LATE INITIATION OF FIRST ANTENATAL CARE VISIT AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING PUBLIC HEALTH FACILITIES IN BENCH MAJI ZONE, SOUTH WEST ETHIOPIA.

MPH THESIS

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Late Initiation of First Antenatal Care Visit and Associated Factors Among Pregnant Women Attending Public Health Facilities in Bench Maji Zone, South West Ethiopia.

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MASTER OF PUBLIC HEALTH

Melkamsew Tesfaye

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I hereby certify that I have read and evaluated this thesis entitled Late Initiation of ANC visit and associated factors among pregnant women in Bench Maji Zone public Health Facilities western Ethiopia. Prepared under my guidance by Melkamsew Tesfaye. I recommend that it be submitted as fulfilling the thesis requirement

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LIST OF ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CI	Confidence Interval
C/S	Cesarean-Section
EBR	Ethiopian Birr
EDHS	Ethiopian Demographic Health Survey
GA	Gestational Age
HIV	Human Immune Deficiency Virus
IHRERC	Institutional Health Research Ethics Review Committee
LNMP	Last Normal Menstrual Period
MMR	Maternal Mortality Rate
SDGs	Sustainable Development Goals
STI	Sexual Transmitted Infection
TTI	Tetanus Toxoid Infection
WKS	Weeks
WHO	World Health Organization
SNNPR	South Nation Nationality Peoples Region

ABSTRACT

Background: Early commencement of antenatal care by pregnant women as well as regular visits has important to early diagnosis and management of complications both related to pregnancy and medical conditions of mother and fetus. World Health Organization recommended a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester According to Ethiopian demographic and health survey report of 2016, 80% of pregnant women were late initiate their first antenatal care. In this regard, there is limited information in our study area. The aim of this study was to assess the proportion of late booking first antenatal care visit and the associated factors.

Method: Institution based cross-sectional study was conducted from February 01-30 2018. Simple random sampling technique was employed to select the study subjects. A total of 535 women were included in the study. Data were collected using a structured and pre-tested questionnaire; Data was entered in EpiData version 3.1 and SPSS version 22 was used for data analysis. Multivariable logistic regression was carried out to identify factors associated with the outcome variable. P-value less than 0.05 was considered as statistically significant.

Result: The proportion of late first antenatal care visit, was 337(66%, 95% CI of 62.7%, 70.3%) Those pregnant women of 25 age and above. (AOR = 1.59, 95% CI: 1.01, 2.48), whose pregnancies were unplanned (AOR=2.23; 95% CI: 1.33, 3.74), perceived right time of ANC after 4 month (AOR=2.34; 95% CI: 1.39, 3.94), attended secondary school (AOR =2.33, 95% CI: 1.05, 5.19), did not get advised (AOR=1.65, 95% CI (1.10, 2.47), and those who confirmed their pregnancy by missing period (AOR=0.61; 95% CI: 0.39, 0.94) were found to be associated with late presentation of first antenatal care.

Conclusion: The majority of the pregnant women initiate ANC late. The factors like the status women's education, age, pregnancy intention, perception on right time of antenatal care and get advise significant by other were found to be associated with late initiation of first antenatal care visit. Therefore, strategies should be designed to intensify advocacy of female education and family planning should be enhanced to prevent unplanned or unwanted pregnancies, maintain local information dissemination network on antenatal care and its right time of commencement should be organized and implemented.

Keywords: Antenatal care, late initiation, first ANC booking, pregnant women.

1. INTRODUCTION

1.1. Background

Pregnancy is a very important event from both social and medical points of view. Therefore, pregnant women should receive special care and attention from the family, community and from the health care system, (WHO, 2010). Antenatal care is a complex of interventions that a pregnant woman receives from organized health care services, with the objective of assuring every pregnancy to culminate in the delivery of a healthy child without impairing the health of the mother.(FMOH, 2013).

The major goal of antenatal care is to help women maintain normal pregnancies through health promotion and disease prevention, early detection and treatment of complications and existing diseases, birth preparedness and complication readiness planning, (WHO., 2002). It also provides women and their families with appropriate information and advice for a healthy pregnancy, safe childbirth, and postnatal recovery, including care of the newborn, promotion of early, exclusive breastfeeding, and assistance with deciding on future pregnancies in order to improve pregnancy outcomes.(FMOH, 2013)

Antenatal care from skilled providers at health facilities is a priority in ensuring and enriching maternofetal health, early detection of problems in pregnancy is used for more timely referrals for women in high-risk categories or with complications. (Tuncalp Ö *et al.*, 2017). This is particularly true in Ethiopia, where three quarters of the population live in rural areas and where physical barriers such as distance (inaccessibility), transportation service, crowded traffic and unsuitable health institution buildings pose a challenge to providing health care. Under normal circumstances, the World Health Organization (WHO) recommends that a woman without complications should have at least four antenatal care visits, the first of which should take place during the first trimester. Timing of first visit is around or preferably before 16 weeks of gestational age (FMOH, 2011, WHO., 2002).

WHO introduced new guidelines for ANC, which recommend a minimum of eight ANC contacts during pregnancy. It increasing maternal and fetal assessments to detect complications, improving support and communication between healthcare providers and pregnant women, increases the likelihood of positive pregnancy outcomes. (WHO, 2016).

1.2. Statement of problem

Late initiation of ANC may lead to undetected or late detection of fetal and maternal health problems such as hypertension, diabetes, anemia, antepartum hemorrhage, preterm labor and intra uterine fetal death. In addition to these, women that are booked in late time of pregnancy and don't take folic acid in the first trimester will develop congenital neural tube defect and even are at high risk for mortality. Not only these but also pregnant women who don't screen for syphilis and HIV in the early time of pregnancy will transmit the disease to the fetus and it results in an adverse outcome to the fetus (FMOH, 2013, UNICEF, 2016b).

Globally maternal mortality is the leading cause of death among females age 15-49 years old, an estimated 303,000 maternal deaths occurred in 2015. Of this, 99% (302,000) of maternal death occur in developing countries where 85% of the world populations live. More than half of these deaths occurred in sub-Saharan Africa accounting 66% (201,000) maternal death. Maternal mortality was reduced by nearly 44% from 1990-2015, (WHO *et al.*, 2015). Annual reduction of MMR was only 2.3% per year. To bring a remarkable change on MMR, countries targeted a new strategy called Sustainable Development Goals "SDGs". Which includes the target of reducing global maternal mortality to less than 70 deaths per 100000 live births, and no country should have to exceed MMR of 140 maternal deaths per 100000 live births by 2030, (WHO, 2015b).The approximate lifetime risk of maternal death in developed countries was 1 in 4900 as compared to 1 in 150 in low-income countries. (WHO *et al.*, 2015).

In Ethiopia, maternal mortality and morbidity levels are among the highest in the world. In the year of 2016 (MMR) was 412 per 100,000 live births. So far the number is high, this is related to the low levels of antenatal care and birth attendance by health professionals in Ethiopia-especially among the poor as well as early age at marriage and first birth. Among the 20-34 years old, about 30% of all female adult deaths follow from maternal deaths at birth. (CSA, 2016).

From the intervention used to reduce maternal mortality one is ANC service. ANC, on the other hand, it's less resource-intensive and its provision can be spread throughout the pregnancy period, (MbuagbawL *et al.*, 2015). However developed country 98 per cent of pregnant women access antenatal care with a skilled health personnel at least once, In regions with the highest rates of maternal mortality, such as sub-Saharan Africa and South Asia region, fewer women received at least four antenatal visits (52% and 46% respectively),(UNICEF, 2016a).

Early commencement of antenatal care by pregnant women as well as regular visits has the potential to affect maternal and fetal outcome positively. The association between antenatal care attendance and neonatal mortality in 57 low- and middle-income countries evidenced that the risk of neonatal death was 26% lower among women who had first ANC visit within the first trimester of gestation and 51% lower among those who had at least four ANC visits, (David T. Doku and Subas Neupane, 2017).

According to EDHS 2016 data showed that only 80% of women made their first ANC visit late (after first trimester of pregnancy), there first antenatal visit which was an improvement from the 9% reported in the 2011 EDHS, 62% of women who had a live birth in the 5 years before the survey received ANC from a skilled provider at least once for their last birth, 32% of women had at least four ANC visits during their last pregnancy, while 37% of women in Ethiopia had no ANC visits,(CSA, 2016).

An evidenced study from Addis Ababa in 2013 indicated that 42% women came late for their first ANC visits, after 16 weeks of gestation (Hanna G and Yemane B 2017). Similar findings have been reported from. Halaba and Gonder town reported the prevalence of late booking of 72.8% and 64.6% respectively. (Kondale *et al.*, 2015, Temesgen *et al.*, 2014).

There have been many studies on factors relating to late booking to ANC in the world. The related factors include, education, age, place of residence, employment status, parity, intention to get pregnant, means of pregnancy recognition, economic status, health insurance and travel time.(Tesfaye *et al.*, 2017). As there is no data regarding ANC initiation time in the study area; this study will fill the gap by identifying the existing time of ANC initiation and the factor for late initiation into first ANC. Therefore, the aim of this study is to assess late initiation of first antenatal care visit and associated factors among pregnant women attending ANC service in Bench Maji Zone public health care facilities, to provide information for better improvement of maternal and fetal health.

1.3. The significance of the study

Studies done on late initiation of first ANC visit in different areas reported the time of first ANC visit differently. Therefore the finding of this study will provide information on the late initiation of first antenatal care visit and associated factors among pregnant mother by analyzing the impact of different variables on late at first antenatal care booking.

The results are expected to give information about time and factors associated with late ANC visit to Bench Maji Zone Health Bureau, Hospitals, Health Centers and other non-governmental Organizations who work in collaboration with the health facilities to plan for reducing of late ANC booking. Hence, reducing maternal mortality has been one of the priority agendas of the Ethiopian government; the result of this study may also help policymakers at each hierarchy; national, regional and zonal levels.

In general knowledge of the information, particularly reasons behind coming late for the first antenatal care visit by some pregnant women, aimed at encouraging pregnant women to make their first antenatal care visit at the times recommended by WHO as well as Ethiopian Federal ministry of health. Moreover, the knowledge generated from this study will enrich literature available on the issue and may trigger other researchers to conduct a similar study in various parts of the country.

1.4 Objective

1.4.1 General objective

To assess Late initiation of first antenatal care visit and associated factors among pregnant women attending public healthcare facilities in bench Maji zone, south west Ethiopia, from February 01-30, 2018.

1.4.2 Specific objective

- To determine the proportion of women who were late booking of their first antenatal care visit.
- To identify factors associated with late booking of antenatal care visit.

2. LITERATURE REVIEW

2.1. Overview of Late initiation of antenatal care visit.

Late initiation of Antenatal Care visit among pregnant women is one of the important factors to increase maternal morbidity and mortality. Unfortunately, many women in developing countries do not receive such care timely. There is sufficient evidence that early initiation ANC visit during pregnancy is an important opportunity to deliver interventions that will improve maternal health and survival during the period immediately preceding birth and after birth (Tuncalp Ö *et al.*, 2017).

A study aimed at finding late initiation of antenatal care and its determinants in Myanmar (2016) found out that, out of 333 pregnant women more than half (56.2%) took their first ANC late (after 16 weeks of gestation). The mean gestational age during first antenatal care booking was 18 week.(Thin *et al.*, 2016). Another cross-sectional study which was conducted among 348 pregnant in Nigeria (2007) revealed that 73.6% of antenatal care attendants were booking in the second trimester and the other 26.4% in third-trimester pregnancy(E.P. Ndidi and I.G. Oseremen, 2010).

In Ethiopia, 2016 DHS data reported that only 20% of women had their first ANC during the first trimester the rest 80% of pregnant women were late booking. (CSA, 2016). A cross-sectional study conduct in Addis Ababa among the 997 women, 411(42%) came late for their first ANC visits, after 16 weeks of gestation. (Hanna G and Yemane B 2017).
A study from northwest Ethiopia in Gonder town among 407 pregnant women 64.5% of them book late the reaming (35.5%) of participants started their ANC visit early or less than 12 weeks gestation. The mean gestational age during first antenatal care booking was 17.7 weeks (Temesgen *et al.*, 2014).

A cross-sectional study was done from the central part of Ethiopia, Ambo town health facility among 379 respondents only 13.2% of the study participants booked their first ANC service timely. Whereas the majority 86.8% of the respondents were booked late. The mean duration of ANC booking among the respondents was 4.7 + 1.3 months (Tolera Gudissa Damme *et al.*, 2015). A similar study from Adigrat Town, on Magnitude and Associated Factors of Late Booking for Antenatal Care in Public Health Centers. Among 423 pregnant women, 51.8% Were booked late their first ANC visit (Lerebo *et al.*, 2015).

In southern region of Ethiopia a study from Halaba town on timing of first AN visit and associated factors in 2015, reviled that among 225pregnant women only 27.1% of women were registered for ANC at right time and the rest 72.8% booked late The mean duration of ANC booking among respondent was four weeks to thirty-two weeks, with median gestational age during the first ANC visit being 18.3 weeks, (Kondale *et al.*, 2015). Another study from Arbaminch town among 409 pregnant women 82.6% of the pregnant women attended first ANC visit at or after four months of gestation. The mean duration of first ANC attendance was 5 months (±1.5) (Feleke *et al.*, 2015). Another cross-sectional study in Wolayta Soddo town on the timing of antenatal care visit in 2016 revealed that 61% of antenatal care attendants were booking late (after 16 weeks of gestation), (Hussen SH *et al.*, 2016).

