delivery at home (aOR=5.32, 95%CI; 1.63, 17.37).

Table 11. Multiple logistic regression showing factors independently associated with pregnancy outcome among mothers in Jimma Zone, 2021.

Variables		Pregnancy Outcome		Odds Ratio (95%, CI)		P value
		Stillbirth	Alive	COR	AOR	
Mode of delivery	Spontaneous vaginal delivery	54(84.4)	527(92.6)	1	1	
	Others	10(15.6)	42(7.4)	4.2(2.11,8.37)	2.37(1.12,4.99)*	0.03*
Place of delivery	Home	16(25)	69(12.1)	1	1	
	Health facility	48(75)	500(87.9)	10.42(7.75,14.01)	5.32(1.63,17.37)*	0.02*
MWH Utilization	Yes	5(7.8)	152(26.7)	7.07(5.38,9.28)	2.4(1.27,5.6)*	0.04*
	No	59 (92.2)	417(73.3)	1	1	

COR=Crude odds ratio; AOR=Adjusted odds ratio; CI=Confidence Interval

*Statistically significant $p \leq 0.01$, 1-Reference

Chapter 6: Discussion

In this study, a total of 633 mothers participated, and about 157 (24.8%) of mothers were utilized maternal waiting homes, this result is consistent with a study done in Arsi zone, Ethiopia (23.6%), Gamo Ethiopia (21.50%), and Zambia (23.8%) [18, 39, 40]. On the other hand, the finding of this study is higher than a study conducted in Jimma zone that the utilization rate was only 7% 8.4%, likewise in Arba Minch, 8.4%, and Kenya 10% [29, 41, 42]. The difference might be due to most MWHs are inaccessible due to the mountainous nature of the setting and lack of faster transport options in Arba Minch, study period in a study conducted in Jimma zone, and study setting in the case of Kenya. However, the finding was lower than other studies conducted in Jimma, Ethiopia (38.7%) and in Tanzania (31.3%) [20, 43]. The difference could be attributed to difference in study setting; this study is community based whereas the previous was facility based in case of Tanzania, systemic review in the case of Ethiopia. The other reason for the difference may be difference in socio demographic, economic and cultural variability between the study settings.

The study identified significant predictors of MWH utilization as it is shown in the multiple logistic regression analysis, time taken to reach to the health facility, autonomous decision making, and knowledge about the MWH utilization was found to be significant predictors which positively associated with MWH utilization.

Mothers who travel a distance greater than 60 minutes were more likely to utilize MWH than those who travel less than 60 minutes. This study agrees with a study done in Arsi Ethiopia which reported traveling time less than and equals to 60 minutes from a nearby health facility were less likely to utilize MWH than those who travel more than 60 minutes [40]. Similarly, this study is consistent with a study conducted in Zambia on personal and environmental factors associated with the utilization of maternity waiting homes [44]. This showed that distance remains the leading potential barrier for accessibility of health services, which in turn leads to the more utilization of MWHs.

This study revealed that mothers who had decision-making autonomy during routine service, obstetric emergency and MWH utilization were more likely to utilize the MWH as compared to women who had not the autonomy. This study is consistent with a study done in Oromia and

Southern region, Ethiopia that women who made decisions jointly with their husbands had higher odds of staying in MWHs compared to those women whose husbands alone took the decisions was more likely to utilize the MWH as compared to a woman who were not autonomous [40,42].

Women who were knowledgeable about MWH were more likely to utilize MWH than mothers who were not knowledgeable. This is consistent with a study done in Northwest Ethiopia shows that pregnant woman who had good knowledge had higher odds of MWH utilization [45].

In multiple logistic regressions, factors that predict the pregnancy outcomes were MWH utilization, husband education, mode of delivery, and place of delivery.

In this study, MWH utilizers are more likely to have favourable birth outcomes than those who didn't utilize MWH. This study is indifferent from a systematic review and meta-analysis study done in six African countries to assess the effects of MWHs on stillbirth and it reported that the occurrences of stillbirth among non-users are more likely as compared to users [35]. Similarly, a study done in Atat hospital claimed that there is a less likely risk of perinatal mortality among users than nonusers of MWHs [43]. In addition, another study showed that the number of stillbirths was significantly lower among MWH users than among non-MWH users [46]. Furthermore, this study is in line with a study done in Gurage zone where MWH users were less likely ($p < 0.05$) to have a stillbirth than compared to MWH non-users [47].

Giving birth by caesarean section and instrumental delivery (vacuum extraction or forceps delivery) was more likely to give favourable birth outcome than those who deliver by spontaneous vaginal delivery. This study is consistent with a cross sectional study done in Ethiopia, where spontaneous vaginal delivery was associated with adverse birth outcome [48]. The current study is different from a study done in Uganda that showed that there was no statistical difference in perinatal mortality by the mode of delivery (vaginal vs. instrumental) [49] and similarly, there were no increased odds of death among the vaginally delivered group compared with the caesarean group [50].

Women who delivered at the health facility were more likely to have favourable birth outcome than those who delivered at home. This is similar with a study done in sub-Saharan Africa revealed that perinatal mortality is higher for home compared to facility-based deliveries [51].

This is different from a study conducted in Kenya showed that Infants delivered in a facility had a higher risk of perinatal mortality than infants delivered at home ($p = 0.005$)[52].

Strength and Limitation of the study

Strength

- High response rate was obtained
- Because the study included mothers who gave birth in the last 12 months, there was no problem concerning recall bias during data collection

Limitation

- The study included only 30% of the total kebeles due to financial limitation so some important findings might be missed because of facility based service provision difference.

Chapter 7: Conclusion and Recommendation

Conclusion:-In this study, the utilization of MWH was low 24.8% and majority of the respondents mentioned lack of awareness about the existence of MWHs, not transferred or referred to the MWHs, and lack of family support were the major reason for the low utilization. MWH utilizers had more favourable pregnancy outcome than those non-utilizers. Moreover, mode of delivery and place of delivery were independent predictors of pregnancy outcome.

