



**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH**

**THE RELATIONSHIP BETWEEN LOW BIRTH WEIGHT AND
HOUSEHOLD FOOD INSECURITY IN ADDIS ABABA, ETHIOPIA.
A CASE CONTROL STUDY**

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Declaration

I, Degemu Sahlu declared that this thesis was my original work in partial fulfillment for the requirement for the degree of masters in public health. All source of material used for this thesis work and all people and institution who gave support during this thesis work were fully acknowledged.

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List of abbreviations and acronyms

ANC	-----	Ante Natal Care
AAU	-----	Addis Ababa University
AOR	-----	Adjusted Odd Ratio
CI	-----	Confidence Interval
COR	-----	Crude Odd Ratio
CDC	-----	Center of Disease Control
EDHS	-----	Ethiopia Demography and Health Survey
FANTA	-----	Food and Nutrition Technical Assistant
FMOH	-----	Federal Ministry of Health
HFIAS	-----	Household Food Insecurity Access Scale
HFI	-----	Household Food Insecurity
IUGR	-----	Intra Uterine Growth Retardation
LBW	-----	Low Birth Weight
MUAC	-----	Middle Upper Arm Circumference
MDG	-----	Millennium Development Goal
NBW	-----	Normal Birth Weight
UNICIF	-----	United Nation Children’s Fund
USAID	-----	United State Agency for International Development
WHO	-----	World Health Organization

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Abstract

Background: Low birth weight is defined as birth weight of less than 2500 grams .It is a public health problem affecting 15%-20% of births worldwide. The great majority of low birth weight occurs in low and middle income countries especially in the most vulnerable population such as sub-Saharan countries which account 13% of low birth weight. The trend of low birth weight decline in Ethiopia from 14.6% in 2005 to 11% in 2011. But if these trends continue in this manner Ethiopia might not achieve the global nutrition target of low birth weight reduction by 30% in 2025. Food and nutrition are critically important to support healthy pregnancy. But food insecurity prevents many women meeting guideline for healthy eating during pregnancy. Inconsistency and little information between relationship of food insecurity and low birth weight was the rationally to study on this area.

Objective: To assess the relationship between low birth weight and household food insecurity in public hospitals, Addis Ababa, Ethiopia.

Methods: Unmatched case control study was conducted among mother with their term neonate in governmental hospital in Addis Ababa, Ethiopia. A total of 480 (120 cases and 360 controls) neonate was included in the study. Case was term baby weighed <2500grams and control was term baby weighed \geq 2500 grams. In each selected hospital selection of case was made as case found and the next three eligible newborn was controls. The data were collected using interviewer administer structured questioner. Necessary permission to conduct the study obtained from research and ethics committee of Addis Ababa University and Addis Ababa health bureau. Data were entered into EPI data 3.1 computer programs and analyzed using STATA 14. Bivariate and Multivariate analysis was done to identify independent predictor of low birth weight using binomial and multivariate logistic regression. The adjusted odd ratio was used to determine the strength of association and corresponding CI was used to decide whether statically significant between the explanatory variable and outcome variable.

Result: A total of 116 cases and 352 controls were included in the analysis. After adjusting potential confounder mothers in food insecure household were strongly associated with low birth weight AOR 3.58 CI (1.79-7.16). In addition MUAC, hypertension and age were independently associated with low birth weight with corresponding AOR of [AOR 7.7 CI (4.39-13.60)], [AOR 4.81 CI (2.33-9.93)] and [AOR 3.88 CI (1.35-11.15)].

Conclusion: Mothers from food insecure household were about four times more likely to give birth with low weight against their counterpart in governmental hospitals in Addis Ababa, Ethiopia. Beside hypertension, MUAC and early age were significantly associated with low birth weight.

Key words: Low birth weight, Household, food insecurity, neonate, mothers.

1. Background

1.1 Introduction

Motherhood is a beautiful and joyous experience to a woman(1). The health of the mother during pregnancy is so important to give birth to healthy baby. Birth weight is a powerful predictor of infant growth and survival. Infant born with low birth weight begin life disadvantaged and face poor survival rate (1).

The World Health Organization (WHO) defines low birth weight as having a birth weight of less than 2500gram (2). Low birth weight and preterm birth is the major determinant of perinatal survival, infant morbidity and morbidity as well as risk for developmental disability throughout future lives. Low birth weight is an intergenerational problem in which low birth weight infants grow up to be undernourished and stunted children and adolescents and, ultimately, undernourished women of childbearing age, and undernourished pregnant women who themselves deliver low birth weight infants.(3) The incidence of low birth weight can be reduced if pregnant woman “at risk” are identified. For this approach the women should identified early in pregnancy. The majority of low birth weight in developing countries is due to intrauterine growth retardation. Causes of intrauterine growth retardation are complex and multiple, but center on the fetus, the placenta, the mother, and combinations of all three. The maternal environment is the most important determinant of birth weight(4).

In Ethiopia adverse birth outcome (LBW, preterm and still birth) are still the major public health problem which are responsible for neonatal and infant morbidity and mortality(5).

Food and nutrition are critically important to support healthy pregnancy, impact preterm and low birth weight. Food insecurity had been show to affect several health outcomes. For example it is associated with self-rated health status among adult and children and depression and anxiety in mothers. Its effect on reproductive outcome has not well been studied. Food insecurity has been associated with anxiety and depression among mother(6-8) .The relationship between household food insecurity and low birth weight were inconsistent and not well studied particularly in Ethiopia. Therefore this study was aim to determine the relationship between low birth weight and household food insecurity in Addis Ababa.

