

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

POST GRADUATE PROGRAM

**DETERMINANTS OF PRETERM BIRTH AMONG NEWBORNS
DELIVERED IN PUBLIC HOSPITALS OF HAWASSA TOWN, SOUTH,
ETHIOPIA, 2020: A CASE CONTROL STUDY.**

INVESTIGATOR: - ASHENAFI ZEWDEWONDIMU (BSC)

**ADVISORS: -Mr. BEREKET GEBREMICHAEL (MSC, ASS'T
PROFESSOR)**

-Mr. TEWODROS TESFAYE (BSC, MSC)

**A THESIS SUBMITTED TO THE DEPARTMENT OF NURSING,
SCHOOL OF NURSING AND MIDWIFERY, COLLEGE OF HEALTH
SCIENCE, ADDIS ABABAUNIVERSITY, FOR THE PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTERS OF SCIENCE IN PEDIATRICS AND CHILD HEALTH
NURSING.**

SEPTEMBER, 2020

ADDIS ABABA

ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF NURSING

MASTER OF SCIENCE RESEARCH PROJECT

NAME OF PRINCIPAL INVESTIGATOR	ASHENAFI ZEZWDE (BSC)
NAME OF ADVISORS	1. Mr. BEREKET GEBREMICHAEL (MSC, ASS'T PROFESSOR) 2. Mr. TEWODROS TESFAYE (BSC, MSC)
FULL TITLE OF THE RESEARCH PROJECT	DETERMINANTS OF PRETERM BIRTH AMONG NEWBORNS DELIVERED IN PUBLIC HOSPITALS OF HAWASSA TOWN, SOUTH, ETHIOPIA, 2020: A CASE CONTROL STUDY
DURATION	NOVEMBER ,2019 TO SEPTEMBER, 2020
STUDY AREA	HAWASSA
ADDRESS OF INVESTIGATOR	Mob +25110954573 E-mail: ashenafi.zewde73@gmail.com

Declaration

I, the undersigned, declare that this M.Sc. thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the proposal have been duly acknowledged.

M.Sc. candidate: Ashenafi Zewde (B.Sc.)

Signature: _____

Date of submission: _____

This thesis has been submitted with our approval as advisors.

Advisor: Bereket Gebremichael (MSc, Ass't Professor)

Signature: _____

Date: _____

Advisor: Tewodros Tesfaye (BSc, MSc)

Signature: _____

Date: _____

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by _____ is accepted in its present form by the board of examiners as satisfying proposal requirement for the degree of masters in pediatrics and child health nursing.

EXAMINER

_____	_____	_____	_____
FULL NAME	RANK	SIGNITURE	DATE

RESEARCH ADVISORS:

_____	_____	_____	_____
FULL NAME	RANK	SIGNITURE	DATE

_____	_____	_____	_____
FULL NAME	RANK	SIGNITURE	DATE

DEPARTMENT HEAD

_____	_____	_____	_____
FULL NAME	RANK	SIGNITURE	DATE

ACKNOWLEDGEMENTS

First and foremost I would like to thank God for helping me throughout doing this thesis. Next, I would like to pass my gratitude to my advisors Mr. Bereket Gebremichael (MSC, Assistant professor) and Mr. Tewodros Tesfaye (BSC, MSC) for their advice.

I would like to forward my thanks to Addis Ababa University librarians for their valuable contributions. I also wish to express my special thanks to southern nations, nationalities and people's regional health office and the study hospitals for their cooperation to conduct the study there.

Last but not the least; I would like to extend my gratefulness and heartfelt thanks to all my colleagues, Mr. Migbar Sibhat and Mr. Tewodros Mulugeta who gave me their unduly support and critical comments throughout this work.

ACRONOMYS

ANC	Ante Natal care
APH	Antepartum Hemorrhage
EDHS	Ethiopian Demographic and Health Survey
ETB	Ethiopian Birr
GDM	Gestational diabetes mellitus
HUCSH	Hawassa Compressive Specialized Hospital
IPV	Intimate Partner Violence
LMP	Last Menstrual Period
MUAC	mid Upper Arm Circumference
NICU	Neonatal Intensive Care Unit
PIH	Pregnancy induced hypertension
PROM	Premature Rapture of Membrane
PTB	Preterm birth
SDG	Sustainable Development Goal
SNNPR	South Nations and Nationalities People Region
UTI	Urinary tract infection
UNICEF	United Nations Child's Fund
VLBW	Very low birth weight

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ABSTRACT

Background Preterm birth is alive childbirth before 37 completed weeks or 259 days of gestation from the first date of a woman's last menstrual period. About 15 million babies are born preterm annually and more than a million died due to complications. Preterm birth rates appear to have increased over time and the exact cause of preterm birth is unknown with different risk factors are assumed to have an association. **Objective** The objective of the study was to assess determinants of preterm birth among newborns in public hospitals of Hawassa town, Southern Ethiopia, 2020. **Method** A Facility-based unmatched case-control study design was conducted from March 1st to June 30th, 2020. The sample size was determined from previous studies by considering double population proportions formula using $r = 2$ (ratio of cases to controls), 80% power and 95% confidence level and total sample size was 270 mothers 90 cases and 180 controls. Consecutive sampling method for cases and systematic random sampling controls were used. Data was coded and entered into Epi data 3.1 and analyzed by using SPSS version 25. Variables that had (P- value < 0.25) in the bivariate logistic regression analysis were entered in multivariable logistic regression model. Finally p-value < 0.05 was used to claim statistical significance. **Result** Out of the 270 mothers, a total of 266 participated in the study comprising 89 cases and 177 controls with a 98% response rate. Factors like sex of newborn AOR 3.39, 95% CI (1.53-7.52), parity AOR 4.25, 95% CI (1.70-10.59), pregnancy induced hypertension AOR 5.62, 95% CI (1.10-28.71), antepartum hemorrhage AOR 9.20, 95% CI (2.09-40.32), premature rupture of membrane AOR 4.69, 95% CI (1.83-12.07), birth weight AOR 6.2, 95% CI (1.97-19.53), stressful life events AOR 5.67, 95% CI (2.16-14.91) and intimate partner violence AOR 5.19, 95% CI (2.06-13.07) were found to predict preterm birth. Therefore interventions that target the identified modifiable risk factors should be developed by health professionals, professional associations, ministry of health in collaboration with non-governmental organization.

Key words:- Preterm birth, Risk factor, Gestational age, Newborn, Ethiopia

1. INTRODUCTION

1.1 Background

Preterm birth or premature birth is defined as alive childbirth before 37 completed weeks or less than 259 days of the first date of a woman's last menstrual period (LMP)(1). It has sub-categories on the basis gestational age as extremely preterm (< 28 weeks), very preterm (28 to < 32 weeks), and moderate to late preterm (32 to < 37 weeks). Preterm birth can be also categorized based on birth weight. Neonates weighing less than 2500 g are classified as low birth weight (LBW), < 1500 g are classified as very low birth weight (VLBW) and < 1000 g are extremely low birth weight (ELBW). Again, preterm birth can be classified as spontaneous preterm birth and provider-initiated preterm birth(2,3).

Worldwide about 15 million preterm babies delivered every year and out of this > 3.1 million die due to its complications. The proportion of preterm birth varies from different regions of the country. In a developed country, the prevalence of preterm birth is from 5-7% and in developing countries it is estimated to be 11.9% averagely(2). Preterm birth is the most important factor associated with short and long term morbidity in neonates. Prematurity has also a huge burden on family members, societies, health care institutions and a country level at large(2).Regarding burden of preterm birth, developing countries are highly affected and Ethiopia is among the top ten high burden country(4).

Preterm birth is increasing over time with different factors and it is a manifestation of many causes(5). Some preterm births occur due to early initiation of labor or cesarean delivery whether for medical or non-medical implications. But most preterm births happen spontaneously. Common risk factors include a multiparty, previous history of PTB, infections and chronic conditions, such as hypertension and diabetes mellitus but the exact etiology is not well identified. So it needs knowing causes, risk factors and the reasons for the occurrence of preterm birth will help to the development of prevention strategies(2,5,6).

Different programs work on prevention and care of preterm birth. World Health Organization (WHO) has established guidelines to overcome preterm birth problems in 2016(7). The Global Strategy for women's, children's and adolescents' health and Sustainable Development Goals (SDGs) planned and is implementing to reduce newborn and under-five mortality to 12 and 25 per 1,000 live births every year respectively by 2030(8,9).

Ethiopia also adopted a national strategy for newborn and child survival by incorporating the sustainable development goals to improve the care for newborns and preterm births(10,11). Hawassa University Comprehensive Specialized Hospital and Adare hospitals also implement different interventions during pregnancy, labor, neonatal intensive care unit and postnatal periods.

1.2 Statement of the problem

Globally more than one out of ten delivered newborns are preterm and around 15 million preterm births occur each year. Greater than 92% of the world's premature deliveries occur in developing countries, among this 60% are in South Asian and African countries, and 12.3% of preterm birth are from sub-Saharan African countries(2). According to the WHO report the prevalence of preterm birth in Ethiopia was 10–13% in 2014(12).

Preterm birth is the major cause of neonatal and child mortality. Worldwide about 3.1 million neonatal deaths occur each year and from this, about 35% of deaths are due to prematurity of newborns(2). According to the 2019 Mini Ethiopia Demographic and Health Survey neonatal mortality rate was 30 deaths per 1,000 live births and prematurity was the major cause of death (13). Preterm births also causes short and long term disabilities in surviving infants like effects on brain functions, cerebral palsy, mental retardation, breathing difficulties, feeding problems, jaundice, visual and hearing impairments, and poor health and growth(5,14).

Prematurity also has further impacts at individual, household, communities, and a national level. The effect includes higher probability of not having more children, risk of preterm birth in offspring, economic burden, having limited social interaction, not sustaining occupation, family stress and dysfunction(2).

Furthermore, the number of preterm birth is increasing through time due to an increment of chronic disease among mothers, improved technology to diagnose preterm birth, and different reproductive technology for infertility treatment. But the exact cause of preterm birth is unknown and different risk factors are considered to have association with preterm birth(2,15,16).

Studies conducted in different parts of the world had shown that different risk factors that are associated with preterm birth. The findings of studies done in China, Iran, Ghana, and Kenya showed that advanced maternal age, history of abortion, diabetes mellitus, pregnancy-induced hypertension, and obesity were highly associated with preterm deliveries(17–20). In Ethiopia, Studies have been done in different areas of the country and found that risk factors like being unmarried, history of preterm birth, maternal HIV infection and premature rupture of the membrane were the determinants of prematurity birth(21–23).

Different programs and activities are done to prevent and improve the care of preterm births. Interventions are targeted at primary prevention and minimizing the known risk factors. The care includes antenatal corticosteroid, antibiotic, kangaroo mother care, immediate intensive care unit and long term complex health services for preterm birth(5,24,25). Ethiopia is also working to improve the care for newborns and preterm births through inclusion of standard maternal and neonatal interventions during pregnancy, labor, NICU and postnatal periods (10,11).

Although several efforts to prevent and reduce preterm birth, its rate appears to have increased over time(2,26). To reduce preterm birth the risk factors should be identified, prioritized and well addressed. Despite the fact mentioned above, previous studies done in Ethiopia were cross sectional by their design and focused mainly on the magnitude of preterm birth, rather than its determinants. Moreover, most prevalence studies recommended further analytical studies(21,22,27). Even though one study was conducted on risk factors at Jimma town, Ethiopia, it was limited for not including all variables like intimate partner violence, behavioral, and stressful life events which were found to be predictors of preterm birth in other countries(23). Therefore, the aim of this case-control study was to determine the risk factors preterm birth among newborns delivered in Hawassa Public Hospitals, South Ethiopia.

1.3 Significance of the Study

The exact cause of preterm birth is unknown and different risk factors are assumed to have an association with preterm birth. Moreover, the rate of preterm birth is increasing over time. Therefore, the results of this study will contribute to explore unaddressed risk factors which may fill gaps to avert preterm birth.

The study will also be important for policy makers and program designers that work on prevention and care of preterm birth. The findings of this study will help different stakeholders of federal and regional health officers and hospitals to see important ways to improve the prevention and care of preterm birth. It may also be used as a resource for future researchers to further generate more research hypothesis.