Recommendation

Jimma zone health office

- Should focus on promotion of MWH services.
- Has to provide information about the services given at MWH for rural mothers especially living far from health facilities using different media outlets.
- Has to promote institutional delivery and equip the health facilities with more advanced equipment so as to improve pregnancy outcome and MWH utilization

District health offices

- Should give due emphasis on advocacy of maternity waiting home and its utilization.
- Should provide tailored information to women about maternity waiting homes utilization through health service providers in any time good opportunity happened

Health care providers

- Have to create awareness about the importance of the use MWH through counseling during service utilization and community mobilization
- Have to promote institutional delivery through health education during women forums, community gatherings, and anytime when opportunity happened
- Health extension workers should provide health education about the benefits of MWH

For researchers

- Further studies should be done to assess the factors associated with the utilization of MWH and pregnancy outcome in Jimma zone as well as across the country
- To conduct further studies using qualitative design to explore other predictors.

Transport and road authority

- Making of road access and avail transportation services to avoid delay related to distance

References

1. Organization WH. WHO Recommendations on Health Promotion Interventions for Maternal and Newborn Health. Geneva: WHO; 2015
2. World Health Organization (WHO). Trends in Maternal Mortality: 2000 to 2017. Estimates by WHO, UNICEF, UNFPA, World Bank and the United Nations Population Division. 2019
3. Berhan Y, Berhan A. Review of maternal mortality in Ethiopia: a story of the past 30 years. *Ethiop J Health Sci.* 2014
4. Stanton ME, Higgs ES, Koblinsky M. Investigating financial incentives for maternal health: an introduction. *J Health Popul Nutr.* 2013;31
5. Bulatao RA, Ross JA. Which health services reduce maternal mortality? Evidence from ratings of maternal health services. *Tropical Medicine and International Health* 2003; 8: 720–
6. WHO. Maternity Waiting Homes: A review of experiences. Geneva WHO [Internet]. 1996;96(21):1–44.
7. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *SocSci Med.* 1994; 38(8):1091–110.
8. Holmes W, Kennedy E. Reaching emergency obstetric care: overcoming the ‘second delay.’ Melbourne: Burnet Institute on behalf of Compass, the Women’s and Children’s Health Knowledge Hub; 2010. <http://www.transaid.org/wp-content/uploads/2015/06/Reaching-emergency-obstetric-care-and-overcoming-the-seconddelay.pdf>.
9. Van Lonkhuijzen L, Stekelenburg J, Van Roosmalen J. Maternity waiting facilities for improving maternal and neonatal outcome in low-resource countries. *Cochrane Database Syst Rev.* 2009;(3).
10. Unicef. Innovative Approches to Maternal and Newborn Health Compendium of Case studies. 2013; (August):67. Avaloable from http://www.unicef.org/health/files/Innovative_Approches_MNH_CaseStudies-
11. Mahler H. The safe motherhood initiative: a call to action. *Lancet.* 1987; 1(8534):668–70.
12. World Health Organization (WHO). Trends in Maternal Mortality: 2000 to 2017. Estimates by WHO, UNICEF, UNFPA, World Bank and the United Nations Population Division. Geneva: World Health Organization; 2019.

13. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels JD, et al. Global Causes of Maternal Death: A WHO Systematic Analysis. *Lancet Global Health*. 2014;2(6): e323-e333.
14. World Health Organization (WHO). Trends in Maternal Mortality: 1990 to 2015. Estimates by WHO, UNICEF, UNFPA, World Bank and the United Nations Population Division. 2015.
15. Federal Ministry of Health [Ethiopia]. Maternal death surveillance and response (MDSR) technical guideline. Addis Ababa: Federal Ministry of Health; 2014.
16. Ethiopia Demographic and Health Survey 2016.
17. The Federal Democratic Republic of Ethiopia Ministry of Health Sector Transformation plan 2015.
18. WHO. Maternity waiting homes: A review of experiences. Geneva: World Health organization, Safe Motherhood Unit, Division of Reproductive Health; 1996. Contract No.: WHO/RHT/MSM/96:21.
19. Sialubanje, C., Massar, K., van der Pijl, M.S.G. *et al.* improving access to skilled facility-based delivery services: Women's beliefs on facilitators and barriers to the utilisation of maternity waiting homes in rural Zambia. *Reprod Health* **12**, 61 (2015).
20. Bekele, B.B., Dadi, T.L. & Tesfaye, T. The significant association between maternity waiting homes utilization and perinatal mortality in Africa: systematic review and meta-analysis. *BMC Res Notes* **12**, 13 (2019).
21. Fogliati P, Straneo M, Mangi S, Azzimonti G, Kisika F, Putoto G. A new use for an old tool: Maternity waiting homes to improve equity in rural childbirth care. Results from a cross-sectional hospital and community survey in Tanzania. *Health Policy Plan* [Internet]. 2017;32 (December):1354-60.
22. Abdulkadir RW. Awareness, attitude towards and utilization of maternity waiting home by mothers in Merti sub county, Isiolo county. *Prime J Soc Sci*. 2017;24-53
23. B, Meshesha, Dejene, Hailemariam, Tesfahun. The Role of Maternity Waiting Area in Improving Obstetric Outcomes: A Comparative Cross-sectional Study, Jinka Zonal Hospital, Southern Regional State. *Journal of Womens Health Care*. 06, 10.4172/21670420.
24. Endalew Getnet, Abebe Lakew, Tamirat Abraham, Gizaw Tamirat.(2017). Intention to use Maternity Waiting Home among Pregnant Women in Jimma District, Southwest Ethiopia
Intention to use Maternity Waiting Home among Pregnant Women in Jimma District,