1.2 Statement of the problem

Annually, one seven neonate (20 million worldwide) has low birth weight. 95.6% of them are in developing countries. Low birth weight is one of public health problem globally and is associated with both short and long term consequence. It account for nearly 80% of neonatal death (9)

In 2012, one of the World Health Assembly plan for 2025 was 30% reduction of the number of infants born with a weight lower than 2500 g, with 3.9% relative reduction per year Between 2012 and 2025. That is a reduction from approximately 20 million to about 14 million Infants with low weight at birth (10)

Ethiopia has significantly reduced child mortality rate. It was on September 13, 2013 the federal ministry of health (EMOH) of Ethiopia and UNICEF announced that Ethiopia successfully achieved millennium development goal 4(MDG 4) three year ahead of timeline, 2015(11)

However, in the report and evidences elsewhere clearly showed that the contribution of neonatal mortality to infant mortality, in the country is still far behind in reducing neonatal mortality rate. Approximately 42% of the under-5 mortality in Ethiopia is attributable to neonatal deaths and 80% of neonatal deaths are attributable to low birth weight(12)

Thus, to address the challenges associated with neonatal mortality reduction, the contribution of adverse birth outcomes (LBW and preterm birth) to neonatal morbidity and mortality should not be ignored. Poor nutrition both before and during pregnancy is recognized as an important cause. Emerging evidence on the role of maternal preconception nutritional status indicates the need for continued investment in strategies that improve women's nutrition.(13)

As household food insecurity may increase the risk of low birth weight because it compromise the nutritional status of the house hold and it is also risk for stress both of them are risk for low birth weight of the neonate. Women may be particularly vulnerable due to gender inequalities within societies, their roles within households, and mothers adjusting their nutrition to buffer the effect of food insecurity on their children, all potentially leading low birth weight. Study on household food insecurity as predictor of low birth weight is limited. Thus, this study is focused on the relationship between the household food insecurity and low birth weight along with controlling biases related to gestational age and adverse selection(14)

1.3 Rationally of the study

Care of low birth weight baby possess substantial cost of health system. There is therefore the need to focus on finding of preventable or modifiable factor to low birth weight in order to reduce this cost to health service system and eventually to reduce neonatal and child mortality(9).

There are a number of well-studied risk factors for low birth weight. However there is not study that associate household food insecurity and low birth weight in this study setup and also finding about household food insecurity as a determinant of low birth weight are inconsistent.

There is also long-held belief that urban populations are better off or even favored than rural Populations concerning food security, the recent food and financial crises have highlighted the problem of urban food insecurity in developing countries including Ethiopia(15)

In addition studies recommended that advice or health education during antenatal visit is one intervention to manage House hold food insecurity (HFI). However, education only may not help to manage house hold food insecurity. Since food insecurity is not only the issue of utilization, it is also about availability and access(16). Therefore, specific policies are required to address household level food insecurity and these policies should be contextual and problem-specific. Hence, to give evidence based context -specific determinant of low birth weight to health programmer is one of the justifications to do this research.

In general, identifying the risk factors associated low birth weight is crucial for policy makers, planners and other collaborators to design a series of well-timed interventions to tackle this important public health problem. In particular, evaluating the link between the house hold food statuses with low birth weight may be important for improving care for women who are at risk of low birth weight. It was also enable development practitioners and policy makers to have better knowledge as to where and how to intervene in urban areas to bring food security or minimize the severity of food insecurity. This study is also believed to fill the identified knowledge gap on the relationship between feeding habit of the mother especially during pregnancy with low birth weight (LBW).Furthermore; it can be used as a base line for further study.

2 Literature review

Food insecurity is a state or a condition in which people experience limited or uncertain physical and economic access to safe, sufficient and nutritious food to meet their dietary needs or food preferences for a productive, healthy and active life(17)

Chronic Food Insecurity is lack of the food for a sustained period of time due to extended periods of minimum requirement food to poverty, lack of assets and inadequate access to productive or financial resources can be called as Chronic Food Insecurity. Acute or Transitory Food Insecurity is Sudden lack of food or reduction in the ability to produce or Access minimum requirement of food due to short-term shocks and fluctuations in food availability and food access, including year-to-year variations in domestic food production, food prices and household incomes can be defied as Acute or Transitory Food Insecurity(18, 19).

Household Food Security: A household is food secure when it has access to the food needed for a healthy life for all its members (adequate in terms of quality, quantity, and safety and culturally acceptable) and when it is not at undue risk of losing such access. Food security can be considered at national, household and individual levels. Household food security is related to the ability to obtain sufficient food with sufficient quality to meet nutritional requirements of all household members. Household level food security mainly relies on economic freedom and purchasing power of household members which again related to income distribution in the household. Low socioeconomic status of house hold is characterized as having low monthly income, low income per capital, low educational level, large household size, unemployment among adult members, and single female head and one that renting(20, 21).

2.1 Dimension of food security

Food availability: This dimension addresses supply side of the food security and expects sufficient quantities of quality food from domestic agriculture production or import. This is simple mathematical calculation weather the food available in certain territory/country is enough to feed the total population in that particular territory and calculated from the level of local agriculture production at that territory, stock levels and net import/export(16, 19).

Food access: Having sufficient food at national level or at certain territory cannot be taken as the proof that all the household or individuals in the country have enough food to eat. Food access is another dimension of food security which encompasses income, expenditure and buying capacity

of households or individuals. Food access addresses whether the households or individuals have enough resources to acquire appropriate quantity of quality foods(22)

Food utilization: Food utilization is another dimension of food security which addresses not only how much food the people eat but also what and how they eat. It also covers the food preparation, intra-household food distribution, water and sanitation and health care practices. The nutritional outcome of the food eaten by an individual was be appropriate and optimum only when food is prepared/cooked properly, there is adequate diversity of the diet and proper feeding and caring practices are practiced(19, 23).

Stability: This dimension addresses the stability of the other three dimensions over time. People cannot be considered food secure until they feel so and they do not feel food secure until there is stability of availability, accessibility and proper utilization condition. Instability of market price of staple food and inadequate risk bearing capacity of the people in the case of adverse condition. Political instability and unemployment are the major factors affecting stability of the dimensions of food security(24, 25)

In general, availability covers whether adequate food is ready at people's disposal while Access ensures if all households and individuals have adequate resources to obtain the food they need either through production or purchase. Similarly utilization is about human body function to adequately ingest, digest and metabolize the food. Stability is about assurance of continuation of fore-mentioned dimension.