2.2. Factors associated with late initiation of antenatal care visit

2.2.1. Predisposing factors

Maternal age is usually considered demographic variable which influences the time of antenatal initiation. In Ethiopia a study done on timing and factors associated with first antenatal care booking among pregnant mothers in Gondar Town; North West, result showed that pregnant women aged 25 and below were nearly two times more likely to commence ANC within the recommended time compared to their counter parts Likewise, mothers whose age at marriage above twenty years were 2.21 times more likely to start their ANC within the first three months of pregnancy than those who married during their teens,(Temesgen *et al.*, 2014).

Another finding from southern region in Halaba town among 225 pregnant mothers indicated that mothers whose age was 26 and below were four times more likely to commence ANC within recommended time, compared to those age was above 26, with p=0.001, (Kondale *et al.*, 2015). A facility based cross-sectional study which carried out in Kemabata tembaro zone southern Ethiopia among 401 pregnant women showed that women who were aged 25 and above were three times more likely to register late compared to those who were less than 25,(Tesfalidet *et al.*, 2014).

Place where a woman resides influences the time of first antenatal initiation. A study done in Nigeria on the timing of first antenatal care visit among pregnant women, according to

NDHS (2003–2013) data, reported that Urban dwellers were 87.1% access to ANC versus 52.4% in rural dwellers (Adeniyifrancis *et al.*, 2017).

In Ethiopia nationally 44% of women in urban residence had received ANC within their first trimester of pregnancy, compared with 17% of those in rural residence (CSA, 2016). Another cross-sectional study done in central Ethiopia Ambo town revealed that among 379 pregnant women, women who had rural residence were about three times more likely to be booked late compared to urban women, (Tolera *et al.*, 2015). Another similar study from Dilla town in Government health institution raveled that, women who are living in rural areas were 3.6 times more likely to be late for first ANC attendance as compared to women of urban residence (Girum T 2016).

Education is found to be the most determinant factor in maternal health. Compared to women with low level of educational, educated women bear fewer children and achieve better child survival, because they avoid early marriages, teenage pregnancy, and high parity because they attend antenatal and postnatal more frequently. A cross-sectional study from Rural Benin on the determinants of low antenatal care services utilization during the first trimester of pregnancy, among pregnant women with no schooling or primary school level showed three times more likely for low utilization of ANC services during the first trimester of pregnancy compared to those with more education (secondary and above) controlling for other factors, with p=0.002 (Ouendo Edgard-Marius *et al.*, 2015).

In Ethiopia, DHS 2016 reported that 53% of women with no education obtained ANC services from a skilled provider, compared with 98% of women with more than secondary education(CSA, 2016). The institutional based cross-sectional study which conducted in Arbaminch city among 409 sampled pregnant women indicated that educational status of mothers were the most predictors of late initiation of antenatal care. Pregnant women who had no attended at formal education were more likely to come late compared to those have educated, (Feleke *et al.*, 2015).

Another cross-sectional study in Kembata Tembaro Zone in 2012, showed that women's educational status had a significant correlation with time of ANC booking. In this study, women with no or lower educational status were 4.6 times more likely to book in late time of pregnancy compared to those with higher educational status, (Tesfalidet *et al.*, 2014). A similar study from Ambo in 2012, revealed that women who had no education were 2 times

more likely to attend first ANC in the late stage of pregnancy than women's education grade 12^{th} and above,(Tolera *et al.*, 2015).

Institution-based cross-sectional study conducted in Halaba indicated that pregnant mothers who had the previous history of antenatal care use were three times more likely to attend ANC in early period of pregnancy compared to those who didn't have the previous history of ANC service utilization, with $p<0.001$,(Kondale *et al.*, 2015).

A hospital-based cross-sectional study conducted in Myanmar in 2014 on late initiation of antenatal care and its determinants among 333 pregnant women, indicated that multiparty women were two times more likely registered late when compared those women who were parity zero with $p=0.045$ (Aung *et al.*, 2016).

In Ethiopia, Higher order births are less likely to receive ANC than lower order births. 50% of women giving birth to their sixth or higher order child received ANC from a skilled provider, compared with 78% of women giving birth to their first child.(CSA, 2016). Evidenced that a facility based cross-sectional study conducted in 2014 Adigerat town on magnitude of late ANC visit and associated factors among pregnant women attend their ANC at public health center reviled that Mothers with parity one and above were 2.78 times more likely to book late for first ANC compared to those with parity zero, (Lerebo *et al.*, 2015).

In the southern region, Wolayta Sodo town primigravidae women had reported 2.5 times more likely to enroll early than multiparty women, (Hussen SH *et al.*, 2016). Another study done in Kembata Tembaro zone to assess factors associated with late initiation of antenatal care among pregnant women attending the antenatal clinic indicate that among 392 of the respondents 24.2% of respondents were parity zero, while the rest 75.8% were parity one and above. This indicates that women with one parity and above were a higher chance of registered lately compared to those who have no parity, (Tesfalidet *et al.*, 2014).

Ignorance or low knowledge on right timing of ANC has been identified as one of the reasons why pregnant women book late. In Uganda cross-sectional study conducted, among 400 pregnant women, 291 (72.7%) of women did not know the right gestation age at which a pregnant woman should start attending antenatal care (Kisuule *et al.*, 2013). Another similar study from Rural Benin, women with a wrong knowledge of the required period of the first ANC visit had five times higher to underutilize ANC services than their counterparts with

p=0.001 Like wisely Pregnant women with low knowledge of the benefits of ANC showed four times higher likelihood of underutilization of ANC services compared to those with low to medium knowledge with p=0.010 (Ouendo Edgard-Marius *et al.*, 2015)

A systematic review and meta-analysis on delayed initiation of antenatal care and associated factors in Ethiopia showed that knowledge of women on ANC has association with delayed initiation of ANC, knowledgeable women were 60% less likely to delay their ANC booking as compared to non-knowledgeable women,(Tesfaye *et al.*, 2017)

A cross sectional study conducted in Rwanda using data from 2010 Rwanda DHS among 6,325 women those who are married were 15% less likely to received ANC during the first trimester as compared to un married women, (Manzi *et al.*, 2014)

Institution-based cross-sectional study from Gonder town, among 407 pregnant women those women who recognize their pregnancy by missing period were two times more likely come late as compared to those recognized by urine test (Temesgen *et al.*, 2014). Another similar study from Halaba indicated that pregnant mothers who confirmed their pregnancy by urine test were about five times more likely to commence ANC within the first trimester of pregnancy, (Kondale *et al.*, 2015).

2.2.2. Enabling Factors

Wealth index or household income is one of the predictors of late registering for antenatal care. A study done in Uganda among 400 pregnant women, 110(27.5%) of the study participants agreed that they did not have money for transport to bring them to the hospital, while 37 (9.3%) thought that they had to pay for the antenatal care services (Kisuule *et al.*, 2013).

According to EDHS, 2016 at national level women in the highest wealth quintile 85% are more likely to received ANC from a skilled provider than those in the lowest quintile 48%, (CSA, 2016) In different part of Ethiopia several studies have also shown that timely initiation of antenatal care service is a strong determinant of utilization of antenatal care services that rely on economic status. A study from Ambo, and Dilla Analyze that among pregnant women who had low household monthly income had two to five times more likely to delayed ANC booking than those women who had with high monthly income,(Tolera *et al.*, 2015, Feleke *et al.*, 2015, Girum T 2016).

A study done in Addis Ababa on the timing of antenatal care and associated factors among pregnant women found out that unemployed women were 40% more likely to come late than employed women,(Hanna G and Yemane B 2017). Another study from Gonder (2012), ambo (2012) and Dilla town indicated that no significant association between women's occupation and timing first antenatal care visit, (Temesgen *et al.*, 2014, Tolera *et al.*, 2015, Girum T 2016).

A Study conducted in Kalabo District of Zambia on maternity services indicated that waiting time had significant association with times of ANC visit. Pregnant women who spent longer time to get the service were two times more likely to start the first ANC visit in late time of pregnancy. (Isaac *et al.*, 2012).

2.2.3. Need Factors

A study done in Myanmar 2014, revealed that women with an unplanned pregnancy were two times more likely booked later compared to respondents with a planned pregnancy, with p=0.024,(Thin *et al.*, 2016). A similar study from Adigrat town in 2015, indicate that women with an unplanned pregnancy were 16 times high likely to book late comparing to pregnant women with planned pregnancy with, (Lerebo *et al.*, 2015).

Another facility based cross-sectional study done in Addis Ababa in 2017, showed that women with unplanned pregnancy 50% higher chance of coming at late time of their ANC visit compared to those pregnant women who had planned pregnancy, (Hanna G and Yemane B 2017). Similar cross-sectional study from southern Ethiopia Kembata Tembaro Zone, Arbaminch and Dilla town. Revealed that Women with unplanned pregnancy had about 4 to 5 times more likely to be booked at late time of pregnancy compared to those pregnant women who had planned pregnancy, (Tesfalidet *et al.*, 2014, Feleke *et al.*, 2015, Girum T 2016).

A cross-sectional study conducted in northern Ethiopia, Mekele town in 2015 among 410 pregnant mothers, women who had the previous history of stillbirth were 15 times high likely to book early compared to those who did not have a history of previous stillbirth, (AOR =15.1, 95% CI 1.29-175.8). likewise, women who had no history of obstetric problems were found to book late than those who had an obstetric problem.(Girmatsion *et al.*, 2015).

Another cross-sectional study from Addis Ababa, women who were free of pain during pregnancy was 54% times more likely to come late than those who had pain or discomfort, (Hanna G and Yemane B 2017). A similar facility-based study in Adigerat (2014), revealed that pregnant women who had no history on abortion were 71.1% times less likely to book late than pregnant women who had history on abortion, (Lerebo *et al.*, 2015). Another cross-sectional study that was done in Nigeria in 2010 on factors affecting the time of antenatal care services, revealed that among 348 pregnant women 21(73%) of them registered late due to no serious problems during the first three months of gestation. (E.P. Ndidi and I.G. Oseremen, 2010).

In Ethiopia, a cross-sectional study from Ambo town among 379 pregnant showed that women who got information on time of ANC booking about four times more likely to attend

ANC timely than those women who did not get information on time of booking, (Tolera *et al.*, 2015). Another study from southern Ethiopia, in Dilla town, indicated that among 362 pregnant women who were not advised the recommended time were 4.64 times more likely to book late for their first ANC as compared to those who received advice on recommended time, (Girum T 2016). A similar study from Halaba among women who got information when to book were 2.5 times more likely attend ANC timely than those women who did not get information on the time of booking.(Kondale *et al.*, 2015).

A cross-sectional study conducted from Adigrat town among 423 pregnant women, those who had a perception the time to book ANC is after four months of gestational age were 39 times high likely to book late than women who had a perception to start ANC is before four months of gestation, (Lerebo *et al.*, 2015). Institution-based study from Addis Ababa in 2013, found out that, pregnant women who had wrong perceptions about ANC schedule were 6.57 times more likely to initiate their ANC visit late as compared to those who had right perception, (Hanna G and Yemane B 2017).

Another institution based cross-sectional study from Gonder town, among 407 pregnant women those who perceived the right time to be in the first trimester were around four times more likely to commence ANC timely than those who perceived the right time beyond 12 weeks of pregnancy, (Temesgen *et al.*, 2014). Similar study from Southern region Sidamo Zone, Perception of the women concerning correct time of early initiation of ANC was highly associated with early initiation of ANC at recommended time and mothers who perceived right time to be in the first 12 weeks of gestation were nearly4.5 times more likely to commence ANC timely than those who perceived right time beyond 12 weeks of gestation , (Mengesha B and Walelegn W, 2017).

2.3. Conceptual Framework

To conceptualize this study, Andersen and Newman socio-behavioral model framework of health services utilization was used. According to this conceptual framework service utilization depends on three factors; predisposing which is the socio-demographic characteristics and psychological realm of the women that exist prior to their particular behavior. Enabling factor which related to logistical aspects of obtaining antenatal care like affordability of the service and Need Factors the most immediate cause that makes the women use the service, like current illness that generates the need for health care services.