The study also will use to increase existing knowledge of practitioners about risk factors of preterm births in the study area and gives insight at the country level. Furthermore, it will provide information for the mothers and clients visiting health facilities during service

2.LITERATURE REVIEW

2.1. Overview of Preterm birth

Premature birth is when a baby is born too early before 37 weeks of pregnancy have been completed. Once preterm baby is born, there is a higher risk of death and a serious disability. Prematurity is the highest risk factor for infant morbidity and mortality at the immediate neonatal period and has also impacts in infancy, childhood, and even adulthood. It affects the physical health, cognitive and behavioral aspects of the victims, making it one of the most significant challenges for modern public health(28,29).

According to born too soon report for 184 countries of 135 million live births around 15 million babies were born preterm every year(2). The prevalence of preterm birth rates in high-income countries is 5–10% varying widely from country to country(29). Each year around 9.1 million preterm births occurred in South Asia and sub-Saharan Africa(2). In Ethiopia studies have been done in different areas of the country, for example, the prevalence of Preterm birth in a Gondar health institution, in Addis Ababa public hospitals and in central zone hospitals of Tigray, northern Ethiopia was 4.4%, 16.5% and 16.1% respectively(21,22,27).

2.2. Risk factors of preterm birth

A wide range of causes and risk factors have been implicated for preterm birth. The mediating factors that link the underlying epidemiological or medical risk factors to preterm birth are poorly understood and the precise etiology is still not known. However, certain factors are known to increase a woman's risk of going into a preterm birth(5,6,14,15).

2.2.1 Socio-demographic Characteristics

Several studies showed that socio-demographic factors have association with preterm birth. Mothers who are younger and older maternal age (<20 and ≥ 35), being unmarried, being male, living in a rural areas, low economic status and illiteracy have a higher risk to deliver preterm birth(15,25).

A cross-sectional study conducted in eight hospitals of Tehran, Iran reported that advanced maternal age was a risk factor for preterm birth(18). But a case-control study conducted in western China suggested that maternal age, family income and low educational level of the mother were not significantly associated with PTB(17).

Another study conducted at Kenyatta National Hospital, Nairobi, Kenya determined that advanced maternal age (≥ 31 years) were significant risk factor for a preterm birth and preterm birth was higher among male babies of 73% males and 27% females(20) and in contrast to this a cross-sectional study done in Addis Ababa public hospitals, Ethiopia showed that mothers who were younger than 25 years were at higher risk to give preterm birth(21).

A study which is also conducted in Central Zone hospitals of Tigray, Northern Ethiopia shows that being unmarried was the risk of preterm birth by four times than the married(22).

2.2.2 Maternal obstetric and nutritional factors

Evidences from different studies showed that preterm birth depends on different maternal obstetric and nutritional factors like History of preterm birth, history of abortion, Birth interval, Number of antenatal care visits, parity, anemia, Maternal weight and height, underweight, obesity and Labor status(15,25).

A cross-sectional study done at Baluchistan, Pakistan showed that overweight and obese mothers were at a higher risk of delivering preterm babies as compared to the underweight and normal mothers(30). Another study done in a secondary health care facility of Cairo, Egypt showed that low maternal weight (< 50 kg) was highly associated with preterm birth(31).

In contrast to this, a study done in Malawi preterm birth were increased by three-fold for those who were underweight (BMI < 18.5)(32). A cross-sectional study done at Kenya revealed that history of abortion had 3.5 times preterm delivery and previous preterm delivery was high depending on the number and gestational age of previous deliveries(20).

A study done in Addis Ababa public hospitals shows that the majority of the preterm births (66.1%) were spontaneous and a few were induced deliveries(21). A study done at Jimma, southwest Ethiopia found that Mothers with a history of preterm birth had six times (AOR 6.4, 95% CI 2.9–13.9), history of stillbirths were four times (AOR 4.2, 95% CI 2–8.9) and anemia were 2.7 times (AOR 2.7, 95% CI 1–7.01) having preterm births of their control counterparts(23).

2.2.3 Pre-existing maternal illness and obstetric complications

Different studies suggest that medical illness including Medical and pregnancy conditions are risk factors such as UTI, hypertension, diabetes mellitus, HIV, and Obstetrical complications like premature rupture of membrane (PROM), pregnancy-induced hypertension (PIH), antepartum hemorrhage (APH), GDM, Hyperemesis gravidarum, Oligohydramnios, and polyhydramnios are significantly associated with preterm delivery (15,25).

In a retrospective study done in Rural Medical College Hospital of India the most common risk factors for prematurity were PROM 24.63%, and PIH 18.23%, oligohydromnios 13.14%, APH 4.60%, polyhydromnios 1.97% and GDM 1.48% (33).

A case-control study done at Ghana reveals that preterm delivery was increased by 3.4 times in hypertensive complicated pregnancy, APH was increased by three times and PROM was two times more likely to have PTB (19).

A study done at Kenya reveals that Mothers who had history of UTI and hypertension were a significant risk factor for preterm birth (20). A study done in Addis Ababa, Ethiopia only hypertension during pregnancy [AOR = 0.182, 95% CI: (0.067, 0.493)] and maternal HIV infection [AOR = 3.408 95% CI: (1.048, 11.079)] remained associated with preterm birth (21).

A case control study done at Jimma University Medical Center found that APH during pregnancy were 8 times, preeclampsia during the current pregnancy 6.6 times, PROM 11.7 times and PIH 6 times to increase the risk of preterm birth respectively to their counterparts (23).

2.2.4 Characteristics of the Newborn

Fetal factors affecting preterm birth include birth weight, multiple gestation, birth defects or congenital malformations, Fetal presentation and Apgar score (15).

A cohort study conducted in Matlab, Bangladesh showed that the proportions of preterm births were 19.7% and 59.7% for singletons and multiple births respectively (34). A case-control study done at Ghana found that birth weight and multiple gestation was found to be positively associated with preterm delivery (19).

A study done at Kenya revealed that the proportion of preterm birth among single and twin babies were 95.1% and 4.9% respectively and low birth weight was 21.9% (20). A cross sectional study done in Addis Ababa public hospitals on preterm birth found that the first minute APGAR score of 68% were low (0–6) and 32% were normal (7–10) (21).

2.2.5 Lifestyle and Behavioral factors

Stressful life events (illness, injury, hospitalization, surgery or death of family members and family conflict) and physical stressors such as shift work, long hours standing and heavy lifting have been consistently associated with increased risk of preterm birth and Behavioral factors such as smoking, drinking alcohol, chewing khat and drug use are of great importance of risk factors (15,25).

A case-control study conducted in Beijing, China the result showed that preterm delivery was increased by 7% and 5% for each Stressful life event among multiparas and primiparas women respectively (17).

A population-based cohort study done at the United Kingdom shows that doing repetitive, boring tasks, employment status and occupational fatigue was highly associated with preterm birth (35). A meta-analysis done in Japan showed that maternal alcohol consumption of 1.0 g or more per day and smoking during pregnancy was positively associated with preterm birth (36).

A case-control study conducted in Tanzania showed that Business women, peasants and government employees had increased two times preterm delivery as compared to a housewife. But alcohol use was not significantly associated with preterm birth (37).

A study done in Cairo, Egypt found that medication use during pregnancy was associated with Preterm births in 24.4% of cases (31). A study conducted, Nairobi, Kenya showed that the proportion of preterm birth was 2.5 times higher among mothers who had a history of alcohol consumption compared to mothers with no such history (20).

2.2.6 Intimate partner violence

Intimate Partner Violence is physical, sexual or psychological coercive act by a current or former partner or spouse of a woman and evidence shows that Women who are victims of

domestic violence including physical, sexual and psychological violence are more likely to give preterm birth (16).

A case-control study conducted in Peru revealed that the prevalence of any IPV during pregnancy was 52.2% and 34.6% among cases and controls respectively. Women reporting any form of IPV had a 2.1 times increased risk of preterm birth than to their counterparts. Emotional and physical abuse during pregnancy was 4.7 times increased risk of preterm birth (38). A cohort study and multivariate analysis done at Andalusia, Spain showed that IPV during pregnancy was 21.3% and out of this 13% of women had spontaneous preterm birth (AOR = 2.2; 95% CI = 1.1–4.5) (39).

A prospective cohort study conducted in Moshi Tanzania found that 1/3 of the women experienced IPV during pregnancy. Women exposed to physical IPV were 3 times experience preterm birth (40). A case-control study conducted in zonal hospitals of Tigray, Ethiopia 40.8% had experienced IPV during their pregnancy and women exposed to IPV during pregnancy were 2.5 times to give preterm birth (AOR = 2.5; CI 95% [2.198–2.957]) (41).

2.3 Conceptual framework

This is adapted from WHO global, regional and national estimate of violence against women, 2012(16) and a study done by Aseidu EK, et al. on obstetric determinants of preterm birth in Accra, Ghana 2016(42).

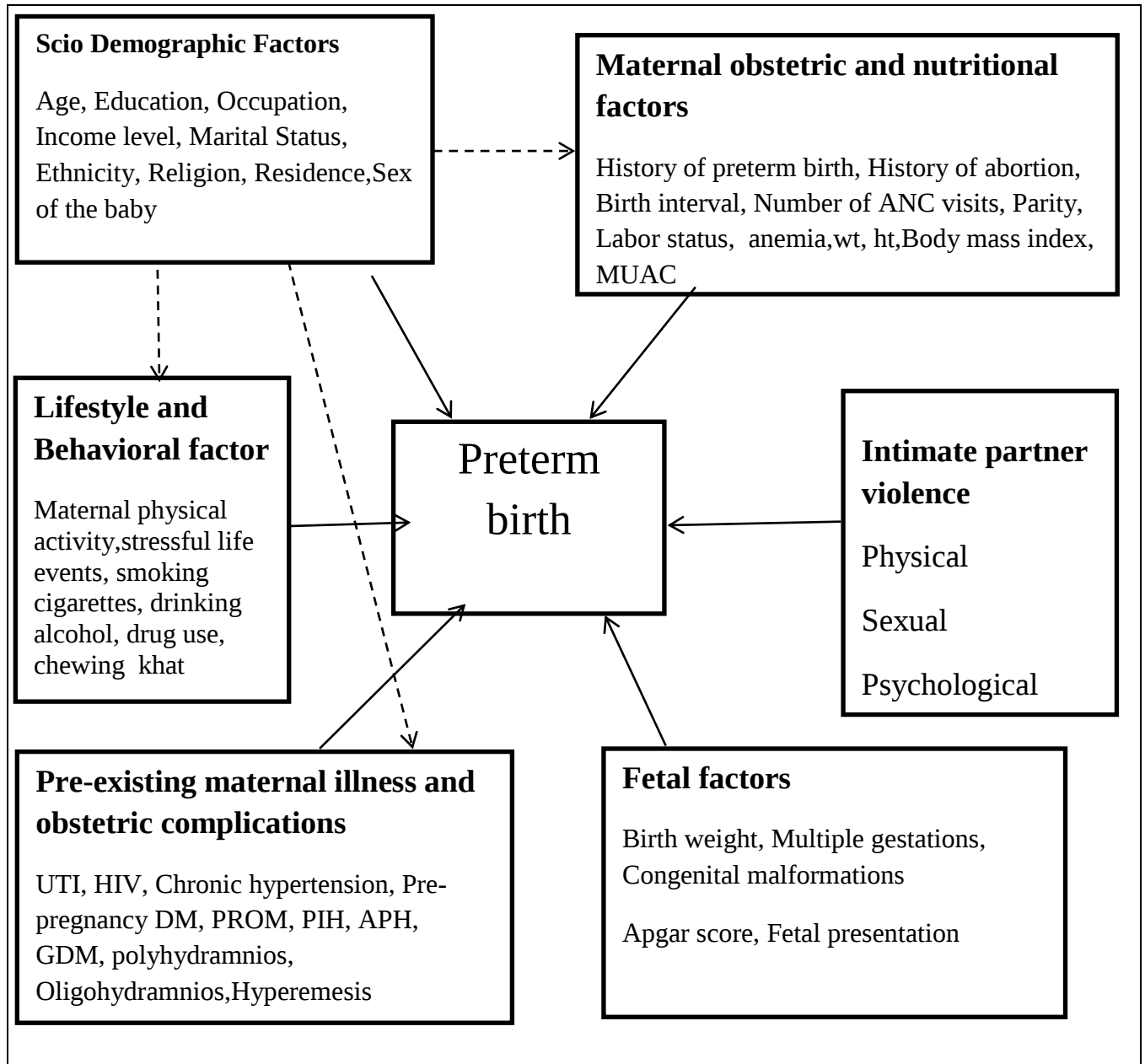


Figure 1. Conceptual framework to the study determinants of preterm birth among newborns delivered at Public Hospitals of Hawassa town, South Ethiopia 2020

3. OBJECTIVES

To assess determinants of preterm birth among newborns delivered in Public Hospitals of Hawassa town, South, Ethiopia 2020.

