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ADVERSEBIRTH OUTCOMES AND ITS ASSOCIATED FACTORS AMONG MOTHERS WHO GAVE BIRTH IN THE LAST YEAR IN ASSOSA CITY, WESTERN ETHIOPIA, 2024.

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BAHIR DAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF REPRODUCTIVE HEALTH AND POPULATION STUDIES

ADVERSEBIRTH OUTCOMES AND ITS ASSOCIATED FACTORS AMONG MOTHERS WHO GAVE BIRTH IN THE LAST YEAR IN ASSOSA CITY, WESTERN ETHIOPIA, 2024.

BY: ADANE WORKIE (BSC MIDWIFERY)

ATHESIS REPORT SUBMITTED TO THE DEPARTMENT OF REPRODUCTIVE HEALTH AND POPULATION STUDIES, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE MASTER OF PUBLIC HEALTH IN REPRODUCTIVE HEALTH

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BAHIR DAR, ETHIOPIA

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COLLEGE OF MEDICINE AND HEALTH SCIENCES

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The full title of the project	Adverse birth outcomes and its associated factors among mothers who gave birth in the last one year in Assosa City, Western Ethiopia, 2024.
Duration of project	December 2023-July 2024
Study area	Benishangul Gumuz Regional State, Assosa City Administration, North West Ethiopia.
The total cost of project	ETB: 65,454 ETB

DECLARATION

I, the undersigned, declare that this thesis paper comprises my own work. In compliance with internationally accepted practices, I have duly acknowledged and referred to all materials used in this work. I understand that non-adherence to the principles of academic honesty and integrity and the misrepresentation or fabrication of any idea, data, fact, or source will constitute sufficient grounds for disciplinary action by the university.

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List of Acronyms

ABO	Adverse Birth Outcome
ANC	Antenatal Care
CI	Confidence Interval
ETB	Ethiopian Birr
IUFD	Intrauterine Fetal Death
LBW	Low Birth Weight
LNMP	Last Normal Menstruation Period
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
NMR	Neonatal Mortality Rate
PNC	Postnatal Care
SDG	Sustainable Development Goal
SPSS	Statistical Package for Social Science
TIBF	Timely Initiation of Breastfeeding
SDH	Social Determinants of Health
WHO	World Health Organization

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Abstract

Background: Adverse birth outcomes refer to health complications or conditions that occur during pregnancy, in labor, or delivery, affecting the newborn's health and mother. Adverse birth outcomes, such as preterm birth, stillbirth, and neonatal death, are multifactorial outcomes with significant implications for public health. Adverse birth outcomes, including stillbirth, preterm birth, and neonatal death, remain significant public health concerns in Ethiopia. While national efforts have been made to improve maternal and child health, disparities persist across regions, with some areas experiencing higher rates of adverse birth outcomes. However, the magnitude and determinant factors of adverse birth outcome is not well explored in the study area.

Objective: To assess the prevalence of adverse birth outcomes and their associated factors among mothers who gave birth in Assosa City Administration, Western Ethiopia, in 2024.

Method: A community-based cross-sectional study was conducted among 600systematically selected mothers who gave birth in the last one year in Assosa city administration. Data were collected using a structured interviewer administered questionnaire. Then, the collected data were cleaned, coded, and entered into EPI- Data version 4.6 and exported into SPSS Version 25 for analysis. Descriptive data were presented using tables, figures and narration. Bivariable and multivariable logistic regression analysis were executed to identify factors associated with adverse birth outcome. Statistical significance was declared at p-value < 0.05.Model good fit test was assessed using Hosmer and Lemeshow test.

Result: The prevalence of adverse birth outcomes among women who gave birth in the last one year in Assosa was 14.8% (Still birth 6.3%, preterm 5.2 and neonatal death 3.3%).Premature rupture of membrane (AOR: 3.4, 95% CI: 1.17-9.68) unplanned pregnancy (AOR: 2.5, 95% CI: 1.78-11.20,) and non-model family in health extension package (AOR: 3.2, 95% CI: 1.16-8.71,) were significantly associated with adverse fetal birth outcome.

Conclusions: Significant proportion of participants experience adverse birth outcome. Premature rupture of membrane, unplanned pregnancy, and non-model family in health extension package were factors affecting adverse birth outcome.Enhancing contraception access, strengthening maternal health programs, and improving PROM management can help reduce these adverse outcomes.

Keywords: Adverse birth outcomes, Neonatal death, preterm birth, stillbirth.

1 Introduction

1.1 Background

Adverse birth outcomes refer to health complications or conditions that occur during pregnancy, in labor, or delivery, affecting the mother and newborn's health and it is a major public health problem. Adverse birth outcome encompasses stillbirth, preterm birth, and low birth weight, congenital anomalies and newborn death amongst others. The World Health Organization (WHO) defines stillbirth as a baby born with no signs of life at or after the age of viability (after 28 weeks of gestation). Preterm birth is defined as a pregnancy of less than 37 weeks of gestation. Stillbirth, preterm birth and low birth weight are the most frequently occurred adverse birth outcomes which are responsible forperinatal morbidity and mortality.

Stillbirth is one component of adverse birth outcome which is the major public health problem and a sensitive indicator of quality of care in the course of pregnancy and child birth.Despite Sustainable Development Goal(SDG) agenda, other strategies such as the United Nation Global Strategy For Women's, Children's And Adolescents' Health (2016-2030) and Every Newborn Action Plan (ENAP)(2014)call to end preventable stillbirths at global level. The magnitude of stillbirth is huge at global, regional and local level. It is reported that, one stillbirth occurs in every 17 seconds in 2021. Moreover, the 2019 evidence showed that there were an estimated 2.0 million babies were born still birth in the world where majority of stillbirths occurred in Sub Saharan Africa (SSA). It has enormous social, economic, and health impacts on the global community. Evidencesrevealedthat health care providers and families who faced stillbirth experienced grieving and mental and psychological problems due to stillbirth.

Preterm birth is another adverse birth outcome which is the leading cause of under-five mortality globally. An estimated 13.4 million babies were born pre-term in 2020, with nearly 1 million dying from preterm complications, according to a new report released by United Nations agencies and partners today. This is equivalent to around 1 in 10 babies born early (before 37 weeks of pregnancy) worldwide. Greater than 80 percent of cases occurred in Asia and SSA. Preterm birth has short- and long-term complications on the affected babies and the community at large. It is the leading cause of neonatal morbidity and mortality and highly linked with long-term physical, neurodevelopmental and socioeconomic consequences. In fact, scientific evidences confirmed that preterm birth exposes the survived children to the risk of cognitive, behavioral and mental health challenges. Moreover, health

complications like respiratory, immune, nervous system, and behavioral problems are more common in babies who have adverse birth outcomes like preterm birth . Despite the survival chance of preterm infants increased during the past three to four decades, the survivors remain at the greater risk of long and short term complications which have led to economic burden of the global community due to hospitalization costs of prematurely born infants.

Currently, various interventions and strategies are being implemented to address the issue of adverse birth outcomes and reduce perinatal loss and neonatal mortality. Improved antenatal careskilled birth attendance and essential newborn are amongst the WHO recommended interventions that could implemented to avert preventable adverse birth outcome. Ethiopia is also implementing different strategy to reduce poor birth outcome. Despit high utilization of ANC, the magnitude of adverse birth outcomes high in Ethiopia. Therefore the purpose of this study is to assess the Prevalence of Adverse birth outcomes and its associated factors affecting adverse birth outcome in Assosa city administration west north Ethiopia community based study.

1.2 Statement of the Problem

Adverse birth outcome is the major public health problem in low- and middle-income countries including Ethiopia .Sub-Saharan Africa has a high prevalence of adverse birth outcomes, with rates reaching almost 30%. In Ethiopia, the magnitude of adverse birth outcome has been document in various literatures. For example a systematic review and meta-analysis study has documented that the pooled prevalence of adverse birth outcome in Ethiopia was 26.88% . Moreover, different research articles showed that significant number of mothers experienced adverse birth outcomes. A study in Amhara region has documented that nearly 33% of mothers had experienced adverse birth outcomes. Similarly, different studies in different settings of Ethiopia such as in Debre Tabor 26.7%, East Gojjam 13.2%, Oromia 21%, Gondar 28%, Debre Birhan(28) 28.3% and Somali region 24.5%, and had reported of result on adverse birth outcome

Stillbirth, preterm birth and neonatal death are the commonly occurred adverse birth outcomes. The recent lancet series publicized that there were an estimated 2 million stillbirths at global level in 2019 with a global stillbirth rate of 1.9 stillbirths per 1000 total births. The rate of stillbirth varies across regions, from 22.9 per 1000 total births in West and Central Africa to 2.9 in western Europe. Preterm birth is another adverse birth outcome which is the leading cause of under-five mortality globally .An estimated 13.4 million babies were born pre-term in 2020, with nearly 1 million dying from preterm complications, according to a new report released by United Nations agencies and partners today. This is equivalent to around 1 in 10 babies born early (before 37 weeks of pregnancy) worldwide.Like other developing countries, the burden of adverse birth outcomes is high in Ethiopia. Different studies conducted across the country indicated that the prevalence of adverse birth outcomes in Ethiopia ranged from 18.3% to 32.5% (30-33).Preterm birth has short- and long-term complications on the affected babies and the community at large. It is the leading cause of neonatal morbidity and mortality and highly linked with long-term physical, neuro developmentaland socioeconomic consequences. In fact, scientific evidences confirmed that preterm birth exposes the survived children to the risk of cognitive, behavioral and mental health challenges. Moreover, health complications like respiratory, immune, nervous system, and behavioral problems are more common in babies who have adverse birth outcomes like preterm birth . Despite the survival chance of preterm infants increased during the past three to four decades, the survivors remain at the greater risk of long and short term complications which have led to economic burden of the global community due to hospitalization costs of prematurely born infants.

Globally, 2.4 million neonates died in 2019, with an average of 6700 deaths per day . Most crucially, a child's chances of surviving are highest within the first 28 days of life . The average number of neonates dying worldwide in 2019 was 17 per 1000 live births, down from 38 per 1000 in 1990, according to UNICEF's 2020 report. In 2019, 33.33% of all neonatal deaths occurred on the first day following delivery and nearly 75% occurred in the first week . According to the recent UNICEF report East Africa and South Asia placed at the top in neonatal death with a projected rate of twenty-seven and twenty-five deaths per 1,000 live births in 2019, respectively. The NM rate was 27 per 1,000 live births in sub-Saharan Africa. Ethiopia has the fifth-highest recorded infant death rate worldwide and the third-highest reported newborn death rate in Africa .

According to the Ethiopia Mini Demographic and Health Surveys report, the number of newborn fatalities decreased from 39 in 2005 to 29 per 1000 live births in 2016. But in 2019, the rate marginally rose to 33 fatalities per 1000 new births. An estimated 36 out of every 1000 live children had passed away before the first 28 days; Addis Ababa had the lowest rate of 2.4%, and the Benishangul Gumuz region had the highest rate of 15.9% .

Previous scientific literatures have established the contributing factors of adverse birth outcomes. A systematic review study from sub Saharan countries has revealed that maternal educational status, socioeconomic status, intimate partner violence, long distance travel, antenatal care follow up, twin birth, and lack of mothers involvement were significant determinants of adverse birth outcomes. Studies also established the significant link between adverse birth outcomes and complicated pregnancy and child birth, inadequate antenatal care, anemia and malaria infection. Adverse birth outcomes are related to socio demographic characteristics such as mother age, education, income, and residence, as well as obstetric factors like abortion history, gestational age and pregnancy interval (41-44).

The consequence of adverse birth outcomes extends beyond infancy, leading to increased neonatal morbidity and mortality. Survivors of adverse birth outcomes often face long-term health complications such as respiratory disorders, developmental delays, and cognitive impairments. These conditions can result in lifelong challenges, including learning disabilities and increased susceptibility to chronic diseases. Additionally, adverse birth outcomes impose significant emotional and financial burdens on families and strain healthcare systems due to prolonged hospitalizations and specialized medical care. Addressing the underlying causes is crucial to reducing these impacts and improving maternal and child health.

Currently, various interventions and strategies are being implemented to address the issue of adverse birth outcomes and reduce perinatal loss and neonatal mortality. Improved antenatal care, skilled birth attendance and essential newborn are amongst the WHO recommended interventions that could implemented to avert preventable adverse birth outcome

In Ethiopia, scholars have investigated the prevalence of adverse birth outcomes and their associated factors in various parts of the country. However, there remains a significant gap in community-based studies, as most research has been conducted in healthcare facility settings. This gap is particularly concerning given the high prevalence of home deliveries, as highlighted in the Mini EDHS 2019 report. Researchers have largely overlooked community-level studies due to challenges such as difficulties in reaching mothers who give birth at home, lack of reliable birth records, and logistical constraints in data collection outside healthcare facilities. Therefore, this study aims to address this gap by investigating the prevalence of adverse birth outcomes and their associated factors among mothers who gave birth in the last year in Assosa City, Northwest Ethiopia.

1.3 Significance of the study

Despite studies have been conducted in different part of the country to investigate the prevalence and determinant factors of adverse birth outcomes, nearly all studies were conducted at institution level. This result didn't show the actual prevalence of the adverse birth out comes because the recent mini-EDHS 2019 report the coverage of institutional delivery was 49% this justifies that conducting research on the prevalence and determinant factors of adverse birth outcomes at community level is essential to address home delivery. Moreover, the previous studies conducted in different settings of the country could not probably capture the community level factors and home delivered mothers. Consequently, these gaps will be filled via this research study. Therefore, the finding of this study will complement the existing evidence and help come up with evidence base for practice and policy.

The findings of this study will have many benefits to the concerned bodies and stakeholders. For instance, the findings of this study will give valuable information for health care providers working at different level in the health care system and help them understand magnitude and determinant factors. This in turn will contribute to effort in ending preventable adverse birth outcomes such as still birth and preterm birth amongst others. The finding of this study will also be used as a reference for future researchers, health system managers, governmental and non-governmental organizations and other stakeholders.

2 Literature Review

2.1 Prevalence of Adverse Birth Outcomes

Adverse birth outcomes are the global public health problems which cause millions of perinatal and child morbidity and mortality. Community-based cross-sectional studies in rural India, Zimbabwe, and rural Uganda have reported that the prevalence of adverse birth outcomes were 25.7%, 15.61%, and 10.8%, respectively (48-50).Similarly, different studies in different settings of Ethiopia such as in Debre Tabor 26.7%, East Gojjam 13.2%, Oromia 21%, Gondar 28% and Somali region 24.5%, and had reported on adverse birth outcome.

A systematic review and meta-analysis study result showed that the overall pooled prevalence of adverse outcomes in Ethiopia was 26.8% . Besides, in institutional-based cross-sectional studies conducted in public health institutions in southern Ethiopia,Debere Markos, Debre Birhan Referral Hospital, and Dessie Referral Hospital), the prevalence of adverse birth outcomes was 13.9%, 26.1%, 28.3%, and 32.5%, respectively(26-28, 52).