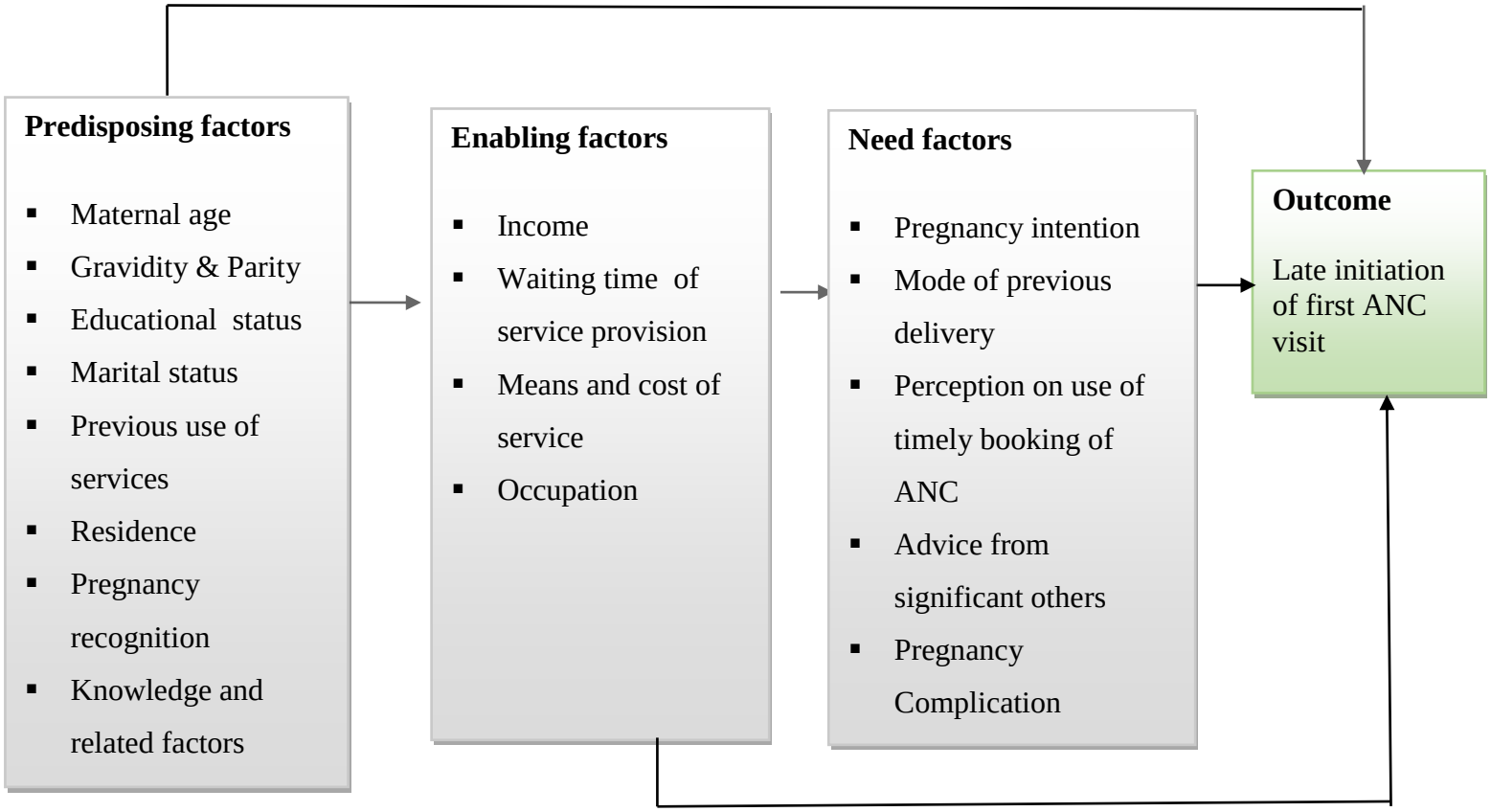

Figure 1.Conceptual framework for Late initiation of first ANC visit adapted from (ANDERSON, 1995)

3. METHODOLOGY

3.1. Study Area and Period

This study was conducted in, public health facilities found in Bench Maji Zone, from February 01-30 2018. Bench Maji zone is one of the 16 zones in SNNPRs located 561 km away from Addis Ababa, the center of Ethiopia, in Southwest direction. According to 2013 Ethiopia census projection for 2014-17, the current total population is 786,421 out of which 388,038 are female and 398,383 are male, (Population projection CSA, 2013).It has 1urban and 10 rural districts, 246 kebeles smallest administrative units, (229 rural and 17 urban). There is one functional hospital and two under construction (Bachuma and Maji Primary hospitals). The zone has about 40 health centers, 182 health posts, one University and one Health sciences college. (Bench Maji Zone profile 2009 e.c).

3.2 study design

A facility based quantitative cross-sectional study design was employed.

3.3 Source population

The source population was all pregnant women who were attending ANC visit, at Bench Maji Zone public healthcare facilities.

3.4 study population

All pregnant women who attended their first ANC visit at selected public health care facilities during data collection period.

3.5. Inclusion and exclusion criteria

3.5.1. Inclusion criteria

All pregnant women who came to their first ANC visit and whose gestational age is identified either by ultrasound or other method in the selected health facility during the data collection time.

3.5.2. Exclusion criteria

Pregnant women who came to that institution in referral base was excluded.

Women who are mentally incapable and those who are severely ill clients are also excluded.

3.6. Sample size determination

The required sample for the first specific objective was calculated by using a single population proportion sample size calculation formula considering the following assumptions. 95% confidence interval (CI), 5% margin of error and Population proportion formula through the assumption of the proportion of late initiation of ANC visit were 73% from cross-sectional study in Halaba southern,(Kondale *et al.*, 2015)

$$n = \frac{(Z\alpha/2)^2 pq}{d^2}$$

d = margin of error of 0.05 with 95% confidence interval.

P= estimated prevalence rate of late ANC initiation is =0.73% (0.27)

α = 0.05 (level of significance)

None response rate = 10%

n= the required sample size

Single population proportion formula will be:

$$n = \frac{[1.96]^2 0.73[0.27]}{0.05^2} = 303$$

By considering 1.5 design effect and 10% of non-response rate, final sample size become = 500

To determine the required sample size for the second specific objective of this study, by considering various factors which significantly associated with the outcome variables with confidence level of 95%, margin of error of 5% and power of 80%, ratio 1:1 and by using Open Epi Info 7 StatCalc software program for double population proportions formula the sample size was calculated for those selected variables and the maximum sample size was taken for final required sample size.

Table 1: Double population proportion based sample size determination for a study on timing of first Antenatal care visit and associated factors among pregnant women attending public health facilities in Bench Maji Zone.

Variables	Late initiation of ANC visit		AOR	Final sample size considering 1.5 design effect and 10% nonresponse rate.	References	Remark
	Exposed	Unexposed				
Maternal age	50.6% age >26	22.2% age <=26	4.04	343	(Kondale *et al.*, 2015)	
Maternal educational	26.4% no education	56.2% have education	2.1	327	(Feleke *et al.*, 2015)	
Means of Pregnancy recognition	75.9% by a Missing period	53.4% by a Urine test	2.29	535	(Temesgen *et al.*, 2014)	
Intention to pregnancy	17.9|% unplanned pregnancy	50.8% planned pregnancy	3.80	250	(Tesfalidet *et al.*, 2014)	

Finally, the sample size for the second objective which is calculated for a factor associated with late initiation of ANC visit is greater than the first objective. Therefore the sample size of the second objective is taken as the final sample size which is 535.

3.7. Sampling procedure

A multi-stage sampling technique was used to select the study units. In the study area, there are 1 urban and 10 rural districts. Considering urban and rural district, for the purpose of logistic feasibility and improving representativeness, 1 district from urban and 5 districts from rural were randomly selected. Six health centers (one from each district) were selected by using a simple random sampling method, and one hospital in the urban was included. Eligible pregnant women who came for their first ANC visits in the selected health facility were enrolled continuously until the required sample size was achieved. The number of study participants from this health facilities was determined from the previous ANC client flow report. The monthly client flow was determined by taking the average ANC attendants from the last quarter of 2017 report for each selected health facilities. The steps of selection is shown below in **figure 2**.

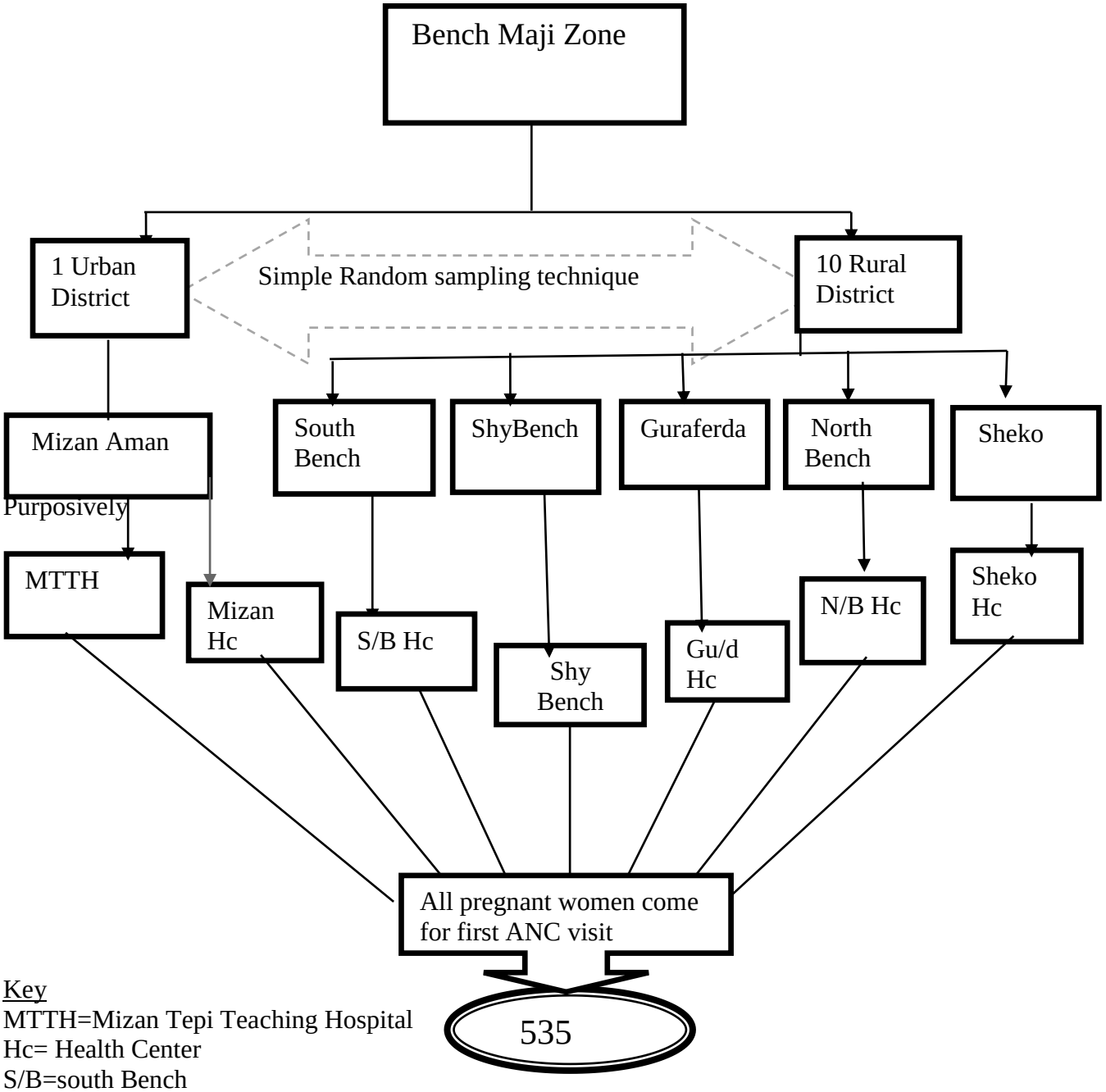

Figure 2: Schematic presentation of the sampling procedure.

Data collection method

The instrument of data collection was an interviewer-administered pre-designed structured questionnaire. The questionnaire was developed based on the (EDHS) data collection tool and other relevant literature, (Hanna G and Yemane B 2017, Sanni *et al.*, 2017)The questionnaires contain the socio-demographic background of the mothers and husbands, obstetric history, past maternal service initialization, knowledge and perception of ANC services, which help to identify factor associated with late initiation of ANC. Data collection was done by seven diploma midwifery data collectors with two health officer supervisors for a period of one month. The data collectors were a fluent speaker of the 2 languages (Amharic, Bench). Interview technique and details of the questionnaire. Recruitment of the study participants was facilitated by ANC service providers in each study health facilities. The interview was carried out in a quiet place after they completed their daily visits. The questionnaires were initially prepared in English and then translated into Amharic then back into English by fluent speakers to check its consistency. If the selected participant is interested, the consent was obtained and the data was collected.

3.8. Study variable

3.8.1. Dependent variables

Late ANC initiation

3.8.2. Independent variables

Predisposing Factors: Maternal age, gravidity, educational status, marital status, previous use of services, residence, Pregnancy recognition, Knowledge and related factors

Enabling Factor: Income, waiting time of service provision, occupation, means and service cost,

Need Factors: Pregnancy intention, mode of previous delivery, perception on use of timely booking of ANC, advice from significant others, previous pregnancy complication.

3.9. Operational Definition

Late initiation: initiating of first ANC visit after 16th weeks of gestation, (FMOH, 2011)

Early initiation: initiating of first ANC visit before 16th weeks of gestation,(FMOH, 2011).

Knowledge: Pregnant women's awareness on time of first ANC visit and danger sign of pregnancy.

Good knowledge: those who score above the mean score value and exactly at the mean score of the knowledge measuring questions.

Poor knowledge: those who score below the mean score value of the knowledge measuring questions.(Ojong *et al.*, 2015)

3.10. Data quality control

To ensure the quality of the data, a structured and pre-tested questionnaire was used. Five percent of the questionnaires were pretested at ketea health center out of study area before the actual data collection starts. This was helpful for further clarification of instruments and to help data collectors to familiarize with the instrument and to estimate the time needed. The structured questionnaire was first to be prepared in English and then translated into Amharic and again translated back to English to increase the questionnaire consistency. Two days intensive training was provided about the instruments, ways of data collection, ethical issues and aims of the study for data collectors and supervisors by the principal investigator (PI). Finally, ambiguous and unclear questions were modified before the data collection. To keep completeness and consistency, data collectors were closely supervised before and during the data collection process by the supervisor. The principal investigator (PI) supervised the correct implementation of the procedure and check completeness and logical consistency after data collection. During data analyses, double data entry was done by two individuals to minimize errors.