- Southwest Ethiopia. *Global Journal of Medical Research*.16.8.
25. Singh K, Speizer IS, Kim ET, Lemani C, Tang JH, Phoya A. Evaluation of a maternity waiting home and community education program in two districts of Malawi. *BMC Pregnancy Childbirth*. 2018;18(1):457. Published 2018 Nov 23.
 26. Lori JR, Munro ML, Rominski S, et al. Maternity waiting homes and traditional midwives in rural Liberia. *Int J Gynaecol Obstet*. 2013;123(2):114–118.
 27. Garcia Prado, Ariadna & Cortez, Rafael. (2012). Maternity waiting homes and institutional birth in Nicaragua: Policy options and strategic implications. *The International journal of health planning and management*. 27. 150-66. 10.1002/hpm.1107.
 28. Kebede, K.M., Mihrete, K.M. Factors influencing women's access to the maternity waiting home in rural Southwest Ethiopia: a qualitative exploration. *BMC Pregnancy Childbirth* **20**, 296 (2020).
 29. Kurji, Jaameeta & Abebe, Lakew & Abera, Mulumebet & Morankar, Sudhakar & Asefa, Yisalemush & Kiros, Getachew & Gebretsadik, Abebe & Bergen, Nicole & Asfaw, Shifera & Bedru, Kunuz & Duguma, Gebeyehu & Labonté, Ronald & Taljaard, Monica & Kulkarni, Manisha. (2019). Factors associated with maternity waiting home use among women in Jimma Zone, Ethiopia: a multilevel cross-sectional analysis. *BMJ Open*. 9. e028210. 10.1136/bmjopen-2018-028210.
 30. Tiruneh, Gizachew & Taye, Belaynew & Karim, Ali & Betemariam, Wuleta & Fesseha, Nebreed & Wereta, Tewabech & Lemango, Ephrem. (2018). Maternity waiting homes in Rural Health Centers of Ethiop: The situation, women's experiences and challenges.
 31. Mramba 2010. Mramba L, Nassir FA, Ondieki C, Kimanga D. Reasons for low utilization of a maternity waiting home in rural Kenya. *International Journal of Gynecology & Obstetrics*. 2010;108(2):152–3.
 32. Eckermann, Elizabeth & Deodato, Giovanni. (2008). Maternity waiting homes in Southern Lao PDR: The unique 'silk home'. *The journal of obstetrics and gynaecology research*. 34. 767-75. 10.1111/j.1447-0756.2008.00924.x.
 33. Kurji J, Gebretsadik LA, Wordofa MA, et al. Factors associated with maternity waiting home use among women in Jimma Zone, Ethiopia: a multilevel cross-sectional analysis. *BMJ Open*. 2019;9 (8):e028210. Published 2019 Aug 28.
 34. Lori JR, Boyd CJ, Munro-Kramer ML, et al. Characteristics of maternity waiting homes and

- the women who use them: Findings from a baseline cross-sectional household survey among SMGL-supported districts in Zambia. *PLoS One*. 2018;13(12):e0209815
35. Lonkhuijzen, Luc & Stegeman, Margreet & Nyirongo, Rebecca & Roosmalen, Jos. (2003). Use of Maternity Waiting Home in Rural Zambia. *African journal of reproductive health*. 7. 32-6. 10.2307/3583343.
 36. Dadi TL, Bekele BB, Kasaye HK, Nigussie T. Role of maternity waiting homes in the reduction of maternal death and stillbirth in developing countries and its contribution for maternal death reduction in Ethiopia: a systematic review and meta-analysis. *BMC Health Serv Res*. 2018;18(1):748. Published 2018 Oct 1.
 37. Chandramohan 1994. Chandramohan D, Cutts F, Chandra R. Effects of a maternity waiting home on adverse maternal outcomes and the validity of antenatal risk screening. *International Journal of Gynecology & Obstetrics*. 1994;46(3):279–84.
 38. Poovan P, Kifle F, Kwast BE (1990). A maternity waiting home reduces obstetric catastrophes. *World Health Forum* 11:440-445.
 39. Getachew B, Liabsuetrakul T, Gebrehiwot Y. Association of maternity waiting home utilization with women's perceived geographic barriers and delivery complications in Ethiopia. *Int J Health Plann Mgmt*. 2020;35:e96– 107.
 40. Gezimu W, Bitewa YB, Tesema MT, Wonde TE (2021) Intention to use maternity waiting home and associated factors among pregnant women in Gamo Gofa zone, Southern Ethiopia, 2019. *PLoS ONE* 16(5): e0251196.
 41. Derese Teshome, Muluemebet Abera, Mamo Nigatu. Maternity waiting home Utilization and associated factors among women who gave birth in the Digelu and Tijo district of the Arsi Zone, Oromia, Ethiopia medRxiv 2020.
 42. Gurara, M.K., Van Geertruyden, JP., Gutema, B.T. *et al*. Maternity waiting homes as component of birth preparedness and complication readiness for rural women in hard-to-reach areas in Ethiopia. *Reprod Health* **18**, 27 (2021).
 43. Paul odour oyoko. Factors influencing utilization of maternal waiting homes in Kenya: a case of Turkana West Sub-County. 2018.
 44. Bekele, Bayu Begashaw & Umubyeyi, Aline. (2018). Maternity waiting homes and skilled delivery in Ethiopia: Review of strategy and implementation to drive sustainable

development goals. 9. 10.5897/MPR2018.0137.

45. Sialubanje, C., Massar, K., Hamer, D.H. *et al.* Personal and environmental factors associated with the utilisation of maternity waiting homes in rural Zambia. *BMC Pregnancy Childbirth* **17**, 136 (2017).
46. Endayehu, M., Yitayal, M. & Debie, A. Intentions to use maternity waiting homes and associated factors in Northwest Ethiopia. *BMC Pregnancy Childbirth* **20**, 281 (2020).
47. Floris Braat, Tienke Vermeiden, Gashaw Getnet, Rita Schiffer, Thomas van den Akker, Jelle Stekelenburg, Comparison of pregnancy outcomes between maternity waiting home users and non-users at hospitals with and without a maternity waiting home: retrospective cohort study, *International Health*, Volume 10, Issue 1, January 2018, Pages 47–53,
48. Erickson AK, Abdalla S, Serenska A, Demeke B, Darmstadt GL. Association between maternity waiting home stay and obstetric outcomes in Ytebon, Ethiopia: a mixed-methods observational cohort study. *BMC Pregnancy Childbirth*. 2021 Jul 3;21(1):482.
49. Teshale Mulatu Dibisa, Adera Debela Kebede, Tilaye Feto Gelano et al. Adverse birth outcomes among women who gave births at Eastern Ethiopian Hospitals: a cross sectional study, 13 May 2020, PREPRINT (Version 1) available at Research Square
50. Tiruneh, D., Assefa, N. & Mengiste, B. Perinatal mortality and its determinants in Sub Saharan African countries: systematic review and meta-analysis. *matern health, neonatol and perinatol* **7**, 1 (2021).
51. Durie DE, Sciscione AC, Hoffman MK, Mackley AB, Paul DA. Mode of delivery and outcomes in very low-birth-weight infants in the vertex presentation. *Am J Perinatol*. 2011 Mar;28(3):195-200.
52. Chinkhumba, J., De Allegri, M., Muula, A.S. *et al.* 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 (2014).
53. Kunkel M, Marete I, Cheng ER, Bucher S, Liechty E, Esamai F, Moore JL, McClure E, Vreeman RC. Place of delivery and perinatal mortality in Kenya. *Semin Perinatol*. 2019 Aug;43(5):252-259.