2.2 Food security situation of Ethiopia

According to food and agriculture organization of united nation (FAO) report in 2016, 10.2 million People in Ethiopia were food insecure (26). Household food insecurity, hunger and under nutrition remain critical issues; the poor nutritional status of women and children has been a consistent problem in Ethiopia. One quarter of women of reproductive age were undernourished, leaving their children predisposed to low birth weight, short stature, lower resistance to infections, and higher risk of disease and death(27). Over the past twenty years, Ethiopia has made significant progress in improving health, nutrition, education, and other human development indicators. Yet for millions of Ethiopians, poverty, vulnerability and food insecurity remain major problem, and are exacerbated by climate change and other factor. Ethiopia has also made significant progress in reducing hunger, with a 39.24% reduction in the Global Hunger

Index from 1990 to 2013. The percentage of the population below a minimum level of dietary energy consumption dropped dramatically from 74.8% in 1990 to 32% in 2015, although the total undernourished population remains high (31.6 million, down from 37.3 million in 1990)(27, 28). World Food Program stated that the common factors that cause household food-insecurity in urban areas of the country are: household size, age of household, sex of household head, marital status of household, education level of household, dependency ratio, access to credit, ownership of saving account, total income per adult equivalent, expenditure level (food and non-food), asset possession, access to social services, owner of home garden, access to subsidized food, sources of food, availability of food commodities, and supply of food commodities(29). Food insecurity is not only a rural problem in Ethiopia. Urban food insecurity is a growing concern due to the toxic combination of high rate of urban poverty. High dependency of urban household on food supplied by the market and fluctuating food price Household food insecurity was particularly high among low income households and those headed by uneducated, daily wagers and government employed household head. Even though there is long-held belief that urban populations are better off, or even favored than rural Populations, the recent food and financial crises have highlighted the problem of urban food insecurity in developing countries including Ethiopia. House hold in Addis Ababa not only do not have sufficient amount of food to eat, their diet are largely serial based, lacking on adequate diversity of food to yield good nutrition (20, 30)

2.3 Determinant of food security in Ethiopia

Food security in Ethiopia determine by different factor, according to previous study the main factor that affect food security conditions were family size, age of the household head, annual income, food expenditure pattern, income per adult equivalent, land size ,number of livestock owned, cultivated area ,amount of credit received , status of education, farming system, access to market ,food consumption expenditure pattern ,off-farm income per adult equivalent ,sex of household head, access to credit ,marital status of household head, dependency ratio ,low annual production ,attitude on food aid ,poor wealth status ,land holding ,rain fall and land and market accessibility(15, 20, 30)

2.4 Low birth weight

Low birth weight is one of a significant public health problem and is associated with a range of both short and long-term consequences .Globally, it is estimated that 15% to 20% of all births are

LBW, representing more than 20 million births a year. The great majority of LBW occur in low and middle-income countries and especially in the most vulnerable populations such as in sub-Saharan Africa which accounts 13% of LBW (31, 32). LBW is caused by preterm birth and intrauterine growth retardation (IUGR) or both. The predominant cause of LBW in the developed country is preterm birth, whereas in developing countries, it is frequently caused by IUGR. It is well documented that 80–85% of all low birth weight (LBW) infants are born in developing countries. LBW is an important public health indicator since it encompasses maternal malnutrition, socioeconomic status, foetal and infant growth as well as mortality and morbidity. In resource-poor environments, quality of medical services comes with a price. Therefore, the affordability of any nutritional intervention and recommendation is a key determinant of success(33). The WHO country cooperation strategy 2008 –2011 showed that the prevalence of low birth weight in Ethiopia, estimated that 14%, it is one of the highest in the world. Generally, the trends of LBW were declining in Ethiopia from 14.6% in 2005 to 11 % in 2011(34). However, if these trends continue in this manner Ethiopia was not achieve the global nutrition target of LBW reduction by 30% in 2025. A 30 % (3.9 annual) reduction of LBW is one of the global nutrition target for 2025 endorsed by world health assembly in 2012 reduction from approximately 20 million to about 14 million infants with low weight at birth(10)

2.5 Factor associated with low birth weight

Evidence in Northern Tanzania indicated that several factors have been associated with LBW including poor maternal nutrition before and during pregnancy, maternal diseases such as maternal anemia, chronic hypertension, renal diseases and heart diseases, alcohol, smoking, drug use during pregnancy, parity, low maternal education, maternal occupation, short stature, extreme maternal age, induced labor or elective caesarean section, physical, sexual, and emotional abuse (35)

As a study done in Tigray reported that Low birth weight is associated with many socio-economic factors such as residence (urban-rural difference), mother's age and occupation, birth order, the family's income and many maternal conditions such as nutritional status, mother's educational and health status. Known factors for pre-term delivery and fetal growth retardation which are associated with LBW include low maternal food intake and illness, especially

infections. Studies suggest that short maternal stature, very young age, high parity, close birth spacing was all associated factors. The place of residence of the mothers was independently associated with the occurrence of low birth weight. Mothers residing in rural area were greater than 4 times more likely to have LBW babies when compared to those mothers who live in urban. In addition rural residents do not appear to health institution at greater risk of poor perinatal outcome than their urban counter parts(36)

A comparative cross sectional study evidenced that Sex of the neonate, ante natal care follow up, Pregnancy type and diet intake per 24 hours were significantly associated with low birth weight in Axum district and sex of the neonate, ante natal care follow up and pregnancy type were significantly associated with low birth weight in Laelay Machew district. Mothers who have had a history of greater than or equal to four ANC follow up were 71% less likely to deliver LBW babies when compared to those who have attended greater than or equal to three times. Additionally, mothers who had unwanted and unplanned pregnancies were 4 times more likely to have LBW than those who had wanted and planned pregnancies(37)

A study in Jimma zone South West Ethiopia found the following factors to be significantly associated with low birth weight. Mothers living in urban areas were found to be more likely to deliver low birth weights compared to their rural counterparts. The study related the association with urban residence to social lifestyles like heavy cigarette smoking and alcohol intake. Mothers who had experienced weight loss and those who had not had additional food during pregnancy had a significant increased risk of delivering low birth weight babies. Other factors including religion, ethnicity, history of a sexually transmitted infection, engaging in heavy work during pregnancy and history of chronic illness not show any association(38)

2.6 Association between food insecurity and low birth weight

Poor nutrition is a known cause of LBW, especially in developing countries. Maternal nutritional factors both before and during pregnancy account for >50% of cases of LBW in many developing countries. Food insecurity has been associated with poor pregnancy outcomes, including low birth weight (39, 40)

Potential reasons why food insecurity may have particular importance for women during pregnancy are: nutrient demands are higher, the effort required for food preparation may be more

difficult, and pregnant women may be forced to leave the workforce, especially in later pregnancy, which leads to financial strain. Food insecurity may increase the risk of low birth weight because it compromises nutrition and increases stress, which are both implicated in low birth weight etiology (41). Food and nutrition are critically important to support a healthy pregnancy, and impact preterm birth and low birth weight, which are leading causes of infant morbidity and mortality (42, 43)

During pregnancy, women must have both an adequate quantity and quality of food. For example, they need certain vitamins and minerals for healthy fetal growth, and should eliminate foods that are unhealthy or unsafe (44). A particular concern for pregnant women is maintaining a healthy weight. Women who gain too little or too much weight may be at risk of low birth weight (45). A significant interaction was found between level of food insecurity and pre-pregnancy weight status (46).