3.11. Data processing and analysis

Data was be coded, entered, cleaned and checked by EpiData statistical software version 3.1 and analysis was done by using SPSS version 22. Descriptive statistics of different variables was presented by frequency and percentage using tables, bar graphs, and pie charts**.** For descriptive numerical variables mean and standard deviation was determined. Hosmer Lemeshow and Omnibus tests was done to test for model fitness. In the Hosmer-Lemshow test, the Pearson's chi-square should not be significant but it should be significant in Omnibus test if the model said to be fitted. Bivariate analysis at 95% confidence interval was used to infer an association between the independent and outcome variables by using binary logistic regression model. All variables with p-value ≤ 0.25 were taken into the multivariable model to control for all possible confounders and the variables were selected, then an adjusted odds ratio (AOR) with 95% confidence interval was calculated for the significant predictive variables, and statistical significance was accepted at (P< 0.05).Variables which are statistically significant at p-value <0.05 identify as factors of late antenatal care and logistic regression tables were used to present the results.

3.12. Ethical consideration

The study was reviewed and approved by Haramaya University College of Health and Medical Sciences. The ethical clearance was obtained from Institutional Health Research Ethical Review Committee (IHRERC) and the Official letter was scented to Bench Maji Zone Health Bureau and the data collection was begin after permission and cooperation obtained from all selected District Health Departments/Offices of the study area. An informed written and signed consent was obtained from each study participants after the objectives of the study are explained. A thumbprint or signature was used on the consent form. Only those who are sign written consent participated in the study and confidentiality of response was maintained throughout the research process by giving the code for the participant. The entire study participants were informed that data was kept private and confidential and used only for research purpose. The participants were also be assured that they have the right to refuse or withdraw if they are not comfortable at any time. Personal privacy and cultural norms were respected. Health education on risk factors, consequences was provided to all of the participants after the completion of data collection.

4. RESULTS

4.1. Socio-demographic characteristics of the respondents

From 535 selected participants, five hundred nine of them were involved in the study and that gives a response rate of 95.1%. Of these 309 (60.7%) were in the age group of 25 and above years. The mean (±SD) age of pregnant women was 25.8(±4.8) years. That ranged from 18 to 43 years. Two hundred eighty (55%) of the study respondents were rural residents and two hundred eleven (41.5%) were bench by ethnicity. (Table 2)

Table 2. Socio-demographic characteristics of pregnant women attending ANC services at bench Maji zone public health institutions, February 2018.

Characteristics		**Frequency**	**Percentage %**
Age	<25 years	200	39.3
	>=25 years	309	60.7
Marital status	In marriage	479	94.1
	Out of marriage	30	5.9
Religion	Orthodox	166	32.6
	Protestant	264	51.9
	Muslim	79	15.5
Ethnicity	Bench	211	41.5
	Sheko	62	12.2
	Amhara	116	22.8
	Kefa	89	17.5
	Other*	31	6.1
Maternal Education	No formal education	252	49.5
	Primary (1-8)	122	24
	Secondary (9-12)	62	12.2
	Above Secondary	73	14.3
Husband Education	No formal education	174	34.2
	Primary (1-8)	131	25.7
	Secondary (9-12)	82	16.1
	Above Secondary	122	24
Residence	Urban	229	45
	Rural	280	55

Other* = Gurage, Hadiya, Maynite, Sidamo,

4.2. Obstetric history and current pregnancy

From the total 509 study participants, 340(66.8%) of the respondents were multigravida, among those 270(79.4%) had used previous ANC service during their pregnancy preceding the current one. From these, 55 (20.4%) had their previous visit within 16 weeks of gestation. A urine test and missing period were used as means of pregnancy recognition by 64.8% and 35.2% respectively. Among the total respondents, 380(74.7%) of them were planned pregnancy. (Table 3)

Table. 3. Obstetric characteristics of pregnant women attending ANC services at Bench Maji Zone public health institutions, February 2018.

Characteristics		**Frequency**	**Percentage %**
Gravidity (n=509)	Prim gravid a	169	33.2
	Multigravida	340	66.8
Pervious utilization of	Yes	270	79.4
ANC preceding the	No	70	20.6
current (n=340)			
Pregnancy intention	Planned	380	74.7
(n=509)	Unplanned	129	25.3
History of Abortion	Yes	32	9.4
(n=340)	No	308	90.6
Mode of previous	SVD	321	96.3
delivery (n=340)	Caesarian section	19	5.6
	/Instrumental delivery		
Complication during	Yes	44	12.9
Previous Pregnancy	No	296	87.1
(n=340)			
History of child death	Yes	53	15.6
(n=340)	No	287	84.4
Means of Pregnancy	Missing period	340	64.8
recognition(n=509)	Urine test	169	35.2

4.3. Knowledge and perception on time of ANC service utilization

A total of 370(72.7%) of respondents rated that ANC visit is important for the mother as well as the fetus. About 367(72%) of them had awareness about the recommended time of ANC initiation and 37.5% of pregnant women had a known about obstetric danger signs. Two hundred ninety-three (57.6) perceived four and above ANC visit required throughout the whole pregnancy time. The mean knowledge of the respondent were 4.4 and 256(50.3) of them had good knowledge about antenatal care visit timing. (Table 4)

Table 4. Knowledge and perception on time of ANC service utilization of pregnant women attending ANC services at Bench Maji Zone public health institutions, February 2018.

Characteristics		Frequency	Percentage %
For whom ANC is important	Fetus	30	5.9
	Mother	109	21.4
	Both	370	72.7
Perception on timing of ANC booking (n=509)	Within 4 month	367	72.1
	After 4 month	142	27.9
Awareness on obstetric danger sign (n=509)	yes	191	37.5
	no	318	62.5
Did ANC used for birth preparedness (n=509)	Yes	480	5.7
	No	29	94.3
Perception on number of ANC visits per pregnancy (n=509)	Less than 4 visit	216	42.4
	4 and above visit	293	57.6

4.4. Health care and facility-related factors

Almost all 486(95.5%) of the respondents did not pay to get the ANC services. The majority, 472(92.7%) of the respondents said that ANC service provider respect for pregnant women and 239(47%) of the respondents perceived the quality of ANC service they obtain was very good. About half (49.1%) responded that they can afford transportation fee. (Table 5)

Table 5. Health care and facility-related factors on late initiation of first ANC service utilization of pregnant women attending ANC services at bench Maji Zone Public health institutions, February 2018**.**

Characteristics		Frequency	Percentage %
Payment for ANC service (n=509)	Yes	23	4.5
	No	486	95.5
Had health care provider respect you (n=509)	yes	472	92.7
	no	37	7.3
Waiting time(n=509)	<=2 hours	493	96.9
	>2 hour	16	3.1
Afford transportation fee	Yes	250	49.1
	No	259	50.9
Maximum payment for transportation (n=250)	<10ETB	174	69.6
	11-20ETB	65	26
	>20ETB	11	4.4

4.5. Timing of first ANC attendance

Among 509 women, 337 (66%, 95% CI of 62.7%, 70.3%) begin their first ANC visit after 16 weeks gestation. beyond WHO recommended time, the remaining 172(34%, 95% CI of 29.7%, 37.3%) attend (within the first 16 weeks of gestation). The timing of first ANC booking ranges from 8th week to 38th week of gestation; with mean duration (±SD) of respondent gestational age was 19.9 (±6.1) weeks at the first ANC booking. (Figure 3).

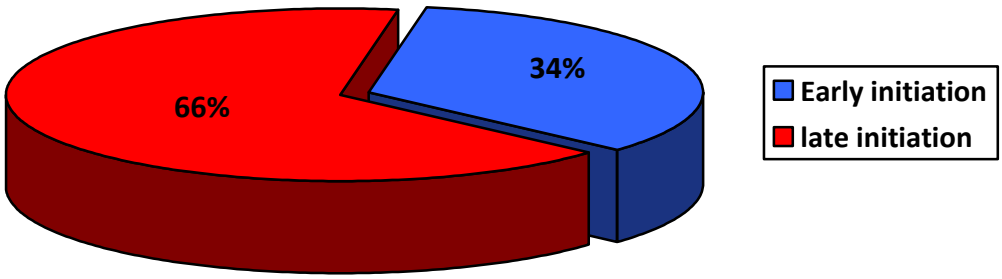

Figure 3. The proportion of pregnant women by gestational age of first ANC Visit, Bench Maji Zone Public Health Facilities, South-West Ethiopia February 2018.

Main reasons given by pregnant women's for the specific time of first ANC visit was,

The majority 243(47.7%) of them perceiving as correct time followed by 125(24.6) due to illness (Figure 4).

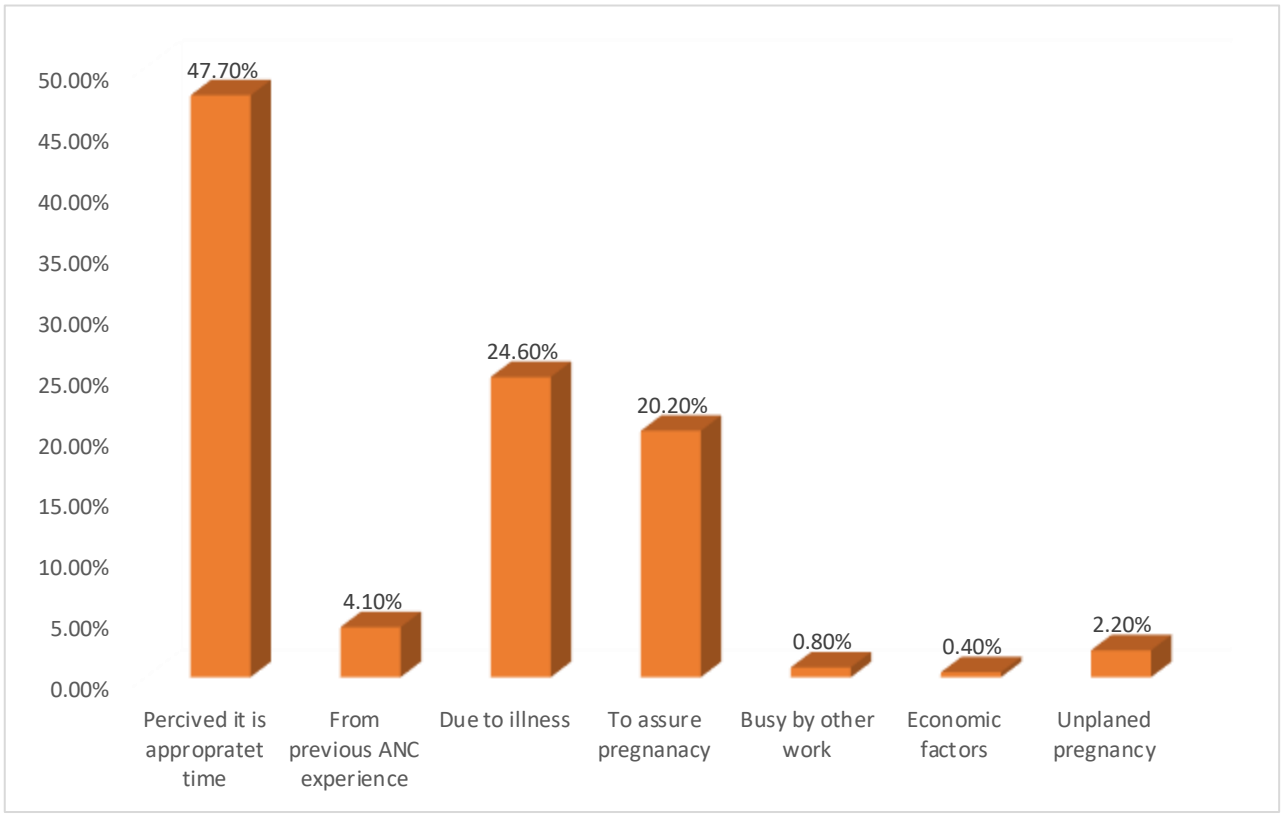

Figure 4. Reasons were given by pregnant women for the specific time of first ANC visit in Bench Maji zone public health facilities, western Ethiopia, 2018.

4.6. Factors Associated with late ANC initiation

4.6.1. Bivariate analysis of predisposing factors on late initiation of first ANC booking

The bivariate analysis showed that, age, gravidity, educational status, marital status, means of pregnancy recognition and knowledge on ANC of the women are significantly associated with late initiation of first ANC service. (Table 6)

Table 6. Bivariate analysis for predisposing factors associated with late initiation of first ANC among pregnant women uses selected public health facilities in Bench Maji Zone, South-west Ethiopia 2018.