Annex I

Part I: PARTICIPANT INFORMATION SHEET FOR CONSENT

Hello, My name is _____ This is a request for you to participate in a study that intends to assess Maternal waiting home utilization and pregnancy outcome in Jimma zone. This data that will be generated to provide health care program managers in making strategic decisions regarding the utilization of maternal waiting homes in the improvement of birth outcome. I will ask you questions related with maternal waiting home utilization and pregnancy outcome. The interview may last about an hour.

There is no harm/disadvantage if you participate in this study except that it takes some of your time and there is no payment. All the data will be processed without name, but we will use a code number and a working position that links you to your data. Only authorized project personnel will have access to the data. The data will be stored confidentially. It will not be possible to identify you when the results are published.

Participation in this study is voluntary. You can choose not to answer any individual question or totally refuse to participate in the study. This will not have any consequences on you. However, I hope that you will participate fully in this survey since your views are very important.

Are you willing to continue with the interview? Yes _____ No _____

Thank you for your participation!

Part II. English Questionnaire

Maternal waiting home: utilization and pregnancy outcomes among women who gave birth in Jimma zone, Oromia Regional State, South-West Ethiopia.

Part I. Identification			
S.no	Questions	Responses	Skip
101	District		
102	Kebele		
103	Name of HC which has MWH (Nearby)		
Part II. Socio demographic and socio economic variables			
201	Age in years	_____ in completed years	
202	Religion	1. Muslim 2. Orthodox 3. Protestant 4. Others specify _____	
203	Ethnicity	1. Oromo 2. Dawro 3. Gurage 4. Amhara 5. Others specify _____	
204	Educational status of the mother	1. Can't read and write 2. Read and write 3. Primary school 4. Secondary school 5. Tertiary and above	
205	Occupation of the mother	1. Housewife 2. Farmer 3. Merchant	

		4. Government employee 5. Others specify _____	
206	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Others specify _____	If single, skip to Q 209
207	Occupation of the husband	1. Farmer 2. Merchant 3. Government employee 4. Others specify _____	
208	Educational status of the husband	1. Can't read and write 2. Read and write 3. Primary school 4. Secondary school 5. Tertiary and above	
209	Who is the Head of the household?	1. Wife 2. Husband 3. Other relatives 4. Other specify _____	
210	Family size	_____ ?	
211	Monthly income in Birr	_____ ?	
212	Residence	1. Rural 2. Semi-rural 3. Urban	

Part III. Knowledge			
301	Do you know what MWH is?	1. Yes 2. No	If no, skip to Q 401
302	From where do you get the	1. Friends, neighbor and/or families	

	information?	<ol style="list-style-type: none"> 2. HEWs 3. Health professionals 4. Media 	
303	Do you know the services that are given at MWH facility?	<ol style="list-style-type: none"> 1. Yes 2. No 	If no, skip to Q 305
304	If yes to question number 303, what are the services?	<ol style="list-style-type: none"> 1. A waiting place before delivery 2. To get close follow up of high risk pregnancy 3. Provide a food supplement while awaiting labor 4. Other specify_____ <p>(Multiple answer possible)</p>	
305	Do you know the benefits of MWH?	<ol style="list-style-type: none"> 1. Yes 2. No 	If no, skip to Q 307
306	If yes to question number 305, what are they?	<ol style="list-style-type: none"> 1. Waiting place if the pregnancy is associated with risk 2. Waiting place if home is very distant to the MWH facility 3. Waiting place where I can get safe and quality delivery 4. Waiting place where pregnancy related complications are treated early <p>(Multiple answer possible)</p>	
307	Do you know the reason for admission at MWA facility?	<ol style="list-style-type: none"> 1. Yes 2. No 	If no, skip to Q 401
308	If yes, what are they?	<ol style="list-style-type: none"> 1. High risk pregnancy 2. If there is a complication 3. Home is distant to the health facility 4. Other specify_____ 	

		(Multiple answer possible)	
Part IV. Maternal Waiting Home Utilization			
401	Where did you give the last birth of your pregnancy?	1. Home 2. Health post 3. Health center 4. Hospital 5. Other specify _____	If home, skip to Q 402, 404, & 501 If HP, HC, Hospital skip to 403
402	If the answer for Q 401 is option 1, (Non-institution); What was your reason for giving birth at home?	1. Because it is safe 2. Lack of transport 3. Due to distance of health facility 4. Other specify _____	
403	If the answer for Q 401 is option 2, 3 or 4 (Institution); What was your reason for giving birth at Health institution?	1. Because it is safe 2. Due to high risk pregnancy 3. Health professionals counselling 4. Other specify _____	
404	Have you used MWH in your last pregnancy?	1. Yes 2. No	If yes, skip to 406 If no skip to 405 & 501
405	What was your reason for not utilizing MWHs?	1. Lack of awareness about existence of MWHs 2. Lack of transport to health facility 3. Lack of money to utilize during stay/Cost 4. Lack of support from husband & family 5. Non friendly MWHs 6. Not referred/transferred to MWH 7. Other specify _____	
406	What was the facilitator for the utilization of MWH?	1. Perceived quality of care 2. Awareness of high risk status	

		<ul style="list-style-type: none"> 3. Women decision making autonomy 4. Counseling by Health care providers during ANC follow up 5. Other specify_____ 	
407	Who were referred you to the MWH service?	<ul style="list-style-type: none"> 1. Self 2. Health post 3. Health center 4. Hospital 	
408	What was the reason for your referral?	<ul style="list-style-type: none"> 1. Distance 2. Geographical location 3. Lack of transportation 4. Presence of complication 5. Other specify 	
409	Did you paid for the services at the MWH of your last pregnancy?	<ul style="list-style-type: none"> 1. Yes 2. No 	If no, skip to 411
410	If yes to question number 409, how is the cost of the service?	<ul style="list-style-type: none"> 1. Affordable 2. Not Affordable 	
411	Did you get food from the HF while you staying at MWH?	<ul style="list-style-type: none"> 1. Yes 2. No 	
412	Did health care providers allow you to make traditional ceremony in the MWHs?	<ul style="list-style-type: none"> 1. Yes 2. No 	
413	Did the health care providers allowed you to take your relatives with you?	<ul style="list-style-type: none"> 1. Yes 2. No 	
414	Did the health care providers monitor you regularly at MWH?	<ul style="list-style-type: none"> 1. Yes 2. No 	
415	Have you stayed at the MWH facility before delivery?	<ul style="list-style-type: none"> 1. Yes 2. No 	If no, skip to Q 418