4.METHODS AND MATERIALS

4.1 Study area

The study was conducted at Hawassa town, SNNPR, Ethiopia. Hawassa city is found about 270 km south of Addis Ababa covering 157.2 km² areas and the city is serving as the capital of south region and Sidama zone. Hawassa town has two public hospitals and six private hospitals. The study was done at the public hospitals of Hawassa University Comprehensive Specialized hospital and Adare hospital. The two public hospitals are the regional hospitals and the main referral centers in southern part of Ethiopia.

The hospitals provide medical service to a catchment population of 18 million and are sites for practical training to medicine and health science students of Hawassa University. The hospitals provide comprehensive emergency obstetric and neonatal care. Both hospitals have a neonatal intensive care unit to manage both complicated term and preterm babies. The maternal and child health case team consists of 6 gynecologists and 23 midwives at HUCSH and 3 gynecologist and 17 midwives at Adare hospital. An average of 9 and 7 mothers delivered per day in the two hospitals respectively.

4.2 Study period

The study period was from March 1st to June 30th, 2020.

4.3 Study design

Facility-based unmatched case-control study design was used.

4.4 Source and study population

Source population

All mothers of newborns delivered in public hospitals of Hawassa town were the source population for both case and control.

Study population

Cases: - Mothers of newborns who gave new Preterm birth (neonates born between 28 and 36 completed weeks of gestational age) at public hospitals of Hawassa town during the study period.

Controls: - Randomly selected mothers of newborns who gave new term birth (neonates born at and above 37 completed weeks of gestational age) at public hospitals of Hawassa town during the study period were controls.

4. 5 Eligibility criteria

Inclusion criteria

All mothers of newborns who gave new Preterm birth (neonates born between 28 and 36 completed weeks of gestational age) and all neonates of mothers who gave new term birth (neonates born at and above 37 completed weeks of gestational age) were included during the study period

Exclusion criteria

- Women with difficulty of communication
- Mothers who were seriously ill during study period

4.6 Sample size determination

Sample size was estimated by using EPI INFO 7.2.2. Software by considering double population proportions formula. Different variables that were associated with preterm birth were used and the variable that yields highest sample size was used. Sample size was calculated using $r = 2$ (ratio of cases to controls), 80% power and 95% confidence level.

Table 1Summary of sample size determination based on the main independent variables, 2020

Variables	Assumption	Study	Sample size
Anemia	P control = 3.4%, P case = 14.7%	Abaraya M (23)	245
Pre-eclampsia	P control = 13.9%, P case = 46.9%	Aseidu EK(19)	77
PIH	P control = 69.7 %, P case = 30.3%	Okube OT(20)	138
Abortion history	P control = 8%, P case = 22.8%	Ranjbar M(18)	225

$$n1 = \frac{\left[\left[z\alpha/2\sqrt{(1 + 1/\gamma)p(1 - p)} \right] + \left[z\beta\sqrt{p1(1 - p1) + \frac{p2(1-p2)}{\gamma}} \right] \right]^2}{(p1 - p2)^2}$$

where n1 is sample size, $z\alpha$ standard normal variant for level of significance, r number of controls per case, $z\beta$ standard normal variant for power or type II error, p1 probability of events in control group, and p2 probability of events in case group. Finally, it generates a sample size of 245 with 82 cases and 163 controls. Allowing a 10% non-response rate, the sample size was estimated to be 270 mothers (90 cases and 180 controls).

4.7 Sampling procedure

Cases and controls were divided proportionally for the two hospitals on the previous year's preterm case flow. Last year's total numbers of live births in the two hospitals were 4,632 and among these 498 were a preterm birth. Out of this, the preterm birth in HUCSH and Adare hospital were 294 and 204 respectively. Cases and controls were identified from labour and gynecology ward. Consecutive sampling were used to select eligible cases until the required sample size was met and controls were selected by systematic random sampling and interviewed. To estimate the total number of delivery within a data collection period client registration book/record was reviewed from March to April and a total of 543 and 378 mothers were delivered in both hospitals respectively. Then sampling interval was calculated (HUCSH $\rightarrow k=N/n$, $543/106= 5.12$ and ADH $\rightarrow K=N/n$, $378/74=5.10$). The first sample was selected by lottery method and finally every 5th of mothers were interviewed.

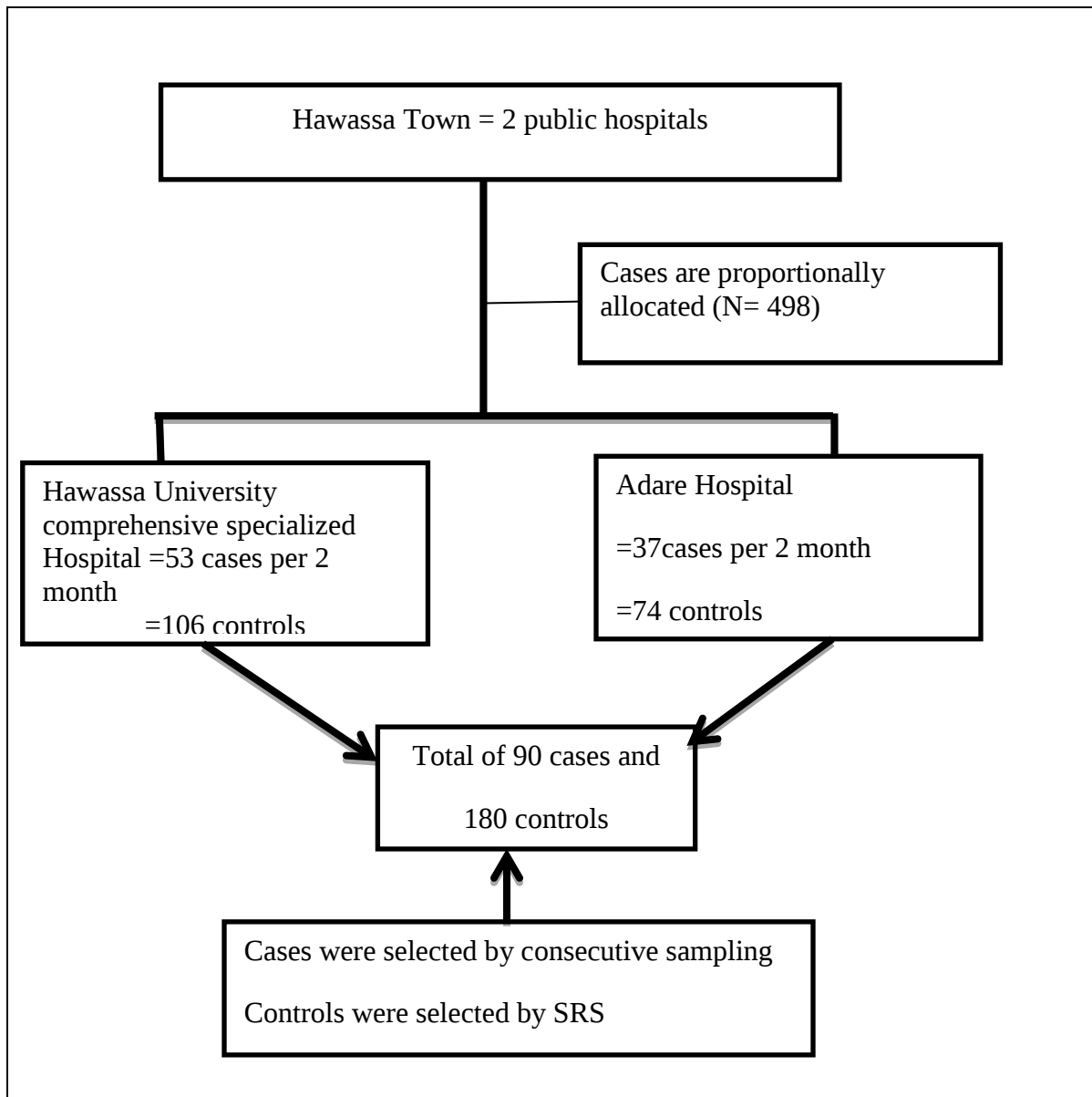


Figure 2Diagram of Sampling techniques and proportional allocation of cases in the two hospitals.

4.8 Study variables

Dependent variable

- Preterm birth

Independent variables

Socio-demographic variables(age, education, occupation, income level, marital Status, ethnicity, religion, residence, sex of the baby), maternal obstetric and nutritional variables(history of preterm birth, history of abortion, birth interval, number of ANC visits, parity, labor status, anemia, wt, ht, body mass index, MUAC), Pre-existing medical illness and Obstetric complication factors(UTI, HIV, chronic hypertension, pre-pregnancy DM, PROM, PIH, APH, GDM, polyhydramnios, oligohydramnios, hyperemesis), fetal factors(Birth weight, Multiple gestations, Congenital malformations, Apgar score, Fetal presentation), life styles and behavioral factors(Maternal physical activity, stressful life events, smoking cigarettes, drinking alcohol, drug use, chewing khat) and intimate partner violence variables(physical, sexual, psychological violence).

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4.9 Operational definition

Preterm birth: birth of alive baby between 28 and 36 completed weeks of gestation(2).

Term birth: Birth of a baby between 37 and <42 weeks of gestation.

Case: Mothers of newborns who delivered preterm baby in Hawassa public Hospitals during the study period.

Control: A mother who delivered term baby in Hawassa public Hospitals during the study period selected randomly.

Medical problems: mothers experienced any medical problems and confirmed by physicians during or prior to this pregnancy.

Standing for a long period of time: Standing for more than 3 hours per day.

Daily intake for alcohol, drug, khat chewing, cigarette smoking: Alcohol drinking, drug intake, khat chewing, and cigarette smoking for more than 4 days per week during pregnancy.

Weekly intake for alcohol, drug, khat chewing, cigarette smoking: Alcohol drinking, drug intake, khat chewing, and cigarette smoking for more than 2 days per month during pregnancy.

Medication use during pregnancy: Any Medication(s) intake during pregnancy including prescribed, over the counter and traditional medication(s) (excluding vitamins, iron and folic acid supplementation and vaccinations)

Hyperemesis gravidarum: Mothers who experience severe nausea, vomiting that affect their daily activity and diagnosed by clinicians and admitted in a hospital for treatment.

4.10 Data collection tools and procedures

A questioner which was developed by reviewing different previous studies was used(42,43). The questioner was structured, pretested and interviewer-administered. The questionnaire was grouped into six categories; Socio-demographic variables, maternal obstetric and nutritional variables, Pre-existing medical illness and Obstetric complication factors, fetal factors, life styles and behavioral factors and intimate partner violence variables. The questionnaire contains around 100 questions and on average the interview took 45-50 minutes. Data on medical, obstetrics, and management history was also extracted from medical records.

The data was collected using face-to-face interview and measurements were taken following the interview. The same interviewer was used to interview both cases (preterm births) and controls (terms) to control information bias. The outcome variable (preterm birth) was obtained from medical records indicated by physicians or midwifery. Gestational age data was obtained from the medical record measured by clinicians through LMP, Ultrasound or Ballard scores. The gestational age measured by the clinicians was used to classify preterm and term birth. The mothers of both cases and controls were interviewed in a separate room to ensure their privacy and to encourage their communication motives.

The weights of the newborns were taken from the medical records. Maternal nutritional assessment was made by using height, weight and MUAC and the other medical and obstetrics conditions of the mother were assessed by using records and interviews.

4.11 Data quality assurance

Standardized and structured questionnaire was used and the questionnaire was first prepared in English, then translated to Amharic and finally back to English by another person to check the consistency and completeness.