Preterm birth is the most common adverse birth outcome in some Sub-Saharan African countries, such as Nigeria, Kenya, Malawi, and Ethiopia, with a prevalence of 23.7, 18.3, 16.3, and 10.48 percent, respectively(53-56). An institution-based cross-sectional study done in east Gojjam, the prevalence of preterm birth was 13.2%.In a similar institution-based cross- sectional study done in an Amhara region referral hospital, the prevalence of preterm birth was 11.41%.

Another community-based research conducted in different part of Ethiopia the prevalence of neonatal mortality was 33 per 1000 live births in mini-EDHS 2019 report. Similar study done in Lume District of Oromia Region, Tigray and in the emerging regions of Ethiopia the prevalence was 19, 28.2and 34.4 per 1000 live birth respectively (59-61)

Another community-based prospective cohort study which was done in southern Ethiopia reported that the rate of stillbirth was 15 per 1000 live births . Moreover, cross-sectional studies conducted in Aksum General Hospital and Yirgalem Hospital showed that stillbirth rates were reported as 36.8 and 9.2 per 1000 live births, respectively.

.

2.2 Factors associated with Adverse Birth Outcomes

2.2.1. Socio-demographic Factors

Previous works have reported that myriads of factors could contribute to the occurrence of adverse birth outcomes. Among these, socio-demographic factors such as maternal age, educational status, and income/ socioeconomic status are the ones among others. A systematic review and meta-analysis study publicized that maternal education, socio-economic status, and intimate partner violence were predictors of adverse birth outcomes.

Maternal age is one the most important predictors of adverse birth outcome. Institution-based cross-sectional studies conducted in HawassaCity, AyderSpecialized Hospital, and Awi Zone Public Hospital Ethiopia have shown that advanced maternal age was positively associated with adverse birth outcomes(65-67).

Maternal educational status is another contributing factor of adverse birth outcome. According to a community-based studies conducted in Iran and Gahanna, individuals with a lower level of literacy were more likely to experience adverse pregnancy outcomes(68-70). Where as evidence from SSA showed that women who attended secondary and higher levels of education have the lower odds of experiencing adverse birth outcomes. And also other cross-sectional study conducted in Awi Zone Public Hospital also found that women who had no formal education were nearly three times more likely to experience adverse birth outcome that women who had secondary and above educational levels.The other study conducted in Debre Tabor town publicized that low educational status was linked to adverse pregnancy outcomes. In this study, mothers with no formal education or primary education were two times more likely to experience adverse pregnancy outcomes than mothers with higher education .

A community-based survey study from Iran also revealed that mothers with a lower level of literacy were more likely to experience adverse pregnancy outcomes . The other study conducted in Debre Tabor town publicized that low educational status was linked to adverse pregnancy outcomes. In this study mothers with no formal education and primary education were two times more likely to experience adverse pregnancy outcomes than to mothers having higher education.

Evidence showed that religious is one of the contributing factors to adverse birth outcome. A study from Zimbabwe has shown that mother who are not belonging to any religion, traditionalists and

Muslims were less likely to experience adverse out outcomes. Economic status of mothers has been reported to be associated with adverse birth outcome. A study in East Gojjam, Ethiopia showed that mothers with low monthly income were more likely to face adverse birth outcome.

Maternal occupation has also been reported to be linked to adverse birth outcome. A cross-sectional study conducted in Sothern Ethiopia showed that mothers who were government employee were nearly five times more likely to develop adverse birth outcome.

2.2.2. Healthcare Access and Service Utilization Related Factors

Healthcare access and utilization play a crucial role in determining adverse birth outcomes. Limited access to healthcare services, including antenatal care, skilled birth attendance, and emergency obstetric care, has been identified as a significant factor contributing to adverse birth outcomes .

Antenatal care (ANC) is one of the health care system factors that affect adverse birth outcomes. Generally, mothers who receive quality prenatal care have a positive child birth experience. Different study in different settings uncovered the contribution of ANC for the prevention of adverse birth outcomes. For example, analysis of recent Demographic and Health Surveys to determine factors that affect adverse birth outcomes has revealed that mothers who had ANC follow-up visits had the lower odds of adverse birth outcomes compared to those who had no ANC follow-ups . A meta-analysis study revealed that adverse birth outcomes were four times more likely to occur among mothers without ANC follow-up. Another case control study conducted in Somali region Ethiopia has shown that mothers without ANC follow-up were nearly three times more likely to face adverse birth outcomes compared their counter parts. Furthermore, an institutional-based cross-sectional study done in the North Wollo Zone reported that lack of ANC follow-up was strongly associated adverse birth outcomes.

Mode of delivery is another health service-related factor that has a detrimental effect on adverse birth outcome. An evidence from Zimbabwe has demonstrated that mode of delivery has been associated to adverse birth outcomes such as still births.Studies in Ethiopia have demonstrated that type of delivery is significantly linked with adverse birth outcome Study participants who gave birth by cesarean delivery were inversely correlated with adverse birth outcomes as compared to those participants who gave birth by spontaneous vaginal birth(24, 25, 77).

Place of delivery is another health service-related factor that affect the birth out comes. in this regard, a study conducted in Debre Birhan Hospital, Ethiopia has shown that mothers who gave birth at home were four times more likely to have adverse pregnancy outcomes . Another study conducted in Hawassa Teaching Hospital, Ethiopia revealed that mothers who had previous home delivery experience had a higher odds of adverse birth outcomes. A recently published article has demonstrated that increased number of pregnancy, complication during pregnancy, previous history of still birth, and complicated delivery were significant contributing factors for stillbirth outcome. Health care access is another determinant factor for adverse birth outcome. Studies in Ethiopia have demonstrated that access to timely ANC, delaying deciding in seeking care, and delaying receiving care contributed to adverse birth outcome.The finding of the research with a previous research in Jama unintended pregnancy was associated with adverse birth outcomes (80) .The finding implies that planned pregnancy is a protective factor for adverse birth outcome. This is supported by evidence from previous research works. A study from Iran has publicized that unintended pregnancy can be a risk factor for pregnancy complications including adverse birth outcomes such as preterm birth .A 2017 national-level analysis found that unintended pregnancy was associated with a 50% higher odds of neonatal mortality compared to intended pregnancy . This aligns with global studies that have linked unintended pregnancy to poorer maternal health behaviors, delayed antenatal care, and increased risks of preterm birth, low birth weight, and neonatal mortality

2.2.3. Behavioral, Lifestyle and Community health program participation t Factors

Evidences uncovered that factors such as smoking during pregnancy and alcohol consumption are linked to increased risk of adverse birth outcomes, including stillbirths, preterm births and congenital abnormalities.

Alcohol consumption during pregnancy is another behavioral factor which negatively affects child birth and pregnancy outcomes. A meta-analysis study in SSA region conducted to determine the pooled prevalence of adverse birth outcome and its determinant factors has demonstrated that maternal alcohol consumption has been associated with adverse birth outcomes. Another cross- sectional study conducted in Gondar, Ethiopia has reported that alcohol drinking was significantly linked with adverse birth outcome.

Participation and involvement of pregnant women in community health programs has a positive effect on maternal and fetal health outcomes. An evidence from South Sudan showed community participation showed that community participation and involvement improved health seeking behavior including maternal and child health. A systematic review study concluded that community participation had a positive impact on maternal and neonatal health outcomes. However, another systematic conducted in Southern Asia publicized that community-based women's education had no impact on maternal and newborn health outcomes. Another mixed method study in southern Ethiopia showed that involvement and participation of the community through a facilitating role of health extension workers (HEWs) had a positive impact on maternal health care service utilization thereby improving maternal and child birth outcomes.

2.2.4. Obstetric and Maternal Health Condition Related Factors

Pregnancy and child birth complications and maternal health conditions during pregnancy and child birth are the major contributing factors of adverse birth outcomes. For example, a study done in Zimbabwe found complications during child birth contribute to high adverse outcomes . A meta-analysis study in Ethiopia publicized that women who had pregnancy complications were nearly five times more likely to have adverse fetal outcomes than their counter parts. Moreover, cross-sectional studies done in the North Wollo Zone and Butajira hospital, Ethiopia found that pregnancy complications had significantly increased the risk of adverse birth outcomes (41, 91).

Birth interval has a detrimental effect for poor birth outcomes. A study from Tanzania short birth interval was highly linked to increased risk of preterm birth . Another study conducted in Tigray region, Ethiopia indicated that mothers with a less than 24-month interpregnancy interval were five times more likely to experience adverse birth outcomes .Moreover, the study done in Awi Zone, Amhara region demonstrated that women who had a short birth interval (< 24 months) were nearly two times more likely to have adverse perinatal outcomes .

Previous research studies have documented that parity (number of pregnancy) contributes to the occurrence of adverse birth outcomes. For instance, the study from Ghana demonstrated that women with more than five deliveries were nearly four times more likely to experience an adverse outcome (94). Another study done in southern Ethiopia in the Gamo Gofa Zone Hospital also demonstrated that having higher number of pregnancies were seven times more likely to experience adverse birth outcomes as compared to first time pregnant mothers.

Evidences in the past literatures confirm medical conditions are contributing factors for adverse birth outcomes. Maternal diabetes mellitus (DM) is one of the medical conditions which is highly linked to adverse birth outcomes. In fact, the relationship between DM and adverse pregnancy outcome is well established in scientific literatures. Several global, regional and local studies have demonstrated a significant relationship between maternal DM and adverse pregnancy outcomes such as stillbirth and preterm birth among others. A study conducted in east Gojjam zone hospitals revealed that chronic illness, positive HIV status, and pregnancy induced hypertension were among the major predictors of adverse fetal birth outcome(i.e. preterm).

Hypertension history in pregnant women has been widely recognized as a maternal health-related factor associated with adverse birth outcomes. Globally, studies have consistently shown that hypertensive disorders of pregnancy, such as preeclampsia and gestational hypertension, contribute to increased risks of adverse outcomes like preterm birth, intrauterine growth restriction, and stillbirth(99, 100).

Evidence showed that Human Immunodeficiency Virus (HIV) infection during pregnancy can lead to several complications, including preterm birth, low birth weight, and perinatal death. Studies from different settings found that HIV-positive women were more likely to experience preterm birth, stillbirth and neonatal death (25, 101, 102).

Malaria is a major public health problem in many parts of the world, and it can have a significant impact on pregnant women and their babies. Malaria during pregnancy can lead to several complications, including anemia, preterm birth, low birth weight, and stillbirth. A study by Ndugwa et al. (2016) found that pregnant women with malaria were more likely to have a preterm birth or a low birth weight baby than pregnant women without malaria. The study also found that malaria was associated with an increased risk of stillbirth.

The national representative evidence in Ethiopia showed that maternal conditions such as complication of pregnancy, placental problem and cord related problem are major risk factors for stillbirth. Another study have demonstrated previous history of abortion, hyper emesis, premature rupture of membrane and obstructed labor are major contributing factors for fetal adverse birth outcome(24, 25, 77).A 2019 study in Amhara region found that PROM increased the odds of preterm birth by over 4 times). Similarly, a 2018 study in Tigray region reported that PROM was associated with a 3-fold higher risk of perinatal mortality.

3 Conceptual framework of the study

This research explored the factors influencing adverse birth outcomes among mothers who gave birth in the last year in Assosa City Administration, Western Ethiopia. It utilized a comprehensive theoretical framework that integrated multiple categories, including socio demographic factors, obstetric factors, behavioral factors, community health program participation, maternal health conditions, and healthcare service-related factors. This framework was adapted from existing literature and specifically tailored to align with the objectives of the study(7,18,32,34,61,64, 67).In the visual representation of the framework, solid black arrows indicated the direct effect of independent variables on adverse birth outcomes, while dotted arrows represented potential relationships between the independent variables.

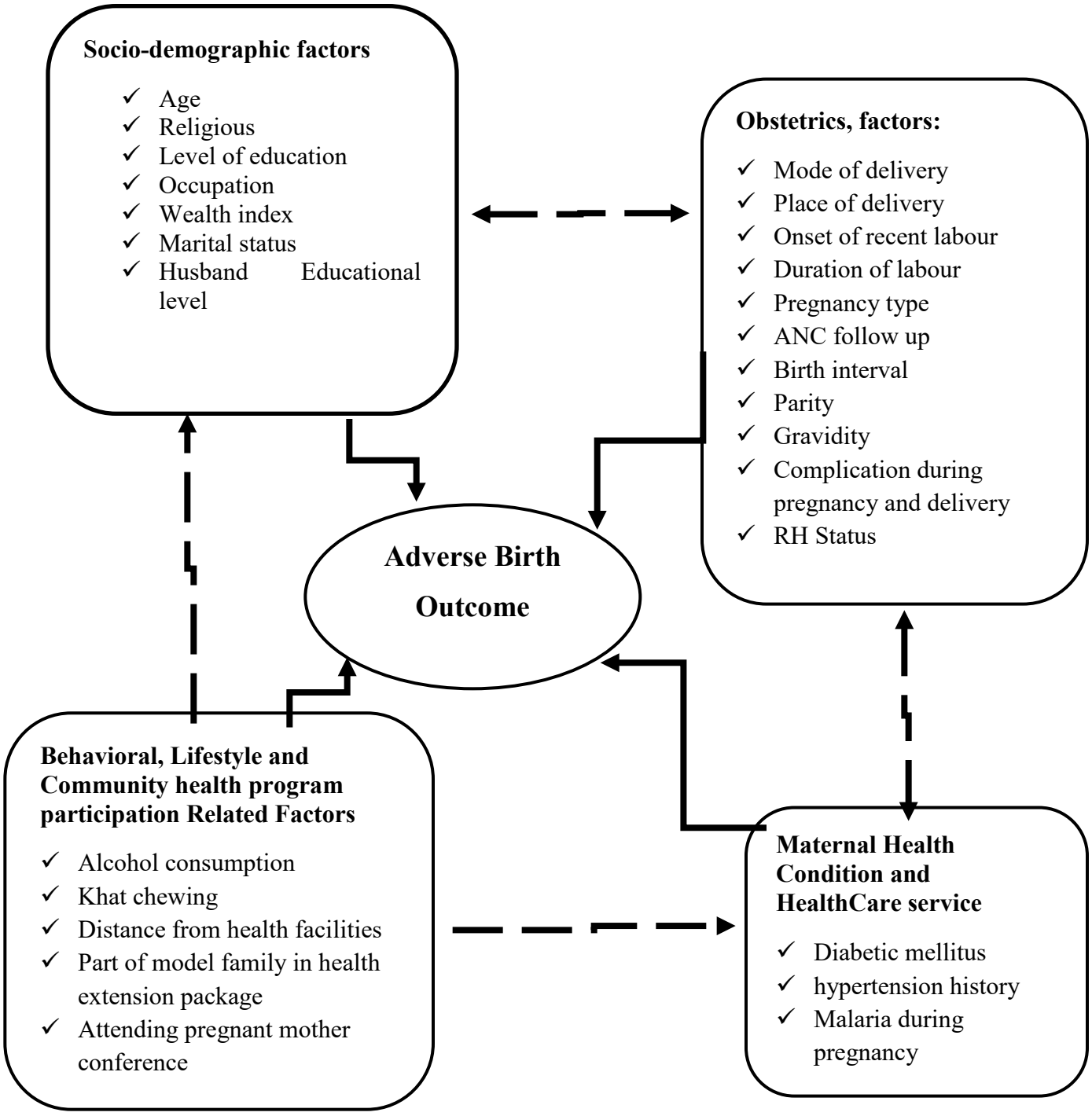

Figure 1: Conceptual framework of adverse birth outcome and associated factors among mother who gave birth the last one year in Assosa City administration, western Ethiopia, 2024.((7,18,32,34,61,64, 67).

