Association of maternal anthropometrics with preterm birth and determine other risk factors for preterm birth among mothers who delivered in Gandhi Memorial Hospital and Tikur Anbessa Hospital, 2016/17

Investigator- Dorka Woldesenbet (Bsc)

Advisors-

- **Mr. Abiy Seifu**
- **Dr. Goitom G/yohannes**

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ACRONYMS

ANC- Ante Natal Care

APH- Antepartum Hemorrhage

ARV- Anti Retro Viral

BMI - Body Mass Index

EmONC - Emergency Obstetric and Newborn Care

EFMOH – Ethiopian Federal Minster Of Health

HIV/AIDS - Human Immuno-deficiency Virus/ Acquired Immune Deficiency Syndrome

IOM- Institute Of Medicine

IRB – Institutional Review Board

LMP - Last Menstrual Period

MUAC - Mid Upper Arm Circumference

NICU - Neonatal Intensive Care Unit

PROM - Premature Rapture Of Membrane

SGA - Small for Gestational Age

SIP- Study of Illness of Preterm

TT- Tetanus Toxoid

USA - United State of America

VCT- Voluntary Counseling and Testing

WHO - World Health Organization

SUMMARY

Background: Globally every year about 15 million newborns are born preterm and about 1.1 million of them die due to complications related to prematurity. Preterm birth is the second leading cause of under-five mortality and the first leading cause for neonatal mortality. In Ethiopia, 25% of neonates die due to prematurity. Socio demographic, medical, obstetric, fetal and behavioral factors were documented as important risk factors for prematurity. The effect of maternal nutritional status measured by anthropometrics on preterm birth is not adequately assessed in Ethiopia.

Objectives: To assess the effect of maternal anthropometrics on preterm birth.

Methods: The study was conducted in Gandhi Memorial Hospital and Tikur Anbessa Hospital. Facility based unmatched case control study with sample size of 507 was conducted. The main outcome measure was preterm birth and measured using either Last Menstrual Period (LMP), ultrasound for mothers with preterm labor or Ballard examination. Data was entered using Epi Info 7 and STATA 14 statistical software was used for data analysis. Binary logistic regression model was used to measure the association between preterm birth and risk factors.

Result: The mean age of respondents was 26 years (±3.7). After adjustment for important risk factors for preterm birth, weight gain during pregnancy (Adj OR=3.5, 95%CI [1.12, 10.90]) and hyperemesis gravidarum (Adj OR=2.62, 95%CI [1.00, 6.85]) was associated with higher odds of having preterm birth. Height, MUAC and pre-pregnancy weight did not showed association with preterm birth when adjusted for other variables.

Conclusion and Recommendation: This study found that mothers who had inadequate weight gain during pregnancy and had hyperemesis gravidarum during pregnancy had higher odds of delivering preterm birth. We recommend that further study is needed using prospective study designs, different nutritional status assessment method and on different setup. Attention should be given on identifying risky mothers, strengthen nutritional counselling and give counseling for mothers to seek early care when they see symptoms of hyperemesis gravidarum. Ethiopian FMOH may need to strength maternal nutrition education and better monitoring of weight gain during ANC visits.

1. INTRODUCTION

1.1.Background

World Health Organization (WHO) defined Preterm birth as "A birth of the baby before 37 completed weeks of gestational age or 259 days" (1).

The magnitude of preterm birth varies throughout the world. In 2010, there were about 15 million preterm births globally from these, majority shares (60%) goes to South Asia and Sub-Saharan Africa. According to different studies in Ethiopia the prevalence of preterm birth ranges from 4.4-11.7 % (2-6).

Prematurity is a cause for morbidity and mortality of neonates and under five children in the world in which African babies are more affected. Preterm birth is the second leading cause of under-five mortality and the first leading cause for neonatal mortality. Globally from 15 million preterm births more than a million babies die due to prematurity related complications from these, Sub Saharan Africa and south Asia account over 80%. The risk of neonatal death due to preterm birth complication among African babies is 12 times higher than European babies (2). The 2013 estimates of Every Woman Every Child shows that 27.5 newborns die per 1000 live birth in Ethiopia. One in four of neonatal deaths in Ethiopia were due to prematurity related complications (7, 8). Babies who are prematurely born and survive suffer from several health and developmental problems including cerebral palsy, intellectual impairment, chronic lung disease, non-communicable disease, hearing and seeing difficulty (9-11).

To prevent and improve survival of preterm birth, different interventions have been implemented which need huge financial capacity. Some of the interventions include antenatal corticosteroid, antibiotic, kangaroo mother care, immediate intensive care unit and long term complex health needs. These interventions lead to a huge economic burden for the family and the community at large through implementations of policies, strategies and programs (2, 12).

Globally and also nationally, there are different policies, strategies and programs which work on prevention and care of preterm birth. The global community made commitment through the Sustainable Development Goals (SDGs) and Every Women and Every Child initiatives (13, 14). The government of Ethiopia also showed its commitment to improve the care for newborns and preterm births through inclusion of high impact life-saving neonatal interventions in its Health

Sector Transformation Plan and Newborn and Child Survival Strategy (15, 16). In two of Ethiopia's hospitals, Gandhi Memorial Hospital and Tikur Anbessa Hospital, different interventions are being implemented during pregnancy, labor and postnatal period. Antenatal corticosteroids, provision of antibiotics, preterm labor care, resuscitation, continuous positive airway pressure, incubation and Kangaroo mother care are some of the interventions that are provided (17).

1.2.Statement of the problem

Deaths from complications related to preterm birth account for 35% of 3.1 million annual neonatal deaths. Preterm babies who survive suffer from consequence of preterm birth like breathing difficulties, feeding problems, jaundice, effects on brain functions, cerebral palsy, mental retardation, visual and hearing impairments, and poor health and growth. The family and the society also suffer from economic burden of preterm birth (2, 9-11).

There are barriers for implementation and scale up of interventions in low and middle income countries. These barriers cause difficulty to expand and give qualified health care throughout the health system (18).

In Ethiopia different interventions are being implemented to prevent preterm birth. To address maternal and child nutrition problem the Ethiopian government set national nutrition strategy and program (NNP) at different levels. Furthermore, Ethiopia signed Scaling Up Nutrition (SUN) movement which target to improve under nutrition focusing on first 1000 days. Health sector development plan IV (HSDP IV) also involves nutritional intervention on health extension program but interventions on nutritional problem of mothers are not adequately implemented and death of neonates and consequences of preterm birth is not decreasing as needed (15, 19, 20).
Evidences are scarce in low and middle income countries on the national prevalence of preterm birth and level of utilization of interventions in order to understand the best way to improve the care given for preterm babies (2). In Ethiopia also few studies are done which deal with prevalence, socioeconomic, maternal obstetric and medical risk factors of preterm birth. The effect of nutritional status of the mother assessed by maternal anthropometric measure on preterm birth is not adequately studied. This study aims to assess the effect of maternal anthropometrics on preterm birth.

1.3.Significance of the study

As preterm birth is a leading cause of neonatal death in the world this study will help to identify the effect of nutritional problem of mothers on preterm birth. This study will add knowledge and fill the gap regarding this area and give direction for other researchers who are interested on this area. The findings of the study will also help health professionals to improve and focus on the nutritional services given to mothers during their pregnancy. Furthermore, the findings from this study will help hospitals to see important ways to improve prevention of preterm birth and will give information for program developers and different stakeholders that work on prevention of preterm birth.

2. LITERATURE REVIEW

2.1. Definition and magnitude of Preterm birth

WHO set standard definition and classification of preterm birth. According to WHO definition preterm birth can be defined as "all births before 37 completed weeks of gestation or less than 259 days since the first day of a woman's last menstrual period" (1). Preterm birth is divided based on gestational age as extremely preterm (<28 weeks), very preterm (28 - <32 weeks) and moderate preterm or late preterm (32 - <37 completed weeks of gestation). Preterm birth can also be classified as spontaneous preterm birth (spontaneous onset of labor or due to pre-labor premature rapture of membrane (PROM)) and provider initiated preterm birth (due to maternal and fetal indication) (21).

The number and prevalence of preterm birth show variation among different section of the world and is increasing through time. Estimation on preterm birth showed that there are about 15 million preterm births worldwide. This number is increasing through time due to improved technology to diagnose preterm birth, increment of chronic disease among mothers and different reproductive technology for infertility treatment. The prevalence of preterm birth ranges from 5-18% in 184 countries of the world. Poor countries have higher prevalence of preterm births than rich countries accounting 12% and 9%, respectively. Even within a country, poor families are at high risk. From ten countries that account 60% prevalence of preterm birth of the world, Bangladsehi and Brazil are two of them. A study in Bangladishi showed that 22.3% prevalence of preterm birth with 12.3% for late preterm birth, 7.1% for moderate preterm birth and 2.9% for very preterm birth. Brazilian multicenter study found that prevalence of preterm birth to be 12.3 % with spontaneous preterm birth accounting 64.6% and therapeutic preterm births accounting 35.4%. Other study from the same country find prevalence of preterm birth to be 13.7% (2, 3, 22-24).

The prevalence of preterm is higher among sub-Saharan countries. Among 11 countries which have greater than 15% prevalence of preterm birth, Malawi takes the first rank with 18.1%. Evidence from the same country showed 16.3% prevalence which is comparable with Nigerian prevalence of preterm birth which is about 16.8% (2, 25, 26).

Different studies in Ethiopia showed that the prevalence of preterm birth is lower than sub-Saharan Africa (12.3%) and east African (14.3%) prevalence which is 4.4% in Gonder, 11.6% in Debremarkos and 11.7% in Bahirdar (2, 4-6, 27).

2.2. Consequence of preterm birth and Initiatives working on preterm birth

Premature babies are prone to different health constrains. Globally among 15 million preterm births about 1.1 million babies die due to preterm birth complications. From those babies, over 80% die from sub-Saharan Africa and Southeast Asia. In Ethiopia, 25% of neonatal death is due to prematurity (2, 7). Evidences showed that babies who are born <37 weeks are at risk of medical and social problems which include breathing difficulties, feeding problems, jaundice and effects on brain functions. Babies born prematurely also have lower survival rate to adulthood having survival rate of 17.8% for babies born at 23 to 27 weeks of gestation and 96.5% for babies born at 37 weeks or later. Among the preterm babies who survived 17.3% will have cerebral palsy, 7.9% mental retardation, 1.1% schizophrenia, 1.08% Autism spectrum, 3.8% disorders of psychological development, behavior and emotion, 7.1% blindness, low vision, hearing loss and epilepsy and 25.4% any medical disability affecting 50% of working capacity at some point until their adulthood (10, 11).

Evidences showed that preterm birth also has an effect at family and country levels. The effect at family level includes higher probability of not having more child, economic burden, having limited social interaction, not sustaining occupation, family stress and dysfunction. An estimation done in 2005 in USA showed that expenditure for preterm birth was 26.2 billion dollar annually (9).

Different initiatives had been developed globally and locally. The world community made commitment by launching Every Woman Every Child to save the lives of 16 million women and children and SDGs to ensure healthy lives and promote wellbeing for all at all ages. WHO has also set Global Nutrition Targets 2025 aiming to decrease 30% of low birth weight by 2025 which incorporate nutritional intervention for preterm and small for gestational age babies. Nationally, the government has set national nutrition strategy and program (NNP) which focus on maternal and child nutrition in order to improve birth outcome and survival of children.

Scaling up nutrition (SUN) movement in Ethiopia also focus on pregnant mothers and children below two years old. Additionally, WHO also recommend interventions during pregnancy, at labor and the newborn period like provision of antenatal corticosteroid, antibiotic, Tocolytic and Magnesium Sulfate treatments, kangaroo mother care, continuous positive airway pressure and surfactant administration for newborns with respiratory distress syndrome and oxygen therapy for preterm newborns to improve the survival of preterm births. The Ethiopian Federal Minstery of Health (EFMOH) also sets different continuum of care at pre-pregnancy, pregnancy, birth-postnatal, infancy and childhood level that end at 2035 (12-16, 19, 20, 28).

There are barriers for effective implementation of interventions to prevent and care for preterm birth. System barriers include difficulty to expand interventions nationwide, dependence on donor funding, deficiency of inter-sectorial action on health, poorly functioning of health information system, weak drug supply system, excessively centralized systems for planning and management and insufficient regulation of pharmaceutical and private sectors. Service level barriers include shortage and inadequate distribution of qualified health professionals, shortage of drug and medical supplies, insufficient guidance program management and supervision and shortage of equipment and infrastructure. Household barriers include low demand to use provided services, financial, sociocultural and accessibility barriers to use the services (18).

2.3. Risk factors for preterm birth

Socio-demographic factors

Several studies showed that socio demographic factors have association with preterm birth. Mothers who are illiterate and have 0-4 years education, single, younger and older maternal age (<20 and ≥ 35), having low income (<600 Ethiopian birr) and living in rural area have higher risk to deliver preterm birth (4, 6, 23, 26, 29, 30).