Pre-testing of the questionnaire was done on 10% (27 participants of 9 cases and 18 controls) of mothers who gave birth at Dilla Referral Hospital which is found in southern Ethiopia and out of the study site. After pretest some adjustment was done accordingly.

Four midwives and nurses who were not staff members were assigned to record the data and two BSC holder supervisors were assigned to supervise the data collectors. Two days training was provided for data collectors about the objectives of the study, the sensitivity of the issue, confidentiality of responses, contents of questionnaires and how to approach the study subjects (cases and controls) in the similar way and the training was given by expert on the area and the principal investigator.

Every questionnaire was checked for completeness and consistency on a daily basis and similarly, checks were repeated during the entry. A double-entry of the data into an electronic database (Epi data 3.1) was done and discrepancies resolved by referring to the original data collection tools.

4.12 Data management and Analysis

Data was coded and entered into Epi data version 3.1 using double entry technique. Data was verified and cleaned to ensure quality. Then data was exported and analyzed by using SPSS version 25.

Any errors identified at this time were corrected after referring of the original data using the code numbers. Based on the nature of variables frequency distribution and summary statistics was computed for case and control groups. Variables were tested for multicollinearity. Hosmer-Lemeshow was used to check model of fitness. Logistic regression model was used to compute bivariable and multivariable analysis. The bivariable analysis measured the association between preterm birth and each risk factor. Those variables that have P-value < 0.25 on bivariate analysis were fitted into a multivariable logistic regression model to control for confounder and identify the independent predictors of preterm birth. Finally, the strength of association was measured using adjusted odds ratios with 95% confidence interval

(CI). Statistical significance was declared at $p\text{-value} < 0.05$ and the data is presented by tables, texts and graphs.

4.13 Ethical issues

Ethical approval was obtained from Research and Ethics Committee (REC) of School of nursing and midwifery, Addis Ababa University for appropriateness and scientific content of the study. Permission letter was obtained from SNNPR Health Bureau and from the two hospitals.

Participants were asked for informed consent before participating in the study. They were provided with the information regarding the purpose, objective, procedures, potential risks and benefits of the study. They were also assured of strict confidentiality with regard to any information obtained from them. No personal identifiers were used and consent was taken after explaining the stated conditions.

There was no risk involved in participating in this study. However, the participants were informed about possible minor discomfort or sad memories, reminders of sad moments in answering certain questions for which they may choose even not to answer. Participation in the study was voluntary and participants were told that they could discontinue the interview at any time. They were informed that no denial of health service for refusal to participate in the study.

4.14. Dissemination of results

The paper will be submitted to Addis Ababa University, college of health science, school of nursing and midwifery and Tikur Anbessa library. The paper will also be disseminated to Southern nations, nationalities and people's regional health office and for the two hospitals. Attempts will be made to present the finding at national and international conference. Finally, efforts will be made to get this paper published in reputable and peer-reviewed journals.

5. RESULTS

Out of the 270 mother baby dyads, a total of 266 participated in the study comprising 89 cases (preterm deliveries) and 177 controls (term deliveries) with a 98% response rate. Out of 89 preterm deliveries, 25(28%) were classified as early preterm and 64(72%) were moderate to late preterm. The mean gestational age was of 33 and 38 weeks of gestation for cases and controls respectively.

5.1 Sociodemographic characteristics

Out of 266 mothers participated in the study all most half of 129(48.5%) mothers were in 25-34 age groups. Almost all of mothers 43(48.3%) were 15-24 age groups in cases where as 92(52.0%) mothers were 25-34 years old in controls. Regarding maternal residence more than half of mothers 52(58.4%) and 140(79.1%) lived in an urban setting for cases and controls respectively. Majority of the mothers 76(85.4%) and 161(91.0%) were married, 45(50.6%) and 74(41.8%) were educated up to primary, 61(68.5%) and 102(57.6%) were house wife and 46(51.7%) and 111(62.7%) had $\geq$ 3500 ETB monthly income for both cases and controls respectively. Most of mothers delivered 61(68.5%) male neonates in the cases where as 63(35.6%) male babies in the controls.

Table 2 Sociodemographic characteristics of mothers, September, 2020

Scio demographic factors		Cases, n (%)	Controls, n (%)	Total n (%)
Maternal age	15-24	43(48.3)	51(28.8)	94(35.3)
	25-34	37(41.6)	92(52.0)	129(48.5)
	35-49	9(9.0)	34(19.2)	43(16.2)
Residence	Urban	52(58.4)	127(71.8)	179(67.3)
	Rural	37(41.6)	50(28.2)	87(32.7)
Marital status	Married	76(85.4)	161(91.0)	237(89)
	Single	10(11.2)	9(5.1)	19(7.1)
	Divorced	2(2.2)	4(2.3)	6(2.3)
	Widowed	1(1.1)	3(1.7)	4(1.5)
Educational status	illiterate	1(1.1)	1(0.6)	2(7)
	primary	45(50.6)	74(41.8)	119(44.7)
	secondary	24(27.0)	66(37.3)	90(33.8)
	tertiary	19(21.3)	36(20.3)	55(20.6)
Occupational status	House wife	61(68.5)	102(57.6)	163(61.2)
	Gov't employee	4(4.5)	34(19.2)	38(14.3)
	merchant	8(9.0)	25(14.1)	32(12)
	Ngo employee	4(4.5)	5(2.8)	9(3.4)
	micro	3(3.4)	4(2.3)	7(2.6)
	other	9(10.1)	7(4.0)	16(6)
Income	<1500	6(6.7)	6(3.4)	12(4.5)
	1500-2499	18(20.2)	31(17.5)	49(18.4)
	2500-3499	20(22.5)	25(14.1)	45(16.9)
	>=3500	46(51.7)	111(62.7)	157(59)
	Missing	3(3.4)	4(2.3)	7(2.6)
Sex of baby	Male	61(68.5)	63(35.6)	124(46.6)
	Female	28(31.5)	114(64.4)	142(53.4)

5.2 Maternal obstetric and nutritional factors

From a total of cases and controls, 39(43.8%) and 131(74.0%) of mothers were multiparous in cases and controls respectively. 19(21.3%) of mothers had history of abortion in the cases while only 21(11.9%) of mothers had a history of abortion in the controls. 24(27.0%) of cases had Hemoglobin <11 g/dL, while in 15(8.5%) of controls hemoglobin <11 g/dL have been seen. More than half of mothers 58(65.2%) had MUAC <21 in cases and 77(43.5%) in control groups.

Table 3 Maternal obstetric and nutritional characteristics of mothers September, 2020

Obstetric and nutritional factors		Cases, n (%)	Controls, n (%)	Total n (%)
Parity	Primiparous	50(56.2)	46(26.0)	96(36.1)
	Multiparous	39(43.8)	131(74.0)	170(63.9)
Birth interval	<2 years	21(23.6)	17(9.6)	38(14.2)
	>= 2years	19(21.3)	113(63.8)	132(49.6)
	Para one	48(53.9)	45(25.4)	93(35)
No of ANC visit	No visit	2(2.2)	7(4.0)	9(3.4)
	1-3	52(58.4)	92(52.0)	144(54.2)
	>=4	35(39.3)	78(44.1)	113(42.5)
Hx of Abortion	Yes	19(21.3)	21(11.9)	40(14.1)
	No	70(78.7)	156(88.1)	226(84.9)
Hx of Still birth	Yes	6(6.7)	10(5.6)	16(43.6)
	No	83(93.3)	167(94.4)	150(56.4)
Hx of Preterm birth	Yes	9(10.1)	13(7.3)	22(8.3)
	No	80(89.9)	164(92.7)	144(54.1)
Status of labor	Yes	64(71.9)	118(66.7)	182(69.5)
	No	25(28.1)	59(33.3)	84(31.5)
Anemia	Yes	14(15.7)	24(13.6)	38(14.2)
	No	75(84.2)	153(86.5)	228(85.7)
HGB	<11gm/dl	24(27.0)	15(8.5)	39(14.6)
	≥ 11gm/dl	57(64.0)	131(74.0)	188(70.6)
	missing	8(9.0)	31(17.5)	39(14.6)
BMI	<19	-	-	-
	19-25	71(79.8)	131(74.0)	202(75.9)
	26-29	18(20.2)	46(26.0)	64(24)
	≥ 30	-	-	-
MUAC	<21	58(65.2)	77(43.5)	135(50.7)
	21-22.9	19(21.3)	53(29.9)	72(27)
	≥ 23	12(13.5)	47(26.6)	59(22.2)

Abbreviation: HGB Hemoglobin,BMI Bod mass index, MUAC Mid upper arm circumference

5.3 Pre-existing maternal illness and obstetric complications

With regard to pre-existing maternal illness and obstetric complications among cases, the proportion of pregnancy induced hypertension, antepartum hemorrhage, previous uterine surgery, premature rupture of membrane and HIV AIDS was 15(16.9%), 9(10.1%), 4(4.5%), 33(37.1%) and 5(5.7%) respectively, while the proportion was 7(4.0%), 6(3.4%), 15(8.5%), 17(9.6%) and 7(4.0%) respectively, among the controls.

Table 4Pre-existing maternal illness and obstetric complication factors of mothers June, 2020

Maternal illness and obstetric complications		Cases, n (%)	Controls, n (%)	Total, n (%)
Chronic HTN	Yes	1(1.1)	2(1.1)	3(1.1)
	No	88(97.8)	175(98.9)	263(98.9)
PIH	Yes	15(16.9)	7(4.0)	22(8.6)
	No	74(83.1)	170(96.0)	244(91.4)
DM	Yes	-	2(1.1)	2(.8%)
	No	89(100.0)	175(98.9)	264(99.2)
GDM	Yes	-	1(0.6)	1(.4)
	No	89(100.0)	176(99.4)	265(99.6)
Cardiac disease	Yes	3(3.4)	3(1.7)	6(2.3)
	No	86(96.6)	174(98.3)	260(97.7)
Respiratory disease	Yes	-	12(6.8)	12(4.5)
	No	89(100.0)	165(93.2)	254(95.5)
Mental illness	Yes	1(1.1)	4(2.3)	5(1.9)
	No	88(98.9)	173(97.7)	261(98.1)
APH	Yes	9(10.1)	6(3.4%)	15(5.6)
	No	80(89.9)	171(96.6)	251(94.4)
previous uterine surgery	Yes	4(4.5)	15(8.5)	19(7.2)
	No	85(95.5)	162(91.0)	247(92.8)
STI	Yes	5(5.6)	8(4.5)	13(4.9)
	No	84(94.4)	169(95.5)	153(95.1)
urinary tract infection	Yes	9(10.1)	12(6.8%)	21(7.9)
	No	80(89.9)	165(93.2)	245(92.1)
epilepsy	Yes	-	3(1.7)	3(1.1)
	No	89(100)	174(98.3%)	263(98.9)
periodontal disease	Yes	5(5.6)	11(6.2)	16(6)
	No	84(94.4)	166(93.8)	250(94)
PROM	Yes	33(37.1)	17(9.6)	50(18.8)
	No	56(62.9)	160(90.4)	216(81.2)
hyperemesis gravid arum	Yes	6(6.7)	12(6.8)	18(6.8)
	No	83(93.3)	165(93.2)	248(93.2)
poly hydra minus	Yes	6(6.7)	9(5.1)	15(5.6)
	No	83(93.3)	168(94.9)	251(94.4)
Oligo hydra minus	Yes	7(7.9)	10(5.6)	17(6.4)
	No	82(92.1)	167(94.4)	249(93.6)
Chorioamnionitis	Yes	1(1.1)	6(3.4)	7(2.6)
	No	88(98.9)	171(96.6)	259(97.4)
HIV	Sero negative	84(94.3)	170(96.0)	243(95.1)
	Sero positive	5(5.7)	7(4.0)	13(4.9)

Abbreviation: HTN Hypertension, PIH Pregnancy induced hypertension, DM Diabetes mellitus, GDM Gestational diabetes mellitus, APH Antepartum hemorrhage, STI Sexually transmitted disease, PROM Premature rupture of membrane, HIV Human immune virus

5.4 Characteristics of the Newborn

Among cases, 9(10.1%) mothers had multiple pregnancy, whereas only 4(2.3%) of mothers had multiple pregnancy in the control group. About one-third of the mothers 29(32.6%) had a baby with birth weight<2500 gm in the cases while only 7(4.0%) had in the controls.