4 Objective

4.1 General objective

- ✓ To assess the prevalence of adverse birth outcomes and their associated factors among mothers who gave birth in the last one year in Assosa City Administration, Western Ethiopia, 2024.

4.2 Specific objectives

- ✓ To determine the prevalence of adverse birth outcomes among mothers who gave birth in the last one year in Assosa City Administration, Western Ethiopia, 2024.
- ✓ To identify factors associated with adverse birth outcomes among mothers who gave birth in the last one year in Assosa City Administration, Western Ethiopia, 2024.

5 Methods and Materials

5.1 Study Area

The study was conducted in Assosa city administration from May 25, 2024_June 25, 2024.Assossa is the capital city of Benishangul Gumuz Regional State. The city is located in the westernmost part of Ethiopia, about 661 km from the capital city, Addis Ababa. Assosa city is located in Ethio-Sudanese border. It is located 90 km away from the Ethiopian-Sudanese border. According to the information gathered from the city mayor's office, the total population of the city was 77,781, the number of children under the age of one was 2338 and the last-year (2016) number of mothers who gave birth in the city was 2652. The city has two health centers and one general hospital; the total number of midwives in the city is 52 and there are 23 health extension workers. Administration is currently divided into two Woreda and 10 kebeles (five kebeles for each Woreda) for administrative purposes.

5.2 Study Design and Period

A community-based cross-sectional study was conducted from May 25 to June 25/2024 among mothers who gave birth in the last one year in Assosa City Administration, Western Ethiopia.

5.3 Source Population

- ✓ Women who gave birth in Assosa City Administration.

5.4 Study Population

- ✓ Women who gave birth during the last one year in Assosa City Administration.

5.5 Eligibility Criteria

5.5.1 Inclusion Criteria

- ✓ Women who give birth during the year in Assosa City Administration.
- ✓ Women who lived in Assosa city at least for one year.

5.5.2 Exclusion Criteria

Mother who are unable to respond/communicate.

5.6 Variables

5.6.1 Dependent Variable

- Adverse Birth Outcome (Yes, No)

5.6.2 Independent Variables

- Socio-economic/socio-demographic factors: Age, religious, educational status of mother, maritalstatus, educational status of husband, occupation, wealth index.
- Obstetric and maternal health related factors: Past obstetric history, Pregnancy complications history (PROM, PIH, APH, GDM) Birth interval, Number of fetuses, gravidity, parity, onset of recent labor, duration of labor, sex of the neonate, types of pregnancy, history of adverse birth outcomes (still birth, preterm, neonatal death), Birth interval, history of diabetic mellitus, history of hypertension, HIV/AIDS and malaria during pregnancy.
- Behavioral and Lifestyle factors: chat chewing during pregnancy and Alcohol consumption
- Health Care Access and Service Utilization factors: ANC follow-up, Place of delivery, Family planning, Breast feeding, mode of delivery, distance from health facilities, and participation in community health programs. (Model family in health extension package), Attending pregnant mother conference,

5.7 Operational definition

Adverse Birth outcomes: If the labor ends up with Preterm birth(<37 weeks of gestation) or Stillbirth(If the infant died in the womb or during intrapartum period after 28 weeks of gestation baby or newborn death (death of a baby within 28 day birth).

Preterm birth: A neonate is said to be preterm, if born before 37 completed weeks of gestation but after

28 weeks of gestation By considering the Last Normal Menstruation Period (LNMP or LNMP is not known and the mother reports the neonate is born before 9 months of gestation.

Stillbirth:If the infant died in the womb or during intrapartum period after 28 weeks of gestation .

Neonatal death: The World Health Organization (WHO) defines neonatal death as the death of a live-born baby within the first 28 days of life.

Model family: Model families are those who are certified by health extension worker.

5.8 Sample size determination

The sample size was determined by using a single population proportion formula. Since there is no previous study in at community setting in Ethiopia, the proportion of adverse birth outcomes is not known at the community level. Consequently, sample size was determined based on the following assumptions; the proportion of adverse birth outcome p=50%, (d) margin of error d=5%,$Z\alpha/_2$ = 1.96 at 95% confidence interval, design effect of 1.5, and 10% non-response rate. So sample size was calculated as follows.

$$n = \frac{(Z\ \alpha/2)^2\ x\ P\ (1-P)}{d^2}$$ Where:

n = sample size

P = proportion of adverse birth outcome = 50%,Z $\alpha/_2$= 1.96standard normal distribution curve value for a 95% level of confidence.

d= Margin of error (5%),

$$n = \frac{(1.96)^2\ x\ 0.5\ (1-0.5)}{(0.05)^2} \approx 385$$

Table 1 Sample size calculation for the second objective of adverse birth outcome and associated factors among mother who gave birth the last one year in Assosa City administration, western Ethiopia, 2024.

Variables/factors	Exposed prevalence	Unexposed prevalence	AOR(95%CI)	Total sample size	Reference
Age	6.9%	93.1%	2.2(1.21, 4.05)	240	
Multi gravida	22.3%	77.7%	1.8(1.08, 3.06)	321	
Lack of ANC visit	36.4%	63.6%	2.1(1.02, 4.40)	280	

Based on the aforementioned computations, the larger sample size was seen using the proportion of adverse birth outcome. Assuming a design effect of multi-stage sampling to be 1.5 (1.5*385 ≈ 577) and considering a non-response rate of 10 %,(58) the final sample size is 634.

5.9 Sampling Procedure

A systematic random sampling technique was employed to collect data for this study. Information about participants was obtained from the health office of the city and from health extension family folder providers working in health administration in Assosa City Administration and by reviewing the women's delivery registration logbook during the study period in each Kebele. Assosa city administration has two administrative Woreda. Before the actual the following procedure was carried out. First, five Kebeles were selected out of ten Kebeles in the Assosa City Administration using simple random sampling method (i.e. lottery method). Consequently, Kebele2, Kebele3 and Kebele5 from Woreda1 and Kebele1 and Kebele4 from Woreda2were selected (Fig2.). Moreover, the total sample size (634) was allocated proportionally to each of the selected Kebeles. According to the information obtained from the after mentioned sources, one thousand four hundred ninety-two (N-=1492)eligible mothers were found in the selected kebeles. Based on this information the K interval value was calculated as K = N/n = 1492/636=2 so, every two mothers were sampled for interview. The first mother was selected randomly using lottery method. The proportional allocation procedure was carried out as follows.

$n_i = nxN_i/N$ Where;

$\mathbf{n_i}$= sample size of each Kebele

n = final sample size

N_i = number of deliveries in each selected Kebele

N = total number of deliveries in selected Kebele

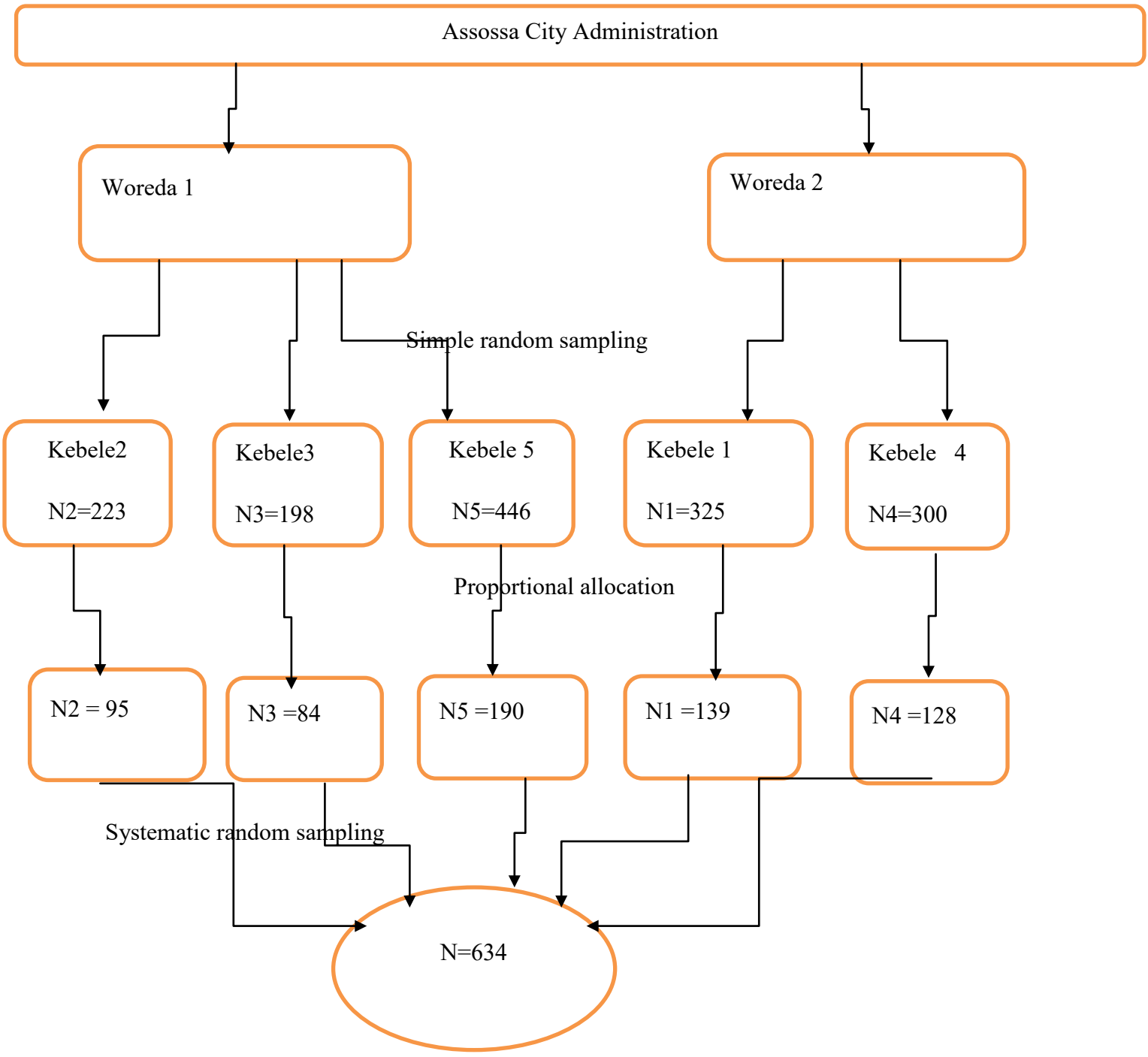

Figure 2 Schematic presentation of sampling procedure of Adverse birth outcome and associated factors among mother who gave birth the last one year in Assosa City administration, western Ethiopia, 2024.

5.10 Data Collection Tool and Procedure

A structured interviewer administered questionnaire was adopted by reviewing different related literatures conducted in similar topic (7,18,32,34,61,,64,67). The questionnaire covers the socio-demographic characteristics of the mother, obstetrics history and medical related factors, behavioral and lifestyle factors and healthcare access and utilization factors. First, the adopted questionnaire was structure modified and prepared in English language. Then language experts translated it to Amharic language and back to English language. The face validity of the questionnaire was assessed by experts in the field of study. Some weeks before the actual data collection, the questionnaire was pre-tested on 5% of the total sample of women who reside in Banbasitown to evaluate its consistency, clarity, applicability and necessary modifications were made on the questionnaire. Nearly 40 minutes was allotted to interview each participant. Five BSc midwives for data collection and five health extension workers for community mobilize two supervisorsclosely followed the data collection process. Mother were interviewed at their household.

5.11 Data Quality Assurance

To enhance the quality of the data, data collectors and supervisors were trained for two consecutive days on the overall content of the questionnaire, the data collection procedure and on how to approach participants to avoid possible errors in the data collection process. Furthermore, the collected data was checked for its completeness, consistency, and accuracy on daily basis. The supervisors and the investigator have closely followed the data collection process. Appropriate times to complete the questionnaire were allocated for participants, and the completed questionnaires were collected on time hence collecting questionnaires on time ensures they are less likely to make mistakes or misunderstand questions, leading to more accurate data.

5.12 Data Processing and Analysis

The collected data were checked for completeness and consistency. Then, they were cleaned, coded and entered into EPI- 4.6 and exported into SPSS Version 25 for analysis. Descriptive statistics were presented using tables, and figures and narration. A logistic regression model was fitted to identify the association between explanatory and outcome variables. Adjusted Odds ratio (AOR) with 95% confidence interval (CI) was used to measure the strength of association between explanatory variables and the outcome variable. The model fitness was checked using Hosmer and Lemeshow goodness of fit

(P=.71). Variables with p-value less than 0.25(P< 0.25) in Bivariable analysis were selected for further analysis in multivariable logistic regression analysis. Variables with a p-value of < 0.05 in multivariable analysis were considered to be statistically significant predictors of adverse birth outcomes. Multi collinearity was also checked using Variance Inflation Factor (VIF) to measures the occurrence of two or more independent variables in the model are highly correlated.

5.13 Ethical Consideration

Ethical approval was obtained from Bahir Dar University College of Medicine and Health Sciences Ethical Review Board Committee. Supporting letter was obtained from Benishangul Gumuz Regional State Health Bureau and permission to conduct the study was obtained from the Assosa City Administration Health Office before data collection. The objective of the study was clearly explained to participants before conducting the interview and informed written consent was sought from each participant. Data were kept confidential throughout the study. Separate and safe place was arranged to interview each participant there keeping the privacy of participants.

5.14 Dissemination of results

The findings of this study will be presented to Bahir Dar University, the Department of Reproductive Health and Population Studies, store in Library of Bahir Dar University, and the Assosa City Administration Health Department. The findings of this study will also be presented at regional, national, and international conferences. In addition, attempts will be made to publish in peer-reviewed international

6 Result

6.1 Socio-demographic characteristics of participants

In this study, a total of 600 mothers were included with 94.6% response rate. Of those mothers,508(84.7%) were in the age group of 21-34 years with the mean age of 27.9years and with standard deviation (SD± 4.65). Regarding of their religion 244 (40.7%) were Orthodox. And 209(34.8) of respondent were attended college and above. 234(39.0%) mothers were house wife. Majority of the respondent were married 491(88.8%). Furthermore, 267(44.5%) mothers were medium wealth index. (**Table2)**.

Table 2 Socio-demographic characteristics of participants in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024.