Food insecurity may influence weight gain through a number of mechanisms; first, women from food-insecure households may become economically dependent on low-cost, processed, high-calorie foods in order to stretch the household budget. Consuming processed, high-calorie foods over time may lead to weight gain (47)

Furthermore, eating high-fat foods under stressful conditions is associated with accumulation of visceral fat and weight gain (48, 49). Therefore, the household food insecurity scale can be viewed as a crude measure that captures psychosocial stress, poor diet quality, and economic hardship. In recent years there has been a concern about the observed co-existence of household food insecurity and obesity, especially among women (50, 51). Food insecurity experience relates not only to hunger and malnutrition, but also to concern and uncertainty regarding the ability of a household to acquire enough food of adequate nutritional quality (52). It has been argued that food insecurity is itself a form of material hardship, leading to feelings of deprivation, anxiety and poor mental health and possible social and behavioral difficulties. These could differentially affect household members depending on their age and gender and result in varied nutritional status outcomes (53-55)

A case control study done in Tehran concluded on the association between HFI and birth weight is that food-insecurity in family and existence of stress, anxiety and depression in mothers during pregnancy can each independently contribute to LBW newborns. With regard to the high prevalence of stress in households with food insecurity, it is probable that stress can have a

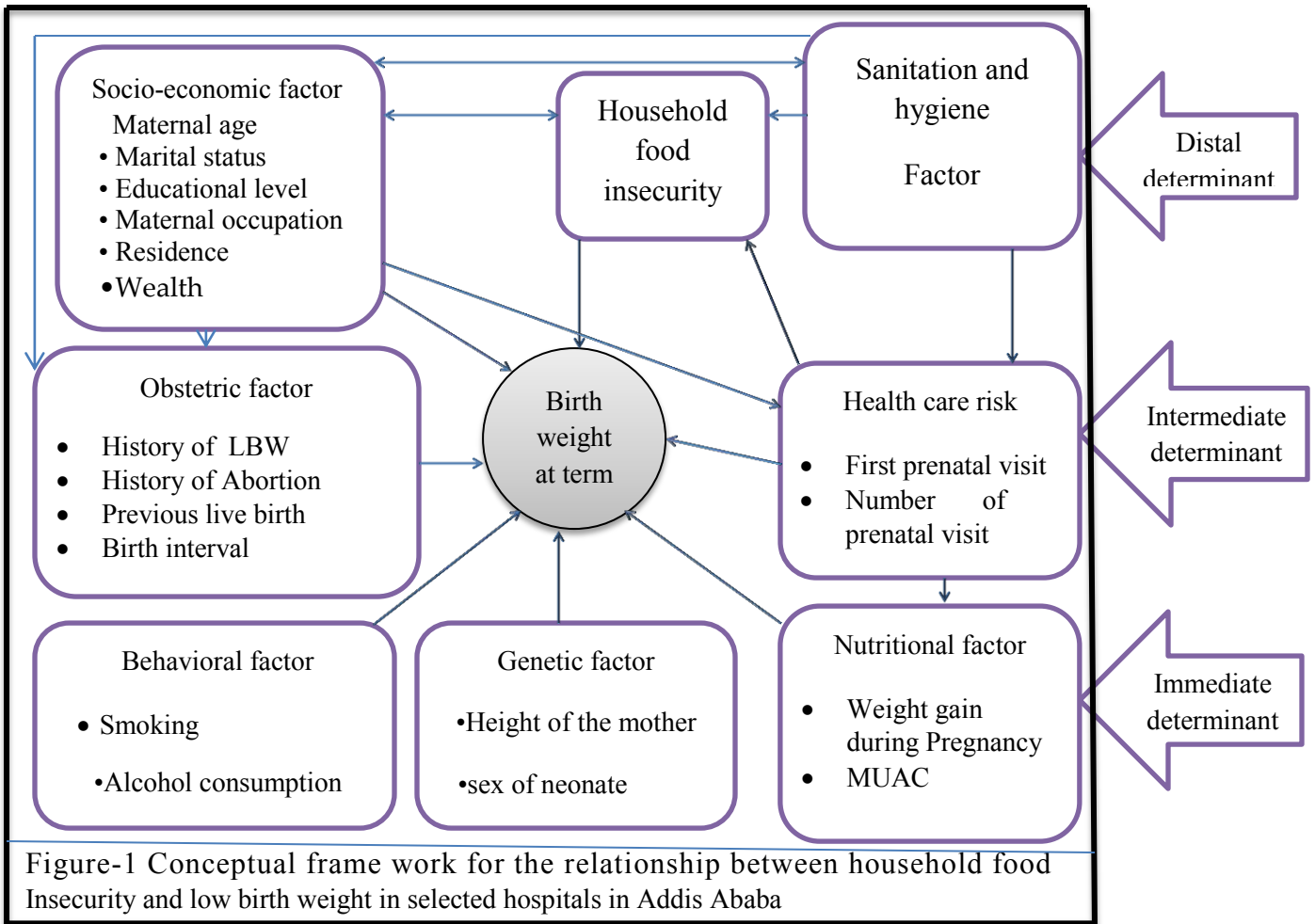
synergistic effect on LBW babies. Results of this study showed that the risk of LBW babies born to mothers with food insecurity 10.46 against mothers who were food security situation ($0.0001 > p$) (56).

According to study in New York City the direct effects of acute and chronic food insecurity on birth weight were non-significant. However, both acute and chronic food insecurity were associated with greater depressive symptoms and anxiety as well as poorer nutrition. Adolescents who experienced acute or chronic food insecurity experienced worse mental health and nutrition during pregnancy than those who were food secure(57)

The finding on the association between household food insecurity and birth weight were inconsistent. So, additional study is important to have clear knowledge on the relationship between household food insecurity and low birth weight.