416	How long do you stay at the MWH before delivery?	1. ≤ 14 days 2. ≥ 15 days	
417	What was the reason to stay at MWH before delivery?	1. Sepsis 2. Gestational hypertension 3. Previous Cesarean section 4. Gestational diabetes 5. Other _____	
418	Have you stayed at the MWH facility after delivery?	1. Yes 2. No	If no, skip to Q 420
419	How long do you stay at the MWH after delivery?	1. ≤ 14 days 2. ≥ 15 days	
420	What was the reason to stay at MWH after delivery?	1. PPH 2. Sepsis 3. Postpartum depression 4. Other specify _____	
421	How do you rate the service given at MWH facility?	1. Very good 2. Good 3. Fair 4. Bad	
422	If bad to question number 417, what was the reason?	_____?	

Part V. Accessibility			
501.	How long it take to reach to the heath facility from home?	_____ Minutes	
502.	Which mode of transport do you use to go to the nearest health facility?	1. On foot 2. Non engine vehicle 3. Ambulance 4. Public transportation 5. Other specify	

503	If the answer for Q 502 is option 2, 3, 4, &5 ; how frequent is the transportation available?	1. Sometimes 2. Everyday	
504.	If the answer for Q 502 is option 2, 3, 4, &5 ; How is the cost of transportation?	1. Affordable 2. Not Affordable 3. No payment/free of charge	
505.	Status of roads to nearest health facility?	1. Inconvenient 2. Convenient	

Part VI Obstetrics history			
601	How many pregnancies do you have?	1. 1 2. 2 3. 3 4. ≤ 4	
602	How many children's do you have?	1. 1 2. 2 3. ≥ 3	
603	Do you have history of still birth (above 28 week) in your past pregnancy?	1. Yes 2. No	
604	Do you have history of abortion (below 28 week) in your past pregnancy?	1. Yes 2. No	
605	Do you have history of ANC follow up?	1. Yes 2. No	If no, skip to Q 607
606	If yes to Q 605, What was the number ANC visit of your last pregnancy?	_____ in number	
607	Was there a complication during your past pregnancy?	1. Yes 2. No	If no, skip to Q 609
608	If yes to Q 607 , what was the complication?	1. Hypertension 2. Antepartum hemorrhage	

		3. Postpartum hemorrhage 4. Sepsis 5. Fetal mal presentation 6. Pre mature rupture membrane 7. Pre term delivery 8. Other specify ----- (Multiple answer possible)	
611	What was the mode of delivery of your recent pregnancy?	1. Spontaneous vaginal delivery 2. Cesarean section 3. Instrumental delivery (Vacuum or forceps)	
612	What was the outcome of your pregnancy?	1. Stillbirth 2. Alive	
613.	Was there any chronic illness during your last pregnancy?	1. Yes 2. No	
614.	If your response for Q 613 is yes , which chronic illness?	1. Diabetes Miletus 2. HIV/AIDS 3. Hypertension 4. Cardiac 5. Severe Anemia 6. Hepatitis B 7. Other specify	

Part VII Social support			
701.	Have you get visits from your friends, neighbors, and relatives during your stay at MWHs?	1. Yes 2. No	
702.	Did you get someone you trust (husband, family members, friends, neighbors, or others) to talk to or share your concerns on MWH service utilization?	1. Yes 2. No	
703.	Did you get people who care or loved you during your pregnancy, delivery	1. Yes	

	and MWH utilization?	2. No	
704.	Did you get any help with your household chores while you stayed at MWH facility?	1. Yes 2. No	
705.	Did you get any help with money from your relatives/family members in an obstetrics emergency during your last delivery?	1. Yes 2. No	
706.	Does anyone help you when you need transportation during your last delivery?	1. Yes 2. No	

Part VIII Decision making autonomy			
801	Who made a decision to go for health care use for your health concerns (ANC, DC, or PNC)?	1. Alone 2. Joint [Both] 3. Respondent and someone else 4. Husband/partner alone 5. Someone else 6. Other	
802	Who decided to go to health facility during obstetric emergency?	1. Alone 2. Joint [Both] 3. Respondent and someone else 4. Husband/partner alone 5. Someone else 6. Other	
803	Who made a decision to utilize MWH service?	1. Alone 2. Joint [Both] 3. Respondent and someone else 4. Husband/partner alone 5. Someone else 6. Other	Only if yes to Q 404

Part IX Attitude of mothers towards MWH utilization				
1	MWHS utilization is important for all pregnant women	1= Agree	2=Neutral	3= Disagree

2	MWHS is a safe place for mothers to wait and give birth			
3	MWHs should be utilized by all pregnant women			
4	MWHs was meant for pregnant mothers with a problem			
5	MWHS is recommendable for our belongings/relatives			
6	Health professionals at MWHS areas are client friendly			
7	Health professionals at MWH areas treat us with respect			
8	Health professionals at MWH areas maintain clients privacy and confidentiality			

Part III. Miiltoolee

Kutaa I: UNKA ODEEFFANNOO HIRMAATTONNI ITTI WAADAA SEENAN

Hayyee, Maqaankoo _____ Barreeffamni kun godina Jimmaatti qorannoo waa'ee mana turtii haadholii fi bu'aa ulfaa qorachuuf kaayyeffate keessatti akka hirmaattaniif kan dhiyaate dha.yommuu. Odeeffannoon asirraa argamu hoji-gaggeessitootni fayyaa murtii yeroo tarsiimawaa dhimmoota itti fayyadama mana turtii haadholii walqabatan irratti kenuudhaan bu'aa dahumsaan fooyyessuudhaaf oola. Gaaffilee itti fayyadama mana turtii haadholiin walqabtan fi bu'aa dahumsaa si gaafachuufan deema. Afgaaffiin kun sa'atiii tokko fudhachuu danda'a.