Variable	Category (n=600)	Frequency	Percent (%)
Age (in year)	<=20 years	37	6.2
	21-34 years	508	84.7
	>35 years	55	9.2
Religion	Orthodox	244	40.7
	Muslim	233	38.8
	Catholic	99	16.5
	Protestant	24	4.0
Educational status	Unable to read and write	96	16.0
	Grade 1-8	117	19.5
	Grade 9-12	178	29.7
	College and above	209	34.8
Marital status	Married	491	84.8
	Unmarried	29	4.8
	Divorced	37	6.2
	Windowed	5	0.8
	Separated	38	6.3
Husband educational status	Unable to read and write	31	6.3
	Grade 1-8	103	20.9

(n= 491)	Grade 9-12	126	21.6
	College and above	231	47.0
Maternal occupation	House wife	234	39.0
	Merchant	101	16.8
	Student	38	6.3
	Daily laborer	47	7.8
	Governmental Employer	180	30.0
Wealth Index	Poor	146	24.3
	Medium	267	44.5
	Rich	187	31.2

6.2 Obstetrics, Maternal Health Condition and Health Care service utilization

About453(75.5%) of women had Multi gravida and 79(18.8%) mothers had unplanned pregnancy. Fifty-seven (9.5%) mothers were developed premature rupture of membrane. Labor durations were mostly within 12 hours527 (87.8%) and spontaneous labor was540 (90%). The normal deliveries were predominantly in health institutions, and most pregnancies were singleton. Breastfeeding initiation was high, and the sex distribution of newborns was fairly balanced. A significant proportion of participants had a birth interval of less than 24 months were 267(63.4%) ((**Table3**).

Table 3. Obstetrics and newborn related characteristics of participants in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024

Variable	Category	Frequency	Percent (%)
Gravity	Primigravida	147	24.5
	Multigravida	453	75.5.
Parity	Primipara	161	26.8
	Multipara	439	73.2
Type of birth	Term birth	569	94.8
	Preterm birth	31	5.2
PROM	Yes	57	9.5
	No	543	90.5

Duration of PROM to labor	<=8 Hours	39	68.4
	>=8Hours	18	31.6
History of stillbirth	Yes	20	3.3
	No	580	96.7
History of preterm birth	Yes	39	6.5
	No	541	93.5
History of neonatal death	Yes	28	4.7
	No	572	95.3
Duration of labor in hours	<=12 Hours	527	87.8
	>12 Hours	73	12.2
Onset of recent labor	Spontaneous	540	90.0
	Induced	60	10.0
Mode of delivery	Spontaneous vaginal	455	75.8
	Cesarean birth	78	13.0
	Instrumental	67	11.2
Place of Delivery	Home	74	12.7
	Health Institution	526	87.3
Types of pregnancy	Singleton	565	94.2
	Multiple	35	5.8
Sex of the Neonate	Female	343	57.2
	Male	257	42.8
Breast feed within one hour	Yes	460	81.9
	No	102	18.1
Time of newborn death	<=7 Days	17	85
	> 7Days	3	15
Current birth interval	< 24 Month	287	63.4
	>=24 Months	166	36.6

6.3 Maternal Health Condition and Health Care service utilization Related characteristics

Most participants, 539 (89.8%), reported no medical illnesses during their pregnancy, with malaria (45.9%), anemia (24.6%), and hypertension (13.1%) being the most common among those who did. Bleeding during pregnancy was rare, with only 18 participants (3.0%) reporting it. A majority, 572 (95.3%), had received antenatal care (ANC), although 167 (29.2%) had fewer than 4 visits, and 313 (54.7%) had their first ANC visit within the first three months. Iron-folate supplementation was common, with 472 (82.5%) receiving it, and 293 (62.1%) of them taking it for less than 90 days. Pregnancy-induced hypertension (PIHN) was reported by only 25 participants (4.4%), and gestational diabetes mellitus by 10 participants (1.7%). Travel time to a health institution varied, with 247 participants (41.2%) needing to travel for 30 minutes or less, while 353 participants (58.8%) traveled for more than 30 minutes. Finally, 468 participants (78.0%) were using modern contraceptive methods **(Table 4).**

Table 4: Maternal Health Condition and Health Care service utilization Related characteristics of participants in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024.

Variable	Category	Frequency	Percent (%)
Medical illness during current pregnancy?	Yes	61	10.2
	No	539	89.8
Type of medical illness(N=61)	Malaria	28	45.9
	HV	5	8.2
	Anemia	15	24.6
	Diabetic Mellitus	5	8.2
	Hypertension	8	13.1
Bleeding during pregnancy	Yes	18	3.0
	No	582	97.0

Had ANC follow up	Yes	572	95.3
	No	28	4.7
Number of ANC follow up(N=572)	<=4 ANC Visit	167	29.2
	>4 ANC Visit	405	70.8
Gestational month of first ANC Visit	<=3 Month	313	54.7
	>3 Month	259	45.3
Got iron folate supplementation(N=572)	Yes	472	82.5
	No	100	17.5
Duration of day iron folate intake	1-89 days	293	62.1
	>=90 days	179	37.9
PIHN in current pregnancy	Yes	25	4.4
	No	547	95.6
Gestational diabetic Mellitus	Yes	10	1.7
	No	562	98.3
Time to travel to health institution	<= 30 minutes	247	41.2
	>30 minute	353	58.8
Use of modern contraceptive before index pregnancy?	Yes	468	78.0
	No	132	22.0

ANC= Antenatal Care PIHN=Pregnancy Induced Hypertension

6.4 Behavioral, Lifestyle and Community health program participation

The study found that the majority of participants, 332 (55.3%), were enrolled in the model family program. Participation in pregnant women's conferences was also prevalent, with 360 (60%) of

participants attending at least one conference. Alcohol consumption during pregnancy was relatively low, with only 41 participants (6.8%) reporting alcohol use, and of those, Tela was the most commonly consumed type (82.9%). Khat chewing was reported by a smaller proportion of participants, with most, 47 (95.5%), chewing it 1-2 days per week **(Table 5).**

Table 5 Behavioral, Lifestyle and Community health program participation and involvement characteristics of participants in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024.

Variable	Category	Frequency	Percent (%)
Part of model family	Yes	332	55.3
	No	268	44.7
Pregnant women's conference participation	Yes	360	60.0
	No	240	40.0
How many times did you participate pregnant mother conference(N=360)	2<= conference	278	77.2
	>2 conference	82	22.8
Ever drunk alcohol during current pregnancy?	Yes	41	6.8
	No	559	93.2
Tye of Alcohol consumed	Tella	34	82.9
	Areqi	13	31.7
	Beer	3	7.3
	Teji	4	9.8
How often did you drink? (N= 41)	Less or equal to once a month	38	92.7
	2-4times / month	3	7.3
	4 and above per week	0	
Have you ever chewed khat during index pregnancy?	Yes	55	9.2
	No	545	90.8
Number of chewing days per week(N=55)	1-2 day per week	47	95.5
	>=3 day per week	8	14.5

6.5 Prevalence of Adverse birth outcome

The prevalence of adverse birth outcomes in the study area was 14.8% (95% CI: 12.0%–17.8%), with a total of 89 cases identified. The most frequently observed adverse birth outcome was stillbirth, occurring in 38 cases (42.7%), followed by preterm birth in 31 cases (34.8%) and newborn death in 20 cases (22.5%).

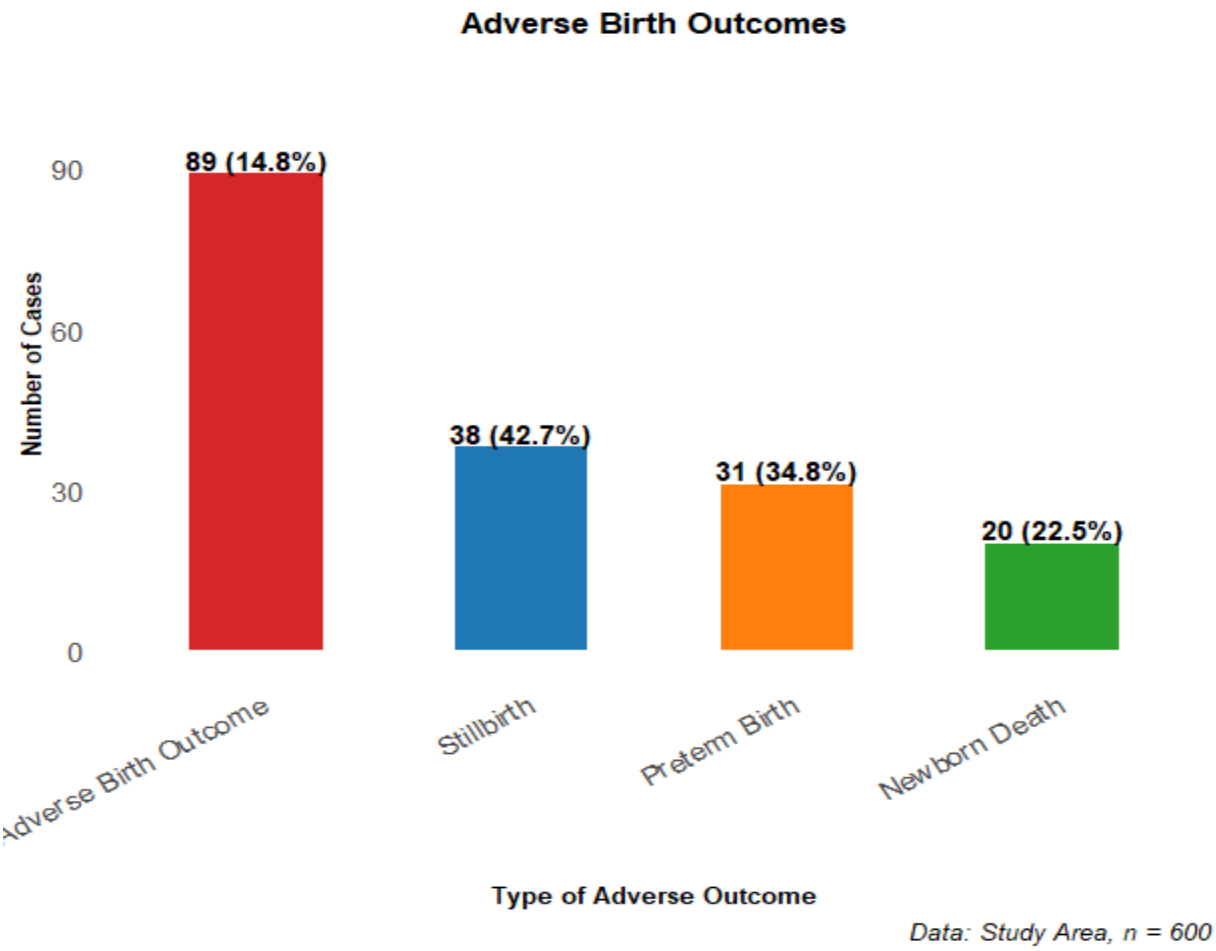

Figure 3Prevalence and types of adverse birth outcomes in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024.

6.6 Factors associated with adverse birth outcome among participants

Current birth interval, number of ANC visit, gestational age at first ANC, unplanned pregnancy, duration of labor, onset of labor, place of delivery, model family, attending pregnant mother

conference, premature rapture of membrane, pregnancy induced HTN, and hours to reach health facility were found significantly associated with adverse birth outcome in Bivariable regression analysis with p<0.25.Afteradjusting potential con founders of other covariates, unplanned pregnancy, non-model family, and premature rapture of membrane were significantly associated with adverse birth outcome.

Study participants those with unplanned index pregnancy were 2.5 times more likely to have adverse birth outcome than study participants those with planned index pregnancy [AOR=2.5,95% CI=1.78,11.20].Study participants those has not been certified as model family were 3.2 times more likely to have adverse birth outcome as compared with those has been certified as model family[AOR=3.2,95% CI=1.16, 8.71].Respondents with current history of premature rapture of membrane were 3.4 times more likely to experience adverse birth outcomes compared to those didn't have current premature rapture of membrane history [AOR=3.4,95% CI=1.17,9.68]**(Table 6).**

Table 6: Bivariable and multivariable logistic regression analysis model among study participants in Assosa City Administration Benishangul Gumuz Regional State, western Ethiopia, 2024.

Variables		Adverse Birth Outcome		Bi-variable	Multi-variable
		Yes	No	COR(CI)	AOR(CI)
No of ANC visit	<4	35 (21.0 %)	132(79.0 %)	2.6(1.59, 4.36)	1.65(0.62, 4.43)
	≥4	37(9.1 %)	368(90.9%)	1	**1**
Gestational age at first ANC	≤3month	26(8.3%)	287(91.7%)	1	1
	>3month	46(17.8%)	213(82.2%)	2.4(1.43,3.98)	2.6(0.49, 3.66)
Planned pregnancy	Yes	53(10.2%)	485 (89.8%)	1	1
	No	43(54.4%)	36(45.6%)	7.4(4.37,12.51)	**2.5(1.78,11.20)**
Current birth interval	<24m	238(82.9%)	49(17.1%)	1.8(1.00,3.25)	1.7(0.64,4 . 4 5)
	≥24m	17(10.2%)	149(89.8%)	1	**1**
Labor duration	<12hr	72(13.7%)	455(86.3%)	1	1
	≥12hr	17(23.3%)	56(76.7%)	1.9(1.06,3.49)	2.0(0.59,6.96)

Labor onset	Spontaneous	76(14.1%)	464(85.9%)	1	1
	Induced	117(78.3%)	13(21.7%)	1.7(0.87,3.27)	0.8(0.20,2.97)
Delivery place	Institution	73(13.9%)	453(86.1%)	1	1
	Home	16(21.6%)	58(78.4%)	1.7(0.93,3.14)	0.9(0.28,2.82)
TIBF	Yes	26(5.7%)	434(95.3%)	1	1
	No	25(24.5%)	77(75.5%)	5.4(2.97,9.88)	2.1(0.83, 5.34)
Model family	Yes	23(6.9%)	309(93.1%)	1	1
	No	66(24.6%)	202(75.4%)	4.4(2.65,7.29)	**3.2(1.16, 8.71)**
Hours to reach health facility	≤30 min	28(11.3%)	219(88.7%)	1	1
	>30min	61(17.3%)	292(82.7%)	1.6(1.01,2.64)	1.6(0.62,4.07)
Pregnancy induced HTN	No	83(14.4%)	464(85.6%)	1	1
	Yes	6(24.0%)	19(76.0%)	1.9(0.73,4.86)	3.0(0.22, 6.67)
Attending pregnant mother conference	Yes	34(9.4%)	326(90.6%)	1	1
	No	55(22.9%)	185(77.1%)	2.9(1.79,4.53)	1.2(0.49,3.06)
PROM	No	68(12.5%)	475(87.5%)	1	1
	Yes	21(36.8%)	36(63.2%)	4.1(2.25,7.39)	**3.4(1.17,9.68)**