Table 5 Characteristics of the Newborn of the mothers September, 2020

Fetal factors		Cases, n (%)	Controls, n (%)	Total, n (%)
Multiple pregnancy	Yes	9(10.1)	4(2.3)	13(42.5)
	No	80(89.9)	173(97.7)	153(57.5)
Birth weight	<2500	29(32.6)	7(4.0)	36(51.2)
	≥ 2500	60(67.4)	170(96.0)	130(48.8)
Fetal presentation	Cephalic	68(76.4)	145(81.4)	233(87.6)
	Breech	20(22.5)	31(17.5)	51(19.2)
	Other	1(1.1)	1(0.6)	2(.7)
1 st min APGAR score	<7	22(24.7)	35(19.8)	57(21.4)
	7-10	67(75.3)	142(80.2)	209(78.6)
5 th min APGAR score	<7	10(11.2)	14(7.9)	24(44.8)
	7-10	79(88.8)	163(92.1)	144(55.2)
congenital malformation	Yes	8(9.0)	10(5.6)	18(7.1)
	No	81(91.0)	166(93.8)	247(92.9)

5.5 Lifestyle, Behavioral factors and intimate partner violence

The proportion of lifestyle and behavioral factors among cases for vigorous-intensity of activity and using medication during pregnancy were 30(33.7%) and 15(16.9%) respectively. While the proportion of risk factors for vigorous-intensity of activity and using medication during pregnancy were 46(26.0%) and 8(4.5%) respectively among controls. The prevalence of Stressful life events were 39(43.8%) and 13(7.3%) among cases and controls. Out of 43.8% of cases 12(30.8%) of Stressful life events were due to illness, 4(10.3%) were due to death of family members and 6(15.4%) were due to family conflict. Intimate partner violence were 44(49.4%) and 24(13.6%) among cases and controls respectively. Furthermore, out of 50% of cases 58.4% were physical violence, 52.8% were psychological violence and 38.6% were Sexual violence.

Table 6 Lifestyle, Behavioral factors and intimate partner violence factors of mothers September, 2020

Lifestyle factors & IPV		Cases, n (%)	Controls, n (%)	Total, n (%)
vigorous-intensity of activity	Yes	30(33.7)	46(26.0)	76(28.6)
	No	59(66.3)	131(74.0)	190(71.4)
Stressful life events	Yes	39(43.8)	13(7.3)	52(19.6)
	No	50(56.2)	164(92.7)	214(80.4)
Drinking alcohol during pregnancy	Yes	17(19.1)	25(14.1)	42(14.8)
	No	72(80.9)	152(85.9)	224(85.2)
Smoking during pregnancy	Yes	1(1.1)	-	1(.4)
	No	88(98.9)	177(100.0)	265(99.6)
Chewing chat during pregnancy	Yes	3(3.4)	5(2.8)	8(3)
	No	86(96.6)	172(97.2)	258(97)
Using medication during pregnancy	Yes	15(16.9)	8(4.5)	23(8.6)
	No	74(83.1)	169(95.5)	243(91.3)
Intimate partner violence	Yes	44(49.4)	24(13.6)	68(24.6)
	No	45(50.6)	153(86.4)	198(75.4)

5.6 Risk factors associated with preterm birth

Variables that had p value <0.25 on bivariate analysis were Maternal age, residence, sex of baby, parity, history of Abortion, MUAC, HGB, PIH, APH, PROM, multiple pregnancy, birth weight, vigorous-intensity of activity, stressful life events, using medication during pregnancy and IPV. Then fitted to multivariate analysis. Finally only sex of baby, parity, pregnancy induced hypertension, antepartum hemorrhage, premature rupture of membrane, birth weight, stressful life events and intimate partner violence had statically significant association with preterm birth. The odds of preterm were three times higher among male neonates AOR 3.39, 95% CI (1.53-7.52) compared to female neonates. Mothers who were multiparous were four times AOR 4.251, 95% CI (1.705-10.599) to give a preterm birth than mothers who were primiparous. The odds of preterm birth among mothers who had PIH, APH, PROM, low birth weight, stressful life events and intimate partner violence were at increased risk of preterm birth with AOR 5.62, 95% CI (1.102-28.71), AOR 9.20, 95% CI (2.09-40.32), AOR 4.69, 95% CI (1.82-12.07), AOR 6.20, 95% CI (1.96-19.52), AOR 5.67, 95% CI (2.16-14.91) and AOR 5.19, 95% CI (2.05-13.09) respectively.

Table 7 Risk factors associated with preterm birth September, 2020

Risk factors preterm birth	Category	Outcome		Bivariate analysis	Multivariate analysis
		Cases, n (%)	Controls, n (%)	Crude OR (95% CI)	Adjusted OR(95%CI)
Maternal age	15-24	43(48.3)	51(28.8)	.47(.27-.83)	1.02(0.39-2.66)
	25-34	37(41.6)	92(52.0)	1	1
	35-49	9(9.0)	34(19.2)		1.53(0.42-5.57)
Residence	Urban	52(58.4)	127(71.8)	1	1
	Rural	37(41.6)	50(28.2)	1.81(1.06-3.08)	1.83(0.74-4.47)
Sex of baby	Male	61(68.5)	63(35.6)	3.94(2.29-6.78)	3.39(1.53-7.52)*
	Female	28(31.5)	114(64.4)	1	1
Parity	Primiparous	50(56.2)	46(26.0)	1	1
	Multiparous	39(43.8)	131(74.0)	3.65(2.13-6.24)	4.25(1.70-10.56)*
History of Abortion	Yes	19(21.3)	21(11.9)	2.02(1.02-3.98)	1.72(0.57-5.14)
	No	70(78.7)	156(88.1)		1
MUAC	<21	58(65.2%)	77(43.5)	1.78(1.26-2.52)	1.53(.528-4.43)
	21-22.9	19(21.3)	53(29.9)	1	2.17(.658-7.15)
	≥ 23	12(13.5)	47(26.6)		1
HGB	<11gm/dl	24(27.0)	15(8.5)	1.65(1.18-2.32)	2.54(0.858-7.53)
	≥ 11gm/dl	57(64.0)	131(74.0)	1	1
	missing	8(9.0)	31(17.5)		
PIH	Yes	15(16.9)	7(4.0)	4.92(1.93-12.57)	5.63(1.10-28.72)*
	No	74(83.1)	170(96.0)	1	1
APH	Yes	9(10.1)	6(3.4)	3.21(1.10-9.31)	9.20(2.09-40.32)*
	No	80(89.9)	171(96.6)	1	1
PROM	Yes	33(37.1)	17(9.6)	5.54(2.86-10.73)	4.69(1.826-12.07)**
	No	56(62.9)	160(90.4)	1	1
Multiple pregnancy	Yes	9(10.1)	5(2.3)	4.87(1.45-16.27)	4.72(.83-26.92)
	No	80(89.9)	173(97.7)	1	1
Birth weight	<2500	29(32.6)	7(4.0%)	11.73(4.88-28.19)	6.20(1.96-19.52)*
	≥ 2500	60(67.4)	170(96.0)	1	1
vigorous-intensity of activity	Yes	30(33.7%)	46(26.0)	1.44(0.83-2.51)	0.94(0.39-2.24)
	No	59(66.3)	131(74.0)	1	1
Stressful life events	Yes	39(43.8)	13(7.3)	9.84(4.87-19.87)	5.67(2.16-14.91)***
	No	50(56.2%)	164(92.7)	1	1

Using medication during pregnancy	Yes	15(16.9%)	8(4.5)	4.28(1.74-10.53)	1.94(.55-6.75)
	No	74(83.1)	169(95.5)	1	1
IPV	Yes	44(49.4)	24(13.6)	6.23(3.42-11.33)	5.19(2.05-13.09)***
	No	45(50.6)	153(86.4)	1	1

Note: *=p < 0.05, **=p < 0.001, ***=p < 0.0001

Abbreviation: HGB Hemoglobin, MUAC Mid upper arm circumference PIH Pregnancy induced hypertension, APH Antepartum hemorrhage, PROM Premature rupture of membrane

6. DISCUSSION

This facility-based unmatched case-control study aimed to assess risk factors of preterm births and the study showed that numerous risk factors like sex of baby, parity, pregnancy induced hypertension, antepartum hemorrhage, premature rupture of membrane, birth weight, stressful life events and intimate partner violence found to be associated with preterm birth.

The study indicated that there is significant association between sex of the baby and preterm birth. The odd of preterm birth is three times higher among male neonates compared to female neonates. This finding is consistent with the study done in Kenya(20). The possible reasons for this could be hormonal change into the onset of labor, or the genetic disadvantage of the male fetus, evidenced by high male sex percentage in preterm births(2,15).

This study also showed that mothers who were multiparous were significantly associated with preterm birth. This finding is in line with studies done in Bangladesh(34). The possible reasons may be related to different factors like as incompetence of cervical as the pregnancy time increases, atrophy of the uterine wall and loss of elasticity and hyalinization of blood vessels for uterine rupture(2)(15).

The present study also revealed that obstetric complications, such as PIH, APH and PROM were significantly associated with the risk of PTB. The finding is consistent with a study conducted in Ghana, Kenya, Addis Ababa, Jimma and India(19–21,23,33). This might be linked to decreased blood flow to the fetus, which results in nutrients and oxygen deficiency on fetus. This leads to decreased fetal growth and increase the risk preterm birth(2,15).

Birth weight of a baby was another factor found to be statically significant with preterm birth. Mothers who gave birth with alow birth weight were six times more likely to deliver a preterm birth than mothers that had a baby with normal birth weight.This is similar to the study done in Ghana(19). The reasons could be due to relation of low birth weight and premature babies. The last trimester is the time when thefetus grows highly in size until term, so the fetus does not get that chance to gain the normal birth weight if it is preterm birth(15).

The study also showed that stressful life events like illness, death of family members and family conflict were significantly associated with preterm birth. The odds of mothers who had faced stressful life events were six times to have a preterm birth than mothers who had not faced stressful life events. The finding is supported by a study done in five hospitals of Beijing (17).Obviously, stressful life events will result in physiological,psychological and hormonal disturbance of the mother during pregnancy. which leads to disturbance of placental oxygen and nutrient to the fetus(15).

According to the study intimate partner violence including physical, psychological and sexual violence had statically significant association with preterm birth. The odds of having preterm birth among mothers who were exposed for intimate partner was five times higher than those mothers who don't experience intimate partner violence.Similarly significant associations have been observed in WHO, Peru, Spain, Tanzania and Tigray(38–41).The possible reasons could be physical violence brings injury causing trauma likerupture of membrane or placental bleeding and finally preterm birth. It also related to emotional or psychological problems leading to sympathetic and hormonal changes that results in disturbance fetal growth(16).

7. STRENGTH AND LIMITATIONS OF THE STUDY

Strength of the study

The strength of this study was both controls and cases were selected from the same hospitals to reduce selection bias and use ofpatient interview and medical record data to access all the variables.

Limitations of the study

The limitation of the study was recall bias linked to difficulty of remembering of the events that happened in the past and incomplete documentation in the history taking sheet and delivery log book like hemoglobin of the mother and other variables was the limitations of the study.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study revealed statistically significant associations of different risk factors such as sex of baby, parity; pregnancy induced hypertension, antepartum hemorrhage, and premature rupture of membrane and birth weight of a baby. Furthermore, this study found Stressful life events like illness, death of family members and family conflict and intimate partner violence including physical, psychological and sexual violence were found to be contributing factors of preterm births and had a possible causal relationship.

Recommendations

Interventions that target the identified modifiable risk factors should be developed by health professionals, professional associations, ministry of health in collaboration with non-governmental organization.

Health care professionals should give attention on identifying risk factors and early treatment for medical problems plus psychological reassurance of mothers on stressful life events and intimate partner violence.

It is also important that meta-analysis for more acceptable and combined reports since there are several studies conducted and experimental studies are recommended to establish temporal relationship between risk factors and preterm birth.

9. REFERENCE

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10. APPENDIX

Appendix 1

Information sheet

Dear Participants

My name isI am here on the behalf of Ashenafi Zewde who is a masters student in Addis Ababa university school of nursing and midwifery, department of pediatrics and child health. He is working his thesis on risk factors of preterm birth. Prior to this I will be explaining information about the study and requesting you to participate in the study.