Variables	Late initiation of first ANC visit		Crude OR 95%CI	p-value
	Yes # (%)	No # (%)		
Predisposing factors				
Age (n=509)				
<25	116(58%)	84 (42%)	1	
>=25	221 (71.5%)	88 (28.5%)	1.82 (1.25, 2.64)	0.002
Gravidity (n=509)				
Prim gravid a	102(60.4%)	67(39.6%)	1	
Multigravida	235(69.1%)	105(30.9%)	1.47 (1, 2.16)	0.05
Maternal Education (n=509)				
No formal education	158(62.7%)	94(37.3%)	0.93(0.54, 1.6)	0.79
Primary (1-8)	85 (69.7%)	37 (30.3%)	1.27(0.69, 2.35)	0.44
Secondary (9-12)	47 (75.8%)	15(24.2%)	1.73(0.82, 3.68)	0.15
Above Secondary	47(64.4%)	26(35.6%)	1	
Marital status (n=509)				
In marriage	314(65.6)	165(34.4)	1	
Out of marriage	23(76.7)	7(23.3)	1.73(0.73, 4.11)	0.217
Residence (n=509)				
Urban	146(63.8)	83(36.2)	1	
Rural	191(68.2)	89(31.8)	1.22(0.84, 1.76)	0.29
Means of Pregnancy recognition (n=509)				
Missing period	206(62.4)	124(37.6)	0.61(0.41, 0.90)	0.15
Urine test	131(73.2)	48(26.8)	1	
Knowledge of ANC (n=509)				
Good	152(59.4%)	104(40.6%)	1	
Poor	185(73.1%)	68(26.9%)	1.86(1.28, 2.70)	0.001

4.6.2. Bivariate analysis of enabling factors on late initiation of first ANC booking

The bivariate analysis showed that, only wealth index of the house hold were significantly associated with late initiation of first ANC service. The occupation, waiting time and payment on ANC service were not significantly associated with late initiation of first ANC. (Table 7)

Table 7. Bivariate analysis for enabling factors associated with late initiation of first ANC among pregnant women uses selected public health facilities in Bench Maji Zone, South-west Ethiopia 2018.

Variables	Late initiation of first ANC visit		Crude OR 95%CI	p-value
	Yes # (%)	No # (%)		
Enabling factors				
Household wealth index (n=509)				
Poorest	71(71.7)	28(28.3)	1.7(0.95, 3.1)	0.76
Poor	68(64.2)	38(35.8)	1.2(0.69, 2.11)	0.519
Medium	66(71.0)	27(29.0)	1.64(0.90, 2.99)	0.103
Rich	71(65.1)	38(34.9)	1.26(0.71, 2.19)	0.424
Richest	61(59.8)	41(40.2)	1	
Waiting time(n=509)				
<=2 hours	325 (65.9)	168 (34.1)	1	
>2 hour	12 (75.0)	4 (25.0)	1.55(0.49, 4.88)	0.45
Payment for ANC service (n=509)				
Yes	17 (73.9)	6(26.1)	1	
No	320 (34.2)	166 (65.8)	0.68(0.26, 1.79)	0.43
Occupation (n=509)				
Government employee	33(63.5)	19(36.5)	1	
NGO employee	43(70.5)	18(29.5)	1.38 (0.63, 3.03)	0.43
House wife	229(66.2)	117(33.8)	1.13(0.61, 2.07)	0.70
Student	32(64.0)	18(36.0)	1.02(0.46, 2.29)	0.95

4.6.3. Bivariate analysis of need factors on late initiation of first ANC booking

The bivariate analysis showed that, pregnancy intention, perceived right time to start ANC and Advice from significant by others were significantly associated with late initiation of first ANC service. The mode of previous delivery and pregnancy complication were not significantly associated with late initiation of first ANC. (Table 8)

Table 8. Bivariate analysis for need factors associated with late initiation of first ANC among pregnant women uses selected public health facilities in Bench Maji Zone, South-west Ethiopia 2018.

Variables	Late initation of first ANC visit		Crude OR 95%CI	p-value
	Yes # (%)	No # (%)		
Need factors				
Pregnancy intention (n=509)				
Planned	232 (61.1%)	148(38.9%)	1	
Unplanned	105(81.4%)	24 (18.6%)	2.79(1.71, 4.55)	0.0003
Perceived right time to start ANC (n=509)				
Within 4 month	224(61%)	143(39%)	1	
After 4 month	113(79.6%)	29(20.4%)	2.49(1.57, 3.93)	0.0001
Mode of previous delivery (n=340)				
SVD	222 (69.2)	99 (30.8)	1	
Caesarian section /Instrumental delivery	13 (68.4)	6 (31.6)	0.97(0.36, 2.62)	0.945
Get advise on ANC (n=509)				
Yes	144(59.0)	100(41.0)	1	
No	193(72.8)	72(27.2)	1.86(1.28,2.70)	0.001
Pregnancy complication (n=340)				
Yes	30(68.2)	14(31.8)	1	
No	201(67.9)	95(32.1)	0.99(0.50, 1.95)	0.97

1= reference

4.6.1. Multivariate analysis of factors by timing of first ANC booking

The final multivariable model was built by using variables having P-values less than 0.25 in the bivariate analysis after controlling the effect of other variables in the final multivariate model. Age group of 25 and above years, attended secondary school, perceived right time of ANC after 4 months, not being advised, unplanned pregnancy and confirm their pregnancy by missing period were significantly associated with the outcome variable; late ANC booking for the first visit.

Pregnant women who were in the age group of 25 and above years were 1.59 times more likely to be late for first ANC booking as compared to with the age group of below 25 years, (AOR = 1.59, 95% CI: (1.01, 2.48)). Women who attend secondary education were 2.33 times more likely to initiate late than those who attend above secondary education, (AOR =2.33, 95% CI: (1.05, 5.19)).

Respondents who perceived the right time to book ANC is after four months were 2.34 times more likely to start ANC late than those who perceived the right time within four months of pregnancy. ((AOR=2.34; 95%CI, (1.39, 3.94)). Mothers with an unplanned pregnancy were 2.23 times more likely to book late comparing to those had planned pregnancy (AOR=2.23; 95%CI, (1.33, 3.74)). Pregnant women who were not advised the recommended time were 1.65 times more likely to book late for their first ANC as compared to those who received advice on recommended time (AOR=1.65; 95%CI, (1.10, 2.47). Pregnant women who confirmed their pregnancy by missing period were 39% less likely to book late than those confirmed by urine test (AOR=0.61; 95%CI, (0.39, 0.94)). (Table 9)

Table 9. Multivariable analysis of factors associated with late initiation of first ANC among pregnant women use selected public health facilities in Bench Maji Zone, South-west Ethiopia 2018 (n=509).

Variable		Late Initiation of first ANC visit		COR(95%CI)	AOR(95%CI)
		Yes # (%)	No # (%)		
Age in year	<25	116(58%)	84 (42%)	1	1
	>=25	221 (71.5%)	88 (28.5%)	1.82(1.25, 2.64)	1.59(1.01, 2.48)**
Maternal Education	No formal education	158(62.7%)	94(37.3%)	0.93(0.54, 1.6)	1.01(0.56, 1.80)
	Primary (1-8)	85 (69.7%)	37 (30.3%)	1.27(0.69, 2.35)	1.32(0.68, 2.55)
	Secondary (9-12)	47 (75.8%)	15(24.2%)	1.73(0.82, 3.68)	2.33(1.05, 5.19)**
	Above Secondary	47(64.4%)	26(35.6%)	1	1
Gravidity	Prime gravid	102(60.4%)	67(39.6%)	1	1
	Multigravida	235(69.1%)	105(30.9%)	1.47 (1, 2.16)	1.14(0.71, 1.80)
Pregnancy intention	Planned	232 (61.1%)	148(38.9%)	1	1
	Unplanned	105(81.4%)	24 (18.6%)	2.79(1.71, 4.55)	2.23(1.33, 3.74)**
Marital status	In marriage	314(65.6)	165(34.4)	1	1
	Out of marriage	23(76.7)	7(23.3)	1.73(0.73, 4.11)	1.59(0.63, 4.01)
Perceived right time to start ANC.	Within 4 month	224(61%)	143(39%)	1	1
	After 4 month	113(79.6%)	29(20.4%)	2.49(1.57, 3.93)	2.34(1.39, 3.94)*
Knowledge of timely initiation.	Good	152(59.4%)	104(40.6%)	1	1
	Poor	185(73.1%)	68(26.9%)	1.86(1.28, 2.70)	1.26(0.82, 1.94)
Advice from significant by others	Yes	144(59.0)	100(41.0)	1	1
	No	193(72.8)	72(27.2)	1.86(1.28,2.70)	1.65(1.10, 2.47)**
Means of pregnancy recognition	Missing period	206(62.4)	124(37.6)	0.61(0.41, 0.90)	0.61(0.39, 0.94)**
	Urine test	131(73.2)	48(26.8)	1	1
Household wealth index	Poorest	71(71.7)	28(28.3)	1.7(0.95, 3.1)	1.72(0.91, 3.24)
	Poor	68(64.2)	38(35.8)	1.2(0.69, 2.11)	1.09(0.59, 1.99)
	Medium	66(71.0)	27(29.0)	1.64(0.90, 2.99)	1.59(0.84, 3.02)
	Rich	71(65.1)	38(34.9)	1.26(0.71, 2.19)	1.13(0.62, 2.06)
	Richest	61(59.8)	41(40.2)	1	1

1= reference *=significant at p <0.01 **=significant at p <0.05

5. DISCUSSION

The proportion of late booking was 66%, with 95% CI (62.7%, 70.3%), according to WHO recommended time of focused ANC service for developing countries (beyond 16 weeks of gestation), (WHO, 2015b) The proportion of pregnant women who book late was in line with the study conducted in Wolayta (61.1%), Mekele (67.3%) and Gonder (64.5%) of pregnant mother initiate late at first ANC visit. (Hussen SH *et al.*, 2016, Girmatsion *et al.*, 2015, Temesgen *et al.*, 2014)

Also, the proportion of late booking in the current study was higher compared to other studies done in Addis Ababa (42%), Adigrat (51.8%), Dilla (50.3%) and Myanmar (56.2%). (Hanna G and Yemane B 2017, Lerebo *et al.*, 2015, Girum T 2016, Thin *et al.*, 2016) This might be due to socio-demographic, economic, and cultural differences as evidenced by the fact that majority of pregnant women had no formal education and more than half of women living in rural areas were housewives as compared to Addis Ababa and northern Ethiopian residents.

On the other hand, this finding is lower than previous reports from Ethiopia, which were 80% in Nationally 2016 EDHS report (CSA, 2016). From a Southern region in Arbaminch town 82.6%, Halaba 72.8% and Ambo 86.8% (Feleke *et al.*, 2015, Kondale *et al.*, 2015, Tolera *et al.*, 2015). This improvement might be due to several factors perhaps the government improving women's access to maternal and child health services might have played a major role, besides the commitment of urban health extension workers who are engaged in tracing advising of pregnant women for early booking of ANC, which mainly focuses on proper ANC service and institutional delivery,(L10K, 2009).

In this study mean gestational age at the time of first ANC was 19.9±6.1 weeks. This is comparable with the previous study done in Arbaminch, which the Mean gestational age was 20±1.5 weeks,(Feleke *et al.*, 2015). This finding is higher than the study conducted in Gonder and Dilla town 17.7 and 15.9 weeks respectively. (Temesgen *et al.*, 2014, Girum T 2016). The difference may be due to the difference in the study population, socio-cultural, economic factors and in addition, applying the current practice of starting ANC at the recommended time that is being practiced widely since the implementation of Basic Emergency Obstetric & Neonatal Care manual and WHO focused ANC guideline,(FMOH, 2013, WHO., 2002).

In this study, mothers who 25 age and above years were 1.6 times more likely to be late for first ANC initiation as compared with below 25 age years. This finding is supported by a

study done in Gonder, Halaba and Kembata tembaro, maternal age was significantly associated with late initiation of first ANC visit. (Temesgen *et al.*, 2014, Kondale *et al.*, 2015, Tesfalidet *et al.*, 2014). The possible reason for older women delaying their first ANC might be that they most likely are uneducated, have poor knowledge of ANC, have experienced pregnancies without complications previously, are less fearful unlike younger women and may be more likely to be multiparous.

The finding observed between pregnant mothers' may have a right or wrong perception on time of first ANC initiation. Respondents who perceived the right time after four months of gestational age were 2 times more likely to book late than those who perceived the right time before four months pregnancy. This finding consistent with previous reports from Adigrat zone, which also reported a strong association between perceived ANC schedule and timing of the first ANC visit,(Lerebo *et al.*, 2015). A study was done in Addis Ababa also reported that women who perceived the right time after four months of gestational age were 6.57 times more likely to book late than those who perceived the right time before four months pregnancy.(Hanna G and Yemane B 2017).

Another study conduct in Sidamo Zone and Gonder revealed that Perception of respondents concerning correct time of early initiation of ANC was highly associated with early initiation of ANC at the recommended time. (Mengesha B and Walelegn W, 2017 , Temesgen *et al.*, 2014). Usually, human being practice what they perceive therefore effort is needed to have all the mothers the right perception on the time of first ANC. Other reasons that curtail early initiation of maternal health services include women's perception of service quality and some cultural beliefs like fear of early publicity of the pregnancy. This was in agreement with previous studies, (E.P. Ndidi and I.G. Oseremen, 2010).

In this study, women whose pregnancy was unplanned were 2 times more likely to book late for their first ANC visit as compared to as those who had planned pregnancy. This finding is consistent with the study done Myanmar which stated that unintended pregnancy was more likely late use of antenatal care services (Thin *et al.*, 2016).