Note: *= Significant at p< 0.05, 1= Reference group COR=Crude odds ratio) AOR=Adjusted odds ratioTIBF=Timely imitated breast feeding

6 Discussion

This study was conducted to assess the prevalence and factors associated with adverse birth outcomes among women who gave birth in the last one year in Assosa city Administration, Northwest Ethiopia. The overall prevalence of adverse birth outcomes was found to be 14.8% (95% CI 12.0%, -17.8%). This result highlights a significant public health concern, indicating that nearly one in seven women experienced adverse outcomes during childbirth. The finding is nearly comparable with previous results in Zimbabwe (15.61% and 16.3%)(49, 73), Debre Tabor Ethiopia (12.3%)(24)and East Gojjam, Ethiopia (13.2%)(25). The comparability of the findings could be probability due to the similarity of study population in study design, health care policy system, and health care service utilization similarities. However, the result in this study is lower than those found in several other studies conducted in Ethiopia and Sub-Saharan Africa.In Oromia, Ethiopia(21%)(26) and Gondar, Ethiopia(28%)(27),the higher prevalence of adverse birth outcomes could be attributed to differences in healthcare infrastructure. Both of these studies were hospital-based, which likely resulted in the inclusion of a higher proportion of high-risk pregnancies, thereby contributing to the observed increase in adverse birth outcomes. Similarly, the prevalence in this study is lower than that in Debre Birhan, Ethiopia (28.3%)(28) , where the higher prevalence may be explained by the inclusion of pregnancies complicated by multiple maternal and fetal conditions, such as ante partum hemorrhage (APH), preeclampsia, low birth weight, and preterm delivery. The presence of such complications can significantly increase the risk of adverse birth outcomes. In comparison to Somali, Ethiopia (24.5%)(29)where a hospital-based unmatched case-control study was conducted, the higher prevalence could be due to the study design itself. Hospital-based studies, particularly case-control designs, tend to focus on higher-risk pregnancies and cases with complications, leading to an overrepresentation of adverse outcomes.Lastly, the result is lower than the prevalence found in Sub Saharan Africa(29.7%)(40) which was based on demographic and health surveys conducted across various countries and time periods. The higher prevalence observed in these surveys can likely be attributed to variations in healthcare systems, along with socioeconomic and cultural differences among the diverse study populations

On the other hand, the finding of this study is higher than study conducted in Bahir Dar Ethiopia (3.8%)(70)which may be due to differences in healthcare infrastructure. Bahir Dar likely benefits from better access to healthcare facilities and maternal health education, leading to improved outcomes. In

contrast, Assosa is a more resource-limited region with limited healthcare access, contributing to the higher prevalence observed. It was also higher than a study conducted in Uganda (10.8%)(106).This difference could be attributed to better healthcare facilities and maternal health education in Uganda, which may have contributed to improved birth outcomes. Additionally, geographic and environmental factors in Assosa may hinder access to care, resulting in higher rates of adverse birth outcomes in this study. In this study, premature rupture of membrane, unplanned pregnancy and non-model family in health extension package were significantly associated with adverse birth outcome.

Unfavorable birth outcomes were linked to premature membrane rupture. The likelihood of an adverse birth outcome was almost three times higher for participants who experienced PROM than for those who did not. The finding is similar with studies conducted in different parts of Ethiopia (2, 29, 107). The possible explanation could be due to the fact that mothers with PROM have higher risk to develop adverse birth outcome. Previous study has confirmed that PROM is a major risk factor for adverse birth outcomes. Moreover evidences from previous literature had consistently identifies PROM as a major contributor to adverse perinatal outcomes, including increased risks of prematurity, neonatal sepsis, and fetal death.

Additionally, in the current study, an unplanned pregnancy was statistically significantly linked to a poor birth outcome. Compared to their counterparts, participants who experienced an unplanned pregnancy were 2–5 times more likely to have a poor birth outcome. The finding is in line with a previous research in Jama (80) .The finding implies that planned pregnancy is a protective factor for adverse birth outcome. This is supported by evidence from previous research works. A study from Iran has publicized that unintended pregnancy can be a risk factor for pregnancy complications including adverse birth outcomes such as preterm birth . Unintended pregnancies can lead to increased psychological stress, which has been linked to adverse outcomes. The absence of planned and wanted pregnancies may also result in inadequate preparation for motherhood, affecting maternal behavior, nutrition, and health-seeking practices. Furthermore, scientific literature shows that women who do not intend to become pregnant may engage in less optimal health behaviors, such as smoking or poor diet, further contributing to negative pregnancy outcomes. Another recent systematic review and meta-analysis study has reported that unplanned pregnancy is highly linked with adverse birth outcomes such as preterm birth (80). This implies that ensuring access to family planning services and promoting the importance of planned pregnancies should be crucial public health interventions to mitigate the

occurrence of adverse birth outcome. Furthermore, A recent study from Peru has reported that unplanned pregnancy is linked with preterm birth. This study also added that birth weight and gestational age were lower in unplanned, mistimed and unwanted pregnancies.

Being non-model family in health extension package was significantly associated with adverse birth outcome. However, evidences in different settings have supported this finding. A recent study from Southern Ethiopia has established that community participation increases uptake of essential maternal and child health services, including antenatal care, facility delivery, and postnatal care. Another systematic review literature has reported that community involvement in public health care intervention have a positive impact on maternal and newborn health as a package of intervention. The protective effect of model family participation observed in the current study suggests that this approach may be an effective strategy to address social determinants of health and improve birth outcomes at the community level. Moreover, the exiting literature revealed that model family approach is a unique community-based intervention that has been scaled up across the country and improved the health of the population.

7 Strength and limitation

7.1 Strength of the study

One of the study's strengths is its focus on home deliveries, which is highly relevant to Assosa's local context. As many women in this region deliver at home, a community-based approach provides a more accurate representation of adverse birth outcomes. By engaging directly with the community, the study captures outcomes often overlooked in hospital-based research, offering valuable insights into the health challenges faced by women in resource-limited settings. This approach also ensures the inclusion of women without access to healthcare facilities, making the findings more representative of the broader population.

7.2 Limitation of the study

One limitation of this study is the exclusion of low birth weight (LBW) as a primary adverse birth outcome. This was due to the community-based design, where many mothers may not remember their infant's exact birth weight, and the lack of formal health records, especially in home deliveries, which could have contributed to recall bias. Additionally, illiterate participants might have struggled to report such details accurately. Another limitation is the potential underestimation of adverse birth outcomes due to the sensitivity of the issue. Self-reporting in a community-based study may have led to less accurate data, particularly for sensitive topics like stillbirth or newborn death.

8 Conclusion and recommendation

8.1 Conclusion

In conclusion, significant proportion of participants have experienced adverse birth outcome. The findings of this study revealed that premature rupture of membranes, unplanned pregnancy, and not being model family were determining factors of adverse birth outcome.

8.2 Recommendation

To Benishangul Gumuz Regional Heath Bureau and Assossa City Health Office

- Enhance awareness and education on contraception, unintended pregnancies, and reproductive health in general
- Improve access to contraceptive methods to ensure availability for all women.
- Address the importance of attitudes, feelings, and motivation in using contraception and preventing unintended pregnancies.
- Design, implement, and rigorously evaluate local programs aimed at reducing unintended pregnancies.
- Adopt a comprehensive approach to maternal and child health, targeting all levels of the healthcare system and communities.
- Focus on improving the quality and coverage of antenatal care to ensure better health outcomes for mothers and children.

To the health care professionals

- Given that being a model family is a protective factor for adverse birth outcomes, health extension workers should scale up and strengthen the model family approach as a community-level intervention to promote positive birth outcomes.
- Healthcare professionals should recognize model families and integrate the model family approach with other maternal and child health programs, creating a comprehensive, community-based strategy to enhance birth outcomes.

To the researchers

Future research, especially qualitative studies, should include all adverse birth outcomes and use prospective follow-up to better understand contributing factors. Exploring socio-cultural and healthcare access issues in resource-limited areas and the long-term effects of adverse outcomes on maternal and child health is also recommended.

9 REFERENCES

1. Tesfay N LF, Kebede M, Woldeyohannes F. Determinants of stillbirth among reviewed perinatal deaths in Ethiopia. Front Pediatr 10:1030981 doi: 103389/fped20221030981. 2022.
2. al. Ae. Determinants of adverse birth outcomes among women delivered in public hospitals of Ethiopia, 2020. Archives of Public Health https://doiorg/101186/s13690-021-00776-0 80:12. 2022.
3. Ntuli ST, Malangu N. An investigation of the stillbirths at a tertiary hospital in Limpopo province of South Africa. Global journal of health science. 2012;4(6):141.
4. Liu L, Oza S, Hogan D, Chu Y, Perin J, Zhu J, et al. Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. The Lancet. 2016;388(10063):3027-35.
5. Lucia Hug, Danzhen You, Hannah Blencowe, et.al. Global, regional, and national estimates and trends in stillbirths from 2000 to 2019: a systematic assessment. Lancet. 2021;398: :772–85.
6. Saifon Chawanpaiboon, Joshua P Vogel, Ann-Beth Moller, et.al. Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. Lancet. 2019;7: e37–46.
7. Hannah Blencowe, Julia Krasevec, Mercedes de Onis, et.al. National, regional, and worldwide estimates of low birthweight in 2015, with trends from 2000: a systematic analysis. Lancet. 2019;7: e849–60.
8. UN, Every Woman, Every Child. THE GLOBAL STRATEGY FOR WOMEN'S, CHILDREN'S AND ADOLESCENTS' HEALTH (2016-2030):. 2015.
9. Sarah B. Barnes, Sophia DeLuca, Maanasa Chitti, et.al. Global Health & Gender Policy Brief:The Global Burden of Stillbirths OVERVIEW. Initiative& MH; 202. Contract No.: 5.
10. Mohamed M Ali SB, Ties Boerma,. Measuring stillbirth and perinatal mortality rates through household surveys: a population-based analysis using an integrated approach to data quality assessment and adjustment with 157 surveys from 53 countries. Lancet. 2023;11 (e854–61).
11. UNICEF. Report of the United Nations Inter-agency Group for Child Mortality Estimation,Never ForgottenThe situation of stillbirth around the globe. 2022.
12. NICHD. Working to Address the Tragedy of Stillbirth. 2023.
13. Organization WH. Born too soon: decade of action on preterm birth: World Health Organization; 2023.

14. Eric O Ohuma, Ann-Beth Moller, Ellen Bradley, et.al. National, regional, and global estimates of preterm birth in 2020, with trends from 2010: a systematic analysis. Lancet. 2023;402.
15. Niloy Nath, Winnica Beltrano, Logan Haynes, et.al. Long-Term Effects of Preterm Birth on Children's Brain Structure: An Analysis of the Adolescent Brain Cognitive Development (ABCD) Study. eNEURO. 2022 https://doi.org/10.1523/ENEURO.0196-22.2023;10(6)
16. Stavros Petrou, Oya Eddama, Lindsay Mangham. A structured review of the recent literature on the economic consequences of preterm birth. BMJ. 2010.
17. Ondeck M, Focareta J. Environmental hazards education for childbirth educators. The Journal of Perinatal Education. 2009;18(4):31-40.
18. Organization WH. WHO recommendations on interventions to improve preterm birth outcomes. 2015.
19. CDC C. Centers for Disease Control and Prevention (CDC). Obtenido de Centers For Disease Control and Prevention CDC: https://www cdc gov/dpdx/strongyloidiasis/index html. 2020.
20. Temkin SM, Noursi S, Regensteiner JG, Stratton P, Clayton JA. Perspectives from advancing national institutes of health research to inform and improve the health of women: a conference summary. Obstetrics & Gynecology. 2022;140(1):10-9.
21. al. Ge. Adverse fetal outcomes and its associated factors in Ethiopia: a systematic review and meta-analysis. BMC Pediatrics (2020) https://doi.org/10.1186/s12887-020-02176-9;20:269.
22. Tamirat KS, Sisay MM, Tesema GA, Tessema ZT. Determinants of adverse birth outcome in Sub-Saharan Africa: analysis of recent demographic and health surveys. BMC Public Health. 2021;21:1-10.
23. Alene AA, Mengesha EW, DagnewGW. Adverse fetal birth outcomes and its associated factors among mothers with premature rupture of membrane in Amhara region, Ethiopia. PLoS ONE 19(4): e0298319. https://doi.org/ 10.1371/journal.pone.0298319. (2024).
24. Mihretie GN HA. Pregnancy outcomes among women who gave birth at health institutions: a cross-sectional study. Health Sci Rep. ;5:e843. doi:10.1002/hsr2.843. 2022.
25. Tafere Birlie Ayele and Yikeber Abebaw Moyehodie. Prevalence of preterm birth and associated factors among mothers who gave birth in public hospitals of east Gojjam zone, Ethiopia. BMC Pregnancy and Childbirth. 2023 https://doi.org/10.1186/s12884-023-05517-5;23:204.
26. Cherie N. Adverse Birth Out Comes and Associated Factors among Delivered Mothers in Dessie Referral Hospital, North East Ethiopia. 2018.

27. Dagnaw Y. Prevalence and associated factors with adverse birth outcome among women who gave birth at Debre Markos General Hospital, East Gojjam Zone, Ethiopia, 2022: A cross-sectional study2023.
28. Tadese M, Dagne K, Wubetu AD, Abeway S, Bekele A, Misganaw Kebede W, et al. Assessment of the adverse pregnancy outcomes and its associated factors among deliveries at Debre Berhan Comprehensive Specialized Hospital, Northeast Ethiopia. PLoS One. 2022;17(7):e0271287.
29. Abdo RA, Endalemaw, TB and Tesso FY. Prevalence and associated Factors of Adverse Birth Outcomes among Women Attended Maternity Ward at Negest Elene Mohammed MemorialGeneral Hospital in Hosanna Town, SNNPR, Ethiopia. J Women's Health Care , . 2016;5:4.
30. Chaibva BV, Olorunju S, Nyadundu S, Beke A. Adverse pregnancy outcomes,'stillbirths and early neonatal deaths' in Mutare district, Zimbabwe (2014): a descriptive study. BMC pregnancy and childbirth. 2019;19:1-7.
31. Degno S, Lencha B, Aman R, Atlaw D, Mekonnen A, Woldeyohannes D, et al. Adverse birth outcomes and associated factors among mothers who delivered in Bale zone hospitals, Oromia Region, Southeast Ethiopia. Journal of International Medical Research. 2021;49(5):03000605211013209.
32. Abdo R, Endalemaw T, Tesso F. Prevalence and associated factors of adverse birth outcomes among women attended maternity ward at Negest Elene Mohammed Memorial General Hospital in Hosanna Town, SNNPR, Ethiopia. J Women's Health Care. 2016;5(4):324.
33. Cherie N, Mebratu A. Adverse birth out comes and associated factors among delivered mothers in dessie referral hospital. North East Ethiopia. 2018:1-6.
34. Rosa-Mangeret F, Benski A-C, Golaz A, Zala PZ, Kyokan M, Wagner N, et al. 2.5 million annual deaths—are neonates in low-and middle-income countries too small to be seen? A bottom-up overview on neonatal Morbi-mortality. Tropical medicine and infectious disease. 2022;7(5):64.
35. UNICEF. Neonatal mortality-UNICEF Data. See https://data unicef org/topic/child-survival/neonatal-mortality/(accessed on 11 June 2020). 2020.
36. Hug L, Sharrow D, Zhong K, You D. Levels and trends in child mortality. New York, USA: United Nations Children's Fund. 2017:1-40.