Purpose: To identify the risk factors of preterm birth.

Benefit: This study will help to determine the risk factors of preterm birth and in turn which helps to prevent preterm birth and consequence of preterm birth.

Harm: - The study will take time of you and may have a little discomfort while measuring height and MUAC but does not have any risk.

Confidentiality: - All the responses given by you and results obtained will be kept confidential. Without permission from you and legal body, any part of this study will not be disclosed to third person. You are not expected to give your name or phone number.

Right of participant: Your participation in this research is voluntary. You have full right to refuse to a question that you don't want to answer and withdraw from the participation at any time if you don't wish to continue. If you have any question you can ask at any time or communicate the principal investigator. I hope by considering the issue you will participate in the study and if you agree you will sign the consent form.

If you are willing to participate in this study, please sign the agreement form.

Address: Cell phone +251910954573 Email: Ashenafi.zewde73@gmail.com

Appendix 2

Informed consent

I have read this form or it has been read to me in the language I understand. I understand that I can discontinue the interview without any problem. Therefore

1. I agree to participate ☐

2. I refuse to participate ☐

If the participant agrees to participate skip to the next page.

If no, skip to the next participant by writing reasons refusal below.

.....

Name of investigator: Ashenafi Zewde

Address: Mob +2510954573

E-mail: Ashenafi.zewde73@gmail.com

Supervisor address Tel

Date of interview

Time started

Time completed

Name of data collector.....

Checked by

Supervisor name Signature Date.....

Mothers who have preterm baby ☐

Mothers who have term baby ☐

Appendix 3

Questionnaire

Identification related information

Data collector's Name: _____ Signature: _____ Date _____

Supervisor's Name: _____ Signature: _____

Questionnaire Code No _____ MRN: _____ Hospital Name: _____

SN	SECTION A. SOCIODEMOGRAPHIC DATA	
101	How old are you in complete years?	_ _ years
102	Where is your place of residence?	1. Urban 2. Rural
103	What is your religion?	1. Orthodox 2. Islam 3. Protestant 4. Catholic 5. Others (Specify).....
104	What is your ethnicity	1, Sidama 2. Amhara 3.Oromo4. Wolayta 5. Others(Specify).....
105	What is your marital status?	1. married 2. divorced 3. widowed 4. single
106.	What was the highest level of education you have attended?	1. Grade 2. Informal (X).....
107	What is your main Occupation?	1. Housewife 2. Farmer 3. merchant4. Government employee 5. NGOs employee 6. Micro 7.Others(Specify)_____
108	What is your household monthly income on Average?	(in ETB)
109	What is your total Family size (including extended families)?	_____ (in number)

SN	SECTION B. MATERNAL OBSTETRIC AND NUTITIONAL FACTORS	
201	How many times you gave birth including this pregnancy? (parity)	_____ (put in number)
202	By How many years' interval you get this pregnancy?	1. _____ In completed months 2. I don't know
203	Did you have ANC follow up for this pregnancy?	1. Yes 2. No
204	Where you started your ANC?	1. HP 2. HC 3. GH 4. PH 5. PC 6. NGOs clinic 7. Other _____
205	How many times you visit health facilities for ANC?	_____ (put in number) 2. I don't remember
206	Do you have History of Abortion before this pregnancy?	1. Yes 2. No
207	Do you have History of still birth before this pregnancy?	1. Yes 2. No
208	Do you have History of preterm birth before this pregnancy?	1. Yes 2. No
209	How was the current pregnancy labor started?	1. Spontaneously 2. Augmented 3. Induced
210	What was the mode of delivery?	1. Assisted Vaginal Delivery 2. Instrumental delivery

		3. Emergency C- section 4. Elective C- section 5. Other.....
211	During your current pregnancy, have you been told that you have anemia?	1. Yes 2. No 3. Don't know

SN	SECTION C. PRE-EXISTING MATERNAL MEDICAL DISORDERS OBSTETRIC COMPLICATIONS	
301	Have you ever been told that you have chronic hypertension?	1. Yes 2. No 3. Don't know
302	During this pregnancy, have you been told that you have developed pregnancy induced hypertension?	1. Yes 2. No 3. Don't know
303	If yes, what was the diagnosis?	1. Pre-eclampsia 2. Eclampsia 3. Don't know
304	Have you ever been told that you have diabetes mellitus?	1. Yes 2. No 3. Don't know
305	During your current pregnancy, have you been told that you have developed gestational diabetes mellitus?	1. Yes 2. No 3. Don't know
306	Have you ever been told that you have Cardiac diseases?	1. Yes 2. No 3. Don't know
307	If yes, what was the diagnosis?	_____
308	Have you ever been told that you have respiratory	1. Yes

	disease?	2. No 3. Don't know
309	If yes, what was the diagnosis?	_____
310	Have you ever been told that you have Mental illness?	1. Yes 2. No 3. Don't know
311	If yes, what was the diagnosis?	_____
312	Did you get vaginal bleeding during current pregnancy? (> 28 weeks of gestation)	1. Yes 2. No 3. Don't know
313	If yes, what was the diagnosis?	1.Placenta previa 2 Abruptio placenta 3 Other Hemorrhage_____ 4 Don't know
314	Do you have Any previous uterine surgery?	1. Yes 2. No
315	If yes, what was the diagnosis?	_____
316	During your current pregnancy, have you been told that you have sexually transmitted infection?	1. Yes 2. No 3. Don't know
317	If yes, what was the diagnosis?	_____

318	During your current pregnancy, have you been told that you have UTI?	1. Yes 2. No 3. Don't know	
319	During your current pregnancy, have you been told that you have epilepsy	1. Yes 2. No 3. Don't know	
320	Did you have mental illness disease?	1. Yes 2. No 3. Don't know	
321	Did you get rapture of membrane before onset of labor during current pregnancy? (before 18 hrs onset of labor)	1. Yes 2. No 3. Don't know	
322	Did you get hyperemesis gravidarum during current pregnancy?	1. Yes 2. No 3. Don't know	
323	Did you get poly hydraminous during current pregnancy	1. Yes 2. No 3. Don't know	
324	Did you get Oligo hydraminous during current pregnancy	1. Yes 2. No 3. Don't know	
325	Did you get Chorioamnionitis during current pregnancy	1. Yes 2. No 3. Don't know	
326	During your current pregnancy, have you tested for HIV?	1. Yes 2. No 3. Don't know	
327	If yes what was the result?	1. Reactive 2. Nonreactive 3. unknown	

SN	SECTION C. FETAL FACTORS		
401	Is the pregnancy?	1. Single 2. Twins 3. multiple	
402	What was the weight of the baby?	_____ in grams	
403	What is/are the sex(es) Of baby/ies?	1.Male 2.Female	
404	Does baby have form of congenital malformation/abnormalities?	1. Yes 2. No	
405	If yes, what is the congenital malformation?	_____	

SN	SECTION E. Lifestyle and Behavioral factors		
501	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work]	1.yes 2.No	
502	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	1.yes 2.No	
503	How much time do you usually spend sitting or reclining on a typical day?	Hours: minute _ _ _ _	
504	Do your activities involve	1. Climbing stair: 2. Standing for long period: 3. Lifting heavy things: 4. Squatting:	
505	During the current pregnancy have you face	1.yes	

	stressful life events?	2.No	
506	If yes what was the event?	1. illness 2. injury 3. hospitalization 4. surgery 5. death of family members 6. family conflict	
507	Have you drink Alcohol?	1. yes 2. No	
508	Which type of alcohol? (multiple response possible)	1. Tella 2. Beer 3. Wine 4. Teji 5. Other(specify)_____	
509	How often you drink alcohol?	1. Every day 2. At least once Per week 3. At least once Per for night 4. Occasionally 5. Not at all	
510	Have you ever smoke cigarette?	1.yes 2.No	
511	How often do you smoke?	1. Every day 2. At least once Per week 3. At least once Per for night 4. Occasionally 5. Not at all	
512	Have you ever chewed Khat?	1.yes 2.No	

5013	How often do you chew khat?	1. Every day 2. At least once Per week 3. At least once Per for night 4. Occasionally 5. Not at all	
5014	Did you taken any medication during current pregnancy excluding vitamins, iron and folic acid supplementation and vaccinations?	1. Yes 2. No 3. Don't know	
5015	If yes, what was the medication?	1. Antibiotics 2. Steroids 3. Anti-epileptics 4. Traditional medications 5. other(specify) _____	
5016	If yes for Q 5015 , How often were you using the medication(s)?	1. Daily 2. Weekly 3. Monthly 4. Less than monthly	

SN	SECTION F. INTIMATE PARTNER VIOLENCE		
	Physical violence		
601	Has he Push or shoved you, or shake your hands?	1. Yes 2. No	
602	Has he slapped you or thrown something at you that could hurt you?	1. Yes 2. No	
603	Has he Punch or hit you with his fist, or twist your arm or with something that could hurt you?	1. Yes 2. No	
604	Has he Kick you, drag or beaten you?	1. Yes 2. No	
605	Has he tried to Attack you with a knife, gun, or other type of	1. Yes	

	weapon?	2. No	
606	Have you scalded or burnt purposefully by your husband?	1. Yes 2. No	
607	Does any of the above listed violations are/were committed by other persons (friends, relatives, strangers...etc) upon you within the last 9 months?	1. Yes 2. No	
	Psychological violence		
608	Have you ever been insulted by your husband using abusive language that made you feel bad about yourself?	1. Yes 2. No	
609	Have you ever been ignored or shown indifference by your husband?	1. Yes 2. No	
610	Has he belittled or humiliated you in front of other people?	1. Yes 2. No	
611	Have you ever been denied by your husband on your basic personal needs?	1. Yes 2. No	
612	Have you ever been intentionally not involved by your husband on decision making in the family?	1. Yes 2. No	
613	Does your husband has been tried to harm or injured anything or anyone you love?	1. Yes 2. No	
614	Does any of the above listed violations are/were committed by other persons (friends, relatives, strangers...etc) upon you within the last 12 months?	1. Yes 2. No	
	Sexual violence		
615	Have you ever physically forced by your husband to have sex when you did not want to?	1. Yes 2. No	
616	Have you ever intentionally denied or avoided sex by your husband?	1. Yes 2. No	
617	Did you ever have sexual intercourse when you didn't want because you were afraid of What he might do?	1. Yes 2. No	
618	Has he forced you to do something sexual that you found	1. Yes	

	degrading or humiliating?	2. No	
619	Does any of the above listed violations happen to you are/were committed by other persons (friends, relatives, strangers...etc)?	1. Yes 2. No	
620	How often any of the above offenses happen to you in the last nine months?	1. Every day 2. At least once per week 3. At least once per month 4. Once during pregnancy period 5. Not at all	

SECTION G: Questions to be filled from medical records or by Measurement

1. What is the Gestational age at birth? (Based on LMNP or see card for physician Diagnosis or see ultrasound result or Ballard score) _____ (put in completed weeks)
2. What is the Weight of the new born at birth (measure or see cards) _____ (put in grams)
3. What is the Weight of the mother at birth (measure or see cards) _____ (in grams?)
4. What is the height of the mother at birth? (Measure or see cards) _____ (in centimeter)
5. BMI (Calculate or see cards) _____
6. What is the hemoglobin of the mother at birth? (See cards) _____ (in gm/dl)
7. What is the MUAC of the mother at birth (measure or See cards) _____ (in centimeters?)
8. What was the fetal presentation during delivery? (See cards) _____
9. What was the 1st and 5th minute APGAR score? (See cards) _____ / _____

Amharic Questionnaire

ለጥናት ተሳታፊዎች መረጃ ፎርም

ውድተሳታፊዎቻችን

ጤናይስጥልኝ!