Maternal medical and obstetric factors

Evidences from different countries state that mothers who have chronic illnesses, infection and take medication during pregnancy have increased risk to deliver preterm baby. Chronic disease like hypertension and gestational diabetes mellitus have increased risk to have preterm birth having 7.3 times and 3.44 times higher risk than those not having hyper tension and gestational diabetes respectively (4, 26, 31-34). Maternal infections that have significant association with

preterm birth include HIV/AIDS, bacterial vaginosis, persistent malaria (despite malaria prophylaxis), urinary tract infection, chlamydia trachomatous, candida and chorioamnionitis (4, 25, 31, 35, 36). Medication use (including antibiotics, steroids, cough-sedatives, antiepileptic and traditional medication like plants) has significant association with preterm birth. A study done in Morocco showed that mothers who take medication have 4.33 times higher risk to deliver a preterm baby (29, 31).

Different studies found that mother's bad obstetric history have association with preterm birth. Obstetric risk factors that relate to preterm birth are anemia, inadequately attending antenatal care, multiple pregnancy, premature rupture of membrane, primiparity, poly/oligohydramnios, antepartum hemorrhage, hyperemesis gravidarum and less than 2years interval between pregnancies. Past obstetric factors that are found to have association with preterm birth involve having prior preterm birth, previous history of abortion, still birth, caesarean delivery and child death (5, 22-26, 29, 37-40). A systematic review done with 24 studies found that the odds of delivering preterm birth is 1.32 times higher among mothers who experience hyperemesis gravidarum during pregnancy than mothers who did not have hyperemesis gravidarum (41).

Physical activity and Behavioral factor

Evidences showed that mothers physical activity during pregnancy has association with preterm birth. Heavy works during pregnancy and activities like standing for long period, climbing stairs and bending have relation with preterm birth (32, 42, 43).

Different studies showed that behavioral factors like alcohol consumption and cigarette smoking have association with preterm birth. Alcohol consumption has a dose response effect in that mothers who take 1.0g/day of alcohol during pregnancy have 1.69 time higher risk while taking ≥ 1.0 g/day of alcohol during pregnancy has 2.58 times higher risk than mothers who do not take any alcohol during pregnancy (24, 38, 44).

Maternal anthropometrics

Studies of different countries showed that maternal anthropometrics have effect on preterm birth. Maternal weight less than 50 Kg, height < 1.5m, pre pregnancy BMI>30.0 Kg/m^2 and <20 Kg/m^2, failure to gain weight during pregnancy, Mid Upper Arm Circumference (MUAC) ≤ 250 mm have significant association with preterm birth. Mothers who have MUAC ≤ 250mm and

mothers who have MUAC < 214mm which shows under nutrition were 1.35 times and 1.56 times at risk than the corresponding groups respectively. (22, 23, 25, 31, 34, 37, 39, 45-47). Having balanced diet is found to be protective factor for preterm birth (32).

Even if few cross sectional studies are done on preterm birth in Ethiopia which address the prevalence, socioeconomic and maternal medical and obstetric risk factors a study on the effect of maternal anthropometrics on preterm birth is limited. The effect of nutritional status of mothers using anthropometrics measure on preterm birth will be studied in this study.

3. CONCEPTUAL FRAMEWORK

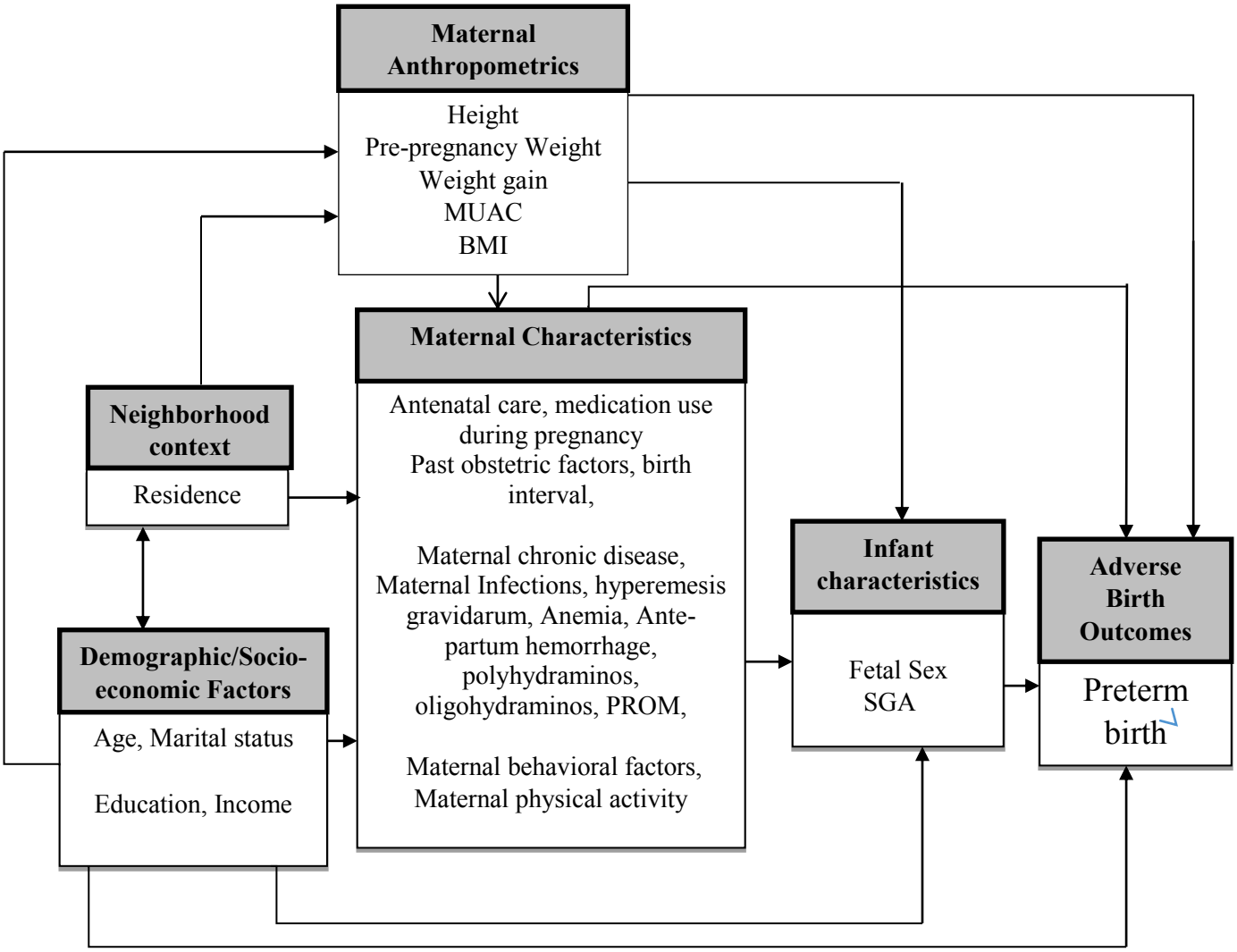

Figure1. Conceptual framework for study of Assessment of the effect of maternal anthropometrics on preterm birth and determine other risk factors for preterm birth, Gandhi Memorial Hospital and Tikur Anbessa Hospital, 2016/17

The conceptual frame work is adapted and modified from a study done by *Olusanya.O.B. et al* on predictors of preterm birth and low birth weight in an inner-city hospital in sub Saharan Africa. It shows that demographic/socioeconomic factors, neighborhood context, maternal obstetric factors and infant characteristics and maternal anthropometrics contribute to preterm birth (48). Maternal anthropometrics has also association with other factors as stated on the figure (49-52). This study addressed the effect of maternal anthropometrics (pre pregnancy weight, weight gain, height and MUAC) on preterm birth among Ethiopian women.

4. OBJECTIVE

4.1.General objective

To assess the association of maternal anthropometrics with preterm birth and determine other risk factors for preterm birth among mothers who delivered in Gandhi Memorial hospital and Tikur Anbessa hospital

4.2.Specific objective

- To assess the association of maternal anthropometrics with preterm birth among mothers who delivered in Gandhi Memorial Hospital and Tikur Anbessa hospital
- To determine medical and behavioral risk factors of preterm birth among mothers who delivered in Gandhi Memorial Hospital and Tikur Anbessa hospital

5. METHOD

Ethiopia Study of Illness in Preterm project is a multicenter project that is currently working on preterm births aiming to determine the top causes of illness and mortality in preterm infants. The project has a 2year data collection time at different site of the study centers. The project got Institutional Review Board clearance (IRB) from Addis Ababa University. The Secondary objective of the project is to determine maternal and obstetric risk factors for preterm births. As part of this project this study assessed maternal anthropometrics as one of maternal risk factors for preterm births.

5.1.Study area

Gandhi Memorial Hospital is established in 1955 in central Addis Ababa in the regimen of Emperor Haile Silassie. The hospital is one of the specialized hospitals that give services focusing on maternal and child care. The hospital has 16 doctors, 22 health officers, 138 nurses and 45 midwives. The hospital has 138 total beds, from these the delivery ward has 11 beds and 3 delivery couches with 25 deliveries per day on average. According to the Hospital registry the NICU unit has 43 beds having on average 50 preterm admissions per month.

Tikur Anbessa Hospital is teaching and tertiary referral hospital. It is established in1972 in the regimen of Emperor Haile Silassie. The hospital has 200 doctors, 379 nurses and 115 other health professionals. The hospital has over 700 beds, from these the delivery ward has 12 beds and 5 delivery couches with 18 deliveries per day on average.

5.2. Study design

Facility based unmatched case control study design was used. The cases were postpartum mothers with preterm births and the controls were postpartum mothers with term births.

5.3. Population

5.3.1. Study population

All mothers who delivered in Gandhi Memorial hospital and Tikur Anbessa hospital from February to April 2017.

5.4. Sample size

Sample size was calculated by using EPI INFO 7. Different variables that have high contribution for 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), 90% power and 95% confidence level.

Table1. Sample size calculation with different variables for study of Assessment of the effect of maternal anthropometrics on preterm birth and determine other risk factors for preterm birth

Variables	Assumption	Study	Sample size
Pregnancy induced hypertension	P control = 5.3%, P case = 15.9%	Teklu.S. (53)	422
HIV status	P control = 5.4%, P case = 19.44%	Cherinet.Y.(54)	278
Heavy Physical activity	P control = 20%, P case = 40%	Hjorth.M.F. (55)	263
MUAC<22cm	P control=19.06%, P case = 34.3%	Kedir.H. (56)	417
Alcohol drinking	P control = 34%, P case = 68%	Anteab.K. (57)	111

Mothers after delivery might not give consent due to stressful situation related with labor and adverse birth outcome, so 20% non-response rate was expected and was added to the total sample size.

Sample size = 422 + 20% non-response (84) = 506 with 1:2 ratio

Cases = 169

Control = 338 so total sample size = 507

5.5. Sampling procedure

In this study Gandhi Memorial hospital and Tikur Anbessa hospital were purposively selected by SIP project as a study center. SIP project selected these hospitals due to their well-organized neonatal intensive care unit and large number of deliveries as to see illness and mortality of preterm births.

As this study is part of this project, Gandhi Memorial Hospital and Tikur Anbessa hospital were used. Cases were all consecutive postpartum mothers with preterm birth (gestational age of <37week) in the study period until the required number was found. It was planned to recruit controls (gestational age of ≥ 37 week) in the same day a case was identified but during data collection some controls were identified within 48 hours after cases were identified due to

recruitment criteria. During selection of controls comparability was considered using age in which controls were within the same 5year age group as cases.

5.6.Variables

Dependent variable: Preterm birth

Independent variables:

- Socioeconomic variables – Mother's age, marital status, educational status, occupation of the mother, Address (sub-city) and household income
- Past obstetric variables - Previous preterm birth, previous still birth, Pervious abortion, Pervious C-section
- Maternal medical and obstetric variables - Pregnancy induced hypertension, Anti Partum Hemmorage, Chorioamnionitis, PROM, Parity, Birth interval, Polyhydraminos, Oligohydraminos, Medication use during pregnancy, Antenatal Care follow up, Hemoglobin level and Urinary Tract Infection (UTI)
- Behavioral variables – Alcohol drinking, Smoking cigarrate, chat chewing
- Maternal physical activity – Heavy physical activity, moderate activity, sitting, type of activity
- Maternal anthropometric variables - Height, Pre-pregnancy weight, MUAC and last weight

5.7.Inclusion criteria

- Women who delivered in selected hospitals in the study period.
- Women who remembered their last menstrual period
- Women who resided in Addis Ababa (lived at least the last six months)

5.8.Exclusion criteria

- Women whose gestational age less than 28 weeks
- Women who were edematous (due to the effect on MUAC measurement)
- Known diabetic mothers (diets of diabetic mothers is different from normal mothers)
- Mothers with multiple pregnancy (mothers with multiple pregnancy cannot be compared with mothers with single birth)

5.9. Operational definition

Term birth: Birth of a baby on 37 weeks and above

Short stature: Mothers who have height less than 155cm.

Pre- pregnancy under-weight: Mothers with pre pregnancy weight less than 50Kg.

In adequate weight gain: Mothers who have weight gain of 7Kg and less than 7Kg

Undernourished mother: Mother who have MUAC less than 23cm.

Edema: Mothers who have generalized body swelling.