37. Sharrow D, Hug L, You D, Alkema L, Black R, Cousens S, et al. Global, regional, and national trends in under-5 mortality between 1990 and 2019 with scenario-based projections until 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation. The Lancet Global Health. 2022;10(2):e195-e206.
38. EPHI I. Ethiopian public health Institute (EPHI)[Ethiopia] and ICF. Ethiopia Mini Demographic and Health Survey 2019: Key Indicators. 2019.
39. Sahile A, Bekele D, Ayele H. Determining factors of neonatal mortality in Ethiopia: An investigation from the 2019 Ethiopia Mini Demographic and Health Survey. PLoS One. 2022;17(12):e0267999.
40. Tamirat et al. Determinants of adverse birth outcome in Sub-Saharan Africa: analysis of recent demographic and health surveys. BMC Public Health. 2021 https://doi.org/10.1186/s12889-021-11113-z;21:1092.
41. Kassahun EA, Mitku HD, Getu MA. Adverse birth outcomes and its associated factors among women who delivered in North Wollo zone, northeast Ethiopia: a facility based cross-sectional study. BMC Res Notes. 2019;12(1):357.
42. Kebede AS, Muche AA, Alene AG. Factors associated with adverse pregnancy outcome in Debre Tabor town, Northwest Ethiopia: a case control study. BMC Res Notes. 2018;11(1):820.
43. Ferguson KK, Rosario Z, McElrath TF, Vélez Vega C, Cordero JF, Alshawabkeh A, et al. Demographic risk factors for adverse birth outcomes in Puerto Rico in the PROTECT cohort. PLoS One. 2019;14(6):e0217770.
44. Hailemichael HT, Debelew GT, Alema HB, Weldu MG, Misgina KH. Determinants of adverse birth outcome in Tigrai region, North Ethiopia: Hospital-based case-control study. BMC Pediatr. 2020;20(1):10.
45. Asiki G, Baisley K, Newton R, Marions L, Seeley J, Kamali A, et al. Adverse pregnancy outcomes in rural Uganda (1996–2013): trends and associated factors from serial cross sectional surveys. BMC pregnancy and childbirth. 2015;15(1):1-12.
46. Behrman RE, Butler AS. Preterm birth: causes, consequences, and prevention. 2007.
47. USAID, ETHIOPIA. ETHIOPIA PROFILE OF PRETERM AND LOW BIRTH WEIGHT PREVENTION AND CARE, www.EveryPreemie.org.

48. Padhi BK, Baker KK, Dutta A, Cumming O, Freeman MC, Satpathy R, et al. Risk of Adverse Pregnancy Outcomes among Women Practicing Poor Sanitation in Rural India: A Population-Based Prospective Cohort Study. PLoS Med. 2015;12(7):e1001851.
49. Chaibva BV, Olorunju S, Nyadundu S, Beke A. Adverse pregnancy outcomes, 'stillbirths and early neonatal deaths' in Mutare district, Zimbabwe (2014): a descriptive study. BMC Pregnancy Childbirth. 2019;19(1):86.
50. Asiki G, Baisley K, Newton R, Marions L, Seeley J, Kamali A, et al. Adverse pregnancy outcomes in rural Uganda (1996-2013): trends and associated factors from serial cross sectional surveys. BMC Pregnancy Childbirth. 2015;15:279.
51. Gedefaw G, Alemnew B, Demis A. Adverse fetal outcomes and its associated factors in Ethiopia: a systematic review and meta-analysis. BMC pediatrics. 2020;20(1):1-12.
52. Lolaso T, Oljira L, Dessie Y, Gebremedhin M, Wakgari N. Adverse birth outcome and associated factors among newborns delivered in public health institutions, Southern Ethiopia. East African Journal of Health and Biomedical Sciences. 2019;3(2):35-44.
53. Daneji SM, Kasim NI, Takai IU. Clinical audit of the management and outcomes of preterm pre-labour rupture of membranes at Aminu Kano Teaching Hospital. Pan Afr Med J. 2022;43:41.
54. Wagura P, Wasunna A, Laving A, Wamalwa D, Ng'ang'a P. Prevalence and factors associated with preterm birth at kenyatta national hospital. BMC Pregnancy Childbirth. 2018;18(1):107.
55. Muchie KF, Lakew AM, Teshome DF, Yenit MK, Sisay MM, Mekonnen FA, et al. Epidemiology of preterm birth in Ethiopia: systematic review and meta-analysis. BMC Pregnancy Childbirth. 2020;20(1):574.
56. van den Broek NR, Jean-Baptiste R, Neilson JP. Factors associated with preterm, early preterm and late preterm birth in Malawi. PLoS One. 2014;9(3):e90128.
57. Ayele TB, Moyehodie YA. Prevalence of preterm birth and associated factors among mothers who gave birth in public hospitals of east Gojjam zone, Ethiopia. BMC Pregnancy and Childbirth. 2023;23(1):204.
58. Adugna DG. Prevalence and associated risk factors of preterm birth among neonates in referral hospitals of Amhara Region, Ethiopia. Plos one. 2022;17(10):e0276793.

59. Etana S, Tadesse W, Ferede A. Assessment of Neonatal Mortality in Women Who Gave Birth Recently: a Community Based Cross Sectional Study in Lume District of Oromia Region, Eastern Ethiopia. Neonat Pediatr Med. 2018;4(146):2.
60. Tsadik M, Legesse AY, Teka H, Abraha HE, Fisseha G, Ebrahim MM, et al. Neonatal mortality during the war in Tigray: a cross-sectional community-based study. The Lancet Global Health. 2024;12(5):e868-e74.
61. Tesema GA, Worku MG. Individual-and community-level determinants of neonatal mortality in the emerging regions of Ethiopia: a multilevel mixed-effect analysis. BMC pregnancy and childbirth. 2021;21:1-11.
62. Jena BH, Biks GA, Gete YK, Gelaye KA. The effect of inter-pregnancy interval on stillbirth in urban South Ethiopia: a community-based prospective cohort study. BMC Pregnancy and Childbirth. 2021;21:1-11.
63. Berhe T, Gebreyesus H, Teklay H. Prevalence and determinants of stillbirth among women attended deliveries in Aksum General Hospital: a facility based cross-sectional study. BMC research notes. 2019;12:1-6.
64. Mengesha S, Dangisso MH. Burden of stillbirths and associated factors in Yirgalem Hospital, Southern Ethiopia: a facility based cross-sectional study. BMC Pregnancy and Childbirth. 2020;20:1-8.
65. Tsegaye B, Kassa A. Prevalence of adverse birth outcome and associated factors among women who delivered in Hawassa town governmental health institutions, south Ethiopia, in 2017. Reprod Health. 2018;15(1):193.
66. Mehari MA, Maeruf H, Robles CC, Woldemariam S, Adhena T, Mulugeta M, et al. Advanced maternal age pregnancy and its adverse obstetrical and perinatal outcomes in Ayder comprehensive specialized hospital, Northern Ethiopia, 2017: a comparative cross-sectional study. BMC Pregnancy Childbirth. 2020;20(1):60.
67. Getaneh T, Asres A, Hiyaru T, Lake S. Adverse perinatal outcomes and its associated factors among adult and advanced maternal age pregnancy in Northwest Ethiopia. Sci Rep. 2021;11(1):14072.
68. Dadras O, Nakayama T, Kihara M, Ono-Kihara M, Seyedalinaghi S, Dadras F. The prevalence and associated factors of adverse pregnancy outcomes among Afghan women in Iran; Findings from community-based survey. Plos one. 2021;16(1):e0245007.

69. Annan RA, Gyimah LA, Apprey C, Asamoah-Boakye O, Aduku LNE, Azanu W, et al. Predictors of adverse birth outcomes among pregnant adolescents in Ashanti Region, Ghana. Journal of Nutritional Science. 2021;10:e67.
70. Arega, et al. Proportion of stillbirth and associated factors among women who deliver at public hospitals in Bahir Dar city, north-West Ethiopia. BMC Women's Health 2024;24:122.
71. Getaneh T, Asres A, Hiyaru T, Lake S. Adverse perinatal outcomes and its associated factors among adult and advanced maternal age pregnancy in Northwest Ethiopia. Scientific reports. 2021;11(1):14072.
72. Kebede AS, Muche AA, Alene AG. Factors associated with adverse pregnancy outcome in Debre Tabor town, Northwest Ethiopia: a case control study. BMC research notes. 2018;11(1):1-6.
73. T Chibura, H S Twabi, K Maluleke, A Musekiwa. Trends and factors associated with adverse pregnancy outcomes in Zimbabwe, 2005 - 2015. S Afr Med J,. 2024. https://doi.org/10.7196/SAMJ.2024.v114i6b.1399.
74. Klement KA, Adamson KA, Horriat NL, Denny AD. Surgical treatment of nonsyndromic craniosynostosis. Journal of Craniofacial Surgery. 2017;28(7):1752-6.
75. World Healt Organization. WHO recommendations on interventions to improve preterm birth outcomes. 2015.
76. Roble AK, Gundappa R, Sheik Abdirahman F, Abdi AM. Determinants of adverse birth outcomes in public hospitals of the Somali region, Eastern Ethiopia: a multicenter unmatched case-control study. Clinical Medicine Insights: Pediatrics. 2023;17:11795565231195253.
77. Tsegaye Lolaso, Fekede Weldekidan, Tesfaye Abera, et.al. STILLBIRTH AND ASSOCIATED FACTORS AMONG WOMEN DELIVERED IN PUBLIC HOSPITALS, SOUTHWEST ETHIOPIA. Ethiopian Journal of Reproductive Health (EJRH) 2021; 13(2).
78. Bililign Yimer N, Tenaw Z, Solomon K, Mulatu T. Inadequate prenatal visit and home delivery as determinants of perinatal outcomes: does parity matter? Journal of pregnancy. 2019;2019.
79. Wolde J HD, Paulos K, Alemayehu M, Adeko AC, Ayza A Prevalence of stillbirth and associated factors among deliveries attended in health facilities in Southern Ethiopia. PLoS ONE 17(12): e0276220. https://doi.org/10.1371/journal. pone.0276220. (2022).

80. Nelson HD, Darney BG, Ahrens K, Burgess A, Jungbauer RM, Cantor A, et al. Associations of Unintended Pregnancy With Maternal and Infant Health Outcomes: A Systematic Review and Meta-analysis. JAMA. 2022;328(17):1714-29.
81. Eftekhariyazdi M, Mehrbakhsh M, Neamatshahi M, Moghadam MY. Comparison of pregnancy complications in unintended and intended pregnancy: A prospective follow-up study. Biomedicine (Taipei). 2021;11(4):51-6.
82. Alene M, Yismaw L, Berelie Y, Kassie B, Yeshambel R, Assemie MA. Prevalence and determinants of unintended pregnancy in Ethiopia: A systematic review and meta-analysis of observational studies. PloS one. 2020;15(4):e0231012.
83. Gipson JD, Koenig MA, Hindin MJ. The effects of unintended pregnancy on infant, child, and parental health: a review of the literature. Studies in family planning. 2008;39(1):18-38.
84. Wellings K, Jones KG, Mercer CH, Tanton C, Clifton S, Datta J, et al. The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). The Lancet. 2013;382(9907):1807-16.
85. OLALERE FA. LEGAL IMPLICATIONS OF WRONGFUL CONVICTION UNDER THE NIGERIAN CRIMINAL JUSTICE SYSTEM 2019.
86. Addila et al. The effects of maternal alcohol consumption during pregnancy on adverse fetal outcomes among pregnant women attending antenatal care at public health facilities in Gondar town, Northwest Ethiopia: a prospective cohort study. Substance Abuse Treatment, Prevention, and Policy. 2021;16:64.
87. Lincie Kusters & Maryse Kok. Community Participation Programme End Report. South Sudan: SOUTH SUDAN HEALTH ACTION AND RESEARCH PROJECT; 2017.
88. Marston C RA, McGowan CR, Portela A (2013),. Effects of Community Participation on Improving Uptake of Skilled Care for Maternal and Newborn Health: A Systematic Review. PLoS ONE 8(2): e55012. doi:10.1371/journal.pone.0055012.
89. Binod Bindu Sharma, Lisa Jones, Deborah Joanne Loxton, et.al. Systematic review of community participation interventions to improve maternal health outcomes in rural South Asia. BMC Pregnancy and Childbirth. 2018;18(327 https://doi.org/10.1186/s12884-018-1964-1).
90. Datiko DG BE, Birrie GB, Kea AZ, Steege R, Taegtmeyer M, Kumar MB, Kok MC. . Community participation and maternal health service utilization: lessons from the health extension programme in rural southern Ethiopia. J Glob Health Rep 2019; 3: e2019027.

91. Abdo R, Halil H, Kebede B. Prevalence and predictors of adverse birth outcome among deliveries at Butajira general hospital, Gurage zone, southern nations, nationalities, and people's region, Ethiopia. J Women's Health Care. 2019;8(474):2167-0420.2119.
92. Mahande MJ, Obure J. Effect of interpregnancy interval on adverse pregnancy outcomes in northern Tanzania: a registry-based retrospective cohort study. BMC pregnancy and childbirth. 2016;16:1-9.
93. Hailemichael HT, Debelew GT, Alema HB, Weldu MG, Misgina KH. Determinants of adverse birth outcome in Tigrai region, North Ethiopia: Hospital-based case-control study. BMC pediatrics. 2020;20(1):1-9.
94. Asundep NN, Carson AP, Turpin CA, Tameru B, Agidi AT, Zhang K, et al. Determinants of access to antenatal care and birth outcomes in Kumasi, Ghana. J Epidemiol Glob Health. 2013;3(4):279-88.
95. Gebremeskel F, Gultie T, Kejela G, Hailu D, Workneh Y. Determinants of adverse birth outcome among mothers who gave birth at hospitals in Gamo Gofa Zone, Southern Ethiopia: a facility based case control study. Qual Prim Care. 2017;25(5):259-66.
96. Kim SY KM, Wilson HG, Diop H, Shapiro-Mendoza CK,. Prevalence of Adverse Pregnancy Outcomes, by Maternal Diabetes Status at First and Second Deliveries, Massachusetts, 1998–2007. England LJ. 2015;12(E218).
97. Brown HL, Warner JJ, Gianos E, Gulati M, Hill AJ, Hollier LM, et al. Promoting risk identification and reduction of cardiovascular disease in women through collaboration with obstetricians and gynecologists: a presidential advisory from the American Heart Association and the American College of Obstetricians and Gynecologists. Circulation. 2018;137(24):e843-e52.
98. Ye W, Luo C, Huang J, Li C, Liu Z, Liu F. Gestational diabetes mellitus and adverse pregnancy outcomes: systematic review and meta-analysis. Bmj. 2022;377.
99. Garovic VD, Dechend R, Easterling T, Karumanchi SA, McMurtry Baird S, Magee LA, et al. Hypertension in pregnancy: diagnosis, blood pressure goals, and pharmacotherapy: a scientific statement from the American Heart Association. Hypertension. 2022;79(2):e21-e41.
100. Parikh NI, Gonzalez JM, Anderson CA, Judd SE, Rexrode KM, Hlatky MA, et al. Adverse pregnancy outcomes and cardiovascular disease risk: unique opportunities for cardiovascular

disease prevention in women: a scientific statement from the American Heart Association. Circulation. 2021;143(18):e902-e16.