ስሜ-----

ነው፤ እዚህ የተገኘሁት አቶ አሸናፊ ዘውዴ ንበመ ወከልሲ ሆን፤ እርሱም በአዲስ አበባ ዩኒቨርሲቲ በነርሲ ንግት/ትክፍል የሁለተኛ ደረጃ ሪወን በመማር ላይ ይገኛል። የዚህ ትምህርት አካል የሆነ ጥናት የሚደረግ ሲሆን ይኸውም እናቶች በእርግዝና ጊዜያቸው ሳሉ ለህፃናት ያለ እድሜያቸው መለድ የሚያጋልጠቸውን ነገር ያጠናል። ስለሆነም በቅድሚያ ስለጥናቱና ስለእርስዎ ድርሻ እንደሚከተለው በማብራራት እጅምራለሁ።

የጥናቱ ዓላማ፡- እናቶች በእርግዝና ጊዜያቸው ለህፃናት ያለ እድሜያቸው ለመለድ የሚያጋልጠቸውን ነገር ምን እንደሆነ መለየት

ጥቅም፡-

የጥናቱ ውጤት በእናቶች ላይ የሚያጋልጠቸውን ነገር በመለየት የህፃናት ያለ እድሜ መለድ ለመቀነስ የሚጠቅም ይሆናል። እርስዎም የዚህ ጥናት አካል በመሆን ዎክፍተኛ አስተዋፅኦ ያደርጋሉ፤ ከዚህ ውጪ ግንደገንዝ በምሆኑ ሌላ የሚያገኙት ቀጥተኛ ጥቅም የለም።

የጉዳት ሥጋት፡-

ቃለመጠይቁ የተሳታፊውን ጥቂት ጊዜ የሚወስድ እና ጥቂት ምችት ይነሳል ግን ተሳታፊው በጥናቱ የሚደርስባቸው ምንም ዓይነት ጉዳት የለም።

የጥናቱ መረጃ ምስጢራዊነት፡-

እርስዎ የሚሰጡት ምላሽ ሁሉም ምስጢር የሚያዝናን ሌላ ሰው ተላልፎ የማይሰጥ ይሆናል። ስምዎም ሆነ የስልክ ቁጥርዎ አይመዘገብም።

የጥናቱ ተሳታፊዎች መብት፡-

በጥናቱ መሳተፍ የእርስዎ ፈቃድ እስከሆነ ድረስ ብቻ ነው። በጥናቱ ሲሳተፉ መመለስ የማይፈልጉትን ጥያቄ መዝለልና እንዲሁም በፈለጉት ሰዓት ጥናቱን አቋርጠው የመውጣት መብት ዎቸው ጠበቀ ነው። ጥያቄዎን በየትኛውም ሰዓት ማንሳት ይችላሉ። እንዲሁም ከዚህ በታች በተገለፀው አድራሻ የጥናቱን አድራጊ ማናገር ይችላሉ። እንግዲህ ከላይ ያነሳሁልዎትን ሀሳቦች ከግንዛቤ አስገብተው በጥናቱ ስለመሳተፍ ያለዎትን ውሳኔ ከዚህ ቀጥሎ ባለው ፎርም ላይ ገልፀልኝ ዘንድ በትህትና እጠይቅዎታለሁ።

የጥናቱ አድራጊ፡- አሸናፊ ዘውዴ

ስልክ +251910954573

ኢሜል፡ ashenafi.zewde73@gmail.com

የስምምነት ውሳኔ መስጫ ፎርም

ከዚህ በላይ ያለውን መረጃ እንብቤና በሚገባኝ ቋንቋ ተገልጾልኝ፤ የጥናቱ ዓላማ፣ ጥቅም፣ ጉዳትና ምስጢራዊነት የተረዳሁ ሲሆን በጥናቱ ስለመሳተፍ ምያለምንም ግፊት በራሴ ውፍላግ ትኩረት ለውኔው እሰጥለሁ።

1.በጥናቱ ለመሳተፍ ወስኛለሁ (ወደሚቀጥለው ፎርም ይለፉ) ☐

2.በጥናቱ ለመሳተፍ አልተስማማሁም (ሌላ የጥናት ተሳታፊ ጋር ይሂዱ) ☐

የጥናት አድራጊው ስም፡- አሸናፊ ዘውዴ

አድራሻ፡- ስልክ፡ +2510954573

ኢሜል፡ ashenafi.zewde73@gmail.com

ይህ ቃለ መጠይቅ የተደረገበት ቀን፡----- የተጀመረበት ሰዓት፡----- ያለቀበት ሰዓት፡-----

የመረጃ ሰብሳቢው ስም፡----- ፊርማ፡----- የጥናቱ ተቆጣጣሪ ስም፡-----
----- ፊርማ፡-----

ከመወለጃ ጊዜው በፊት የተወለደህን ያላት እናት ☐

በመወለጃ ጊዜው የተወለደህን ያላት እናት ☐

የጥናቱ መግቢያ ቅጽ፡

የመረጃ ሰብሳቢው ስም፡----- ፊርማ፡----- ቀን፡-----

የጥናቱ ተቆጣጣሪ ስም፡----- ፊርማ፡----- ቀን፡-----

የመጠይቁ ቦታ፡----- የህፃኑ/የእናቱ/ ካርድ ቁጥር፡----- የሆስፒታሉ ስም፡-----

ተ. ቁ	ክፍል አንድ፡- የኢኮኖሚያዊ እና የማህበራዊ ሁኔታ ጉዳዮች ለመለኮታት ያፍቃል	
10	እድሜዎን በሙሉ ዓመት ስንት ነው?	----- (በዓመት)

1		
10	የትነውየሚኖሩት?	1. ከተማ 2. ገጠር
2		
10	የየትኛውሀይማኖትተከታይነዎት?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ(ይገለፅ) -----
3		-----
10	የትኛውብሄርነዎት?	1.ሲዳማ 2.አማራ 3.አሮሞ 4.ወላይታ 5. ሌላ(ይገለፅ) -----
4		----
10	የጋብቻሁኔታምንይመስላል?	1.ያገባች/አብረውየሚኖሩ 2.የተፋታች 3. ባለቤትዋበሞትየተለያት 4. ያላገባች
5		
10	የተከታተሉትከፍተኛየትምህርትደረጃስንትነዉ?	1. _____(ከፍል) 2.
6		መደበኛያልሆነ
10	የእርስዎዋናስራምንድነው?	1. የቤትእመቤት 2. ገበሬ 3. ነጋዴ 4. የመንግስትሰራተኛ
7		5. መንግስታዊያለሆነድርጅት 6. ጥቃቅንናአነስተኛድርጅት 7. ሌላ (ይገለፅ)-----
10	በአማካኝየቤተሰቡየወርገቢምንያህልነዉ?	------(በኢትዮጵያብርይገለጽ)
8		
10	አጠቃላይየቤተሰቡብዛትስንትነው? (አብርሃምኖርዘመድንጨምሮ)	------(በቁጥርይገለጽ)
9		
	ክፍልሁለት፡እርግዝናናወሊድድንእንዲሁምአጠቃላይየጤናሁኔታንየተመለከቱጥያቂዎች	
20	በእድሜዎስንትጊዜወልደውያውቃሉ? (የአሁኑንጨምሮ)	------(በቁጥርይገለጽ)
1		
20	ይህንህጻንበምንያህልጊዜልዩነትነውየወለዱት?	1----- (በወራትይገለጽ)
2	(ከዚህበፊትከነበረውእርግዝናጋርሲነፃፀር)	2. አላውቅም
20	ለዚህህጻንዦቅድመ_ወሊድክትትልአድርገውነበር?	1. አዎ 2. አላውቅም
3		
20	የቅድመወሊድክትትልየጀመሩትየትነበር?	1. ጤናኬላ 2. ጤናጣቢያ 3. የመንግስትሆስፒታል 4. የግልሆስፒታል 5. መንግስታዊያለሆነክሊኒክ
4		6. ሌላ(ይገለፅ)-----
20	ለቅድመ_ወሊድክትትልብቻስንትጊዜሀኪምቤትሄደዋል?	1----- (በቁጥር) 2. አላውቅም
5		
20	ከዚህእርግዝናበፊትበነበሩትእርግዝናዎችወርጃአጋጥሞትያውቃል?	1. አዎ----- 2. አያውቅመ
6		
20	ከዚህእርግዝናበፊትበነበሩትእርግዝናዎችህፃኑሲወለድመሞትአጋጥሞትያውቃል?	1. አዎ----- 2. አያውቅመ
7		
20	ከዚህእርግዝናበፊትበነበሩትእርግዝናዎች 9 ወርሳይሞላውመወለድአጋጥሞትያውቃል?	1. አዎ----- 2. አያውቅመ
8		
20	ምጥዎትየጀመረውእንዴትነበር?	1.በድንገት 2. በምጥመርፌ
9		
21	የወለዱትበምንነበር?	1. በማህፅን 2.በመሳሪያበመታገዝ
0		3.በቀዶጥገና 4. ሌላ(ይገለፅ)----
21	በአሁኑእርግዝናዎጊዜየደምማነስአጋጥሞትነበር	1. አዎ 2. አይደለም
1		3. አላውቅም
	ክፍል 3 ከእርግዝናበፊትየነበሩህመሞችእናውስበስብነትንየተመለከቱጥያቂዎችበተመለከተ	
30	ከእርግዝናበፊትየነበረየታወቀየደምግፊትነበረዎት	1. አዎ 2. የለም
1		3. አላውቅም

30 2	በአሁኑእርግዝናወቅትከእርግዝናውጋርበተያያዘየደምግፊትአለብዎትታለዎል	1. አዎ 3. አላውቅም	2. የለም
30 3	አዎከሆነደረጃውምነነበር	1. በእርግዝናጊዜየተባባሰየደምግፊት 2. በደምግፊትየሚመጣመንቀጥቀጥ 3. አላውቅም	
30 4	ከእርግዝናበፊትየነበረየታወቀየስካርህመምአለብዎት	1. አዎ 3. አላውቅም	2. የለም
30 5	በአሁኑእርግዝናወቅትከእርግዝናውጋርበተያያዘየስካርህመምአለብዎትታለዎል	1. አዎ 3. አላውቅም	2. አይደለም
30 6	የታወቀየልብህመምአለብዎት	1. አዎ 3. አላውቅም	2. የለም
30 7	አዎከሆነምርመራውምነነበር		
30 8	የታወቀየመተንፈሻህመምአለብዎት	1. አዎ 3. አላውቅም	2. የለም
30 9	አዎከሆነምርመራውምነነበር		
31 0	የታወቀየአእምሮህመምአለብዎት	1. አዎ	2. የለም
31 1	አዎከሆነምርመራውምነነበር		
31 2	በዚህእርግዝናወቅትየደምመፍሰስ (በወርአበባከተለመደውበላይ) አጋጥሞዎትነበር?	1. አዎ	2. የለም
31 3	አዎከሆነምርመራውምነነበር	1. የእንግዴልጅያለበታውመቀመጥ 2. የእንግዴልጅከምጥበፊትመልቀቅ 3. ሌላአይነትካለይጠቀስ	
31 4	ከዚህበፊትየማህፀንቀዶጥገናተደርጎለዎትያውቃል	1. አዎ 3. አላውቅም	2. አያውቅም
31 5	አዎከሆነምርመራውምነነበር		
31 6	በዚህእርግዝናወቅትየአባላዘርህመምአጋጥሞትያውቃል	1. አዎ 3. አላውቅም	2. የለም
31 7	አዎከሆነምርመራውምነነበር		
31 8	በዚህእርግዝናወቅትየማህፀንኢንፌክሽንአጋጥሞትያውቃል	1. አዎ 3. አላውቅም	2. የለም
31 9	የታወቀየአእምሮህመምአለብዎት	1. አዎ 3. አላውቅም	2. የለም
32 0	በዚህእርግዝናወቅትህመምአጋጥሞትያውቃል	1. አዎ 3. አላውቅም	2. የለም
32 1	በዚህእርግዝናወቅትከምጥበፊትየእንሽርትውሃመፍሰስአጋጥሞትነበር(ከ 18 ሰዓትበፊት)	1. አዎ አላውቅም	2. የለም 3.
32 2	በዚህእርግዝናወቅትበተውከትምከንያትተኝተውታከመውነበር?	1. አዎ 3. አላውቅም	2. የለም
32 3	በዚህእርግዝናወቅትየእንሽርትውሃመብዛትአጋጥሞዎትነበር?	1. አዎ 3. አላውቅም	2. የለም