Type of activities involved: Any activity involving squatting, standing for long period of time, climbing stairs and lifting heavy material.

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

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

Pre-Pregnancy weight: Weight of the mother within 1 month before pregnancy using LMP

Adequate physical activity: Heavy physical activity for 75 minutes throughout the week or moderate activity for 150 minutes throughout the week.

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 hospital for treatment.

5.10. Data collection instrument

Data was collected using interviewer administered questionnaire. The questionnaire includes data on maternal sociodemographic characteristics, obstetrics characteristics, medical disorders and physical activity. It contains 65 questions and on average the interview took 45-50 minute. Data on medical, obstetrics, and management history was extracted from medical records.

Maternal anthropometric measure was collected by using actual measurement using standard scale for height to measure height and inelastic tape to measure MUAC.

5.11. Data collection

Consent from Addis Ababa University was obtained. The objective of the study was discussed with individuals who participated in the study and gave informed consent. Then, an interview was conducted using interviewer administered questionnaire, which was prepared in English language and then translated to Amharic language. Pretest was done on 10% of the sample size using data collectors who participated on the actual data collection. Additional pretested questions were added to the SIP tool.

Gestational age of the mother was not measured by the investigator. Gestational age was measured by clinicians either through LMP, Ultrasound for those women who had preterm labor or Ballard examination. The gestational age measured by the clinicians was used to classify preterm and term birth.

Physical activity of the mother was measured using Global Physical Activity Questionnaire (GPAQ). Three major components were used to measure physical activities of mothers, which include heavy (vigorous intensity) activity, moderate activity and sitting or reclining. Additionally, type of physical activity as one variable was added from literature review. Number of days per week and time spent doing those activities were used to measure each activity.

Maternal anthropometric measure was taken two times from all participants using standard measurement scales within 24 hours after delivery and average measure was taken. For two measurements which had 1cm variation for height and 0.5cm variation for MUAC, other two measurements were taken.

- Height was measured using height wooden Stadiometer with sliding head bar without shoes, standing erect, with shoulder blades, buttocks and heels touching measuring board, looking straight ahead, shoulders relaxed arms at sides, legs straight and knees together, feet flat and with heels almost together.
- MUAC was measured by using flexible non- starched tape taken at mid-point of left upper arm at relaxed position, without any clothing and with optimal tape tension between Acromiom process on shoulder blade and tip of Olecranon process of ulna.
- Pre pregnancy weight of the mother was obtained through mother's report.
- Weight gain was considered from pre pregnancy weight to the last ANC visit weight extracted from ANC chart for mothers who had ANC visit in data collection site and mother's report for mothers whose ANC visit were not on selected hospitals.

5.12. Data quality assurance

As this study is part of Ethiopia study of illness in preterm project, data collectors and supervisors were well trained and the questionnaire was well pretested using 10% of the total sample size. Additional pretested questions were added on SIP tool. The additional pretest was done on mothers who deliver in Gandhi Memorial hospital one month before the actual data collection is started, to avoid information transfer. After pretest some adjustment and change on the questionnaire is done. The Adjustments were that question that address frequency of medication intake was added, recreational activity questions were removed and question on type of activity is added.

Data collectors and supervisor were trained on objective and methods of the study, study tools and anthropometric measurements. During training technical error of measurement (TEM) was calculated for data collectors. Intra observer TEM for height was 0.39 and for MUAC was 0.36 and Inter Observer TEM for both height and MUAC was 0.5. It is found that their measurement was in the acceptable range so additional training on measurement was not given.

This study used questionnaire that was adapted from SIP project, Ethiopia Demography and Health Survey (EDHS), Global physical activity questionnaire and some other factors from literature review (5, 6, 29, 31, 33, 38, 39, 44, 58, 59).

Data collection and maternal anthropometric measurement were done by trained nurses with supervision. Every questionnaire was checked for completeness and inconsistency on daily basis.

5.13. Data analysis procedures

After data collection, each questionnaire was checked visually for completeness**.** Coding was done for each questionnaire and for variables in the questionnaire. After this validation, the principal investigator entered the data using Epi Info7 and exported to STATA 14 statistical software packages for data cleaning and analysis. Frequencies and summary statistics (mean, standard deviation, percentage, and range) were used to describe the study population in relation to relevant variables and outlines. Any errors identified at this time were corrected after revision of the original data using the code numbers. Missing values were excluded during analysis.

Frequencies and measures of variation described the study population in relation to socio-demographic and other relevant variables. Crude odds ratio was calculated with 95% confidence interval and P-value < 0.05 was used to declare statistical association. We included all independent variables in the analysis. We checked correlation among independent variables and did not find correlation among them.

Binary logistic regression model was used to measure the association between preterm birth and risk factors. Variables that have P value <0.2 on bivariate regression analysis and had association with preterm birth in previous studies were fitted into multivariate logistic regression model to assess their association with the outcome variable.

5.14. Ethical consideration

SIP project has obtained IRB clearance from Addis Ababa University Collage of health science. This study is part of this project and final draft of the study was submitted to Addis Ababa university ethical committee and ethical clearance was secured. Letter of cooperation was obtained from Addis Ababa University to Gandhi Memorial hospital and Tikur Anbessa hospital. The objective and benefit of the study were discussed with study participants before informed consent was obtained from participants. Participation on the study was voluntary and participants could discontinue the interview at any time. Privacy was maintained during interview and names were not recorded on the form.

The benefit of the study is that, mothers with preterm birth who participated got counseling on applicable cares that can be given by the mothers. The study also helped to understand the effect

of maternal nutritional status and for improving the nutrition of mothers during pregnancy and to prevent preterm birth and consequence of preterm birth. The study took time of the participants and had a little discomfort while measuring height and MUAC but did not have any risk.

6. RESULT

In this study from a total of 507 mothers, 504 mothers (168 cases and 336 controls) who gave birth in Gandhi Memorial hospital and Tikur Anbessa hospital were included with 99.4% response rate for both cases and controls.

Sociodemographic characteristics

Mothers in case and control groups have similar socio-demographic characteristics. The mean age of mothers in both group was 26 years (±3.7). Majority of mothers [153(91.1%) of mothers of the preterm babies, 303(90.2%) of mothers of the term babies] were married, employed [86(51.2%) of mothers of the preterm babies and 182(54.2%) of mothers of the term babies] and live in Nifas-silk Lafto sub city [45(26.8%) of mothers of the preterm babies and 108(32.1%) of mothers of the term babies]. Among mothers of the preterm babies, 70(41.7%) attended secondary and above education while the proportion of mothers who attended secondary and above education among mothers of term babies was 165(49.1%). (Table 2)

Table 2. Sociodemographic characteristics of mothers who deliver in Gandhi Memorial and Tikur Anbessa Hospitals, 2017

Characteristics	Birth status		Chi^2 (P-value)
	Preterm (n, %) n=168	Term (n, %) n= 336	
Mother's education			
Illiterate	19(11.3)	45(13.4)	0.25
Primary Education	77(45.8)	123(36.6)	
Secondary Education	55(32.7)	129(38.4)	
Higher Education	15(9.0)	36(10.7)	
Missing	2(1.2)	3(0.9)	
Marital Status			
Currently married	153(91.1)	303(90.2)	0.75
Currently unmarried	15(8.9)	33(9.8)	
Mother's Occupation			
House wife	78(46.4)	150(44.6)	
Employed	86(51.2)	182(54.2)	
*Others	4(2.4)	3(0.9)	
Missing	0(0.0)	1(0.3)	
Household Income (ETH Birr)			
<2300 birr	32(19.0)	56(16.7)	
2300 - 3499 birr	34(20.3)	48(14.3)	
3500 - 5000 birr	47(28.0)	91(27.1)	0.22
>5000 birr	13(7.7)	33(9.8)	
Unknown	41(24.4)	108(32.1)	
Missing	1(0.6)	0(0.0)	

Address (Sub-city)		
Addis ketema	4(2.4)	2(0.6)
Akaki-Kaliti	1(0.6)	4(1.2)
Arada	26(15.4)	34(10.1)
Bole	35(20.8)	69(20.5)
Gulelea	3(1.8)	2(0.6)
Kirkos	22(13.1)	43(12.8)
Kolfe-Keranyo	11(6.5)	32(9.5)
Lideta	7(4.2)	14(4.2)
Nifas-Silk Lafto	45(26.8)	108(32.1)
Yeka	7(4.2)	17(5.1)
Missing	7(4.2)	11(3.3)

*Others include Students and Prisoners

Maternal Medical and Obstetric characteristics

Obstetric characteristics of mothers differ between cases and controls. Among mothers who deliver preterm birth, 9(14.3%) have prior history of preterm birth whereas proportion of mothers who deliver term birth who have prior history of preterm birth were 6(4.8%). Among mothers who have preterm delivery, 24(38.1%) have prior history of abortion while proportion of mothers who have term birth who have prior history of abortion were 56(44.8%). About 5(7.9%) and 8(6.4%) of mothers of preterm babies and mothers of term babies have history of still birth respectively. TT vaccination was not taken by 14(8.4%) of preterm babies' mothers and 11(3.3%) term babies' mothers. Among mothers of preterm babies 7(4.2%) and from mothers of term babies 5(1.5%) had antepartum hemorrhage. About one in five 33(19.6%) of mothers of preterm babies and about one in six 52(15.5%) mothers of term babies had hypertensive disorder of pregnancy. About 7(4.2%) and 6(1.8%) of mothers of preterm babies and mothers of term babies had chrioaminonaitis respectively. Among total, 504 mothers 6 of them had polyhydramnios in which all of them were mothers who deliver preterm babies additionally from 10 mothers who had Oligohydramnios 7 of them were from mothers of preterm

babies and 3 of them were mothers who had term birth. Twenty-three percent of mothers of preterm babies experienced hyperemesis gravigarum whereas 52(15.5%) of mothers of term babies experienced hyperemesis gravigarum during their pregnancy.

Additionally, mothers showed differences on medical characteristics. Three percent of mothers of preterm babies and 4(1.2%) of mothers of term babies were HIV positive. Six percent of mothers who deliver preterm baby and 5(1.5%) of mothers who deliver term baby took medication during pregnancy. (Table3)

Table 3 Obstetric and medical characteristics of mother who deliver in Gandhi Memorial and Tikur Anbessa hospital, 2017

Characteristics	**Birth status**		**Chi^2 (P value)**
	Preterm (n, %) n= 168	**Term (n, %) n=336**	
Gravida			
Primigravida	105(62.5)	211(62.8)	
Multigravida	63(37.5)	125(37.2)	0.95
Prior Abortion			
Yes	24(38.1)	56(44.8)	
No	39(61.9)	69(55.2)	0.38
Prior Preterm birth			
Yes	9(14.3)	6(4.8)	
No	54(85.7)	119(95.2)	0.02
Prior Still birth			
Yes	5(7.9)	8(6.4)	
No	58(92.1)	117(93.6)	0.69
Birth Interval			
<12 Months	13(20.6)	32(25.6)	
≥12 Months - <24 Months	26(41.3)	64(51.2)	0.08
≥24 Months	24(38.1)	28(22.4)	
Missing	0(0.0)	1(0.8)	

ANC visit				
	Yes	164(97.6)	329(97.9)	
	No	4(2.4)	7(2.1)	
Number of ANC visit				
	≤2 times	15(8.9)	27(8.0)	
	>2 times	146(86.9)	298(88.7)	0.71
	Missing	7(4.2)	11(3.3)	
TT Vaccination				
	No vaccination	14(8.4)	11(3.3)	
	1 Dose	13(7.7)	33(9.8)	0.04
	≥2 Dose	139(82.7)	290(86.3)	
	Missing	2(1.2)	2(0.6)	
Hypertensive disorders of pregnancy				
	Yes	33(19.6)	52(15.5)	
	No	135(80.4)	284(84.5)	0.24
APH				
	Yes	7(4.2)	5(1.5)	
	No	161(95.8)	328(97.6)	0.07
	Missing	0(0.0)	3(0.9)	
Chrioaminonaitis				
	Yes	7(4.2)	6(1.8)	
	No	161(95.8)	328(97.6)	0.12
	Missing	0(0.0)	2(0.6)	
Polyhydramnios				
	Yes	6(3.6)	0(0.0)	
	No	162(96.4)	334(99.4)	
	Missing	0(0.0)	2(0.6)	
Oligohydramnios				
	Yes	7(4.2)	3(0.9)	
	No	161(95.8)	331(99.1)	
	Missing	0(0.0)	2(0.6)	
Hyperemesis gravidarum				
	Yes	39(23.2)	52(15.5)	
	No	129(76.8)	284(84.5)	0.03

Anemia status				
	Anemic	5(3.0)	10(3.0)	
	Normal	152(90.5)	305(90.7)	0.99
	Missing	11(6.5)	21(6.3)	
HIV Serostatus				
	Positive	5(3.0)	4(1.2)	
	Negative	163(97.0)	332(98.8)	
Medication use during pregnancy				
	Yes	10(6.0)	5(1.5)	
	No	158(94.0)	331(98.5)	0.005