Hirmaachuu keetiif bu'aan argattus tahe miidhaan sirra gahu hin jiru; yerookee hamma tahe aarsaa gochuu malee. Odeeffannooleen kan adeemsifaman maqaa utuun dhahinii dha, garuu bakka bu'ee fayyadmuu malla akkasumas bakka hojii nin fayyadamna kan siif odeeffannookee wal simsiisu. Namoota eeyyamameef qofatu odeeffannoo san bira gahuu danda'a. Odeeffannoon iccitiidhaan qabama; yommuu bu'aan qorannoo maxxanfamu adda isin baasuun hin danda'amu. Hirmaannaan qorannichaa fedharratti kan hundaa'eedha. Gaaffii barbaadde deebisuu dhiisuuf mirgikee eegamaadha; qorannoo irratti hirmaachuu dhiisuunis mirga keeti.Kun sirratti dhiibba fidu hin qabu.. Haatahu malee, akka ati qorannoo kana irratti himaattu abdiin qaba sababni isaa yaadnikee baayyee nu barbaachisa waan taheef.

Afgaaffii irratti hirmaachuuf ni eeyyamtaa? Eeyyee _____ Lakkii _____

Hirmaannaa keetiif galatoomi!

Part IV: Afaan Oromo Questionnaire

Kutaa 1. Addaan baastuu			
T/L	Gaaffilee	Deebiiwwan	Irra-tari
101	Aaanaa		
102	Ganda		
103	Maqaa Buufata Fayyaa mana turtii haadholii qabanii (Dhiheenyatti)		
Kutaa II: Jijjiiramoota hawaasummaa fi hawaasdinagdee			
201	Umurii waggaadhaan	Waggaa_____Fixeera	
202	Amantaa	1. Musiliima 2. Ortodoxoksii 3. Pirootestaantii 4. Kan biro(Caqasi)_____	
203	Gosa/qomoo	1. Oromoo 2. Daawuroo 3. Guraagee 4. Amaara 5. Kan biro(Caqasi)_____	
204	Haala Gaa' ilaa	1. Qeerroo/Qarree 2. Kan fuudhe/heerumte 3. Kan hike/hiikte 4. Kan irraa du'e/duute 5. Kan biro (caqasi) _____	Yoo qeerroo/qarree taate gara gaaffii 106, 108, 110 tyi tari
205	Sadarkaa barnoota Haadhaa	54. Dubbisuu fi barreessuu kan hin dandeenye 55. Dubbisuu fi barreessuu kan dandeessu 3. Sadarkaa 2ffaa 4. Sadarkaa 3ffaa fi sanii ol	
206	Sadarkaa barnoota Abbaa	1. Dubbisuu fi barreessuu kan hin	

		dandeenye 2. Dubbisuu fi barreessuu kan dandeessu 3. Sadarkaa Tokkoffaa 4. Sadarkaa 2ffaa 5. Sadarkaa 3ffaa fi sanii ol	
207	Hojin Haadhaa	1. Haadha warraa 2. Qotee bulaa 3. Daldalaa 4. Hojjettuu mootummaa 5. Kan biroo _____	
208	Hojin Abbaa	1. Qotee bulaa 2. Daldalaa 3. Hojjetaa mootummaa 4. Kan biroo _____	
209	Baayyina maatii	_____ ?	
210	Mataan manaa eenyu?	1. Haadha warraa 2. Abbaa Warraa 3. Firoota biroo 4. Kan biroo(Caqasi)_____	
211	Galii ji'aa qarshiidhaan	_____ ?	
212	Bakka	1. Baadiyyaa 2. Hammi tahe baadiyyaa 3. Magaalaa	

Kutaa III. Beekumsa

301	Manni turtii haadholii maal akka tahe beektaa?	1. Eeyyee 2. Lakkii	Yoo Lakkii tahe, gara gaaffii 302 - 310'tti tari
302	Odeeffannoo eessaa argatta?	1. Hiriyoota, Olloota and/ maatiiwwan 2. Hojjettuu eksiteenshinii Fayyaa	

		3. Ogeessota Fayyaa 4. Miidiyaa irraa 5. Kan biro (Caqasi)_____	
303	Tajaajilawwan mana turtii haadholii keessatti kennaman beektaa?	1. Eeyyee 2. Lakkii	Yoo lakkii tahe , gara gaaffii 305'tti tari
304	Yoo gaaffii 303 eeyyee tahetajaajilawwan sun maal fa'i?	1. Bakka turtii dahumsaan duraa 2. Dahumsaa saaxilamoo ta'aniif hordoffii itti djiheenyaan gochuuf 3. Nyaata dabalaa yeroo ciniinsuu kennuudhaaf 4. Kan biro (Caqasi)_____	
305	Faayidaa mana turtii haadholii beektaa?	1. Eeyyee 2. Lakkii	Ypp lakkii tahe gara gaaffii, 307 tari
306	Deebii gaaffii 305 yoo eeyyee tahe faayidaaleen isaa maal fa'i?	1. Bakka turtii yoo ulfi saaxilamaa tahe 2. Bakka turtii yoo maaani isaanii mana turtii haadholii irraa baayyee fagoo tahe 3. Bakka turtii itti dahumsaa fayyaalessa fi guutuu tahe itti argatanii dha. 4. Bakka turtii ulfi wal xaxaan itti yaalamuu dha. (deebii lamaa ol eeyyamamaadha)	
307	Sababii gara mana turtii haadholii geeffamaniif beektaa?	1. Eeyyee 2. Lakkii	Yoo lakkii tahe, gara gaaffii 309tti darbi
308	Yoo eeyyee tahe, maal fa'i isaan?	1. Ulfa baayyee saaxilamaa 2. Yoo rakkoo walxaxaan jiraate	