3. Conceptual framework

In order to identify the factors associated with low birth weight in the context of this study area, an analytical approach using different literature this conceptual framework was developed for this study area(33, 58). These factors directly or indirectly through maternal and infant factors influence birth outcome. Behavioral, genetic and nutritional factors are hypotized as immediate determinant that directly influence birth outcome while obstetric and health care risk factors are intermediate determinant that directly and indirectly affect birth weight. Socio-economic and demographic factor, household food insecurity and sanitation and hygiene factors are distal determinant which directly and indirectly influence birth weight.



Research question

- Is household food insecurity independent determinant of birth weight of term neonate in public hospitals in Addis Ababa?

Hypothesis

H0: There is no relationship between household food insecurity and low birth weight among term neonate in governmental hospitals in Addis Ababa.

HA: Household food insecurity is independently associated with low birth weight among term neonate in governmental hospitals in Addis Ababa.

4. Objective

- ❖ To assess the relationship between low birth weight and household food insecurity among term neonate in public hospitals in Addis Ababa, February - April 15, 2017.

5. Methods

5.1 Study area and period

The study was conducted in selected four governmental hospitals located in Addis Ababa. Addis Ababa is located in the heart of Ethiopia. Administratively the city divides into 10 sub cities and 116 districts. Based on the 2017 the federal democratic republic of Ethiopia report total projected population size of Addis Ababa was 3,435,030 from these 1,625,453(47.3%) were males and 1,809,577(52.7%) were females. Out of total females 1,161,441(64%) were in reproductive age group(59). The city possesses a complex mix of highland climate zones, with temperature differences of up to 10°C (50° F), depending on elevation and patterns. In the city 82% of deliveries take place in public health facilities. There are 6 hospitals owned by Addis Ababa health bureau, 4 by Federal Ministry of Health and 1 by Addis Ababa University, 3 by non-governmental organizations, 3 by defense force and police and 34 are private hospitals. There are 84 public health centers and 700 private clinics out of which 75 are higher clinics(12, 60). 58.16% households in Addis Ababa were food insecure in 2012(17). Government tried to contain the multi-faceted problems of household food insecurity in the population of Addis Ababa by distributing wheat at subsidized prices and lifting of taxes from food commodities, compared to the magnitude and seriousness of the challenge, the level and type of assistance provided to the most affected households was found to be inadequate(26)

The study was conducted from February-June, 2017

5.2 Study design

Institution based unmatched case control study design was applied among mother-new born pairs. Cases were term babies weighed <2500grams and controls were term babies weighed ≥2500 grams.

5.3 Source population

All births took place in the governmental hospitals in Addis Ababa were the source population of the study.

5.4 Study population

All term births that took place in the selected governmental hospitals during the study period were study populations.

5.5 Exclusion criteria

Neonates who had:

1. Congenital anomalies
2. Still birth
3. From multiple births were excluded from this study. Since these are known factors of low birth weight. In addition to these mothers whose gestational age unknown by interview or from card were excluded from the study.

5.6 Sample size determination

The total Sample size was calculated using statistical program of Epi-info v.7. Sample size determination for proportion in two populations was used. One major exposure variable household food insecurity was taken in to consideration during sample size calculation. The following assumptions were taken to come up with the final sample size. 95% confidence level, power of 80%, case to control ratio of 1: 3. The proportion of food insecurity among normal birth weight mother was 58.16%(17). Detecting 15% difference in food insecurity among cases. Based on the above assumptions, with additional 10% for non-response rate, total sample size required to detect the existing difference was 480 (120 case and 360 controls).Sample size was determined by using the formula below.

$$n = \frac{r \left(Z_{\alpha/2} + Z_{\beta} \right)^2 \bar{p} (1 - \bar{p})}{(P_1 - P_2)^2}$$

Where,

n = sample size in case group

r = ratio of controls to cases (3:1)

\bar{p} = measure of variability

$Z_{\alpha/2}$ = level of statical significance (95%)

Z_{β} = desired power (80%)

P_1 = proportion of exposure among control (58.16%)

P_2 = proportion of exposure among case (73.5%)

5.7 Sampling technique and procedure

There are 11 public hospitals in Addis Ababa. From these public hospitals four hospitals were selected by simple random (lottery) technique. To allocate the total sample size to each hospital, total number of women who gave birth in the selected hospitals in the last two months was considered before the actual data collection period. Allocation of the sample size to each health facility was made using proportion to population size of the facilities. In each selected health facility selection of cases made as a case was found, and the next three eligible children were the controls.