Furthermore, studies done in Addis Ababa, Adigerat, Kembata Tembaro, Arbaminch and Dilla, indicate that unwanted pregnancies was associated with late first antenatal care booking when compared with pregnancy reported as wanted, (Hanna G and Yemane B 2017, Lerebo *et al.*, 2015, Tesfalidet *et al.*, 2014, Feleke *et al.*, 2015, Girum T 2016). Pregnant women with unplanned pregnancy may probably have less love to such pregnancy and It could also be

detected later by the mother, therefore they may not seek proper care for healthy development of their pregnancy and might not be interested to get information about ANC from significant others. Wanting to terminate a pregnancy could also be another reason for delaying ANC among women experiencing unintended pregnancy. (Paudel YR *et al.*, 2017)

Women who had attend secondary school were 2 times more likely to come late compared to those who attended above secondary education. This finding is supported by a study conducted in Arbaminch, Kembata Tembaro, and Ambo town, concluded that where women's low level of educational status was associated with late entry into ANC,(Feleke *et al.*, 2015, Tesfalidet *et al.*, 2014, Tolera *et al.*, 2015). Education of the mother plays a great role in improving awareness of health matters in general, and the importance of ANC in particular. (Sohail A and Hannah T, 2016). As evidenced in this research work, the existence of association in those with secondary education this might be because of the higher proportion (32%) of the secondary educated women exhibited unplanned pregnancy than those with below secondary education and tertiary education. Since these high school girls more vulnerable to numerous reproductive health problem and unwanted pregnancy, (Nigatu, 2017). Instead of being made ANC visit they look for other alternative for pregnancy termination. These might contribute for the delay in ANC visit.

The other factor that significantly associated with late antenatal care entry in this study was did not get advice from significant others. Women who were did not get advised about time of first ANC on the recommended time were 1.6 times more likely as compared to those who received advice on recommended time of first ANC booking. This was similar to the studies conducted in Dilla, Halaba and Ambo town. In which showed that awareness on time of ANC booking increases the timely initiation of ANC service by pregnant women, (Girum T 2016, Kondale *et al.*, 2015, Tolera *et al.*, 2015).

Pregnant mothers who recognize their pregnancy by missing period were 39% less likely to commence ANC late. (AOR=0.61; 95%CI, (0.39, 0.94)). This is slightly lower than the finding in Halaba and Gonder, which indicates pregnant women who used urine test as means of pregnancy recognition were nearly five times more likely in Halaba and two times more likely in Gonder come early when compared to those who used missing period. (Kondale *et al.*, 2015, Temesgen *et al.*, 2014). This difference could be for the fact that urine is done in health institution and mothers are initiated to start ANC at the time they come to confirm pregnancy.

As revealed on the result of the study, residence had no association on late ANC initiation. This finding contradicts the study done in Dilla and Ambo in which rural women were 3.6 times in Dilla and 3 times in Ambo more likely to be booked late for their first ANC visit than urban dweller women. (Girum T 2016, Tolera *et al.*, 2015).

This difference could be now a day's majority of rural area having access to health facility, so that individuals in urban and rural dweller had equal chance to get the service. (L10K, 2009)

6. STRENGTH AND LIMITATION OF THE STUDY

6.1. Strength

- Use of primary data.
- It was able to meet its aim and the objectives and provided an understanding of the different factors that significantly determine the time of first ANC booking

6.2. Limitation

- The study has considered only pregnant women attending ANC at the public health institutions, public health institutions are preferred because it is the first contact and easily accessible to the community for preventive health care aspects. Despite these assumptions, other pregnant women may visit private clinics and hospitals for ANC.
- Some of the events may be difficult to remember and hence the effect of recall bias and selection bias may exist.
- Ultrasound scan to confirm gestational age was not performed on all women hence different methods were used to determine gestational age.

7. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

Nearly two-thirds of women were late their first ANC visit. Current, women with low level of education, age above 25 years, unplanned pregnancy, perceived right time less than four months, and did not get advise significant by other were found to be significantly associated with late initiation of first antenatal care visit. Significant number of pregnant mothers' reason out for the specific time for first ANC visit as time constraint, perceived as it's appropriate time, due to illness and others.

6.2. Recommendation

Keeping in view of the present research study findings, the following recommendations have been made:

- The zonal health bureau should: focusing on program and activities to improve ANC utilization time and other intervention can considerably improve maternal health and repeated capacity building workshops should be organized for ANC providers at all level to enhance their capabilities for improving the efficiency of ANC services.
- District health office collaborate with districts educational office encourage the students to actively participate in RH clubs and providing quality RH services for all students and improving women's education
- The health institutions should focus on avoiding unplanned pregnancy through family planning, early testing and recognition of pregnancy, improving women's knowledge on time Antenatal care.
- The district health extension workers and care provider should: provide community based information, education and communication on antenatal care and its right time for initiation, , promote health,
- Further community-based study is needed to determine the prevalence and associated factors affecting ANC initiation time.

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APENDEX

Appendix. A. Information Sheet and Informed Voluntary Consent Form for Heads of Bench Maji Zone Health Facilities.

My name is _____.I am working as a data collector for the study being conducted in this institution by Melkamsew Tesfaye who is studying for her Master's degree at Haramaya University, College of Health and Medical Sciences. I kindly request you to lend me your attention to explain you about the study and your institution being selected as the study setting.

1. **Study title**: late initiation of Antenatal Care visit and associated factors among pregnant women Attending public health facilities in Bench Maji zone South-west Ethiopia
2. **Purpose of the study:** The findings of this study can be important for the health care providers working in antenatal care unit to identify the major areas for late booking and to take appropriate modification strategies to improve the effectiveness of health facility antenatal care follow up, thereby improving early initiation of ANC visit. Besides this, the aim is for partial fulfillment of master in MPH for the Principal Investigator.
3. **Procedure and duration:** I will be interviewing pregnant mothers using a questionnaire to provide me with pertinent data that is helpful for the study. There are 58 questions to answer where I will fill the questionnaire by interviewing the mother. The interview will take about 45 minutes.
4. **Risks and benefits:** The risk of participating in this study is minimal, but only taking few minutes from pregnant mothers time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.
5. **Confidentiality:** The information that we will be provided will be kept confidential. There will be no information that will identify the participants in particular. The findings of the study will be general for the study community and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.
6. **Rights:** Participation in this study is fully voluntary. The participants have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits which they otherwise are entitled. They do not have to answer any question that they do not want to answer.

7. **Contact address:** If there, are any questions or enquires any time about the study or the procedures, please contact: Mobile phone of investigator: +251932018322 (Melkamsew Tesfaye) Email address of investigator: makihaben29@gmail.com Institutional research ethics review committee (IRERC) Haramaya University: Office phone: 0254662011: P.O.BOX: 235, Harar.
8. **Declaration of informed voluntary consent:** I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions about things that may have been unclear. I was informed that participants have the right to withdraw from the study at any time or not to answer any question that they do not want. I am also informed that the health facilities have the right to stop this study from being conducted in the health facilities if any misdeeds and unethical procedures are observed during the data collection process in the health facility's premises. Therefore, I declare my voluntary consent on behalf of _____ management to allow this study to be conducted in the health facilities with my initials (signature).

   Name and Signature of Head of the health facilities: _____

   Name and Signature of Data Collector: _____

Thank you for your cooperation!

Appendix B. Participant Information Sheet and Informed Voluntary Consent form for Pregnant Women

My name is _____, I am working as data collectors for the study being conducted in this community by Melkamsew Tesfaye who is studying her masters in Reproductive Health in Haramaya University, the college of health and Medical Sciences

I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

1. **Study title**: late initiation of Antenatal Care visit and associated factors among pregnant women Attending public health facilities in Bench Maji zone South west Ethiopia
2. **Purpose of the study**: **:** The findings of this study can be important for the health care providers working in antenatal care unit to identify the major areas for late booking and to take appropriate modification strategies to improve the effectiveness of health facility antenatal care follow up.; thereby improving early initiation of ANC visit. Besides this, the aim is for partial fulfillment of master in MPH for the Principal Investigator.
3. **Procedure and duration:** I will be interviewing by using questionnaires to provide me with the required information. There are 58 questions to answer where I will fill the questionnaire by interviewing you. The interview will take about 45 minutes. So kindly request you to spare me this time for the interview.
4. **Risk and benefit:** there is a very limited risk in this study.It only taking for few minutes of your time. There would not be any direct payment for participating in this study. But the finding from this research will reveal important information for zonal health bureau and other interested organization on thematic area of the study.
5. **Confidentiality**: The information that you provide for us will not be disclosed. The questionnaires have no any information which will disclose your personal identity in specific.
6. **The right of participant**: participating in this study fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefit which you otherwise are entitled. You do not have to answer any question that you do not want to answer.
7. **Contact address:** if there is any question time about the study or the procedures, please contact:-**Principal investigator:** Melkamsew Tesfaye, E-mail, makihaben29@gmail.com.

Mobile: 0932018322. Institutional Health Research Ethics Review Committee (IHRERC): Office phone: 025-466-20-11 or P.O.BOX: 235, Harar.

8. Declaration of informed voluntary consent

I have read/ was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions about things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore; I declare my voluntary consent to participate in this study with my initials (signature) as indicated below.

Name of participant: _____Signature of participant: _____

Name of data collector: _____Signature of data collector_____

N.B: This is to be signed face to face in the presence of data collector and the copy is provided to the participant.

Appendix. C. English Version Questionnaire.

This is questionnaire to assess late initiation of Antenatal Care Visit and associated factors among pregnant women attending public health facilities in Bench Maji zone south-west Ethiopia, 2018.

1. Date of interview (date/month/year):_____
2. Name of the health Institution's: _____
3. Code number of the questionnaire: _____
4. Name of Data Collector_____ Signature_____
5. Name of Supervisor: _____ Signature_____

Part I: Socio-demographic variables				
S.n	Questions	Option/Response	Response code	Skip
101	How old are you?	_____(in years)		
102	What is your marital status?	Married Single Widowed Separated Divorced		
103	What is your religion?	1. Orthodox 2. Protestant 3. Muslim 4.Others(specify)----------		
104	What is your ethnicity?	Bench Sheko Amhara Oromo Kefa Others(specify)----------		
105	What is your occupation?	Governmental Employee Non-Governmental Employee Housewife Student Others[specify]----------		
106	What is your educational Status?	Cannot read and write Can read and write Attend primary school (Grade 1-8) Attend secondary school (Grade 9-12) College diploma and above		
107	What is your husband's Educational status?	Unable to read and write Able to read and write Attend primary school(1-8) Attend secondary school(9-12)		

		College diploma and above		
108	What is your place of residence?	Rural Urban		

109 current family wealth (economic condition)

Could you tell me if you have the following in your house?

Asset type	**Response**			
Domestic animals				
Ox	Yes 2.No			
Cow	1. Yes 2.No			
Calf	1. Yes 2.No			
Sheep	1. Yes 2.No			
Goat	1. Yes 2.No			
Horse	1. Yes 2.No			
Donkey	1. Yes 2.No			
Cock and Hen	1. Yes 2.No			
Durable assets	1. Yes 2.No			
Television	1. Yes 2.No			
Radio	1. Yes 2.No			
Electricity	1. Yes 2.No			
Refrigerator	1. Yes 2.No			
Conventional telephone	1. Yes 2.No			
Mobile phone	1. Yes 2.No			
Car	1. Yes 2.No			
Motorcycle	1. Yes 2.No			
Cycle	1. Yes 2.No			
Cart	1. Yes 2.No			
Gold, money	1. Yes 2.No			
Ownership of owned living house	1. Yes 2.No			
Ownership of agricultural land	1. Yes 2.No			
Productive assets				
Plough plow	1. Yes 2.No			
Axe	1. Yes 2.No			
Hoe	1. Yes 2.No			
Shovel	1. Yes 2.No			
Sickle	1. Yes 2.No			
Modern beehive	1. Yes 2.No			
Traditional beehive	1. Yes 2.No			
Housing characteristics				
Indoor plumping/ pipe water	1. Yes 2.No			
Type of flooring	1. Earth/dung 2. Cement			
Toilet facility	1. Unsanitary or traditional pit latrine/ no toilet. 2. Sanitary or improved pit latrine.			
Other household materials				
Sofa	1. Yes 2.No			
Bed	1. Yes 2.No			
Table	1. Yes 2.No			

Chair		1. Yes 2.No			
Stove		1. Yes 2.No			
Part II: Obstetrics History					
201	How many times have you been pregnant? Including the current.	Number of Pregnancies:_____			
202	How many times did you give birth?	Number of children alive:_____ Number of children died:_____ Number of still birth:_____			
203	Did you have previous abortion?	Yes No			If 2, to Q 205
204	If your answer is yes for Q203 What was the types of abortion?	Number of Spontaneous:_____ Number of Induced_____			
205	How old is the last child?	_____(Years)			
206	Have you ever attended ANC for previous pregnancies?	Yes No			If 2, to Q 210
207	If yes, for Q 206, for which pregnancy did you attend?	For the first pregnancy For the second pregnancy For the third pregnancy For all pregnancy			
208	If you attend ANC for the last baby when did you start follow up for that pregnancy?	1._____months 2.I don't know			
209	How money times did you attend ANC visits for the last baby?	Once Two Three Four and more Do not remember			
210	Did you experience a health problem during the last pregnancies?	Yes No Don't remember			
211	Have you ever given birth in health institution?	1.yes 2.No			If 2, to Q 214
212	If yes, for Q 211, Where did you give birth for that pregnancy?	Governmental hospital Private hospital Governmental health center Private clinic Others specify_____			
213	What was the mode of delivery?	1.Normal Delivery 2.Ceserian section/Instrumental delivery			
214	Did you have any complications during previous deliveries?	1.Yes 2.No			
Part III Knowledge on time of ANC					
301	Where did you hear the information about ANC?	Heath institution Health extension workers			