		3. Manni yoo mana yaalaa irraa fagoo tahe 4. Kan biro(caqasi)_____	
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Kutaa IV. Hojiiwwan mana turtii haadholii			
401	Dahumsakee isa dhumaa eessatti deesse?	1. Manatti 2. Kellaa Fayyaatti 3. Buufata Fayyaa 4. Hoospitaala 5. Kan biro (caqasi)_____	Yoo mana tahe, gara gaaffii 403 - 423 yookaan Yoo KF, BF, Hospitala ta'e gara gaaffii 403tti tari
402	Yoo deebiin gaaffiin 401 '1' ta'e, (Dhaabbilee fayyaan alatti); sababiin ati mana deesseef maali?	1. Fayyaaleessa waan taheef 2. Hanqina geejjibaa 3. Fgeenya dhaabbilee Fayyaa 4. Kan biro (caqasi)_____	
403	Yoo deebiin gaaffii 401 2, 3 ykn 4 tahe (Dhaabbata fayyaatti); sababootni ati mana yaalaatti dahuu filatteef maaliif?	1. Fayyaaleessa waan taheef 2. Ulfa baayyee saaxilamaa waan taheef 3. Gorsa ogeesota fayyaa 4. Kan biro (adda baasi)_____	
404	Ulfakee isa yeroo darbee irratti mana turtii haadholii fayyadamteettaa?	1. Eeyyee 2. Lakkii	Yoo deebiin gaaffii 404 lakkii tahe , gara gaaffii 406- 423tti tari
405	Sababootni ati mana turtii haadholii hin fayyadamneef maal fa'i?	1. Waa'ee mana turtii haadholii hubannoo dhabuu 2. Yeroo turtiitti Hanqina maallaqa itti fayyadamanii	

		<ol style="list-style-type: none"> 3. Hanqina deeggersa abbaa manaa fi maatii 4. Mana turtii haadholii namatti hin tolle 5. Kan biro(adda baasi)_____ 	
406	Mana turtii haadholii fayyadamuuf haalotni mijeessan maal fa'i?	<ol style="list-style-type: none"> 1. Tajaajilli qulqullina qabaachuu 2. Ulaagaa saaxilamummaa beekuu 3. Haati of dandeessee murtii kennuu 4. Gorsa hojjetoota kellaa fayyaa yeroo hordofii dahumsa duraa 5. Kan biroo (Caqasi)_____ 	
407	Tajaajila mana turtii haadholiitiif eenyutu ol si erge?	<ol style="list-style-type: none"> 1. Anuma 2. Kellaa Fayyaa 3. Buufata Fayyaa 4. Hospitaala 	
408	Sababiin ati ol-ergamteef maalture?	<ol style="list-style-type: none"> 1. Fageenya 2. Argama Ji'oogiraafii 3. Hanqina geejjibaa 4. Jiraachuu rakkoo walxaxaa 5. Kan biro (Caqasi) 	
409	Tajijila ulfaakee isa dhumaa argatteef qarshii kaffaltee?	<ol style="list-style-type: none"> 1. Eeyyee 2. Lakkii 	Yoo lakkii tahe, gara gaaffi 411'tti tari
410	Yoo deebiin gaaffii 409 eeyyee tahe, gatiin tajaajilichaa qarshiidhaan meeqa?	<ol style="list-style-type: none"> 1. Qaalii 2. Qaalii kan hin tahin 	
411	Yeroo turtiikee mana turtii haadholii keessatti nyaata argatteettaa?	<ol style="list-style-type: none"> 1. Eeyyee 2. Lakkii 	

412	Mana turtii haadholii keessatti qophii aadaa akka gootuuf ogeessonni siif eeyyamaniiruu?	1. Eeyyee 2. Lakkii	
413	Ogeessotni fayyaa akka firootnikee dhufaniif siif eeyyamani jiruu?	1. Eeyyee 2. Lakkii	
414	Ogeessotni fayyaa haalaan hordoffii siif godhaniiruu mana turtii haadholii keessatti?	1. Eeyyee 2. Lakkii	
415	Dahumsaan booda mana turtii haadholii keessa turfamteettaa?	1. Eeyyee 2. Lakkii	Lakkii yoo tahe, gara gaaffii 417'tti tari
416	Dahumsaan booda mana turtii haadholii keessa hammamiif turte?	1. Guyya ≤ 14 2. Guyya ≥ 15	
417	Sababiin dahumsaan dura mana turtii haadholii turtfamteef maalture?	1. Infekshinii Dhiigaa 2. Dhukkuba Onnee 3. Dahumsa gara baqaqfachuun kan durii 4. Dhukkuba shukkaaraa yeroo ulfaa 5. Kan biroo _____	
418	Sababiin dahumsaan booda mana turtii haadholii turtfamteef maalture?	1. Dhangalahuu dhiigaa dahumsa booda 2. Infekshinii Dhiigaa 3. Dahumsaan booda muusa'uu 4. Kan biro (caqasi) _____	
419	Tajaajila siif kenname akkamiin shallagda?	1. Baayyee gaarii 2. Gaarii 3. Gahaa 4. Gadhee	
420	Deebiin gaaffii 417, gadhee yoo tahe sababiinkee maali?	_____?	

Kutaa V. Dhaqqabummaa

501.	Dhaabbatni fayyaa sitti dhihoo tahe hammam sirraa fagaata?	Distance inkm _____	
502.	Yeroo hangamii sitti fudhata manaa kaate dhaabbata fayyaa gahuuf?	1. Daqiiqaa 60 gadi 2. Daqiiqaa 60 oli	
503.	Gosni geejjibaa ati fayyadamtu maali gara mana yaalaa deemuuf?	1. Miilaan 2. Fardaan/Gaangedhaan 3. Geejjiba Hawaasaa 4. Kan biro(Caqasi)	
504	Yoo deebiin gaaffii 403 filannoo 3 tahe , (Geejjiba gawaasaa);geejjibni sun yeroo meeqa jiraata?	1. Takkatakka 2. Yeroo mara	
505.	Gatiin geejjibaa akkami?	1. Qaaliidha 2. Qalii miti	
506.	Haalli daandii dhaabbata fayya geessuu akkam?	1. Mijataa miti 2. Mijataa dha	