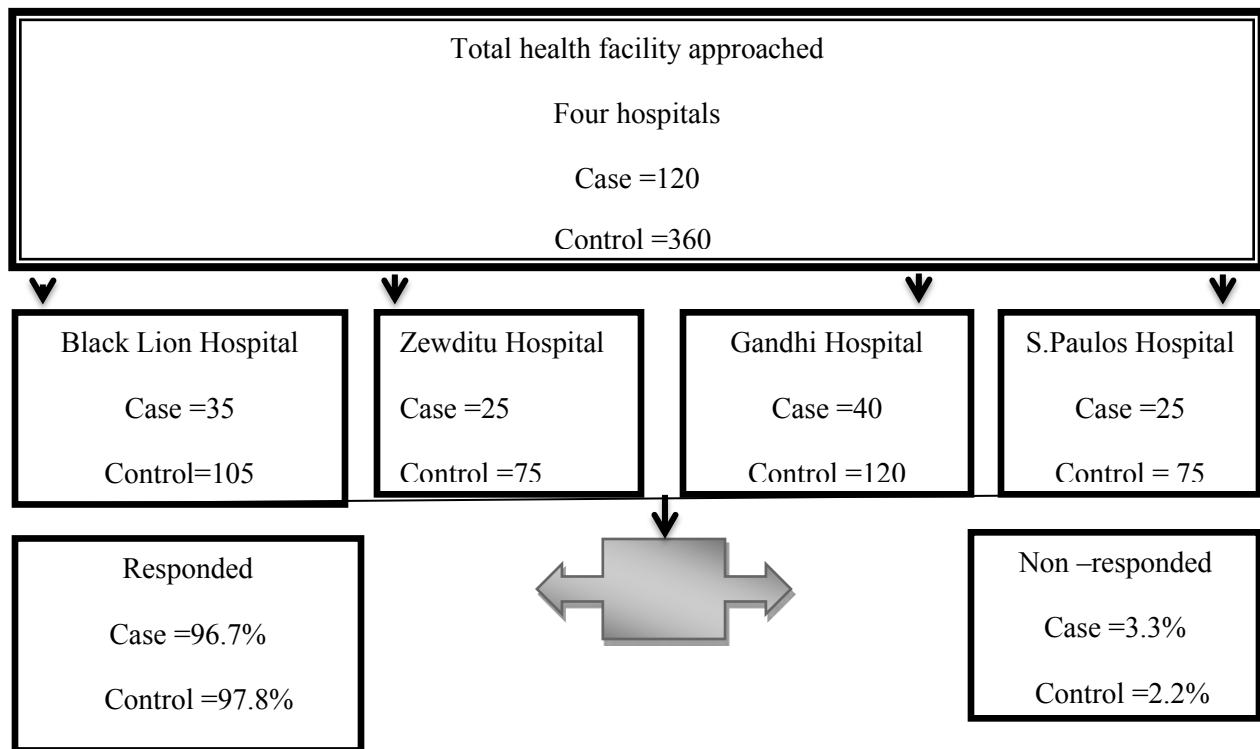


Figure- 2 Summary of study population among selected hospitals in addis ababa, Ethiopia.

5.8 Data collection method and procedures

The data was collected using structured for interviewer administered questionnaire which was adapted from standard literature. This tool consists of questions that can measure different factors that were associated with the outcome variable like: socio-economic and demographic factors, obstetric factors and environmental health condition of the household. The questionnaire also had the outcome variable and the major exposure variable, food insecurity, having nine generic questions that used to measure household food insecurity. The neonate weight was measured by using standard beam balance in the delivery room immediately after delivery or within the first hour by trained diploma and degree midwifery. The measurements were rounded to nearest 100gm. Maternal MUAC was also taken using non stretchable MUAC tape to estimate the nutritional status. It was taken after the mother became stable after delivery. Client chart were reviewed for information that could not got by interview.

5.9 Study variables

Dependent variable

The dependent variable was the outcome variable of interest which was a low birth weight (<2500grams).

Independent variable

The major independent variable was Household food insecurity (HFI)

The other explanatory variables were divide into; socio-economic factor like maternal (age, education level, occupation, residence), household wealth and family size; obstetric factor including history of low birth weight, parity, history of abortion , birth interval and age at first birth; sanitation and hygiene factor ;behavioral factor like smoking and alcohol consumption;gentic factor including mother height and infant sex; nutritional factor like weight gain during pregnancy and maternal MUAC; toxic exposure during pregnancy including malaria ,hypertension, UTI and anemia.

5.10 Defining and measurement of variables

Socioeconomic profile: socioeconomic profile of the mother were assessed by educational status (categorized as non-formal education, primary, secondary and above); marital status classified as single, married, divorced and widowed; residence as in Addis Ababa and out of Addis Ababa; occupation (categorized as farmer, private business, housewife, farmer and government Worker; age (categorized as ≤ 19 , 20-24, 25-29, ≥ 30); religion (categorize as orthodox, Muslim, catholic and protestant)

Wealth Index: wealth index was computed by ownership of different assets, house characteristics and type of latrine and water source. The resulting wealth index categorized into five as lowest, second, middle, fourth and highest.

Household Food insecurity: Household food insecurity was assessed by using household food access scale. Nine questions with dictums (yes/no) response options and nine questions with quantitative response options were used to assess the household food security. The respondents were asked about questions related to Anxiety and uncertainty about the household food supply (Q1), Insufficient Quality (includes variety and preferences of the type of food) (Q2, Q3 and Q4). Insufficient food intake and its physical consequences in the past four weeks with their frequency (Q5, Q6, Q7, Q8 and Q9). The response of the household in this case mothers was recategorized as secured (household experiences none of the food insecurity access conditions or just experiences worry Once or twice in the past four weeks) and insecure (household experiences one of the food insecurity access conditions, but not just experiences worry Once or twice in the past four weeks)(61)

Mid Upper Arm Circumference was measured by MUAC tape and re categorized as < 23 cm (poor nutritional status) and ≥ 23 cm (nutritional status is not poor).

Dietary advice was assessed if mother given counseling about the importance of additional food during pregnancy.

Obstetric characteristic: obstetric characteristic of mother was assessed by birth interval (categorized as ≤ 2 , 2-4, 5), parity (categorized as 1, 2-5), age at first birth (categorized as < 18 years and ≥ 18 years), history of low birth weight assessed by mother report small and very small baby and history of abortion.

Number of Antenatal visits: This was defined as the number of times the pregnant woman visits the hospital or health center to receive care for herself and her unborn child.

Number of ANC visit was classified on the basis of the minimum recommended visits i.e. having four or more visits and less than four visits.

Explanatory variables such as morbidities during pregnancy and toxic exposure during pregnancy were categorized as Yes and No.

5.11 Data quality management

The questioner was prepared in English and translated in to Amharic and translated back to English to keep consistency of the question and increase understanding with the respondents. The sample of questioner was pre-tested on mother out of the study area. The pre-test was done to insure clarity, wording, and logical sequence and skip pattern of the questioner. Essential amendment was taken. Training was given to the data collector and supervisor on objective of the study, technique and procedure that they follow during interview and anthropometry measurement. Close supervision was done by supervisor and principal investigator.

5.12 Data analysis

The collected data were entered into EPI data 3.1 computer programs and exported to STATA 14 software for cleaning, recording, categorizing and analyzing. All variables were changed to categorical and dichotomous type and summarized by using frequency and percentage. The outcome variable was categorized as case and control. Case was birth weight below 2500g and control was birth weight 2500g and above. And the value recategorized as (case =1 control =0).

Household food insecurity statuses of the participants were assessed by using nine generic and nine frequency questions of HFIAS that were developed by FANTA. By using the standard criteria of household food insecurity (access) prevalence domain, mothers were categorized into four level (Foods secure, and mild, moderately and severely food insecure).categorization was done by the help of STATA 14 software.

The wealth status of the mother was assessed by using asset variable (electricity, Electric mitad, refrigerator, television, mobile phone, non-mobile phone, automobile, radio, bed and animal drawn cart), house hold characteristic (floor type, roof type and wall type), water source and latrine type. And analyzed using principal component analysis. Before doing principal component analysis the value of each wealth variable was categorized to (0=no and 1= yes). Then the analysis was done and categorized the participant in to first quintile, second quintile, third quintile, fourth quintile and fifth quintile group.