Physical activity and behavioral characteristics

There were differences among mothers with and without preterm birth on their level of physical activity and alcohol intake during pregnancy. Seventeen percent of mothers who delivered preterm birth and 33(9.8%) of mothers of preterm babies reported heavy activities during pregnancy. Higher proportion of mothers of preterm babies reported activities including squatting, standing for long time, climbing stairs and lifting heavy materials compared to mothers of term babies, 55(32.7%) and 66(19.6%), respectively. Thirty percent of mothers of preterm babies reported drinking alcohol at least once during pregnancy compared to 65(19.4%) of mothers of term babies. (Table 4)

Table 4. Physical activity and Behavioral characteristics of mothers who deliver in Gandhi Memorial and Tikur Anbessa Hospital, 2017

Characteristics		Preterm birth		Chi ^{2} (P- value)
		Yes (n, %) n=168	No(n, %) n=336	
Heavy physical activity				
	Yes	29(17.3)	33(9.8)	
	No	139(82.7)	303(90.2)	0.02
Moderate physical activity				
	Yes	145(86.3)	274(81.6)	
	No	23(13.7)	62(18.4)	0.12
Type of activity involved*				
	Yes	55(32.7)	66(19.6)	
	No	113(67.3)	270(80.4)	0.001
Alcohol intake at least once during pregnancy				
	Yes	51(30.4)	65(19.4)	
	No	117(69.6)	271(80.6)	0.006

*Type of activities involved include climbing stairs, squatting, lifting heavy material and standing for long period of time

Anthropometric measures of mothers

Anthropometric measures differ among mothers of preterm and term babies. One in five 32(19.1%) of mothers of preterm babies and one in six 54(16.1%) of mothers of term babies were less than 155cm tall. (Figure 2) Among mothers who have preterm birth, 20(12.4%) have pre-pregnancy weight of less than 50Kg while proportion of mothers who have pre-pregnancy weight of less than 50Kg were 37(11.5%). (Figure 3) Higher proportion of mothers of preterm babies gain weight of ≤7Kg during pregnancy compared to mothers of term babies which is 37(23.1%) and 30(9.3%) respectively. About one in ten 15(9.5%) of mothers of preterm babies and 20(6.5%) have MUAC of <23cm.

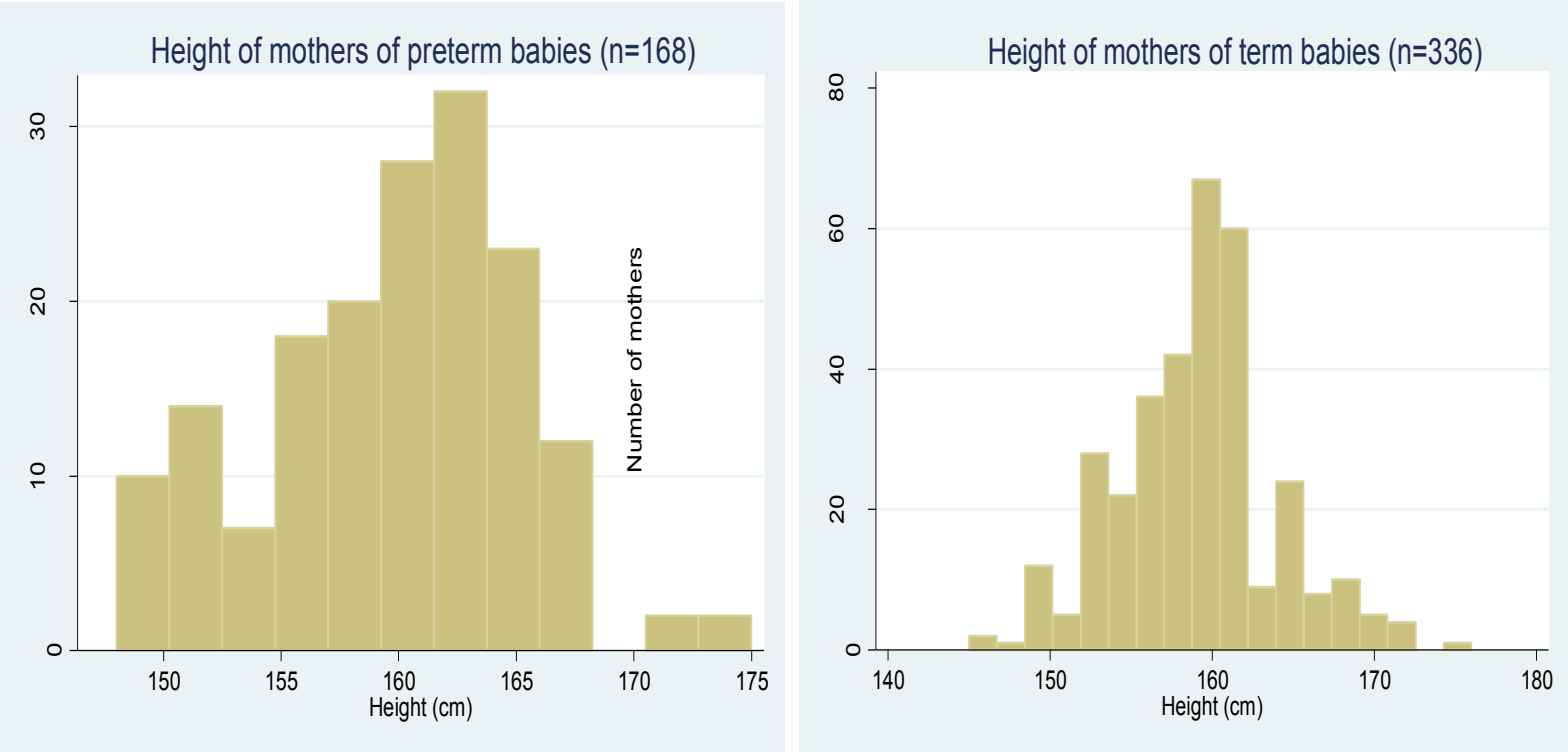

Figure 2. Height (cm) of mothers of preterm and term babies who deliver in Gandhi Memorial and Tikur Anbessa Hospital, 2017

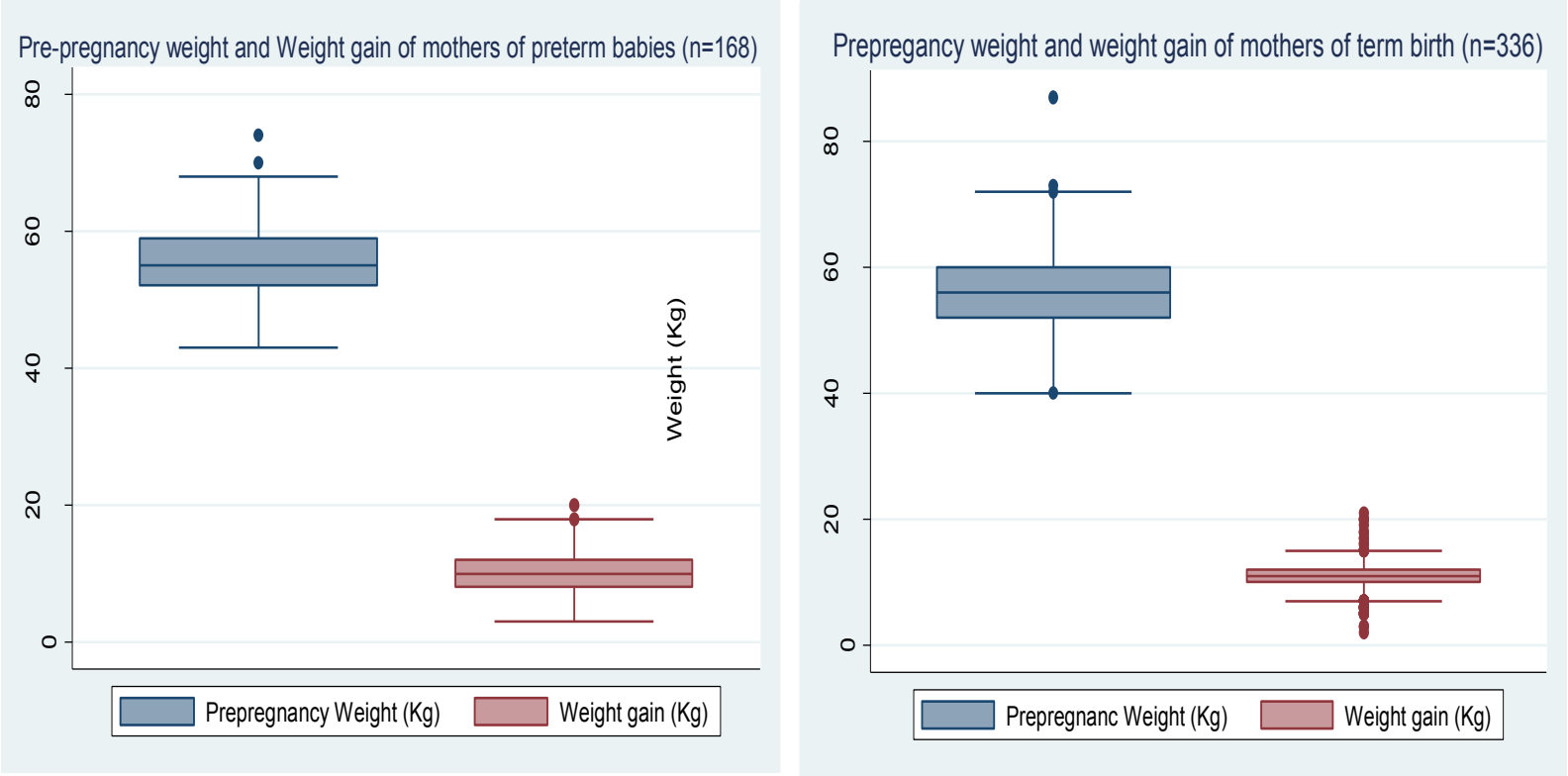

Figure 3. Pre-pregnancy weight and weight gain of mothers of preterm and term babies who deliver in Gandi Memorial and Tikur Anbessa hospital, 2017

Risk factors for preterm birth

Binary logistic regression analysis model was used to see the association of important variables with preterm birth. This study found no statistically significant association between socio-demographic variables and preterm birth.

On bivariate analysis some obstetric and a medical variable show association with preterm birth. Prior preterm birth, birth interval of 12-24 months between pregnancy (COR=0.47 95%CI [0.23,0.96]), TT vaccination, oligohydramnios, hyperemesis gravidarum and medication intake during pregnancy have association with preterm birth. When we fit the obstetric and medical variables into the multivariate analysis only hyperemesis gravidarum (AOR=2.62, 95%CI [1.00, 6.85]) show significant association with preterm birth.

This study found that from physical activity components type of physical activity of the mothers have association with preterm birth on bivariate analysis. One composite variable was developed which measure heavy and moderate physical activity. Heavy and moderate physical activity was

fitted separately and as a composite variable in binary logistic regression model and they did not have significant association on multivariate analysis. Activities involving squatting, standing for long period of time, climbing stairs and lifting heavy material showed association with preterm. This variable did not show association with preterm birth when it was fitted to multivariate analysis.

Among behavioral characteristics of the mother alcohol intake at least once during pregnancy (COR=1.82 95%CI [1.19,2.78]) have association with preterm delivery but it did not show association with preterm birth when it was fitted to multivariate analysis.

Anthropometric characteristics of the mother including pre-pregnancy weight, weight gain, height and MUAC were fitted to the model and it was found that weight gain during pregnancy and being 150-160 cm tall (COR=0.53 95% CI [0.33,0.82]) showed significant association with preterm birth. The result of multivariate analysis showed that mothers who gained weight of ≤7 Kg (AOR=3.50, 95%CI [1.12, 10.90]) have higher odds of having preterm birth as compared to mothers who gained 8-12Kg during pregnancy. (Table 5)

Table 5. Multivariate analysis for risk factors of preterm birth among mothers who deliver in Gandhi Memorial and Tikur Anbessa Hospital, 2017

Characteristics	Birth status		COR [95%CI]	AOR[95%CI]
	Preterm (n, %)	Term (n, %)		
Birth Interval				
<12 Months	13(28.9)	32(77.1)	0.47[0.20,1.10]	0.86 [0.28, 2.65]
≥12 Months - <24 Months	26(28.9)	64(71.1)	0.47[0.23,0.96]	0.75 [0.29, 1.90]
≥24 Months	24(46.2)	28(53.8)	1	1
Hyperemisis gravidarum				
Yes	39(42.9)	52(57.1)	1.65[1.04,2.63]	2.62 [1.00, 6.85]**
No	129(31.2)	284(68.8)	1	1
Hypertensive disorders of pregnancy				
Yes	33(38.8)	52(61.2)	1.33[0.82,2.16]	1.50 [0.67, 3.37]
No	135(32.2)	284(67.8)	1	1
Type of activities involved *				
Yes	55(45.5)	66(54.6)	1.99[1.30,3.03]	1.31 [0.60,3.92]
No	113(29.5)	270(70.5)	1	1
Alcohol intake at least once during pregnancy				
Yes	51(43.9)	65(56.1)	1.82[1.19,2.78]	1.58 [0.63, 3.92]
No	117(30.2)	271(69.8)	1	1
Pre-pregnancy Weight(Kg)				
<50Kg	20(35.1)	37(64.9)	1.4[0.72,2.69]	2.46 [0.55, 10.94]
50-60Kg	103(35.4)	188(64.6)	1.4[0.91,2.20]	1.83 [0.84, 3.98]
≥60Kg	38(27.9)	98(72.1)	1	1

Weight gain(Kg)					
	≤7Kg	38(55.9)	30(44.1)	2.5 [1.47, 4.29]	3.50 [1.12, 10.90]**
	8-12Kg	27(49.1)	28(50.9)	1	1
	>12Kg	18(18.6)	79(81.4)	0.46 [0.26, 0.82]	0.53[0.19, 1.47]
Height(cm)					
	<155cm	32(37.2)	54(62.8)	0.98[0.59,1.63]	0.58 [0.17, 1.95]
	155-160cm	37(24.0)	117(76.0)	0.53[0.33,0.82]	0.55 [0.22, 1.39]
	≥160cm	99(37.5)	165(62.5)	1	1
MUAC(cm)					
	<23cm	15(42.9)	20(57.1)	1.56[0.77,3.16]	1.21 [0.28, 5.33]
	23-25cm	35(35.7)	63(64.3)	1.15[0.72,1.85]	1.91 [0.71, 5.11]
	≥26cm	108(32.5)	224(67.5)	1	1

*Type of activities involved include climbing stairs, squatting, lifting heavy material and standing for long period of time
**P<0.05

7. DISCUSSION

This study was an unmatched case control study on 504 mothers who delivered in Gandhi Memorial and Tikur Anbessa hospital with the objective of identifying the effect of maternal anthropometrics on preterm birth. It was found that weight gain during pregnancy and hyperemesis gravidarum have a statistically significant association with preterm birth.