		Radio/TV Friends Relatives Others (Specify)_____		
302	For whom ANC is important?	Fetus Mother(me) both Don't know		
303	Do you think that ANC is used for birth preparedness?	Yes No Don't know		
304	Should a healthy looking pregnant women need to attend ANC clinics?	Yes No Do not know		
305	When is the appropriate time to start first ANC visit?	_____ months I don't know		
306	How many ANC visits should pregnant women attend to the entire period of pregnancy?	One Two Three Four and above I don't know		
307	Do you know danger signs of pregnancy?	Yes No		If 2, to Q 401
308	If yes for Q307, can you mention some of them? (More than one answer is possible)	Persistent vomiting A.Yes___B.No_____ Leg swelling A.Yes___B.No_____ Vaginal bleeding A.Yes___B.No_____ Right upper quadrant pain A.Yes___B.No_____ Headache A.Yes___B.No_____ Blurring of vision A.Yes___B.No_____ Other(Specify)_____		
Part IV Healthcare and service related				
401	Where did you start the first ANC visit for previous pregnancy?	Governmental hospital Private hospital Health center		
402	Why did you select it?	Cost-free less cost Get good care Good attitude of staffs Short waiting time short distance Family/friends recommend		

		Others specify_____		
403	How long did you wait in the facility to get ANC service in a visit?	_____hours		
404	Do you think that waiting time was a problem while you were attending ANC?	Yes No Don't know		
405	Is there any payment you were asked for a check-up?	Yes No		
406	Did you miss any service due to cost constraint in the previous or present visit?	Yes No		
407	What types of services did you get in last pregnancy from ANC clinic?	1. Iron/folic acid A. Yes_____B. No___ .2. TT vaccine A. Yes_____ B.No_____ 3.Conseling A.Yes_____ B.No_____ 4.Anti parasite drugs(Deworming) A.Yes_____ B.No_____ 5.others(specify)_____		
408	Have you paid for transportation from home to facility to home?	1.Yes 2.No		If no skip to Q. 410
409	How much money you spent on transportation	1. <5ETB 2.6-10ETB 3. 11-20 ETB 4.>20ETB		
410	Do health providers give respect?	Yes No I don't know		
411	How do you rank the approach of ANC services providers?	Very Good Good Fair Bad		
Part V History of current pregnancy				
501	Date of First ANC booking	Date_____month_____year		
502	How do you know your pregnancy? (More than one answer is possible)	Missed period once Missed period twice Missed period three and more Physiological changes Other signs like nausea By examination [urine test] Other (Specify)_____		
503	When did you see your last menstrual period	Date_____month_____year_____		
504	Duration of pregnancy confirmed by health care provider	_____weeks		

505	Is this pregnancy planned	Yes No		If 2, to Q 507
506	If yes for Q 506, did the plan include your husband?	Yes No		
507	Who decides to you attend ANC Care?	My husband Me Both My mother Others specify_____		
508	If this pregnancy is not planned, was it wanted by you after conception?	Yes No		
509	If this pregnancy is not planned was it wanted by your husband after conception?	Yes No		
510	Did anyone advise you to start the first ANC visit?	Yes No		If 2, to Q 514
511	If yes for Q 508, from whom you get advice?	Health extension Worker Husband Mother Sisters Friends Others[specify]_____		
512	If you were advised to attend ANC by someone, Did he/she informed you when to start?	Yes No		
513	When does he/she advise you to start the first ANC visit?	_____months after Amenorrhea		
514	What is your husband's or partner's attitude towards ANC?	Positive Negative Don't know		
515	When did you start ANC follow up for the current pregnancy?	After _____Weeks of amenorrhea		
516	Why did you decide to start ANC follow up at this time? (More than one answer is possible)	perceive it is an appropriate time From my previous Experience Due to illness To assure pregnancy Busy with other works Economic factor [money constraints] Because of unplanned pregnancy Others [specify]_____		
517	When did your next ANC follow up time	Date_____month_____year		

Thank you for your cooperation!!!

Appendix. D. Amharic Version of the Participant Information Sheet and Voluntary Consent Form

ስሜ……እባላለሁ:-

አሁን:እየሰራሁኝ:ያለሁት:በዚህ:ማህበረሰብ:ለሚደረገው:ጥናት:መረጃ፡ሰብሳቢ:ሆኜ:ለወ/ሪት፡ መልካምሰው፡ተስፋዬ፡በሐረማያዩኒቨርሲቲ፡የስነ፡ተዋልዶ፡ጤና፡አጠባበቅ፡ለማስተርስ፡ት/ት፡ ለመመረቂያ፡የሚሆን ጥናት ለማካሔድ ነው።ስለዚህ እንዴት ተሳታፊ መሆን እንደቻሉና ስለጥናቱ በተመለከተ ማብራሪያ እንድሰጥዎትና የተወሰነ ጊዜ እንዲሰጡኝ በአክብሮት እጠይቃለሁ።

የጥናቱ ርዕስ፡- በቤንች ማጂ ዞን ውስጥ ባሉ የመንግስት ጤና ተቋማት ለቅድመ ወሊድ ክትትል(ምርመራ) ዘግይተው የሚመጡ ነፍሰጡር እናቶች የምዝገባ ጌዜ እና ተዛማጅ ምክንያቶች፡

የጥናቱ፡ጥቅም፡ የዚህ፡ጥናት፡ግኝት፡ የጤና ባለሞያዎች፡ነፍሰጡርእናቶች፡ለምን፡የቅድመ፡ወሊድ፡ ክትትልን፡አርፍደው፡እንደሚጀምሩ፡እንዲሁም፡ጤና፡ተቆማት፡የቅድመ፡ወሊድ፡ክትትልን፡በጊዜ፡ ባለመጀመር፡የሚመጡ፡እናቶችና፡ህፃናት፡ጤና፡ችግሮችን፡ለማሻሻል፡ለሚደረጉት፡ጥረቶች፡ከፍተኛ፡ ጠቀሜታ፡ይኖረዋል።ከዚህ፡በተጨማሪም፡ለዋና፡አጥኚዋ፡የማስተርስ፡ትምህርቱዋን፡ለማጠናቀቅና፡ የመመረቂያ፡ሱሁፍ፡ለማዘጋጀት፡ይጠቅማታል።

የጥናቱሂደትእናጊዜ፡ለጥናቱ፡የሚያገለግሉና፡መረጃ፡ሊሰጡ፡የሚችሉ፡ጥያቄዎች፡ተዘጋጅተዋል፡እነዚህ፡ ጥያቄዎችጠቅላላ፡58:ሲሆኑ፡በቃለምልልሱ፡ጥያቄዎቹን፡ለመመለስ፡በግምት፡45ደቂቃ፡ይፈጃል።

ስለዚህ፡አሁንም፡በድጋሚ፡ጊዜዎትን፡እንዲሰጡኝ፡በአክብሮት፡እጠይቃለሁ።

ጉዳትናጥቅም፡በዚህጥናት፡መሳተፍዎ፡ትንሽ፡ጊዜዎትን፡ከመውሰድ፡በስተቀር፡የሚደርስብዎት፡ጉዳት፡ የለም፡እንዲሁም፡የሚያገኙት፡ቀጥተኛ፡ጥቅም፡የለም፡ነገር፡ግን፡ከጥናቱ፡የተገኙትን፡ጠቃሚ፡ መረጃዎች፡ስለጤና፡እና፡ጤናን፡በተመለከተ፡ለሚያቅዱ፡የሚመለከታቸው፡ባለድርሻ፡አካላት፡ ይጠቅማቸዋ።

ምስጢርአጠባበቅ፡የሚሰጡን፡መረጃ፡ሁሉ፡ምስጢርነቱ፡የተጠበቀ፡ነው።ለዚሁም፡እርስዎን፡የሚገልጽ፡ ምንም፡ነገር፡የለም።የጥናቱ፡ውጤት፡በግለሰብ፡ሳይሆን፡ለሁሉም፡ህዝብ፡ነው።ጥያቄው፡መለያ፡ ምልክት፡አለው፤ስም፡የሚገልጽ፡ነገር፡የለውም፡እናም፡ስለተሳታፊዎች፡የሚገልጥ፡የቃልም፡ይሁን፡ የጥሁፍ፡በጥናቱ፡ውስጥ፡የለም።

የተሳታፊውመብት፡በዚህጥናትለመሳተፍ፡ሙሉ፡ፈቃደኝነትን፡ያስፈልጋል።በዚህ፡ጥናት፡የመሳተፍ፡ ወይም፡ያለመሳተፍ፡ሙሉ፡መብት፡አለዎት።ላለመሳተፍ፡ከፈለጉ፡ደግሞ፡በማንኛውም፡ጊዜ፡በመሀል፡

ራስዎን፡ከጥናቱ፡ማግለል(ማቋረጥ)፡ይችላሉ።ካቋረጥኩኝ፡ጥቅም፡ይጎልብኛል፡ብለው፡አያስቡ።

መመለስ፡የማይፈልጉትን፡ማንኛውም፡ጥያቄ፡አለመመለስ፡መብትዎ፡ነው።

አድራሻ፡-ለጥናቱ፡አካሄድ፡ወይም፡ስለጥናቱ፡መጠይቅ፡ወይም፡ደግሞ፡ጥናቱን፡በተመለከተ፡

ማንኛውም፡ጥያቄ፡ካሎት፡የሚከተሉትን፡አድራሻ፡ይጠቀሙ።መልካምሰው፡ተስፋዬ(+251)-

932018322፣ኢሜይል-makihaben29@gmail.comተቋማዊ፡የጤና፡ምርምር፡ስነ-ምግባር፡ግምገማ፡

ኮሚቴ፡ስልክ-(+251)-025-466-20-11፣ፖ.ሳ.ቁ-235 ሀረር

በፈቃደኝነትላይየተመሰረተየስምምነትማረጋገጫ፡የተሳታፊውን፡መረጃ፡ፎርም፡አንብቤዋለሁ፡ወይም፡

ተነቦልኛል።የጥናቱዓላማ፤ያለውንጉዳትናጥቅም፤ምስጢር፡አጠባበቅ፡የመሳተፍ፡እና፡ያለመሳተፍ፡

መብት፡እንዲሁም፡ችግር፡ካለ፡ከማንጋር፡መገናኛኘት፡እንዳለብኝሁሉተገልጸልኛል፤ጥያቄ፡ካለኝ፡ደግሞ፡

እንድጠይቅ፡እድልተሰጥቶኝ፡በመሀል፡ደግሞ፡ጥናቱን፡ለማቆም፡ከፈለኩኝ፡በማንኛውም፡

ጊዜከጥናቱ/ከተሳታፊነት/መውጣት፡እንደምችል፡በመጨረሻም፡መመለስ፡የማልፈልገውን፡ጥያቄ፡

አለመመለስ፡መብቱ፡እንዳለኝ፡ከተረዳሁኝ፡በኋላ፡በሙሉፈቃደኝነት፡በዚህ፡ጥናት፡ለመሳተፍ፡

የወሰንኩኝ፡መሆኔን፡ከዚህበታች፡በተቀመጠው፡ፊርማዬአረጋግጣለሁ።

የተሳታፊ፡ስም……ፊርማ

……. ቀን……...

የመረጃሰብሳቢ፡ስም……ፊርማ……

ቀን……

ስለትብብርዎ፡ አመሰግናለው።

Appendix. E. Amharic Version of the Questionnaire

ቃለመጠይቁ የተካሄደበትቀን (ቀን/ወር/ዓመት):_____

የጤናድርጅቱ ስም: _____

የመጠይቅመለያቁጥር:_____

የቃለመጠይቅአቅራቢዉስምናፊርማ: ስም:_____ ፊርማ፡_____

የተቆጣጣሪዉስምናፊርማ: ስም፡_____ ፊርማ:_____

ተ.ቁ	ጥያቄ	ምላሽ	መለያ.ቁ	ምርመራ
ክፍልአንድ: የማህበራዊባህሪያትመረጃ				
101	እድሜዎትስንትነው? (በሙሉአመት)	_____		
102	የጋብቻሁኔታዎ?	ያገቡ ያላገቡ የፈቱ የሞተባቸው ሌላካለ (ይተቀስ)----------		
103	ሃይማኖት	ኦርቶዶክስ ሙስሊም ፕሮቴስታንት ሌላካለ/ይጥቀሱ/.....		
104	ብሔር	ቤንች ሸኮ ከፋ አማራ ሌላካለ (ይጥቀሱ)----------		
105	የትምህርትደረጃዎት	ማንበብ እና መፃፍ አልችልም ማንበብ እና መፃፍ እችላለው የመጀመሪያደረጃ(1-8) ሁለተኛደረጃ(9-12) ከሌጅእናከዚያበላይ		
106	ስራዎምንድንነው?	የመንግስትሰራተኛ(ተቀጣሪ) በግልየሚሰራ የቤትእመቤት ተማሪ 5.ሌላካለ/ይገለጽ_____		
107	የባለቤትዎየትምህርትደረጃ?	1.ማንበብ፡እና፡መፃፍ፡ አይችልም 2.ማንበብእናመፃፍይችላል 3. የመጀመሪያደረጃ(1-8) 4. ሁለተኛደረጃ(9-12) ከሌጅእናከዚያበላይ		