101. Bull FC, Al-Ansari SS, Biddle S, Borodulin K, Buman MP, Cardon G, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. British journal of sports medicine. 2020;54(24):1451-62.
102. Lawn JE, Blencowe H, Waiswa P, Amouzou A, Mathers C, Hogan D, et al. Stillbirths: rates, risk factors, and acceleration towards 2030. The Lancet. 2016;387(10018):587-603.
103. Ndugwa C. Novel Use of Hydroxyurea in an African Region With Malaria. 2016.
104. Gebreslasie K. Preterm birth and associated factors among mothers who gave birth in Gondar town health institutions. Advances in Nursing. 2016;2016(1):4703138.
105. Tesfay N, Hailu G, Woldeyohannes F. Effect of optimal antenatal care on maternal and perinatal health in Ethiopia. Frontiers in Pediatrics. 2023;11:1120979.
106. Asiki G, Baisley K, Newton R, Marions L, Seeley J, Kamali A, et al. Adverse pregnancy outcomes in rural Uganda (1996–2013): trends and associated factors from serial cross sectional surveys. BMC pregnancy and childbirth. 2015;15:1-12.
107. Jejaw et al. Adverse birth outcome among women who gave birth at the University of Gondar comprehensive specialized hospital, Northwest Ethiopia. BMC Pregnancy and Childbirth https://doiorg/101186/s12884-024-06478-z 24:285. 2024.
108. Buchanan SL, Crowther CA, Levett KM, Middleton P, Morris J. Planned early birth versus expectant management for women with preterm prelabour rupture of membranes prior to 37 weeks' gestation for improving pregnancy outcome. Cochrane Database of Systematic Reviews. 2010(3).
109. Ticona DM, Huanco D, Ticona-Rendon MB. Impact of unplanned pregnancy on neonatal outcomes: findings of new high-risk newborns in Peru. Int Health. 2024;16(1):52-60.
110. Datiko DG BE, Birrie GB, Kea AZ, Steege R, Taegtmeyer M, Kumar MB, Kok MC. . Community participation and maternal health service utilization: lessons from the health extension programme in rural southern Ethiopia. J Glob Health Rep 2019; 3: e2019027. 2019.
111. World Bank. Ethiopia Health Extension Program AN INSTITUTIONALIZED COMMUNITY APPROACH FOR UNIVERSAL HEALTH COVERAGE. 2016.

112. Yonas Assefa. Family Planning Utilization Among Model and Non Model Family Women Enrolled in Urban Health Extension Program in Addis Ababa, Ethiopia, 2015. Journal of Medicine, Physiology and Biophysics. 2019;Vol.59, 2019.

10. Appendix I: Consent form (English version)

Bahir Dar University

College of Medicine and Health Sciences

School of Public Health

Department of Reproductive Health and Population Studies

Dear participants

Good morning/afternoon;

My name is----------I am working as a data collector for the study being conducted by Adane Workie, who is studying for his Master's degree at Bahir Dar University College of Medicine and Health Sciences, School of Public Health, Department of Reproductive Health and Population Studies. Currently, he will be conducting research on a topic entitled Assessment of Adverse Birth Outcomes and its Associated Factors among Mothers those who gave Birth in the last one year in Assossa City Administration, Western Ethiopia. I kindly request you that you lend me your attention to explain to you about the study and being selected as the study participant.

The purpose of the study: - The purpose of this study is to assess adverse birth outcomes and associated factors among mothers who gave birth in the last one year in Assossa City administration, Western Ethiopia. Assossa City Administration and its surroundings know that this is of paramount importance for the district health office to plan strategies that can create safe and favorable birth outcomes in the sustainability system in the area.

Risks and benefits: - There is no risk in participating in this study except it takes your time. There would not be any direct payment for participating in this study. However, the findings from this study will reveal important information for local health planners. As a result you and your community will be benefited from the health plantings based the findings of this study.

Participant rights: -Participation in this study is fully voluntary. You have the right to resign from the study at any time and this will not label you for any loss of benefits to which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Confidentiality: - The information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general and will not reflect anything particular about individual persons.

Contact address

If there are any questions or inquiries at any time about the study or the procedures, you can contact us by using the following addresses. Principal investigator:

Name: Adane Workie

Mobile phone: +251906260104Email: adaneworke@gmail.com

Are you volunteering to participate in the interview?

A) If yes take the consent form &continue the interview

B) If No--→Thank you and stop the interview

Annex II -Declaration of Informed Voluntary Consent (English Version)

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, the issues of confidentiality, the rights to participate, and the contact address for any queries. I have been allowed 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. I have been told that my answers to the questions will not be given to anyone else, and no reports of this study will ever identify me in any way. Therefore, I declare my voluntary consent to participate in this study with my signature, as indicated below.

_____ _____ _____Participant Code number

Date Signature

Instruction:-Give appropriate answers for each the following questions based on the quest of the data collector.

Appendix II: Questionnaire (English Version)

Questionnaire identification number _____

Part I – Questions related to socio-socio-demographic characteristics of the study participants

S. No	**Questions**	Alternatives	Skip
101	How old are you?	_____Years	
102	What is your religion?	1. Orthodox 2. catholic 3. Protestant 4. Muslim **5.** Other(specify)_____	
103	What is your educational level?	1. Unable to read and write 2. Grade 1-8 3. Grade 9-12 4. College/University and above	
104	What is your marital status?	a. Married b. Unmarried c. Divorced d. Widowed e. Separated f. Others	

105	If you are married, what is the education level of your husband?	1. Unable to read & write 2. Grade 1-8 3. Grade 9-12 4. Colleague &above	
106	What is your Occupation?	1. Housewife 2. Farmer 3. Merchant 4. Student 5. Daily laborer 6. Government employee 7. Others(specify)_____	

Part II. Wealth index assessment

	Wealth Indexes for Urban residence		
S/N	Question	Response	
201	Owner of the house	1. Private 2. Kebele 3. Rents 4. Other_____	
202	House floor	1. Soil 2. Muck 3.cement 4.ceramics	
203	House roof	1. Corrugated iron 2. Grass 3. Other …..	
204	Houses outside the wall	1. Stone with mud 2. Wood with mud 3. stone/brocket with cement	

		4. Others _____	
205	Which of the following types of fuel does your household used mainly	1. Electricity 2. Animal Dug 3. Charcoal 4. Gas 5. Wood 6. Others_____	
206	What types of toilet do your household use?	1.Flush or pour-flush latrine dwelling 2. Ventilated improved pit latrine 3. Traditional latrine 4. Public latrine 5. Space field	
207	Kitchen house	1.Yes 2.No	
208	Source of water	1. Piped water into the compound 2. Public Borehole 3.Public tap 4.Borehole with hand pump into the compound 5. Dam from rain source	
	Do any of your household members have the following? If yes how many?		
209	Radio	1. Yes 2. No	
210	Television	1. Yes 2. No	
211	non-mobile telephone	1. Yes 2. No	
212	Refrigerator	1. Yes 2. No	
213	Bed/cotton/sponge/spring matters	1. Yes 2. No	
214	Table	1. Yes _____ 2. No	
215	Chair	1. Yes _____2. No	

	Do any of your household members have the following?		
216	oxen/cow	1. Yes 2. No	
217	Horse/mule	1. Yes 2. No	
218	Goat/Sheep	1. Yes 2. No	
219	Hen	1. Yes 2. No	
220	Beehives	1. Yes 2. No	
221	Bank account/ Saving Book	1. Yes 2. No	
222	Is your HH enrolled in CBHI scheme	1. Yes 2. No	

Part III: – Questions Related to Obstetrics and Medical illness Factors

S. No	**Questions**	Alternatives Answers	
301	How many times have you been get pregnant?	_____in number	
302	How many times did you give birth?	_____in number	
303	When was your last menstruation period during current pregnancy?	_____]dd/m/yy	
304	What was the gestational age for the index pregnancy birth?	[_____] in weeks	
305	Did you get ANC follow up for the index pregnancy?	1. Yes 2. No	
306	If yes, How often did you get ANC service?	_____	
307	At what gestational age did you start your	At _____weeks of	

	first ANC follow up?	gestation.	
308	What was your Rh status?	1. Unknown 2. Rh Negative 3. Rh Postive	
309	Did the current pregnancy wanted and supported?	1. Yes 2. No	
310	Did you use modern contraceptive method before the index pregnancy	1. Yes 2. No	
311	Did you face any medical illness during current pregnancy?	1. Yes 2. No	If No, go to Q313
312	If yes, what was the medical illness you faced?	1. Malaria 2. HIV 3. Syphilis 4. Anemia 5. Known DM 6. Known hypertension 7. other specify----------	
313	Have you taken daily tablets (iron/folic) during current pregnancy for prevention of anemia?	1. Yes 2. No	
34	If yes how many days did you take the tablets?	_____days	
315	Have you taken one tablet during the index pregnancy which was told to you for prevention of intestinal parasite?	1. Yes 2. No	

316	At what birth interval do you bear the last delivery and the index pregnancy?	……in months	Go to Q318 if you are first time pregnant
317	Did you have bleeding problems during your pregnancy?	1. Yes 2. No	
318	Did you face a gush of fluid via your vagina before labor started in the current pregnancy?	1. Yes 2.No	If No, go to Q320
319	If yes Q 318, at what time did you give birth after a gush of fluid?	----------Hours	
320	Have you had pregnancy related hypertension to your current pregnancy?	1. Yes 2. No	
321	Have you had pregnancy related diabetes mellitus in the current pregnancy?	1. Yes 2. No	
322	Did you have prior history of stillbirth?	1. Yes 2. No	
323	Did you have prior history of Preterm?	1. Yes 2. No	
324	Did you have prior history of Neonatal death?	1. Yes 2. No	
325	At what time did you give birth after your labor started?	----------hours	
326	What was the onset of recent labor?	1. Spontaneous 2. Induced	
327	What was the mode of delivery for the index pregnancy?	1. Normal Vaginal delivery 2. Instrumental delivery 3. Caesarean Section delivery	
328	Where did you give birth for your current	1. health facility	

	baby?	2. Home	
329	What was the type of pregnancy in your index pregnancy?	1. Singleton 2. Multiple	
330	What was the sex of the index neonate?	1. Female 2. Male	
331	What was the outcome of your index pregnancy birthing**?**	1. Live birth 2. Still birth 3. Pre term birth 4. Neonatal death	
332	If the outcome was live birth inQ331, did you give breast milk within one hour?	1. Yes 2. No	
333	If the neonate died, for q331 for how long the neonate survived?	----------days	

Part IV: -Community Level Factors

S. No	Questions	Alternatives	
401	Are you part of a model family in health extension package in your community?	1. Yes 2. No	
402	Did you participate pregnant in women's conference during your recent pregnancy?	1. Yes 2. No	
403	If yes Q402, how many times did you participate?	_____	
404	How many hours did you take to reach to health facility to get maternal health service?	----------	

Part V:-**Alcohol and Other Substances Consumption Assessment Questions**

Sr.No	Questions	Alternative Answers	
501	Do you drink alcohol?	1. Yes 2. No	If No, go to Q504
502	How many units of alcohol do you drink on atypical day when you are drinking tella, areki beer, teji) during pregnancy?	1 Monthly or less 2 2 to 4 times a month 3 4 or more times a week	
503	How often do you have a drink containing alcohol per day/week during index your	(0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7,8 or 9	
504	Have you ever chewed chat?	1. Yes 2. No	
505	How Many days did you chew chat?	_____.	

Appendix III: **የስምምነት ቅፅ(የአማርኛ መጠየቅ)**

ባህርዳር ዩኒቨርስቲ

ህክምና እና የጤና ሳይንስ ኮሌጅ

የህዝብ ጤና ትምህርት ቤት

የስነ ተዋልዶ ጤና እና የህዝብ ጥናቶች ክፍል

ውድ ተሳታፊዎች

ደህናዋሉ?