This study found that weight gain during pregnancy has a significant association with preterm birth which is similar with other studies. Mothers who have weight gain during pregnancy of ≤ 7Kg have 3.5 times higher odds of preterm delivery than mothers who have weight gain during pregnancy of 8-12 Kg. This result is also supported by a systematic review done with 55 studies; 37 cohort and 18 case control studies which showed that delivering preterm baby has increased risk in mothers with low total gestational weight gain. This result also agrees with one longitudinal and one community based randomized placebo controlled trial studies done in Malawi. A large cross-sectional study done in Brazil with sample size of 5,296 showed similar finding in that weight gain ≤7 Kg has significant association with preterm birth (23, 25, 46, 47).

Institute of medicine set recommendation about weight gain of mothers during pregnancy. According to Institute of medicine(IOM) recommendation of weight gain during pregnancy, one mother should gain 0.3 - 0.5Kg per week in her second and third trimester depending on pre-pregnancy BMI which is the critical periods to gain weight (60). In this study gestational age of the mothers when the last weight was measured range from 27 to 42 weeks. Without seeing their pre-pregnancy BMI about 67(13.9%) mothers had weight gain of ≤7 Kg which imply that 13.9% mothers who were involved in this study did not achieve the minimum required total weight gain for normal weighing mother during their pregnancy which may have a risk to have preterm birth.

Hyperemesis gravidarum showed a significant association with preterm birth which is supported with other studies. The odds of preterm birth were 2.62 times higher among mothers who had hyperemesis gravidarum during pregnancy than mothers who did not experience hyperemesis gravidarum during pregnancy. This result has agreement with a systematic review done with 24 studies and a case control study done in Iran (33, 41). Mothers who had severe hyperemesis gravidarum were prone to initiation of premature induction of labor as one of the management.

Height, MUAC and pre-pregnancy weight did not show significant association with preterm birth in our study which disagrees with findings of other studies done in Egypt, Newzeland-Australia and Bangladshi which showed that height, MUAC and pre-pregnancy weight have a significant association (22, 31, 40). The discrepancy of the results could be due to difference of mother's level of physical activity. For Individuals who are physical active, it is difficult to know their nutritional status by using MUAC. Majority (81.4%) of mothers who were involved in this study were physically active which may affect their MUAC measurement too. Additionally, studies are limited in Sub-Saharan Africa in which mothers in this region are different in socioeconomic status.

Pathophysiology of preterm birth have four primary processes where premature activation of the maternal or fetal hypothalamic pituitary axis is one of them. Maternal-fetal stress hormones corticotrophin-releasing hormone (CRH) and adrenocorticotropin hormone (ACTH) work together to increase maternal and fetal steroid hormone production and cortisol which further increase production of CRH which lead to more production of estrogen specially estriol. It is believed that early production of cortisol and estrogen lead early uterine quiescence loss which happens 2-6 week earlier which is as early as 18-week gestational age. Poor nutrition and fasting is one of the maternal stressors which bring this process to occur (61, 62). Weight gain shows nutritional status of the mother during pregnancy and hyperemesis gravidarum is also one of a clinical problem that deprive nutritional status of the mother during pregnancy. It is hypothesized that when maternal nutrition decreases, the amount of nutrient that goes to the fetus also decreases which in turn affects the fetus growth and may initiate the maternal-fetal stress pathway for preterm labor (61).

Additionally, when mother's nutritional status is affected, they will be prone to chronic infection which lead to activation of maternal fetal innate immune system which in turn initiate preterm labor (61).

This finding find that during pregnancy inadequate weight gain and experiencing hyperemesis gravidarum are the most important factors that should be considered. This shows that mothers should have adequate knowledge about weight gain and get early treatment for hyperemesis gravidarum.

8. LIMITATION

Limitation of our study is that due to case control nature of the design there was recall bias on some variables but in order to alleviate this problem, we extracted data from records. Although some variables which have inadequate sample size were not fitted to the model, descriptive analysis of the variables were done to show the variation among cases and controls. Some mothers did not have ANC follow up in our data collection site and mothers report was used to get last weight of the mother.

9. CONCLUSION AND RECOMMENDATION

9.1.Conclusion

In this study it is found that mothers who had inadequate weight gain and had hyperemesis gravidarum during pregnancy have higher odds of delivering preterm birth compared to mothers who had adequate weight gain and mothers who did not experience hyperemesis gravidarum during pregnancy.

9.2.Recommendation

Further study is recommended regarding the effect of maternal nutrition on preterm birth using prospective study design, using different nutritional status assessment method and on different setup which include studying it on community based and on rural setup.

Health care professionals should give attention on identifying mothers who have nutritional risk and strengthen nutritional counseling and give counseling for mothers to seek early care when they see symptoms of hyperemesis gravidarum. Although there are policies on implementation which focus on maternal nutrition during pregnancy the Ethiopian FMOH may need to strength maternal nutrition education and better monitoring of weight gain during ANC visits.

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ANNEX

Annex 1- English Questionnaire

PARTICIPANT INFORMATION SHEET

Dear Participants

My name is ……I am here on the behalf of Dorka Woldesenbet who is a masters student in Addis Ababa university school of public health in department of Reproductive health. She is working her thesis on the effect of maternal anthropometrics on 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 effect of maternal anthropometrics on preterm birth.

Benefit: This study will help to know the effect of maternal nutritional status and for improving the nutrition of mothers during pregnancy further more 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 and right of participant: All the responses given by you and results obtained will be kept confidential using coding system whereby no one will have access to your response. 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. 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. There will not be any negative consequence and benefit because of participating and not participating on the study. However, your participation on this study is very important for achievement of the study. We hope you will participate in the study for the sake of the benefit of the research result.

Duration of the interview –This interview will take approximately 30 – 40 minutes.

- You can ask any question during the interview.
- Have you any question regarding the aim and content of the interview?

Are you willing to participate on the study?

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

Address: Cell phone +251920808185 Email: dorkatab8@gmail.com

Questionnaires ID_____

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: DorkaWoldesenbet

Address: Mob +251920808185

E-mail: dorkatab8@gmail.com

Supervisor address Tel …….

Date of interview …….

Time started …….

Time completed …….

Name of data collector……

Checked by

Supervisor name …… Signature …… Date……

ETHIOPIA STUDY OF ILLNESS IN PRETERMS (SIP)		
HOSPITAL Name_____	**OBSTETRIC FORM**	**FORM 02**
2017	Study ID: |___|___ |___|___|___|___|___| MEDICAL RECORD: _____ NAME:_____	

The obstetric form should be completed following delivery at enrollment for all women with an infant participating in the SIP project by the study nurse. All dates should be recorded in the Ethiopian Calendar.

SECTION A. SOCIODEMOGRAPHIC DATA

1. Maternal age: |__|__| years
2. Address : sub-city: _____
3. Marital status :
   1 ☐ Married 3 ☐ Widowed. 5 ☐ Don't Know
   2 ☐ Single. 4 ☐ Divorced
4. Formal education of mother:
   1 ☐ None/<u>not</u> able to read and write 3 ☐ Primary Education 5 ☐ Higher Education
   2 ☐ None/able to read and write 4 ☐ Secondary Education 6 ☐ Don't Know
5. Occupation of mother:
   1 ☐ Housewife 3 ☐ Self-employed 5 ☐ Other:_____
   2 ☐ Government/Company 4 ☐ Farmer 6 ☐ Don't Know
6. Total household income (Ethiopian birr):_____
   (**Interviewer**: - help the respondents to remember different sources of income)
7. Is this mother's first pregnancy? 1 ☐ Yes – Skip to Section C 2 ☐ No 3 ☐ Don't Know

SECTION B. PAST PREGNANCY HISTORY – *SKIP TO SECTION C IF FIRST PREGNANCY*

8. Prior pregnancies ending at <28 weeks: |__|__|(if no prior pregnancies <28 weeks indicate 00)
   8.1. Spontaneous abortions: |__|__|
   8.2. Medical/induced abortion: |__|__|
9. Number of prior pregnancies that appeared preterm (28-37 weeks): |__|__|(if none, code 00)
10. Number of pregnancies that appeared to be term (>37 weeks) :|__|__| (if none, code 00)
11. Number of still birth:|__|__|

ETHIOPIA STUDY OF ILLNESS IN PRETERMS (SIP)		
HOSPITAL Name_____	**OBSTETRIC FORM**	**FORM 02**
2017	Study ID: |___|___ |___|___|___|___|___| MEDICAL RECORD: _____ NAME:_____	

12. Number of living children: |__|__| (if no living children, code 00)

13. Prior C- Section: 1 ☐ Yes 2 ☐ No

14. Number of month between pervious and current pregnancy

1 ☐ < 12 months 2 ☐ ≥12 - <24months 3 ☐ ≥24 months

SECTION C. CURRENT PREGNANCY

15. Antenatal care (ANC) received? 1 ☐ Yes 2 ☐ No/Don't Know

15.1. If yes, number of visits whether in this or other hospital/clinics: |__|__|

16. Last Hemoglobin level (Hgb)|__|__|.|__| or 2 ☐ Not done/Don't Know

17. Last HCT level |__|__|.|__| % or 2 ☐ Not done/Don't Know

18. Blood group: 1 ☐ A 2 ☐ B 3 ☐ AB 4 ☐ O 5 ☐ Don't Know

19. Rh factor: 1 ☐ Positive 2 ☐ Negative 3 ☐ Not done/Don't Know

20. VDRL: 1 ☐ Reactive 2 ☐ Nonreactive 3 ☐ Not done/Don't know

21. HIV/AIDS sero-status: 1 ☐ Positive 2 ☐ Negative 3 ☐ Not done/Don't know

22. History of tuberculosis: 1 ☐ Yes 2 ☐ No 3 ☐ Not done/Don't know

23. Urine test suggesting infection: 1 ☐ Yes 2 ☐ No 3 ☐ Not done/Don't know

24. Malaria during the current pregnancy? 1 ☐ Yes 2 ☐ No 3 ☐ Not evaluated/Don't know

25. TT vaccination 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

25.1. If yes, How many dose

1 ☐ one dose 2 ☐ 2 doses, pre- pregnancy 3 ☐ 2 doses, this pregnancy

26. Have you taken a drink that contains alcohol during your current pregnancy(drinks like Tella, Tej, Areke, beer, wine etc) 1 ☐ Yes 2 ☐ No

26.1. If yes, How often do you taken a drink that contains alcohol?

1. ☐ Daily 3. ☐ Monthly
2. ☐ Weekly 4. ☐ Less than monthly

26.2. How much alcoholic drink do you take at a time? _____drinks (Per Coffee cup)

26.3. During the last 30 days, how many days did you take a drink that contains alcohol? _____ Days

27. During current pregnancy did you take any Medication(s) including prescribed, over the counter and traditional medication(s) (excluding vitamins, iron and folic acid supplementation and vaccinations)?