108	የመኖሪያቦታ	ከተማ ገጠር	

109 **የቤተሰብ የሀብት ጠቋሚ ምክንያቶች**

ከሚከተሉት ውስጥ የትኛው በቤትዎ ውስጥ ይገኛል

በሬ	1 = አለ 2 = የለም			
ላም	1 = አለ 2 = የለም			
ጥጃ	1 = አለ 2 = የለም			
በግ	1 = አለ 2 = የለም			
ፍየል	1 = አለ 2 = የለም			
ፈረስ	1 = አለ 2 = የለም			
አህያ	1 = አለ 2 = የለም			
ዶሮ	1 = አለ 2 = የለም			
ቋሚ ንብረት				
ቴሌቭዢን	1 = አለ 2 = የለም			
ራዲዮ	1 = አለ 2 = የለም			
መብራት	1 = አለ 2 = የለም			
የቤት ስልክ	1 = አለ 2 = የለም			
ፍሪጅ	1 = አለ 2 = የለም			
ተንቀሳቃሽ ስልክ	1 = አለ 2 = የለም			
መኪና	1 = አለ 2 = የለም			

ሞተር ሳይክል	1 = አለ 2 = የለም			
ሳይክል	1 = አለ 2 = የለም			
ጋሪ	1 = አለ 2 = የለም			
ወርቅ	1 = አለ 2 = የለም			
የራስሽ መኖሪያ ቤት	1 = አለ 2 = የለም			
የራስሽ የእርሻ መሬት	1 = አለ 2 = የለም			
የማምረቻ ዕቃዎች				
ማረሻ	1 = አለ 2 = የለም			
መጥረቢያ	1 = አለ 2 = የለም			
መከትከቻ	1 = አለ 2 = የለም			
አካፋ	1 = አለ 2 = የለም			
ማጭድ	1 = አለ 2 = የለም			
ዘመናዊ የንብ ቀፎ	1 = አለ 2 = የለም			
ባህላዊ የንብ ቀፎ	1 = አለ 2 = የለም			
የቤቱ ሁኔታ				
ቤት የውሀ ቧንቧ	1 = አለ 2 = የለም			
የጣራው አይነት	1 = የአፈር 2 = የሲምንቶ			
የመፀዳጃ አይነት	1.ባህላዊ 2.ዘመናዊ			

		3.የለም			
የቤት ቁሳቁስ					
ሶፋ		1 = አለ 2 = የለም			
አልጋ		1 = አለ 2 = የለም			
ጠረንጴዛ		1 = አለ 2 = የለም			
ወንበር		1 = አለ 2 = የለም			
ክፍልሁለት፡የወሊድመረጃ					
201	ስንትጊዜአርግዘውያውቃሉ? [የአሁኑንጨምሮ]?	1.የእርግዝናብዛት_____			
202	ስንትጊዜወልደውያውቃሉ?	በህይወትያሉብዛት _____ ከተወለዱበኋላየሞቱብዛት _____ ሞተውየተወለዱብዛት_____			
203	ከዚህበፊትአስዎርዶዎትያውቃል	አዎ አያውቅም		ቁ 2 ከሆነ ወደ 205	
204	ለጥያቄተ.ቁ፡203፡-መልስዎ፡፡አዎ፡ከሆነ፡	1. በራሱ ጊዜ የወጣ ብዛት_____ 2.እርስዎ ያስወረዱት ብዛት_____			
205	ከዚህብፊትየወለዱትልጅእድሜው/ዋስን ት:ነው?	1._____አመት			
206	ከዚህእርግዝናበፊትየቅድመወሊድ (የነፍሰጡር) ምርመራአድርገውያውቃሉ?	አዎ አላውቅም		ቁ 2 ከሆነ ወደ 210	
207	ለጥያቄተ.ቁ፡206፡-መልስዎ፡፡አዎ፡ከሆነ፡ ለየትኛው፡እርግዝናዎነው?	ለመጀመሪያእርግዝና ለሁለተኛእርግዝና ለሦስተኛእርግዝና ለአራተኛእርግዝና			

		ሌላ/ይጥቀሱ/_____		
208	ከዚህበፊትለነበረውእርግዝናየቅድመወሊድክትትልካደረጉየወርአበባዎበቀረበስንተኛውጊዜነበር?	1._____ወርበኋላ 2.አላስታውስም		
209	ለባለፈውእርግዝናበጠቅላላስንትጊዜተከታትለውነበር?	አንድጊዜ ሁለትጊዜ ሶስትጊዜ አራትናከዚያበላይጊዜ 5.አላሰታዉስም		
210	ከዚህበፊትለነበረውእርግዝናዎችግርገጥሞዎትያውቃል?	አዎ አያውቅም አላስታውስም		
211	ከዚህበፊትበጤናተቋምወልደውያውቃሉ?	አዎ አላውቅም		ቁ 2 ከሆነ ወደ 214
212	ለተ.ቁ 211:መልስዎአዎከሆነየትነበር?	መንግስትሆስፒታል የግልሆስፒታል የመንግስትጤናጣቢያ የግልክሊኒክ ሌላካለ (ይጠቀስ)----------		
213	በምንነውየወለዱት?	በማህፀጸን በቀዶህክምና		
214	ላለፉት:እርግዝና:በወሊድ:ጊዜችግር:ገጥሞዎት:ያውቃል	አዎ አያውቅም		
ክፍል-3 የቅድመወሊድ ምርመራ ክትትል እውቀትእናከእርግዝናጋርተዛማጅችግሮች				
301	ስለ፡ቅድመወሊድ/የነፍሰጡር/ክትትልከየትነውየሰሙት?	ከጤናድርጅት ከጤናባለሙያ ከሬዲዮ/ ቴሌቪዥን ከጎደኛ ሌላ /ይጥቀሱ/_____ _____		
302	የቅድመወሊድምርመራየሚጠቅመውለማንነውብለውያስባሉ	ለህጻኑ ለእናት ለሁሉም አላውቅም		
303	የቅድመወሊድ(የነፍሰጡር) ምርመራለወሊድዝግጅትይጠቅማልብለውያስባሉ	አዎ አላስብም		
304	ጤናማየሆነችነፍሰጡርእናትየቅድመወሊ	አዎ		

	ድክትትልማድረግአለባትብለውያስባሉ?	አላስብም አላውቅም		
305	የነፍሰጡር /የቅድመወሊድ/ ምርመራየወርአበባዎበቀረመቼቢጀመርጥሩነውብለውያስባሉ?	1.ከ_____ወር በሆላ 2.አላዉቅም		
306	በአንድእርግዝናባጠቃላይስንትጊዜክትትልቢያደርጉበቂነውብለውያስባሉ?	አንድ ሁለት ሶስት አራትእናከዚያበላይ አላውቅም		
307	ከእርግዝናጋርበተያያዘሊመጡየሚችሉአደገኛየጤናችግሮችን(እንከኖችን) ያውቃሉ?	አዎ አላውቅም		ቁ 2 ከሆነ ወደ 401
308	ለጥያቂተ.ቁ 307 መልስዎአዎከሆነእባክዎየተወሰኑትንይጥቀሱ(ካንድበለይ:ይቻላል)	የማያቋርጥትዉከት ሀ.አለ ለ.የለም የእግርማበጥ ሀ.አለ ለ.የለም ከማህፀንደምመፍሰሰ ሀ.አለ ለ.የለም የደምግፊት ሀ.አለ ለ.የለም ከፍተኛራስምታት ሀ. አለ ለ.የለም የሚጥልበሽታ/ ራስንየሚያስት/ ሀ.አለ ለ.የለም የተለየ ካለ(ይጥቀሱ) _____		
ክፍል - 4 የጤናአገልግሎትአሰጣጥናእንክብካቤችግሮች				
401	ከዚህ እርግዝና በፊት ለነበረውን እርግዝና የቅድመ ወሊድ ተከታትለው ከሆነ ክትትሉን የትአደረጉ	የመንገስትሆስፒታል የግልሆስፒታል የመንግስትጤናጣቢያ		
402	ለምንይህንመረጡ	ከክፍያነፃስለሆነ አነስተኛክፍያ ጥሩአገልግሎትለማግት የጤናባለሙያዎችጥሩአመለካከትስላላቸው የምቆይበትጊዜውአጭርስለሆነ		

		ቅርብስለሆነ		
403	የነፍሰጡር /ቅድመወሊድ/ ምርመራለማግኘትየወሰደበዎትጊዜ?	_____ሰአት		
404	በነፍሰጡር /ቅድመወሊድ/ ምርመራጊዚብዙሰዓትመጠበቅችግርነው ብለዉያምናሉ?	1. አዎ 2. የለም 3. አላውቅም		
405	ለነፍሰጡር /ቅድመወሊድ/ ምርመራገንዘብከፍለውነበር?	አዎ አላውቅም		
406	በገንዘብእጥረትምክንያትያላደረጉትምር መራአለ?	አዎ የለም		
407	ከዚህየነፍሰጡርምርመራተቋምምንአይነ ትአገልግሎትአገኙ	የደምማነስመድሀኒተ ሀ.አዎ ለ.አላገኘውም ክትባት ሀ. አዎ ለ.አላገኘውም የምክርአገልግሎት ሀ.አዎ ለ. አላገኘውም የትላትልመድሀኒት ሀ.አዎ ለ.አላገኘውም ሌላካለ(ይጠቀስ)_____		
408	የጤናባለሙያዎችነፍሰጡርእናቶችንበቅድ መወሊድምረመራወቅት፡ያከብራሉ?	አዎ የለም አላውቅም		
409	የቅድመወሊድምርመራየሚሰጡትንየጤ ናባለሙያዎችእንዴትደረጃያወጣሉ?	በጣምጥሩ ጥሩ በቂነው ደካማ አላውቅም		
ክፍል - 5 የአሁኑእርግዝናመረጃዎች				
501	የመጀመሪያ እርግዝና ምርመራ ምዝገባ ቀን	ቀን_____ወር____ አመት		
502	ማርገዝዎትንበምንድንነውያወቁት? /ከአንድበላይመልስመስጠትይቻላል/	የወርአበባመቅረት [መምጣትከነበረበትአንድወር መዘግየት] የወርአበባመቅረት [መምጣትከነበረበትሁለትወር መዘግየት] የወርአበባመቅረት [መምጣትከነበረበትሦስትወር ናከዚያበላይመዘግየት] የሰውነትለውጥ [የጡትጫፍመለወጥየመሳሰሉ		

		ት] ማቅለሽለሽናየመሳሰሉት የሽንትምርመራበማድረግ ሌላመንገድካለ [ይገለጽ] _____		
503	የመጨረሻ የወር አበባ ያዩት መቼ ነው	ቀን_____ወር_____ዓ.ም		
504	የፀንሱ እድሜ ስንት ነው በባለሞያ የተረጋገጠ	_____ሳምንት		
505	ይህንእርግዝናአቅደውነው?	1.አዎ 2.አይደለም		ቁ 2 ከሆነ ወደ 507
506	ለጥያቄተ.ቁ.505:መልስዎአዎከሆነያቀዱት ከባለቤትዎጋረነዉ?	1.አዎ 2.አይደለም		
507	የእርግዝናክትትልእንዲጀምሩየሚወስንማ ንነው	ባለቤትዎ እርስዎ ሁለታችሁም እናትዎ ሌላካለ(ይጠቀስ)_____		
508	ይህእርግዝናዎያለእቅድከሆነከተረገዘበኋላ እርስዎፈልገውታል ?	አዎ አልፈልገውም		
509	ይህእርግዝናዎያለእቅድከሆነከተረገዘበኋላ በባለቤትዎይፈልጉታል?	አዎ አይፈልገውም		
510	የመጀመሪያውንየቅድመወሊድ /የነፍሰጡር/ ምርመራእንዲጀምሩምክርየሰጠዎት፡ ሰውነበር?	አዎ የለም		ቁ 2 ከሆነ ወደ 514
511	ለጥያቄ:ተ.ቁ.511:መልስዎአዎከሆነምክሩ ንየሰጠዎትማንነው?	ጤናባለሙያ ባለቤትዎ እናትዎ እህትዎ ጓደኛዎ ሌላ ካለ /ይገለጽ/ _____		
512	ምክርየሰጠዎትሰውመቼምርመራማድረ ግ [መጀመር] እንዳለበዎትነግሮዎታል	1.አዎ 2.አልነገረኝም		
513	የመጀመሪያየነፍሰጡርምርመራየወርአበ ባዎበቀረመቼመጀመርእንዳለብዎትነገረዎ ት?	ከ_____ወርበኋላ		
514	የነፍሰጡርምርመራንበተመለከተየባለቤት ዎአመለካከትምንይመሰላል?	ይደግፋል አይደግፍም		

		አላዉቅም		
515	የአሁኑንየነፍሰጡርምርመራ (ክትትል) የወርአበባዎከቀረከስንትሳምንትበኋላነው የጀመሩት?	ከ_____ሳምንትበኋላ		
516	በዚህንጊዜምርመራለማድረግለምንፈለጉ ?(ካንድበላይመምረጥይቻላል)	ትክክለኛየምርመራጊዜበመሆኑ ከዚህበፊትበዝህጊዜምርመራስ ለማደርግ ስላመመኝ እርግዝናንለማረጋገጥ ጊዜስለሌለኝ በገንዘብችግር እርግዝናውየታቀደባለመሆኑ ሌላ [ይገለጽ] _____		
517	የሚቀጥለው የምርመራ ቀጠሮ መቼ ነው	ቀን ወር አመት		

ስለትብብርዎአመሰግናልሁ::