Bivariate analysis was done to compare low birth weight with each independent variable. The enter regression model was used to test the determinant predictor of low birth weight. To evaluate the association between a single independent variable with dependent variable crude odds ratio was used. By using Variance Inflation Factor (VIF) and tolerance test multicollinarity was tested among selected independent variable. After multiple logistic regressions was done, the adjusted odd ratio was used to determine the strength of association and corresponding CI was used to decide whether statically significant between the explanatory variable and outcome variable.

5.13 Ethical Consideration

The study proposal had ethical approval from the ethical approval board of Addis Ababa University School of Public Health and Addis Ababa Public Health Research and Emergency Management Core Process. Permission was obtained from head of selected hospitals. The study participant was explained to about the objective and the aim of the study. It was explained that participating the study was entirely voluntary and they had the right to refuse to participate and that was not affected any way. It was also made clear that they were at liberty to withdraw from the study at any stage of participation. It was made known to them that there were no direct benefits or risks in participating.. However it was made clear that the information that the study was come out with, was help us to understand the factors and circumstances associated with low birth weight. Assurance of confidentiality of the information was given and explained that the information was to be used for the intended purpose only. Again participants were made aware that they were not be identified by name in any dissemination reports or publications resulting from this study. Finally it was made clear that this research was entirely for academic purposes.

5.13 Dissemination of the result

The main finding of this research will be disseminated to the concerned body in the form of presentation, hard copy and publication Dissemination of the result. The hard copy of the whole research paper will be submitted to school of public health of Addis Ababa University and Addis Ababa Public Health Research and Emergency Management Core Process. It will be presented to school of public health during thesis presentation.

6. Result

From a total planned 480 mother-neonate pair (120 cases and 360 controls) for this project only 468 participants were involved in the study which was 97.5% (case 96.7% and control 97.8) response rate of the total sample size. 13 mothers were excluded from the study because they were not fulfilling the criteria for selection.

6.1 Description of Socio-demographic characteristic mother in case and control group

Among mothers who were included in the analysis majority (58%) were Orthodox. About 40% of mothers were within age group 25-29 years old, 75% of these age group mothers were in controls group. The mean age of the respondent was 26.7 ± 5.2 years old. Concerning to educational level of the mothers nearly 40 % (75.5% controls and 24.5% cases) of them were in the primary educational level and 14%(29% cases and 71% controls) had no formal education. Mothers whose ages below 19 were greater in cases (18) than controls (14). 88% of the mothers were from Addis Ababa and married. 50% of mothers were housewife, from these 24% from cases and 76% from controls. 31% (17% from cases and 83% from controls) of respondents were in the fourth wealth quintile group (Table 1)

Table 1: Socio-demographic profile of mothers and its association with low birth weight among selected hospitals in Addis Ababa, Ethiopia, May, 2017.

Explanatory variables	Birth weight status		Df	X ² -value	p-value
	Low	Normal			
	N ₀ (%)	N ₀ (%)			
Age of mother					
15-19	18 (56.3)	14 (43.7)	3	19.68	<0.0001
20-24	24 (18.9)	103 (81.1)			
25-29	46 (25)	139 (75)			
≥30	28 (22.6)	96 (77.4)			
Educational status					
No formal education	19 (29)	47 (71)	3	5.17	0.271
Primary	49 (24.5)	151 (75.5)			
Secondary and diploma	40 (24)	127 (76)			
Degree and above	8 (22.9)	27 (77.1)			
Occupation					
Gov't employer	9 (17)	44(83)	4	6.50	0.164
Private employer	32 (29.4)	77(70.6)			
Merchant	13 (18.3)	58(81.7)			
House wife	58 (26)	168(74)			
Farmer	4 (44.4)	5(55.6)			
Residence					
Addis Ababa	100 (24.3)	312(75.7)	1	0.49	0.484
Out of Addis Ababa	16(28.6)	40(71.4)			
Current marital status					
Single	15(26.8)	41(73.2)	1	0.14	0.712
Married	101 (24.5)	311(75.5)			
Wealth					
1 st quintile	15(23.1)	50(76.9)	4	15.13	0.004
2 nd quintile	32(34.8)	60(65.2)			
3 rd quintile	36(31.9)	77(68.1)			
4 th quintile	25(17.1)	121(82.9)			
5 th quintile	8(15.4)	44(84.6)			

6.2 Food security status of mothers

The occurrence of food insecurity at household level can be assessed by nine generic occurrences question. The food insecurity occurrence questions relate three domains of food insecurity; anxiety and uncertainty, insufficient quality including variety, preference of food and insufficient food intake and its physical consequence(61) .From all nine occurrence questions house hold in our case mothers who participated in this study responded that neither of them had the two (food that really you did not want to eat and stay whole day and night without eating) condition. As showed by the graph below no mother in the control group had the condition of sleep hungry. Occurrence of no food at house also rare both in case and control group. However majority of mothers especially in case group reported that they or member of the household ate unprefered, limited Variety and smaller meal than they needed to ate Participant particularly in case group worried that food in the house was not enough to the member of the household in the last one month period.