ስሜ----------ይባላል።

በአሁኑ ጊዜ ለአቶ አዳነ ህዝብ ጥናቶች በአሶሳ ከተማ አስተዳደር የድህር ወሊድ ውጤቶችና እና ተያያዥ ጉዳዩች በሚል ርዕሰ ጥናት ያካሂዳል።ሰለጥናቱ እንዲብራላላቹህ እና የጥናቱ ተሳታፊ እንዲሆኑ እንደ ተመርጡ በትህትና እጠይቃለሁ።

የዚህ ጥናት አለማ፡

በአለፈው አንድ አመት በአሶሳ ከተማ አስተዳዳር በወለዱ እናቶች ላይ አሉታዊ የወሊድ ውጤቶች እና ተያያዥ ጉዳዬች ላይ ጥናት ይካሄዳል።አሶሳ ከተማ እና አካባቢው ባለው ዘላቂነት የጤና ስርዓት ውስጥ ደህንነቱን የጠበቀ እና ምቹ የወሊድ ውጤቶችን የሚፈጥሩ ስልቶችን በማቀድ ለክልሉ ቢሮና ለከተማ አስተዳደር ጠቀሜታ ይኖርዋል።

ስጋት:በዚህ ጥናት ላይ በመሳተፍዎ ምንም አይነት ጉዳት አይደርስብዎትም።

ጥቅም:በጥናቱ ላይ በመሳተፎ የተለየ ጥቅም ወይም ክፍያ አያገኙም። ቢሆንም ግን የጥናቱ ውጤትም ጥቅም ላይ ይውላሉ እና በሚወልዱ እናቶች ላይ ለሚደረጉ እንክብካቤዎች መሻሻል ያመጣል ተብሎ ይታሰባል።

ሚስጢራዊነት: በዚሁ ጥናት ላይ የሚገኘው መረጃ በሙሉ ሚስጢራዊነት ተጠብቆ ይቀመጣል፡፡ የእርስዎም መረጃ በፋይል ከእርስዎ ስም ውጪ በኮድ ተደርጎ ይቀመጣል፡፡ በተጨማሪም ከጥናቱ ውጪ ለማንም ሰው አይሰጥም፡፡

በጥናቱ ያለመሳተፍ መብት: በጥናቱ ያለመሳተፍ ወይም በማንኛውም ጊዜ ራስዎን ከጥናቱ የማግለል ሙሉ መብት አለዎት፡፡መልስ መስጠት የማይፈልጉትን ማንኛውንም ጥያቄ ያለመመለስ መብት አለዎት፡፡ ማንኛውም ጥያቄ ካለዎት በሚከተለው አድራሻ ማግኘት ይችላሉ፡፡

አዳነ ወርቁ

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የስምምነት ቅፅ መገለጫ ቅፅ የአማርኛ

የዚህ ጥናት አላማ በደንብ የተብራራልኝ ሲሆን የጥናቱንም አላማ ተርድቻዋለሁ፡፡በዚህ ጥናት ላይ ለመሳተፍ በሙሉ ፍቃደኝነት ላይ የተመሰርተ መሆኑን በሚገባ የተርዳሁ ሲሆን በማንኛውም ጊዜ ከጥናቱ እራሴን ማግለል መብት እንዳለኝ አውቂዓለሁ፡፡ ሰለሆነም የምሰጠው መርጃ እሰከ ተጠበቀ ድርስ በጥናቱ ለመሳተፍ ተስማምቻለሁ፡፡በዚህ ጥናት ለመሳተፍ ስምምነቴን ስገልፅም ጠያቀው ጥያቄው በእውነት ላይ የተመሰርተ መልስ ለመሰጠት የተሰማማሁ መሆኔን አርጋግጣለሁ፡፡

የተሳታፊው መለያ ቁጥር----------

በጥናቱ ላይ ለመሳተፍ ፍቃደኛ ነዎት

1. አዎ----------መልሱ አዎ ከሆነ ወደ ሚቀጥለው ጥያቄ እለፊ

2. የለም ---------- መልሱም የለም ከሆነ አመሰግንሻለሁ

የመርጃ ሰጪው ፊርማ ----------ቀን ----------

የመርጃ ሰብሳቢው ፊርማ ----------ቀን----------

Appendix IV: መጠይቅ (የአማርኛ ቅጅ)

የመጠይቁ መለያ ቁጥር_____

ክፍል I-፡ማህበራዊ፣ኢኮኖሚያዊ እና ስነ ህዝባዊ ገጽታዎችን በሚመለከት

ተ.ቁ	ጥያቄዎች	ምላሽ	
101	አሁን እድሜወ ስንት ነው?	_____አመት	
102	የየትኛው ሃይማኖት ተከታይ ነሽ?	1. ኦርቶዶክስ 2. መስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ (ይግለጹ)_____	
103	የትምርህርት ደረጃወትን ይገልፁልኛል?	1. ማንበብና መፃፍ የማትችል 2. የመጀመሪያ ደርጃ ትምህርት ያጠናቀቀች(1_8) 3. ሁለተኛ ደርጃ ትምህርት ያጠናቀቀች(9_12) 4. ኮሌጅ/ዩኒቨርሲቲ እና ከዚያ በላይ የተማረች	
104	የጋብቻ ሁኔታሽ	1. ባለትዳር 2. የተፋታች 3. የሞተባት 4. ያላገባች 5. ተለያይተው የሚኖሩ	
105	ያገባች ከሆነ ጥ104፥ የባለቤትዎትን የትምህርት ደረጃ ይገልጹልኛል?	1. ማንበብ እና መጻፍ የማትችል 2. የመጀመሪያ ደረጃ ትምህርት	

		ያጠናቀቀች(1-8) 3. ሁለተኛ ደረጃ ትምህርት ያጠናቀቀች(9-12) 4. ኮሌጅ/ዩኒቨርሲቲ እና ከዚያ በላይ የተማረች	
106	ሥራዎ ምንድ ነው?	1. የቤት እመቤት 2. አርሶ አደር 3. ነጋዴ 4.ተማሪ 5..የቀንሠራተኛ 6.የመንግስትሠራተኛ 7.ሌላ (ይገለጽ) ___	

ክፍል II. የሀብት ሁኔታን የሚመለከት ጥያቄ

(ለከተማነዋሪዎችብቻ)			
ተ.ቁ	ጥያቄ	ምላሽ	
201	የቤቱ ይዞታ የማንነዉ?	1. የግል 2.የቀበሌ 3. የክራይ 4.ሌላ_____	

202	የቤቱ ወለል	1. አፈር/ጠጠር 2. በዕበት የተለቀለቀ 3. ሲሚንቶ 4. ሴራሚክ	
203	የቤቱ ጣራ	1. ቆርቆሮ 2. ሳር 3. ሌላ _____	
204	የቤተወ የውጭ ግድግዳ ከምንድ ነው የተሰራ?	1. ድንጋይ በጭቃ 2. እንጨት በጭቃ 3. በድንጋይ /በብሎኬት ስሚንቶ 4. በሌላ	
205	የቤተወ ዋና ምግብ የሚያበሰሉበት መንገድ	1.ኤሌክትሪክ 2. ከሰል 3. እንጨት 4. ኩበት 5. ጋዝ 6. ሌል_____	
206	የሚጠቀሙት መጸዳጃ ቤት ምን ዐይነት ነው	1. የውሃ መልቀቂያና ማፋሰሻ ያለው የግል 2. የተሻሻለ ሽታ አልባ የጉድጓ 3. ባህላዊ የጉድገንድ 4. የጋራ 5. ሜዳላይ	
207	የምግብ ማብሰያ ቤት አልዎት	1. አወ 2.የለም	
20	የሚጠቀሙበት የውኃ ምንጭ ምንድን ነው	1.በግቢው ውስጥ ካለ ቧንቧ	

8		2.ኩሬ/ወንዝ/ወራጅ/ምንጭ 3.የጋራ ጉድጓድ 4.የጉድጓድውኃ ፓምፕ የሌለው 5.የጋራ ቧንቧ 6.የጉድጓድ ውኃ ፓምፕ ያለው	
	ቤት ውስጥ ከዚህ በታች የተዘረዘሩት አሉ?		
209	ሬዲዮ	1. አወ 2. የለም	
210	ቴሌቪዥን	1. አወ 2. የለም	
211	የቤት ስልክ	1. አወ 2. የለም	
212	ፍሪጅ	1.አወ2.የለም	
213	ፍሪጅ	1. አወ2.የለም	
214	ጠረጴዛ	1.አወ2.የለም	
215	ወንበር	1.አወ2.የለም	
	ከቤተሰብሞ ውስጥ ከሚከተሉት ያለው አለ?		
216	በሬ/ላም	1. አወ 2. የለም	
217	ፈረስ/በቅሎ	1. አወ 2. የለም	
218	ፍየል/በግ	1. አወ 2. የለም	

219	ደሮ	1. አወ 2. የለም	
220	የንብቀፎ	1. አወ 2. የለም	
221	የባንክ/የቁጠባ ደብተር	1. አወ 2. የለም	
222	የጤና መድን ታቅፋቹሃል	1. አወ 2. የለም	

ክፍል|||:-ጽንስ እና ስነ ተዋልዶ ሁኔታን በተመለከተ

ተ.ቁ	ጥያቄዎች	ምላሽ	
301	በአጠቃላይ ስንት ጊዜ ነው ያረገዙት?	_____	
302	በአጠቃላይስንት ጊዜ ነው የወለዱት?	_____	
303	በአሁኑ እርግዝና ወቅት የመጨርሻ የወር አበባ መቼ ነበር የመጣው ?	_____	
304	የአሁኑን ልጅ ስትወልጅ በስንተኛዉ የእርግዝና ሳምንት ወይም ወር ነው የወለዱት? ነበር?	..... ሣምንት	
305	በአሁኑ እርግዝና የቅድመ ወሊድ ክትትል ነበረዎት?	1.አዎ 2. የለም	የለም ከሆነ ውድ 308
306	አዎ ከሆነ ስንት ጊዜ ክትትል አድርገዋል?	በቁጥር----------	
307	የመጀመሪያዉን ክትትል በስንተኛዉ ወር ላይ ነዉ የጀመሩት?	----------ኛወር	

308	የደም አይነተውን ያውቃሉ?	1. አላውቀውም 2. ኔጌቲቭ 3. ፖዝቲቭ	
309	የአሁኑ እርግዝና ፈልገወ ነው ያርገዙት?	1. አወ 2. የለም	
310	ከአሁኑ እርግዝናወ በፊት የወሊድ መካለከያ ዘዴዎችንስ ትጠቀሚ ነበር ?	1. አወ 2. የለም	
311	በአሁኑ እርግዝና ወቅት የገጠመወት የጤና ችግር ነበር ??	1. አወ 2. የለም	የለም ከሆነ ወደ ጥ 313
312	መልስወ አዎ ከሆነ ምን አይነት ሕመም /በሽታ የታመሙት?	1. ወባ 2. ኤቺአቪኤድስ 3. ቂጥኝ 4. የደምማነስ 5. የስኳርበሽታ 6. የደምፊት 7. ሌላከሆነይገለፅ----------	
313	በቅድመ ወሊድ ክትትል ጊዜ በየቀኑ የሚዎጥ የደም ማነስ መከላከያ (የብረት) እንክብል ወስደዋል?	1.አዎ 2. የለም	
314	ለጥያቄ ቁጥር 313 መልሰው አወ ከሆነ ለስንት ወርያህል ወሰደሻል?	_____	
315	በቅድመ ወሊድ ክትትል ጊዜ አንዴ የሚወሰድ የሆድ ትላትል እንክብል ወስደዋል?	1. አዎ 2. የለም	

316	ከአሁን ቀደም በወለድሽውና በአሁን እርግዝና የወለድሽው ልጅ በስንት ጊዜ ልዩነት ውስጥ ነው?	……	ወደጥ 318ይሂዱየመጀመሪያእርግዝናከሆነ
317	በአሁኑ እርግዝና ጊዜ ከመውለዱ በፊት የደም መፈሰስ ችግር አጋጥመወት ነበር?	1. አዎ 2. የለም	
318	በአሁን እርግዝናወ ጊዜ ምጥ ከመጀመሩ በፊት የእንሸርት ውሃ ፈሶወት ነበር?	1.አዎ 2. የለም	የለምከሆነወደ ጥ 320
319	መልሰወ አወ ከሆነ ለጥያቄ ቁጥር 318 የእንሸርት ውሃ ከፈሰሰወት ከስንት ጊዜ በኋላ ወለዱ?	----------ሰአት	
320	ከአሁኑ እርግዝናወ ጋር የተያያዘ የደምግፊት አጋጥሞወት ነበር?	1.አዎ 2. የለም	
321	ከአሁኑ እርግዝናወ ጋር የተየያዘ የስኳር በሽታ አጋጥሞወት ነበር?	1.አዎ 2. የለም	
322	ከአሁን ቀደም በሚወለዱበት ጊዜ ሞቶ የተወለደ ልጅ አጋጥሞወት ያውቃል?	1.አዎ 2. የለም	
323	ከአሁን ቀደም የመወለጃ ጊዜው ቀኑ ሳይደርስ ወይም ዘጠንኛ ወሩ ሳይደርስ ልጅ ወለደው ያውቃለ?	1.አዎ 2. የለም	
324	ከአሁን ቀደም በሰላም ከተወለደ በኋላ የሞተብሽ ህፃን ነበር?	1.አዎ 2. የለም	
325	ምጥ ከጀመርሽ በኋላ በስንት ሰአት ወለድሽ?	----------ሰአት	
326	የአሁኑ ምጥ ሲጀምርሽ በምን ሁኔታ ነበር ?	1. በእራሱጊዜ 2. በምጥማስጀመሪያ	
327	የአሁኑን ልጅወ ትንሲ ወለድ በምን	1.ያለመሳሪያ እገዛ/ አምጣ	

	አይነት መንገድ ነበር የወለዱት?	2. በኦፕረሽን 3. በመሳሪያ እገዛ	
328	የአሁኑን ልጀው የትነው የወለዱት ?	1. ቤት 2. ጤና ተቋም	
329	አሁን ላይ የተወለዱት ህፃን ቁጥር ስንት ነው?	1. አንድ 2. መንታ	
330	የወለድሽው ልጅ ፆታ ምንድን ነው?	1. ሴት 2. ወንድ	
331	የአሁኑን ልጅው ሲወለድ ውጤቱ ምን ነበር ?	1. በሂወት የተወለደ 2. ሙቶ የተወለደ 3. የመመለጃ ጊዜው ሳይደርስ የተወለደ 4. በሰላም ከተወለደ በኋላ የሞተ	
332	ለጥያቄ ቁጥር 331 በሂወተ ከሆነ የተወለደው እንደ ተወለደ በአንድ ሰአት ውሰጥ የጡት ወተት አጥብተውት ነበር?	1.አዎ 2. የለም	
333	መልሰወ አወ ከሆነ ለጥያቄ ቁጥር 331 በሰላም ከተወለደ በኋላ በስንተኛ ቀኑ ነው የሞተበወት?	---------- ቀን	

ክፍልIV: **-የማህበረሰብ ደረጃ ምክንያቶች በተመለከት ጥያቄዎች**

ተ.ቁ	ጥያቄዎች	ምላሽ	
401	በማህበርሰቡ ውሰጥ በጤና ኤክሰቴንሽን ፓኬጅ ሞደል ቤተሰብ አባል ነወት??	1. አዎ 2. የለም	

402	በአሁኑ እርግዝና ጊዜወት የነፈሰጡር እናቶች ስብሰባ ተሳትፈዋል?	1. አዎ 2. የለም	
403	መልሰው አው ከሆነ ለጥያቄ ቁጥር 402 ስንት ጊዜ ተሰብስበሻል ?	_____	
404	የእናቶች ጤና አገልግሎት ለማግኘት ወደ ጤና ተቋም ለመድረስ በእግር ወስንት ሰዓት ይፈጅበወታል ?	----------	

ክፍልV- አልኮና ጫትን የተመለከተ ጥያቄወች

ተ.ቁ	ጥያቄዎች	ምላሽ	
501	በአሁኑ እርግዝናዎ ወቅት አልኮል ይጠጡ ነበር?	1.አዎ 2. የለም	የለም ከሆነ ወደ ጥያቄ ቁጥር 504 ይሂዱ
502	በቀን/ሳምንት አልኮል ያለበት መጠጥ ምን ያህል ጊዜ ይጠጣሉ?	1 በወር 2 ከ 2 አሰከ 4 ጊዜ በወር 3 4 እና ከዚያ በላይ በሳምንት	
503	በሚጠጡበት ቀን ምን ያህል አልኮሆል ይጠጣሉ (ጠላ፣ አርቂ፣ጠጂ፣ቢራ?	1 .1ወይም 2 2.3ወይም 4 3. 5ወይም 6 4. 7.8 ወይም 9	
504	ጫት ቅመው ያውቃሉ በዚህ እርግዝና ጊዜ ?	1.አዎ 2. የለም	
505	መልሰው አወ ከሆነ ስንት ቀን ይቀማሉ??	_____.	

እናመሰግናለን ለነበርን ቆይታ !!!