1 ☐ Yes 2 ☐ No 3 ☐ Don't know

27.1. If yes, what was the medication(s) you used? (TICK ALL THAT APPLY):

1. ☐ Antibiotics
2. ☐ Steroids
3. ☐ Cough sedatives
4. ☐ Anti-epileptics
5. ☐ Traditional medications
6. ☐ other(specify) _____

27.2. How often were you using the medication(s)?

1. ☐ Daily
2. ☐ Weekly
3. ☐ Monthly
4. ☐ Less than monthly

28. During current pregnancy did you chew chat?

1 ☐ Yes 2 ☐ No 3 ☐ Don't know

28.1. If yes, how often were you chewing chat?

1. ☐ Daily
2. ☐ Weekly
3. ☐ Monthly
4. ☐ Less than monthly

28.2. During the last 30 days, how many days did you chew chat? _____ Days

29. During your current pregnancy, did you smoke cigarettes?

1 ☐ Yes 2 ☐ No 3 ☐ Don't know

29.1. If yes, how often do you smoke cigarettes?

1. ☐ Daily
2. ☐ Weekly
3. ☐ Monthly
4. ☐ Less than monthly

29.2. How many cigarettes did you smoke at a time? _____ Cigarettes

29.3. During the last 30 days, how many days did you smoke cigarettes? _____ Days

SECTION D. MATERNAL MEDICAL DISORDERS

30. Cardiac disease? 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

31. Thyroid disease 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

ETHIOPIA STUDY OF ILLNESS IN PRETERMS (SIP)		
HOSPITAL Name_____	**OBSTETRIC FORM**	**FORM 02**
2017	Study ID: |___|___ |___|___|___|___|___| MEDICAL RECORD: _____ NAME:_____	

32. Other disorders? 1 ☐ Yes 2 ☐ No/Don't Know

32.1. If Yes, Specify:_____

SECTION E. OBSTETRIC DISORDERS

33. Hypertensive disorders of pregnancy? 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

33.1. If yes, Check type (TICK ALL THAT APPLY):

1 ☐ Pre-eclampsia 3 ☐ Superimposed pre-eclampsia 5 ☐ Don't know

2 ☐ Eclampsia 4 ☐ Chronic hypertension

34. Antepartum hemorrhage (APH): 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

34.1. If Yes, Check type: 1 ☐ Placenta previa 2 ☐ Abruptio placenta

3 ☐ Other Hemorrhage, specify _____4 ☐ Don't know

35. Chorioamnionitis: 1☐ Yes 2 ☐ No 3 ☐ Don't know

36. Poly hydraminos: 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

37. Oligohydraminos: 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

38. During current pregnancy, were you have nausea and vomiting that restricted you on your daily activity which make you to be admitted and treated?

1 ☐ Yes 2 ☐ No 3 ☐ Don't know

SECTION F. INTRAPARTUM AND IMMEDIATE POSTPARTUM

Events leading to delivery

39. Spontaneous labor 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

40. Spontaneous ROM 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

41. Induction of labor 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

41.1. If Yes, Specify indication:

1 ☐ Fetal distress 4 ☐ Macrosomia

2 ☐ IUGR/SGA 5 ☐ Other specify:_____

3 ☐ Preeclampsia/eclampsia

42. C-Section 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

42.1. If Yes, Specify indication:

1 ☐ Fetal distress
2 ☐ IUGR/SGA
3 ☐ Preeclampsia/eclampsia
4 ☐ Cord prolapse
5 ☐ Prior Cesarean section
6 ☐ Macrosomia
7 ☐ Breech presentation
8 ☐ Prolonged or obstructed labor
9 ☐ Elective Cesarean section
10 ☐ Other specify:_____
11 ☐ Don't know

43. Fetal sex: 1. ☐ Male 2. ☐ Female

SECTION G. MAINTERNAL MEDICATIONS PRIOR TO DELIVERY

44. Antibiotics: 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

44.1. If yes, check whether antibiotics are given for following indications:

1. ☐ PROM
2. ☐ Chorioamnionitis
4. ☐ Prophylaxis for C-Section
5. ☐ Other maternal infection, Specify:_____

45. Magnesium sulfate 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

46. Diazepam 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

47. Pethidine 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

48. Other medication 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

48.1. If Other, Specify:_____

SECTION H. MATERNAL ANTHROPOMETRIC MEASURE

49. Pre pregnancy Weight: |__|__| . |__| Kg

50. Weight gain: |__|__| . |__| Kg

51. Height: |__|__ |__| . |__|cm

52. MUAC: |__|__ | . |__|cm

ETHIOPIA STUDY OF ILLNESS IN PRETERMS (SIP)		
HOSPITAL Name_____	**OBSTETRIC FORM**	**FORM 02**
2017	Study ID: |___|___ |___|___|___|___|___| MEDICAL RECORD: _____ NAME:_____	

SECTION I. MATERNAL PHYSICAL ACTIVITIES

READ: I am going to ask you about the time you spent being physically active in a typical week. Please answer each question even if you do not consider yourself to be an active person. Think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

READ: Now, think about all the *vigorous* activities which take *hard physical effort* that you did in a typical week. Vigorous activities make you breathe much harder than normal and may include heavy lifting, digging, aerobics, or fast bicycling. Think only about those physical activities that you did for at least 10 minutes at a time.

	Questions	**Response**	**Code**
Activity at work			
1	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] for at least 10 minutes continuously? [INSERT EXAMPLES]	Yes 1 No 2 If No, go to P 4	P1
2	In a typical week, on how many days do you do vigorous intensity activities as part of your work?	Number of days |__|	P2
3	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours: minute |__|__| |__|__| Hrs. min	P3
4	Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously? [INSERT EXAMPLES]	Yes 1 No 2 If No, go to P 7	P4
5	In a typical week, on how many days do you do moderate intensity activities as part of your work?	Number of days |__|	P5
6	How much time do you spend doing moderate-intensity	Hours : minute |__|__| |__|__|	P6

	activities at work on a typical day?	Hrs. min	
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example, to work, for shopping, to market, to place of worship. [insert other examples if needed]			
7	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 If No, go to P 10	P7
8	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days |__|	P8
9	How much time do you spend walking or bicycling for travel on a typical day?	Hours: minute |__|__| |__|__| Hrs. min	P9
Sedentary behavior			
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping. [INSERT EXAMPLES] (USE SHOWCARD)			
10	How much time do you usually spend sitting or reclining on a typical day?	Hours: minute|__|__| |__|__| Hrs. min	P10
Type of physical activity			
11	Do your activities involve	Yes No Climbing stair: ☐ ☐ Standing for long period: ☐ ☐ Lifting heavy things: ☐ ☐ Squatting: ☐ ☐ If no for all, end the interview.	P11
12	In a typical week how many days do you spend doing climbing		P12

	stairs, standing for long period, lifting and squatting?	Number of days |__|	
13	How much time do you spend doing climbing stairs, standing for long period, lifting and squatting on a typical day?	Hours: minute |__|__| |__|__| Hrs. min	P13

SECTION J. COMPLETION OF FORM

Name and ID of person completing this form: _____|___|___|___|

Name and ID of person reviewing this form: _____ |___|___|___|

Date Completed Form Reviewed: |__|__|-|__|__|-|__|__|__|__| (dd-mm-yyyy)(Ethiopian Calendar)

Annex 2 - Amharic Questionnaire

አዲስ አበባ ዩኒቨርሲቲ

ህክምና እና ጤና ሳይንስ ኮሌጅ

የማህበረሰብ ጤና ትምህርት ቤት

የጥናቱ መግለጫ የአማርኛ ቅፅ

መግቢያ፡- ጤና ይስጥልኝ እንደምን አሉ? እኔ..... እባላለሁ፡፡ እዚህ የመጣሁት ይህንን ጥናት የሚያካሂድ የአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ የሕብረተሰብ ጤና ትምህርት ቤት የስነ ተዋልዶ ትምህርት ክፍል የድህረ ምረቃ ተማሪ የሆነችውን ዶርቃ ወ/ሰንበትን ወክዬ ነው፡፡ ጥናቱ የእናቶች የሰውነት መጠን ልኬት ከመወለጃ ጊዜያቸው በፊት በሚወለዱ ህጻናት ላይ ስላለው ተጽዕኖ ሲሆን በጥናቱ ላይ ተሳትፎ ለማድረግ ወይም ላለማድረግ እንዲወስኑ በቅድሚያ የተወሰነ መረጃ እንሰጥዎታለን፡፡

የጥናቱ አላማ፡ የእናቶች የሰውነት መጠን ልኬት ከመወለጃ ጊዜያቸው በፊት በሚወለዱ ህጻናት ላይ ያለውን ተጽዕኖ ለማወቅ

የጥናቱ ጥቅም: ይህ ጥናት የእናቶች አመጋገብ ያለውን ተጽዕኖን ለማወቅ እንዲሁም በእርግዝና ወቅት ያለውን የእናቶችን አመጋገብ ለማሻሻል የሚረዳ ሲሆን በተጨማሪም ያለ ጊዜ (ቀድሞ) በመወለድ ምክንያት የሚመጣውን ችግር ለመከላከል ይረዳል፡፡

የጥናቱ ጉዳት፡ ቃለ መጠይቁ የተሳታፊውን ጥቂት ጊዜ የሚወስድ እና ጥቂት ምቾት ይነሳል ግን ተሳታፊው በጥናቱ የሚደርስባቸው ምንም ዓይነት ጉዳት የለም፡፡

ሚስጥራዊነት እና የተሳታፊዎች መብት፡ ማንኛውም ተሳታፊዎች የሚሰጡት መረጃ ሚስጥራዊነቱ የኮድ ስርዐት በመጠቀም የሚጠበቅ ሲሆን ማንም ሰው ተሳታፊዎች የሚሰጡትን መረጃ ማግኘት አይችልም፡፡ ያለ ተሳታፊው እና ያለ ህግ ፈቃድ ማንኛውም መረጃ ለሶስተኛ ወገን አይተላለፍም፡፡ ተሳታፊዎች ስማቸውን እና ስልክ ቁጥራቸውን እንዲጠቅሱ አይጠበቅም፡፡ ተሳታፊው በዚህ ጥናት ላይ የመሳተፍ ወይም ያለመሳተፍ መብቱ የተጠበቀ ነው፡፡ በመሳተፍ ላይ እያሉ ቃለ መጠይቁን በማንኛውም ሰዓት ማቋረጥ ወይም ከጥያቄዎቹ ውስጥ ለመመለስ የማይፈልጉትን ጥያቄ አለመመለስ ይቻላሉ፡፡ ተሳታፊው ተሳታፊ በመሆናቸው እና ባለመሆናቸው በቀጥታ የሚያገኙት ጥቅምም ሆነ ጉዳት የለም፡፡ ነገር ግን በእዚህ ጥናት ላይ መሳተፍዎ ለጥናቱ ስኬታማነት ያገለግላል፡፡ ለጥናቱ ውጤታማነት ሲባል በጥናቱ ላይ እንደሚሳተፉ ተስፋ እናደርጋለን፡፡

ቃለ-መጠይቁ የሚወስደው ጊዜ፡-ቃለ-መጠይቁ በአማካይ 30 — 40 ደቂቃ ይወስዳል፡፡

- በቃለ መጠይቁ ወቅት ግልጽ ያልሆነ ነገር መጠየቅ ይቻላል፡፡
- በዚህ ሰዓት የቃለ መጠይቁን ዓላማ ወይም ይዘት በተመለከተ የሚጠይቁኝ ነገር አለዎት?

በጥናቱ ለመሳተፍ ፍቃደኛነዎት?

አድራሻ፡ ስልክ ቁጥር፡ + 251920808185

ድህረ ገጽ፡ dorkatab8@gmail.com መለያ ኮድ ቁጥር:_____

የፍቃደኝነት መግለጫ ቅፅ

ከዚህ በላይ ስለ ጥናቱ የተጻፈውን መግለጫ በሚገባኝ ቋንቋ አንብቤ ወይም ተነቦልኝ ተረድቻለሁ፡፡በማንኛውም ሰዓት ከጥናቱ ያለ ምንም ቅጣት ማቋረጥ እንደምችል ተረድቻለው፡፡ በመሆኑም በዚህ ጥናት

1. ለመሳተፍ እስማማለሁ 2. ለመሳተፍ አልስማማም

መልሱ እስማማለሁ ከሆነ ወደ ሚቀጥለው ገፅ ይሻገሩ፡፡
መልሱ አልስማማም ከሆነ ወደ ሚቀጥለው ተሳታፊ ይሂዱ፡፡

ለጥናቱ ፍቃደኛ ያልሆኑበትን ምክንያት ከዚህ በታች ይጻፉ

.....