32 4	በዚህእርግዝናወቅትየእንሸርትውሃማነስኢጋጥሞዎትነበር	1. አዎ 2. የለም 3. አላውቅም
32 5	በዚህእርግዝናወቅትየእንሸርትውሃመበከልኢጋጥሞዎትነበር	1. አዎ 2. የለም 3. አላውቅም
32 6	በዚህእርግዝናወቅትየኤትአይቪምርመራአድርገዋል	1. አዎ 2. የለም 3. አላውቅም
32 7	አዎከሆነውጤቱምነነበር	1. ነፃ 2. አለብኝ 3. አላውቅም
ክፍል 4 ከተወለደውህፃንጋርየተያያዙጥያቂዎች		
40 1	እርግዝናሸሰንትነበር	1፡አንድ 2፡መንታ 3፡ሶስትእናከዛበላይ
40 2	የህጻኑክብደትሰንትነበር	(በግራም)
40 3	የህፃኑ/ናፆታምንድነው	1፡ወንድ 2፡ሴት
40 4	ህጻኑ/ናሲወለዱበተፈጥሮየአፈጣጠርችግርነበረበት	1፡አዎ 2፡የለም
40 5	አዎከሆነችግሩምነነበር	-----
ክፍል 5 ከአኗኗርዘይቤናየግልባህርያትጋርየተያያዙጥያቂዎች		
50 1	ከእንቅስቃሴዎትመሀከልአተነፋፈሶትንእናየልብምቶትንየሚጨምሩ (ለምሳሌ፡- መሸከም፣ከባድእቃማንሳት፣መቆፈር፣ወ.ዘ.ተ....) ቢያንስለአስርደቂቃሰርተውያውቃሉ?	1፡አዎ 2፡አላውቅም
50 2	በቀንውስጥበእግርጉዘወይምሳይከልበመጠቀምወደሆነቦታይሄዳሉወይምይመለሳሉቢያንስለአስርደቂቃ	1፡አዎ 2፡አላውቅም
50 3	በቀንውስጥምንያህልጊዜበመቀመጥያሳልፋሉ	ሰዓት..... ደቂቃ
50 4	ከሚከተለትእንቅስቃሴዎችመሀከልየትኞቹንያደርጋሉ? ?	1.ደረጃመውጣት 2.ረጅምሰአትመቆም 3.ከባድእቃማንሳት 4.መንበርከክ
50 5	በአሁኑእርግዝናወቅትአስጨናቂየሂዎትኢጋጠመኝንጥሞትነበር	1፡አዎ 2፡አያውቅም
50 6	አዎከሆነየትኛውግጠመኝ	1.ህመም 2. አደጋ 3.ሆስፒታልመተኛት 4.ቀደጥገና 5.የቤተሰብሞት 6.በቤተሰብመሃልግጭት
50 7	በህይወትዘመንዎአልኮልጠጥተውያውቃሉ?	1፡አዎ 2፡አላውቅም
50 8	የትኞችንየአልኮልዓይነትይጠቀማሉ? (ከአንድበላይመልስይቻላል)	1. ጠላ 2. ቢራ 3. ወይን 4. ጠጅ 5. ሌላ(ይገለፅ)-----
50 9	በየሰንትጊዜውአልኮልይጠጣሉ?	1. በየቀኑ 2. በሳምንት 3. በሁለትሳምንት 4. አልፎአልፎ
51 0	በህይወትዘመንዎሲጋራአጭሰዉያውቃሉ?	1. አዎ 2. አላቅም
51 1	በየሰንትጊዜውሲጋራያጨሳሉ?	1. በየቀኑ 2. በሳምንት 3. በሁለትሳምንት 4. አልፎአልፎ
51 2	በህይወትዘመንዎጫትቅመውያውቃሉ?	1. አዎ 2. አላቅም

51 3	ለምን ያህል ጊዜ ጫት ቅመዋል	1. በየቀኑ 2. በሳምንት 3. በሁለት ሳምንት 4. አልፎ አልፎ
51 4	በዚህ እርግዝና ወቅት መጽሃኒት ወስደው ያውቃሉ ለምሳሌ፡- በሃኪም የታዘዘ፣ በራስዎ ወይም የባህል መዳሃኒት (ቫይታሚን፣ አይረን እና ፎሊክ አሲድ እንዲሁም ከትባቶችን እያካትትም)	1. አዎ 2. አልወሰድኩም
51 5	መልስዎ አዎ ከሆነ፡ ምን ዓይነት መድሃኒት ወስደው ነበር? (ከአንድ በላይ መልስ መስጠት ይቻላል)	1. የባክቴሪያ መድሃኒት 2. ስቴሮይድ 3. ለሚጥል በሽታ የሚወሰድ 4. የባህል መድሃኒት 5. ሌላ (ግለፅ).....
51 6	መድሃኒቱን (ቶቹን) በምን ያህል ጊዜ ልዩነት ይጠቀሙ ነበር?	1. በየቀኑ 2. በሳምንት 3. በወር 4. ከወር ባለፈ
ክፍል-6፡ በነብሰጡር እና ቶች ላይ የሚደርሱ የጥቃት ዓይነቶችን የተመለከቱ ጥያቄዎች		
አካላዊ ጥቃቶችን የተመለከቱ ጥያቄዎች		
60 1	በእርግዝና ወቅት በባለቤትዎ በሀይል ተገፍትረው፣ አላግባብ ተጨብጠው ያውቃል?	1. አዎ 2. የለም
60 2	ባለቤትዎ በዚህ እርግዝና በጥፊ መመታት ወይም የሆነ ነገር ተወርውሮ በዎት ያውቃል?	1. አዎ 2. የለም
60 3	ባለቤትዎ ባለፉት 9 ወራት ውስጥ በባለቤትዎ መመታት፣ የመጠምዘዝ ወይም በሌላ ነገር መቶዎት ያውቃል?	1. አዎ 2. የለም
60 4	ባለቤትዎ በርግጫ/በካል ችመቶዎት፣ ደብድበዎት ወይም ንትቶዎት ያውቃል?	1. አዎ 2. የለም
60 5	ባለቤትዎ ቢላዎ፣ ጡብ መንጃ፣ ወይም ሌላ የጦር መሳሪያ አደጋ መዙብዎት ያውቃል?	1. አዎ 2. የለም
60 6	ባለቤትዎ ሆንብለው የሚቃጠል ወይም የማንቅ አደጋ አድርሰው በዎት ያውቃል?	1. አዎ 2. የለም
60 7	ከላይ ከተጠቀሱት የጥቃት ዓይነቶች ውስጥ በሌላ ሰው ማለት ምን ዓይነት፣ በዘመድ፣ በእንግዳና በሌሎች በእርስዎ ላይ ባለ ፉት 9 ወራት የተፈፀመ አለ?	1. አዎ 2. የለም
ስነ ልቦናዊ ጥቃቶችን የተመለከቱ ጥያቄዎች		
60 8	ባለቤትዎ ባለፉት 9 ወራት ውስጥ በመጥፎቃላት ስለሰደበዎት ራስዎን እስኪጠሉ መጥፎስ ሜት ተሰምትዎት ያውቃል?	1. አዎ 2. የለም
60 9	ባለቤትዎ ላይ እንዳለዎት ተሰምቶዎት ያውቃል?	1. አዎ 2. የለም
61 0	ባለፉት 9 ወራት ውስጥ ባለቤትዎ በሰው ፊት አሸማቀዎት ወይም አሳፋሪ ቃላት ተናግሮዎት ያውቃል?	1. አዎ 2. የለም
61 1	ባለፉት 9 ወራት ውስጥ ባለቤትዎ ሆንብለው መስረታዊ ፍላጎትዎን እንዳይፈጽሙ ከልክለዎት ያውቃል?	1. አዎ 2. የለም
61 2	ባለፉት 9 ወራት ውስጥ ባለቤትዎ ሆንብለው በቤት በዎጉ ዳይወሳኔ እንዳይሰጡ ከልክለዎት ያውቃል?	1. አዎ 2. የለም
61 3	ባለቤትዎ ሆንብለው ቤተሰብዎን፣ ዘመድዎን ወይም ሌላ የሚወዱትን ነገር ለመጉዳት ዝታውቀው በዎት ያውቃል?	1. አዎ 2. የለም
61 4	ከላይ ከተጠቀሱት የጥቃት ዓይነቶች ውስጥ በሌላ ሰው ማለት ምን ዓይነት፣ በዘመድ፣ በእንግዳና በሌሎች በእርስዎ ላይ ባለ ፉት 9 ወራት የተፈፀመ አለ?	1. አዎ 2. የለም
የታዊ ጥቃቶች (ከግብረሰጋ ግንኙነት ጥቃት) ጋር የተያያዙ		
61 5	ባለቤትዎ እርስዎን ሳይፈልጉ ግብረሰጋ ግንኙነት እንዲያደርጉ አስገድደዎት ያውቃል?	1. አዎ 2. የለም

61 6	ባለቤትዎ ሆነው የእርስዎን የግብረሰጋግን ፍላጎት ከልክለዎት ያውቃሉ?	1. አዎ 2. የለም
61 7	ፍላጎት ሳይኖርዎት ባለቤትዎ የሆነ ነገር ያደርገኛል ብለው በመፍራት ግብረሰጋግን ፍላጎት አድርገው ያውቃሉ?	1. አዎ 2. የለም
61 8	በባለቤትዎ ያልተለመደ (አሳፋሪ) ነው ብለው የሚስቡትን ዓይነት የግብረሰጋግን ፍላጎት እንዲያደርጉ አስገድደዎት ያውቃሉ? (በአፍ፣ በፊንጢጣወዘተ)	1. አዎ 2. የለም
61 9	ከላይ ከተጠቀሱት የጥቃት ዓይነቶች ውስጥ በሌላ ሰው ማለት ምን ዓይነት በዘመድ፣ በእንግዳና በሌሎች በእርስዎ ላይ ባለፉት 9 ወራት የተፈፀሙ አሉ?	1. አዎ 2. የለም
62 0	ከላይ የተጠቀሱት አካላዊ፣ ስነልቦናዊ እና ጾታዊ ጥቃቶች በየስንት ጊዜ ይፈፀሙበዎት ነበር?	1. በየቀኑ 2. ቢያንስ በሳምንት ውስጥ አንዴ 3. ቢያንስ በወር ውስጥ አንዴ 4. ቢያንስ በዚህ 9 ወር አንዴ 5. ምንም አልተፈፀመ በኋላም

ክፍል 7: በመለካት ወይም ከካርድ ላይ የሚሞሉ ጥያቄዎች

- ህፃኑ ሲወለድ የነበረው የእርግዝና እድሜ ስንት ነው? (ከ LMP በመነሳት ተቆጥሮ፣ ከካርድ ላይ የህኪም ዲያግኖሲስ/የአልትራሳውድ ውጤት በማየት የሚሞላ) = _____ (በሳምንት ይገለጽ)
- ህፃኑ ሲወለድ የነበረው ክብደት ስንት ነበር? (ካርድ ታይቶ ወይም ተለክቶ የሚሞላ) _____ (በግራም ይገለጽ)
- እናቱ ህፃኑ ሲወለድ የነበረው ክብደት ስንት ነበር? (ተለክቶ የሚሞላ) = _____ (በኪሎግራም ይገለጽ)
- እናቱ ህፃኑ ሲወለድ የነበረው ቁመት ስንት ነበር? (ተለክቶ የሚሞላ) = _____ (በሴንቲሜትር ይገለጽ)
- እናቱ ህፃኑ ሲወለድ የነበረው MUAC ስንት ነበር? (ተለክቶ የሚሞላ) = _____ (በሴንቲሜትር ይገለጽ)
- የእናቱ የክብደት እና ቁመት መመጣጠን ስንት ነበር (BMI)? (ተለክቶ / ካርድ ታይቶ የሚሞላ) = _____
- የእናቱ የደም ልኬት/መጠን (hemoglobin level (Hgb) ስንት ነበር? (ካርድ ታይቶ የሚሞላ) = _____
- የህፃኑ የአቀማመጥ ሁኔታ በማህፀን ውስጥ እያለ (ካርድ ታይቶ የሚሞላ) = _____
- የህፃኑ አጠቃላይ ሁኔታ በመጀመሪያ እና በአምስተኛው ደቂቃ (APGAR SCORE) (ተለክቶ / ካርድ ታይቶ የሚሞላ) = _____ / _____