Kutaa VI Seenaa ulfaafi dahumsaa			
601	Si'a meeqa ulfoofte?	1. 1 2. 2 3. 3 4. ≥ 4	
602	Ijoollee meeqa qabda?	1. Ijoollee waggaa shanii gadii hin qabu 2. 1 3. 2 4. ≥ 3	
603	Daa'ima lubbuun hin jirre deessee beektaa (turban 28-36)?	lakkoofsaan _____	
604	Ulfi sirraa bahee beekaa (torban 28 gadi)?	lakkoofsaan _____	
605	Hordoffii Dahumsa duraa siif godhamee beektaa?	1. Eeyyee 2. Lakkii	Yoo lakkii tahe,

			gaaffii 607'tti tari
606	Yoo gaaffiin 605 eeyyee tahe ,baayyinni hordoffii daumsa duraa kan ulfa isa dhumaa meeqa ture?	Lakkoofsaan_____	
607	Ulfakee isa dhumaa irratti rakkoo walxaxaan tureeraa?	1. Eeyyee 2. Lakkii	Yoo lakkii tahe gara 609'tti tari
608	Yoo eeyyee tahe 607 irratti ,rakkoo walxaxaan yeroo ulfaa maal ture?	1. Dhukkuba onnee yeroo ulfaa 2. Dhukkuba shukkaaraa yeroo ulfaa 3. Infeekshinii dhiigaa 4. Dhangalahuu dhiigaa dahumsa duraa 5. Kan biro (caqasi)	
609	Rakkoo walxaxaan dahumsakee yeroo dhiyoo maal ture?	1. Eeyyee 2. Lakkii	Yoo Lakkii tahe, gara Q 611'tti tari
610	Yoo deebiin gaaffii 505 eeyyee tahe rakkoo walxaxaan sun maal ture?	1. Ciniinsuu uggurame 2. Infeekshinii dhiigaa 3. Tarsa'uu qaama hormaataa 4. Kan biro(caqasi)_____ (Deebiin lamaa ol eeyyamamaadha)	
611	Akkaataan dahumsakee yeroo dhihoo maal ture?	1. Nagaadhaan karaa qaama hormaataa 2. Garaa baqaqsuudhaan 3. Meeshaa saayinsaawaa tahe fayyadamuudhaan	

612	Bu'aan dahumsa keetii maal ture?	1. Du'aatu dhalate 2. Utuu bakka hin gahin dhalate 3. Kan lubbuu qabu	
613	Sababiin ati dahumsa dura mana turtii haadholii keessa akka turtu godhamteef maali?	1. Dhukkuba Onnee 2. Baqaqsanii hodhuu yeroo duraa 3. Rakkoo walxaxaa obbaatii 4. Dhukkuba shukkaaraa yeroo ulfaa 5. Kan biro(caqasi)_____ (Deebiin lamaa ol eeyyamamaadha)	
614	Ulfa yeroo darbee keessatti rakkoon fayyaa meedikaalaa fi ulfaa tureeraa?	1. Eeyyee 2. Lakkii	
615	Yoo deebiin Q 306 eeyyee tahe rakkoo akkamii ture?	1. Dhukkuba shukkaaraa 2. Dhukkuba Onnee yeroo ulfaa 3. HIV/AIDS 4. Dhiibbaa dhiigaa 5. Rakkoo onnee 6. Hanqina dhiigaa Hamaa 7. Hepatitisii B 8. Kan biro (Caqasi)	

Kutaa VII Deeggersa Hawaasaa

701.	Hiriyyootni, ollootni, fi firootni kee gara mana turtii haadholii dhufanii si daawwatani jiruu?	1. Eeyyee 2. Lakkii	
702.	Tajaajila mana turtii haadholiin walqabatee namoota (Abbaa manaa, miseensota maatii, hiriyyoota, olloota, yookaan kan biroo) waliin yaada garaakee dubbattu argatteetaa?	1. Eeyyee 2. Lakkii	
703.	Yeroo ulfaa, dahumsaa fi itti fayyadama mana turtii haadholii nama si kunuunsu yookaan jaallatu argatteetaa?	1. Eeyyee 2. Lakkii	

704.	Hojii mana keessaatiif gargaarsa maatiikee argatteettaa yeroo turtiikee mana turtiii haadholii dabarsite keessatti?	1. Eeyyee 2. Lakkii	
705.	Horii firoonni ykn maatiin siif arjoomaniin gargaaramteettaa yeroo kutaa dahumsaa turtetti dahumsakee xumuraa irratti?	1.Eeyyee 2. Lakkii	
706.	Yeroo tajaajila geejjibaa barbaaddutti namni si gaargaare jiraa dahumsakee xumuraa irrattti?	1. Eeyyee 2. Lakkii	

Kutaa VIII Of danda'uudhaan murtii kennuu

801	Tajaajila fayyaa (ANC,DC,PNC) argachuuf mana yaalaa deemuu akka qabdu eenyutu murteesse?	1. Kophaa 2. Walumaan 3. Gaafatamaa fi nama biro 4. Abbaa manaa/hiriyaa qofa 6. Nama biroo 7. Kan biraa	
802	Eenyutu mana yaalaa akka deemtu murteesse yeroo dahumsa battalaa?	1. Kophaa 2. Walumaan 3. Gaafatamaa fi nama biroo 4. Abbaa manaa/hiriyaa qofa 5. Nama biroo 6. Kan biraa	
803	Mana turtii haadholii akka fayyadamtu eenyutu murtii kenne?	7. Kophaa 8. Walumaan 9. Gaafatamaa fi nama biroo 10. Abbaa manaa/hiriyaa qofa 11. Nama biroo 12. Kan biraa Alone	

Part IX Attitude of mothers towards MWH utilization			
	1= Waliifangala	2=Garhingorree	3= Waliifhingalu
MTH fayyadamuun dubartoota ulfaa hundumaaf barbaachisaadha			
MTH duhumsa dubartii ulfaaf bakka mijataadha			
Dubartootni ulfi martinu MTH fayyadamuu qabdi			
MTH dubartii ulfa rakkoo fayyaa qabdu qofaaf barbaachisa			
MTH firoota ykn aantee keenyaaf eeyyamamaadha			
Ogeessoni fayyaa MTH amala gaarii qabu			
ogessonni fayyaa MTH keessa hojjetan kabaja namaaf laatu			
ogessonni fayyaa MTH keessa hojjetan iccitii namaa ni eegu			

DECLARATION

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Faculty of Public Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: Temesgen Abreha Gebresilase

Date. _____ Signature _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: Mr. Lemesa Dube (MPH/Epidemiology)

Date. _____ Signature _____

APPROVAL OF THE SECOND ADVISOR

Name of the second advisor: Mr. Zerihun Kura (Msc/Biostatistics)

Date. _____ Signature _____