የጥናቱ አጥኚ ፡ ዶርቃ ወ/ሰንበት

አድራሻ፡ ስልክ ቁጥር ፡ + 251920808185

ድህረ ገጽ፡ dorkatab8@gmail.com

የሱፐርቫይዘር ስልክ ቁጥር ፡ _____

ቃለመጠይቁ የተደረገበት ቀን :_____

የተጀመረበት ሰዓት ፡ _____

ያለቀበት ሰዓት፡ _____

የቃለ መጠይቅ አድራጊዉ ስም፡ _____

ቃለ መጠይቁን ያረጋገጠዉ ሱፐርቫይዘር፡-

ስም_____ ፊርማ _____ ቀን _____

ከመወለጃ ጊዜው በፊት የተወለደ ህጻን ያላት እናት ☐

በመወለጃ ጊዜው የተወለደ ህጻን ያላት እናት ☐

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	**ከወሊድ ጋር የተያያዘ ቅጽ**	**ቅጽ 02**
2009	**የጥናቱ መለያ ቁጥር**፡|___|___ |___|___|___|___|___| **የህክምና ማህደር**፡_____ **ስም** ፡ _____	

ይህ ቅጽ ከወሊድ በኋላ በጥናቱ ለሚካተቱ ለሁሉም የህጻናቱ እናቶች በጥናቱ ነርሶች ይሞላል፡፡ ሁሉም መረጃዎች በኢትዮጵያ አቆጣጠር ይሞሉ፡፡

ክፍል አንድ ፡ተሳታፊዋን የተመለከቱ መሰረታዊ ጥያቄዎች

1. የእናትየው ዕድሜ ፡ \|__\|__\| ዓመት
2. አድራሻ፡ ክ/ከተማ _____
3. የጋብቻ ሁኔታ፡ 1. ☐ ያገባች 3. ☐ የሞተባት 5. ☐ አላውቅም
   2. ☐ ያላገባች 4. ☐ የተፋታች
4. የትምህርት ደረጃ ፡ 1. ☐ ማንበብና መፃፍ የማይችሉ 3. ☐ የመጀመሪያ ደረጃ ት/ት 5. ☐ ከፍተኛ ደረጃ ት/ት
   2. ☐ ማንበብና መፃፍ የሚችሉ 4. ☐ ሁለተኛ ደረጃ ት/ት
5. የስራ ደረጃ፡ 1. ☐ የቤት እመቤት 3. ☐ የግል ስራ 5. ☐ ሌላ ካለ ይጠቀስ _____
   2. ☐ የመንግስት ስራ 4. ☐ ገበሬ 6. ☐ አላውቅም
6. የቤት ውስጥ ጠቅላላ ገቢ /በኢትዮጵያ ብር/ _____

   (**መረጃ ሰብሳቢ፡** የተለያዩ የገቢ ምንጮችን እንዲያስታውሱ ይርዷቸው)
7. የመጀመሪያ እርግዝና ነው? 1. ☐ አዎ 2. ☐ አይደለም 3. ☐ አላውቅም

   አዎ ከሆነ ወደ ክፍል ሶስት ይለፉ

ክፍል ሁለት ፡ ያለፈ የእርግዝና ታሪክን የተመለከቱ ጥያቄዎች - የመጀመሪያ እርግዝና ከሆነ ወደ ክፍል ሶስት ይለፉ

8. ከዚህ በፊት ባለው እርግዝና ከ28 ሳምንታት በፊት የነበረ እርግዝና ነበር? \|__\|__\| (ከሌለ "00" ይጻፉ)
   - 8.1. ድንገተኛ ያጋጠመ ውርጃ \|__\|__\|
   - 8.2. ሆን ተብሎ የተደረገ ውርጃ \|__\|__\|
9. ከዚህ በፊት ከመወለጃ ጊዜያቸው በፊት የተወለዱ/የተረገዙ/ብዛት (28-37 ሳምንታት) \|__\|__\| (ከሌለ "00" ይጻፉ)
10. በጊዜያቸው የተወለዱ ህፃናት ብዛት (>37 ሳምንታት) \|__\|__\| (ከሌለ "00" ይጻፉ)
11. በህይወት ያሉ ህፃናት ብዛት \|__\|__\| (ከሌለ "00" ይጻፉ)
12. የሸል መሞት ገጥሞዎት ያውቃል? 1. ☐ አዎ 2. ☐ አያውቅም
    - 12.1. መልስዎ አዎ ከሆነ፣ ስንት ጊዜ ገጥሞዎታል፡ \|__\|__\|
13. ከዚህ በፊት ለወሊድ የተደረገ ቀዶ ጥገና ነበር? 1. ☐ አዎ 2. ☐ አልነበረም
14. በአሁኑ እርግዝና እና በበፊቱ እርግዝና መሃከል ያለው የወራት ብዛት

    1. ☐ < 12 ወራት 2. ☐ ≥ 12 - < 24 ወራት 3. ☐ ≥ 24 ወራት

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	**ከወሊድ ጋር የተያያዘ ቅጽ**	**ቅጽ 02**
2009	**የጥናቱ መለያ ቁጥር፡**|___|___ |___|___|___|___|___| **የህክምና ማህደር፡**_____ **ስም ፡** _____	

ክፍል ሶስት፡ ስለ አሁኑ እርግዝና የተመለከቱ ጥያቄዎች

15. የእርግዝና ክትትል አድርገው ነበር? 1. ☐ አዎ 2. ☐ አላደረኩም

15.1. መልስዎ አዎ ከሆነ፣ ስንት ጊዜ አድርገዋል (እዚህ ወይም ሌላ ሆስፒታል/ክሊኒክ) ፡ \|__\|__\|

16. የመጨረሻ የደም ልኬት/መጠን/ (hemoglobin level(Hgb):\|__\|__\|.\|__\| ግ/ዴሊ 2.☐ አልተሰራም/አላውቅም

17. የመጨረሻ የደም ልኬት /መጠን/ (HCT level): \|__\|__\|.\|__\| % 2. ☐ አልተሰራም/አላውቅም

18. የደም አይነት፤: 1. ☐ ኤ 2. ☐ ቢ 3. ☐ ኤቢ 4. ☐ ኦ 5. ☐ አላውቅም

19. አርኤች /የደም አይነት : 1. ☐ ፖዘቲቭ 2. ☐ ኔጌቲቭ 3. ☐ አላውቅም

20. የቂጥኝ ምርመራ : 1. ☐ ፖዘቲቭ 2. ☐ ኔጌቲቭ 3. ☐ አላውቅም

21. የኤች አይ ቪ ምርምራ: 1. ☐ ፖዘቲቭ 2. ☐ ኔጌቲቭ 3. ☐ አላውቅም

22. በዚህ እርግዝና ወቅት የሳንባ ነቀርሳ በሽታ ታመው ነበር? 1. ☐ አዎ 2. ☐ አልታመምኩም 3. ☐ አላውቅም

23. የሽንት ቧንቧ መበከል ታመው ነበር? 1. ☐ አዎ 2. ☐ አልታመምኩም 3. ☐ አላውቅም

24. በዚህ እርግዝና ወቅት ወባ (በሀኪም የተረጋገጠ) ታመው ነበር? 1. ☐ አዎ 2. ☐ አልታመምኩም 3.☐ አላውቅም

25. መንጋጋ ቆልፍ (TT) ክትባት ወስደዋል? 1. ☐ አዎ 2. ☐ አልወሰድኩም 3. ☐ አላውቅም

25.1. መልስዎ አዎ ከሆነ፡ ስንት ጊዜ ወስደዋል?

1. ☐ አንድ ጊዜ 2. ☐ ሁለት ጊዜ፡ ከእርግዝና በፊት 3. ☐ ሁለት ጊዜ፡ በዚህ እርግዝና ወቅት

26. አልኮል ያለው መጠጥ በእርግዝናዎ ወቅት ጠጥተው ያውቃሉ? (ለምሳሌ፡- ጠላ፣ ጠጅ፣ አረቄ፣ ቢራ፣ ወይን ወ.ዘ.ተ...)

1. ☐ አዎ 2. ☐ አላውቅም

26.1. መልስዎ አዎ ከሆነ፣ በምን ያህል ጊዜ ልዩነት አልኮል ያለው መጠጥ ይጠጡ ነበር?

1. ☐ በየቀኑ 3. ☐ በወር
2. ☐ በሳምንት 4. ☐ ከወር ባለፈ

26.2. አንድ ጊዜ ሲጠጡ ምን ያህል ይጠጡ ነበር? _____ (በአንድ የሲኒ ቡና ልኬት 70 ሚሊ)

26.3. ባለፉት ሰላሳ ቀናት ውስጥ ለምን ያህል ቀናት አልኮል ያለው መጠጥ ጠጥተው ነበር? _____ ቀናት

27. በዚህ እርግዝናዎ ወቅት መጽሃኒት ወስደው ያውቃሉ ለምሳሌ፡- በሃኪም የታዘዘ፣ በራስዎ ወይም የባህል መድሃኒት (ቫይታሚን፣ አይረን እና ፎሊክ አሲድ እንዲሁም ክትባቶችን አያካትትም)

1. ☐ አዎ 2. ☐ አልወሰድኩም

27.1. መልስዎ አዎ ከሆነ፡ ምን አይነት መድሃኒት ወስደው ነበር? (ከአንድ በላይ መልስ ካለ ያለው አይነት ላይ ምልክት ይደረግ)

1. ☐ የባክቴሪያ መድሃኒት 4. ☐ ለሚጥል በሽታ የሚወሰድ መድሃኒት
2. ☐ ስቴሮይድ 5. ☐ የባህል መድሃኒት

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	**ከወሊድ ጋር የተያያዘ ቅጽ**	**ቅጽ 02**
2009	**የጥናቱ መለያ ቁጥር፡**|___|___ |___|___|___|___|___| **የህክምና ማህደር፡**_____ **ስም ፡** _____	

3. ☐ ለሳል ማቆሚያ የሚወሰድ መድሃኒት 6. ☐ ሌላ ካለ ይጠቀስ _____

27.2. መድሃኒቱን (ቶቹን) በምን ያህል ጊዜ ልዩነት ይጠቀሙ ነበር?

1. ☐ በየቀኑ 3. ☐ በወር
2. ☐ በሳምንት 4. ☐ ከወር ባለፈ

28. በእርግዝናዎ ወቅት ጫት ቅመው ያውቃሉ? 1. ☐ አዎ 2. ☐ አላውቅም

28.1. መልስዎ አዎ ከሆነ በምን ያህል ጊዜ ልዩነት ጫት ይቅሙ ነበር?

1. ☐ በየቀኑ 3. ☐ በወር
2. ☐ በሳምንት 4. ☐ ከወር ባለፈ

28.2. ባለፉት ሰላሳ ቀናት ውስጥ ለምን ያህል ቀናት ጫት ቅመው ነበር? _____ ቀናት

29. በእርግዝናዎ ወቅት ሲጋራ አጭሰው ያውቃሉ? 1. ☐ አዎ 2. ☐ አላውቅም

29.1. መልስዎ አዎ ከሆነ፣ በምን ያህል ጊዜ ልዩነት ሲጋራ ያጨሱ ነበር?

1. ☐ በየቀኑ 3. ☐ በወር
2. ☐ በሳምንት 4. ☐ ከወር ባለፈ

29.2. አንድ ጊዜ ሲያጨሱ ምን ያህል ሲጋራ(ዎች) ያጨሱ ነበር? _____ሲጋራ(ዎች)

29.3. ባለፉት ሰላሳ ቀናት ውስጥ ለምን ያህል ቀናት ሲጋራ አጭሰው ነበር? _____ ቀናት

ክፍል አራት፡ የእናትየውን የህመም ሁኔታ የተመለከቱ ጥያቄዎች

30. የታወቀ የልብ በሽታ አለብዎት? 1. ☐ አዎ 2. ☐ የለብኝም 3. ☐ አላውቅም
31. የታወቀ የእንቅርት በሽታ አለብዎት? 1. ☐ አዎ 2. ☐ የለብኝም 3. ☐ አላውቅም
32. ሌላ የታወቀ በሽታ አለብዎት? 1. ☐ አዎ 2. ☐ የለብኝም

32.1. ሌላ ካለ ይጠቀስ፡ _____

ክፍል አምስት፡ ስነ ተዋልዶን የተመለከቱ ጥያቄዎች

33. በዚህ እርግዝናዎ ወቅት የደም ግፊት ኢጋጥሞዎት ነበር?

1. ☐ አዎ 2. ☐ አላጋጠመኝም 3. ☐ አላውቅም

33.1. መልስዎ አዎ ከሆነ፣ የትኛው አይነት ነው? (ያለው አይነት ላይ ምልክት ይደረግ)

1. ☐ በእርግዝና ወቅት የሚመጣ ደም ግፊት 3. ☐በእርግዝና ጊዜ የተባባሰ የደም ግፊት
2. ☐ በደም ግፊት የሚመጣ መንቀጥቀጥ 4. ☐ ከእርግዝና በፊት የነበረ የታወቀ የደም ግፊት

34. በዚህ እርግዝናዎ ወቅት የደም መፍሰስ (በወር አበባ ከተለመደው በላይ) ኢጋጥሞዎት ነበር?

1. ☐ አዎ 2. ☐ አላጋጠመኝም 3. ☐ አላውቅም

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	ከወሊድ ጋር የተያያዘ ቅጽ	ቅጽ 02
2009	የጥናቱ መለያ ቁጥር፡|___|___ |___|___|___|___|___| የህክምና ማህደር፡_____ ስም ፡ _____	

34.1. መልስዎ አዎ ከሆነ፣የቱ አይነት

1. ☐ የእንግዴ ልጅ ያለ ቦታው መቀመጥ 2. ☐የእንግዴ ልጅ ከምጥ በፊት መላቀቅ

3. ☐ ሌላ አይነት የደም መምሰስ ካለ ይጠቀስ _____4. ☐ አላውቅም

35. የእንሽርት ውሃ መበከል ኢጋጥሞዎት ነበር? 1. ☐ አዎ 2. ☐ አላጋጠመኝም 3. ☐ አላውቅም

36. የእንሽርት ውሃ መብዛት ኢጋጥሞዎት ነበር? 1. ☐ አዎ 2. ☐ አላጋጠመኝ 3. ☐ አላውቅም

37. የእንሽርት ውሃ ማነስ ኢጋጥሞዎት ነበር? 1. ☐ አዎ 2. ☐ አላጋጠመኝም 3. ☐ አላውቅም

38. በዚህ እርግዝና ወቅት በትውከት ምክንያት ተኝተው ታክመው ነበር? 1. ☐ አዎ 2. ☐ አልታከምኩም 3. ☐ አላውቅም

ክፍል ስድስት፡ በወሊድ ጊዜ እና ከወሊድ በኋላን የተመለከቱ ጥያቄዎች

39. ምጥዎት የመጣው በድንገት ነበር? 1. ☐ አዎ 2. ☐ አይደለም 3. ☐ አላውቅም

40. የእንሽርት ውሃ መፍሰስ ነበር? 1. ☐ አዎ 2. ☐ አይደለም 3. ☐ አላውቅም

41. ምጥዎ የጀመረው በምጥ መርፌ ነበር? 1. ☐ አዎ 2. ☐ አይደለም 3. ☐ አላውቅም

41.1. መልስዎ አዎ ከሆነ፣ ምክንያቱ ምን ነበረ?

1. ☐ በህፃኑ መታፈን ምክንያት 3. ☐ የደም ግፊት/ በደም ግፊት የሚመጣ መንቀጥቀጥ
2. ☐ በህፃኑ እድገት መወሰን ምክንያት 4. ☐ ህፃኑ ትልቅ ስለነበረ
5. ☐ ሌላ ካለ ይጠቀስ ፡ _____

42. የወለዱት በቀዶ ጥገና ነበር? 1. ☐ አዎ 2. ☐ አይደለም 3. ☐ አላውቅም

42.1. መልስዎ አዎ ከሆነ፣ ምክንያቱ ምን ነበረ?

1. ☐ በህፃኑ መታፈን ምክንያት 7. ☐ ህፃን በመቀጫው በኩል መምጣት
2. ☐ በህፃኑ እድገት መወሰን ምክንያት 8. ☐ ለረጅም ጊዜ ምጡ ስለቆየ
3. ☐ የደም ግፊት 9. ☐ በራሴ ፍላጐት
4. ☐ በእትብት ቀድም መውጣት ምክንያት 10. ☐ ሌላ ካለ ይጠቀስ_____
5. ☐ ከዚህ በፊት በነበረ የወሊድ ቀዶ ጥገና ምክንያት 11. ☐ አላውቅም
6. ☐ ህፃኑ ትልቅ ስለነበረ

43. የህጻኑ ጾታ? 1. ☐ ወንድ 2. ☐ ሴት

ክፍል ሰባት፡ ከወሊድ በፊት ለእናትየው የተሰጡ መድሀኒቶችን የተመለከቱ ጥያቄዎች

44. ከእርግዝና በፊት የባክቴሪያ መድሃኒት ተሰጥቶዎት ነበር?

1. ☐ አዎ 2. ☐ አልነበረም 3. ☐ አላውቅም

44.1. መልስዎ አዎ ከሆነ፣ ምክንያቱ ምን ነበር?

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	**ከወሊድ ጋር የተያያዘ ቅጽ**	**ቅጽ 02**
2009	**የጥናቱ መለያ ቁጥር፡**|___|___ |___|___|___|___|___| **የህክምና ማህደር፡**_____ **ስም ፡** _____	

1. ☐ ከምጥ በፊት የበረ የእንሽርት ውሃ መፍሰስ
2. ☐ የእንሽርት ውሃ መበከል
3. ☐ የሽንት ቧንቧ መበከል
4. ☐ የቀዶ ጥገና መድሀኒት
5. ☐ ሌላ ካለ ይጠቀስ_____

45. ማግኒዚየም ሰልፌት ተሰጥቶዎት ነበር? 1. ☐ አዎ 2. ☐ አልነበረም 3. ☐ አላውቅም
46. ዲያዜፖም ተሰጥቶዎት ነበር? 1. ☐ አዎ 2. ☐ አልነበረም 3. ☐ አላውቅም
47. ፔቲዲን ተሰጥቶዎት ነበር? 1. ☐ አዎ 2. ☐ አልነበረም 3. ☐ አላውቅም
48. ሌላ መድሀኒት ተሰጥቶዎት ነበር? 1. ☐ አዎ 2. ☐ አልነበረም 3. ☐ አላውቅም

48.1. መልስዎ አዎ ከሆነ፣ ይጠቀስ _____

ክፍል ስምንት፡ የእናትየው የሰውነት መጠን ልኬት

49. ከወሊድ በፊት የነበረዎት ክብደት፡ \|__\|__\|.\|__\| ግራም
50. በእርግዝና ወቅት የጨመሩት ክብደት፡ \|__\|__\|. \|__\| ግራም
51. ቁመት ፡ \|__\|__\|__\|.\|__\| ሴ.ሜ.
52. የላይኛው ክንድ ዙሪያ፡ \|__\|__\|. \|__\|ሴ.ሜ.

ክፍል ዘጠኝ፡ በእርግዝና ጊዜ የነበረን እንቅስቃሴን የተመለከቱ ጥያቄዎች

የሚነበብ ፡ - አሁን በአንድ ሳምንት ውስጥ የነበሮትን እንቅስቃሴ እጠይቆታለሁ፡፡ እባኮት እያንዳንዱን ጥያቄ እንቀሳቀሳለሁ ብለው ባያስቡ እንኳ እንዲመልሱ እፈልጋለሁ፡፡ በስራ ቦታ፣ በቤት ውስጥ ፣ ከአንድ ቦታ ወደ ሌላ ቦታ ለመሄድ እና ለመዝናናት የሚያደርጉትን እንቅስቃሴዎች ያስቡ፡፡

የሚነበብ ፡- አሁን በሳምንት ውስጥ ከባድ ስራዎች (ድካምን የሚጠይቁ) የሰሩትን ስራዎች ያስቡ፡፡ ከባድ ስራዎች ከትክክለኛው አተነፋፈስ በበለጠ ፆሎ ፆሎ እንዲተነፍሱ ያደርጋሉ፡፡ እነዚህም ከባድ እቃ ማንሳት፣ መቆፈር፣ የአካል ብቃት እንቅስቃሴ፣ ፈጣን ሩጫ ቢያንስ ለአስር ደቂቃ ያደረጉትን እንደዚህ አይነት እቅስቃሴዎች ያስቡ፡፡

ጥያቄዎች		**መልስ**	**ኮድ**
በስራ ላይ ያሉ እንቅስቃሴዎች			
1	ከእንቅስቃሴዎት መሀከል አተነፋፈሶትን እና የልብ ምቶትን የሚጨምሩ (ለምሳሌ ፡- መሸከም፣ ከባድ እቃ ማንሳት፣ መቆፈር፣ ወ.ዘ.ተ....) ቢያንስ ለአስር ደቂቃ ሰርተው ያውቃሉ?(ተጨማሪ ምሳሌዎችን እዚህ ጋር ያስገቡ)	አዎ 1 አላውቅም 2 ካልነበረ ወደ ጥያቄ 4 ይለፉ	P1
2	በአንድ ሳምንት ውስጥ ለምን ያህል ቀናት ከባድ እንቅስቃሴዎች ያደርጋሉ?	|_____| ቀናት	P2
3	በአንድ በተወሰነ ቀን ውስጥ ለምን ያህል ሰአት ከባድ እንቅስቃሴዎች ያደርጋሉ?	ሰአት: ደቂቃ |__|__| |__|__| ሰአት ደቂቃ	P3

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	ከወሊድ ጋር የተያያዘ ቅጽ	ቅጽ 02
2009	የጥናቱ መለያ ቁጥር፡|___|___ |___|___|___|___|___| የህክምና ማህደር፡_____ ስም ፡ _____	

4	መህከለኛ ድካም የሚጠይቁ ስራዎችስ(አተነፋፈሶትን እና የልብ ምቶትን በጥቂት የሚጨምሩ ለምሳሌ ፡- ቀለል ያሉ እቃዎችን መያዝ/መሸከም) ቢያንስ ለአስር ደቂቃ ሰርተው ያውቃሉ?(ተጨማሪ ምሳሌዎችን እዚህ ጋር ያስገቡ)	አዎ 1 አላውቅም 2 ካልነበረ ወደ ጥያቄ 7 ይለፉ	P4
5	በአንድ ሳምንት ውስጥ ለምን ያህል ቀናት መህከለኛ እንቅስቃሴዎች ያደርጋሉ?	|_____| ቀናት	P5
6	በአንድ በተወሰነ ቀን ውስጥ ለምን ያህል ሰአት መህከለኛ እንቅስቃሴዎች ያደርጋሉ?	ሰአት: ደቂቃ |__|__| |__|__| ሰአት ደቂቃ	P6
ከአንድ ቦታ ወደ ሌላ ቦታ ለመጓዝ የሚደረጉ እንቅስቃሴዎች			
ከዚህ በፊት የጠቀሱትን እንቅስቃሴዎች ያስወግዱና አሁን ከአንድ ቦታ ወደ ሌላ ቦታ ለመንቀሳቀስ በብዛት የሚያደርጉትን እንቅስቃሴዎች እጠይቆታለሁ፡፡ ለምሳሌ ፡- ወደ ስራ፣ ወደ ሱቅ፣ ወደ ገበያ፣ ወደ ስራ ቦታ ለመጓዝ የሚያደርጉትን እንቅስቃሴዎች			
7	ከአንድ ቦታ ወደ ሌላ ቦታ ለመጓዝ ከአስር ደቂቃ ያላነሰ በእግር ሄደው ያውቃሉ?	አዎ 1 አላውቅም 2 ካልነበረ ወደ ጥያቄ 10 ይለፉ	P7
8	በአንድ ሳምንት ውስጥ ለምን ያህል ቀናት ከአስር ደቂቃ ያላነሰ በእግር ይሄዳሉ?	|_____| ቀናት	P8
9	በአንድ በተወሰነ ቀን ውስጥ ለምን ያህል ሰአት በእግር ይሄዳሉ?	ሰአት: ደቂቃ |__|__| |__|__| ሰአት ደቂቃ	P9
የሚቀጥሉት ጥያቄዎች በመቀመጥ የሚያሳልፉትን ጊዜ ይመለከታል፡፡ በስራ ቦታ፣ በቤት፣ ከአንድ ቦታ ወደ ሌላ ቦታ ተቀምጠው ወይም ከጓደኛዎት ጋር የሚያሳልፉትን ጊዜ (ለምሳሌ፡- ከጓደኛዎት ጋር ተቀምጠው፣ በመኪና ወይም በባቡር ተቀምጠው ሲሄዱ፣ በማንበብ፣ በመጫወት፣ እና ቴሌቪዥን በማየት) ተኝተው የሚያሳልፉትን ጊዜ አያካትትም፡፡			
10	በአንድ በተወሰነ ቀን ውስጥ ለምን ያህል ሰአት በመቀመጥ ወይም በማረፍ ያሳልፋሉ?	ሰአት: ደቂቃ |__|__| |__|__| ሰአት ደቂቃ	P10
የሰውነት እንቅስቃሴ አይነቶች			
11	ከሚከተሉት እንቅስቃሴዎች መህከል የትኞቹን ያደርጋሉ?	አደርጋለሁ አላደርግም ደረጃ መውጣት ☐ ☐ ለረጅም ሰአት መቆም ☐ ☐ ከባድ እቃ ማንሳት ☐ ☐ መንበርከክ ☐ ☐ ለሁሉም አላደርግም ከሆነ ቃለመጠይቁን ያጠናቁ	P11
12	በአንድ በተወሰነ ሳምንት ውስጥ ለምን ያህል ቀናት ደረጃ በመውጣት፣ ለረጅም ሰአት በመቆም፣ ከባድ እቃ በማንሳት እና በመንበርከክ ያሳልፋሉ?	|_____|ቀናት	P12
13	በአንድ በተወሰነ ቀን ውስጥ ለምን ያህል ሰአት ደረጃ በመውጣት፣ ለረጅም ሰአት በመቆም፣ ከባድ እቃ በማንሳት እና በመንበርከክ ያሳልፋሉ?	ሰአት : ደቂቃ |__|__| |__|__| ሰአት ደቂቃ	P13

በኢትዮጵያ ያለጊዜያቸው የሚወለዱ ህፃናት ህመም ጥናት		
የሆስፒታሉ ስም_____	**ከወሊድ ጋር የተያያዘ ቅጽ**	**ቅጽ 02**
2009	**የጥናቱ መለያ ቁጥር፡**|___|___ |___|___|___|___|___| **የህክምና ማህደር፡**_____ **ስም ፡** _____	

ክፍል አስራ ሁለት፡ የፎርሙ ማጠናቀቂያ
ፎርሙን የሞላው ሰው ስም _____
ፎርሙን ያረጋገጠው ሰው ስም _____
መረጃው የተጠናቀቀና የተረጋገጠ ፎርም፡|__|__|-|__|__|-|__|__|__|__| (ቀን - ወር - አ/ም) (በኢትዮጵያ አቆጣጠር)