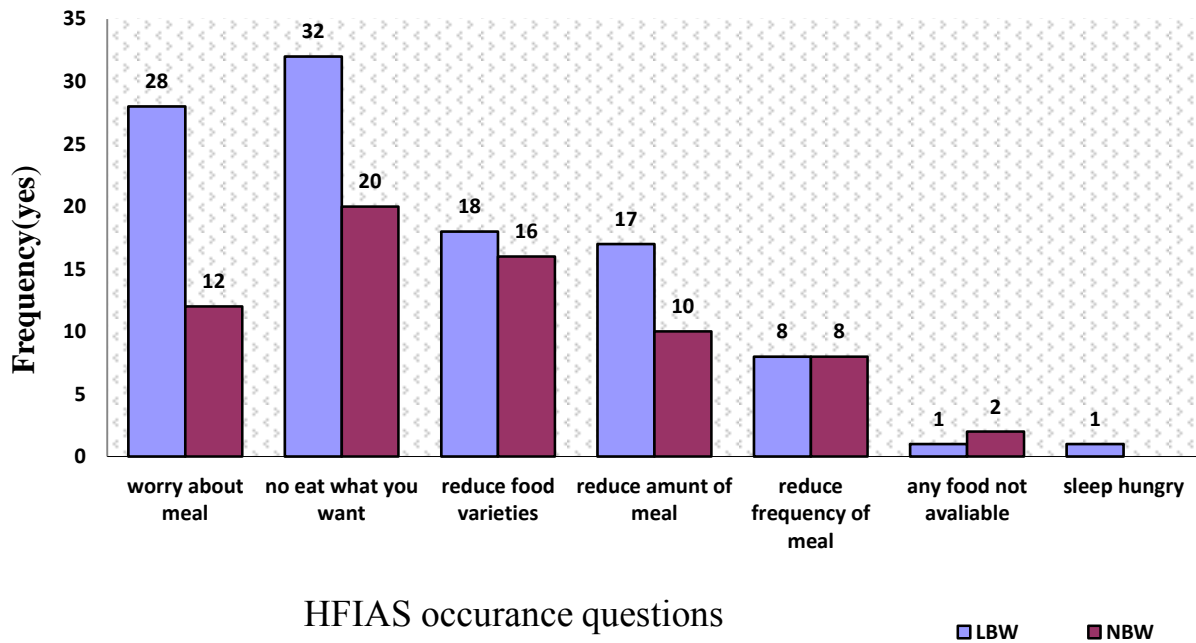


Figure- 3 Food insecurity occurrence among mothers in selected hospitals, Addis Ababa, Ethiopia, May, 2017.

Depending on household food insecurity access scale (HFIAS) which was developed by USAIDS (25) this analytical study come up with the following finding .Of total respondent about 86% of them were food secured, from these 91% in control group and 70% in case group . Only 1% of mothers were severely food insecure. Mild food insecurity in low birth weight mother was higher (13%) than normal birth weight mother which was about 5%. And also moderate food insecurity among total cases was greater (about 15%) than control mothers (3%) (figure4). House hold food insecurity access prevalence can calculated by using the category of the participant on each level and total household in the category.

$$\text{HFIA prevalence} = \frac{\text{Number of household with HFIA category}}{\text{Total number of household with a HFIA category}} \times 100$$

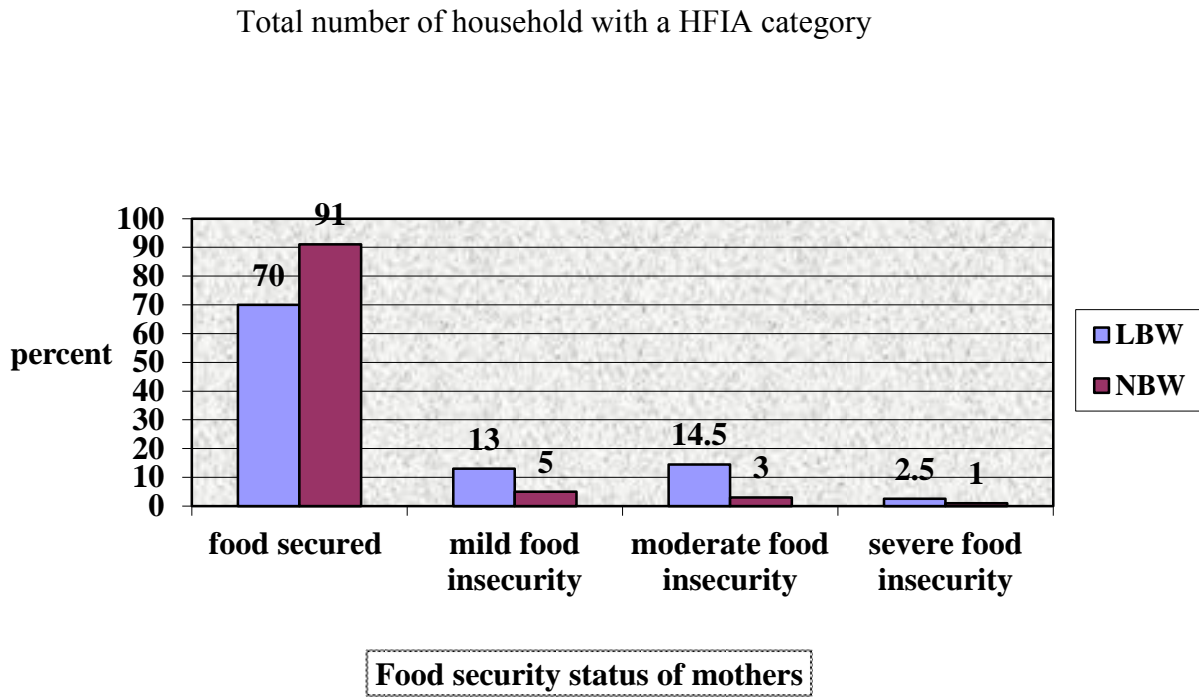


Figure- 4 Food Security status of mothers among selected hospitals, Addis Ababa, Ethiopia, May, 2017

6.3 Obstetric characteristic and ANC follow up result of the study participant

From total 468 mothers who had participated in the study about 50% were primigravida, out of these mothers 30% in case group and 70 % in controls group. Just about 95% of mother gave the first birth at age 18 years and above. MUAC was used to assess nutritional status of mother and majority of mothers (57%) in case group had MUAC less than 23. 60% of mothers gave current birth with interval of 5 year and above from previous birth. 53% of the newborns were males and the remaining 43% were females, but females neonate in case groups were higher than males. The average weight of the newborn was 2923.29g with standard deviations of (S.d±562.18).

Nearly 94% of mothers attended ANC from these 68% of them attended more than four times. About 80% of mother had been given advice about diet during their ANC follow up of this pregnancy

As the Result of this study indicated that 11% (55% in case group and 45% in control group) of mothers had history of hypertension in the pregnancy of this baby. About 17% of mother exposed to anemia (Table2).

Table 2. Obstetric, ANC, toxic exposure during pregnancy profile of mothers and its association with low birth weight among selected hospitals in Addis Ababa, Ethiopia, May, 2017

Explanatory variables	Birth weight status		Df	X ² -value	p-value
	Low N ₀ (%)	Normal N ₀ (%)			
Parity					
1	71(29.22)	172(70.78)	1	5.32	0.021
2-5	45(20)	180(80)			
Birth interval in year					
<2	12(21.82)	43(78.18)	2	5.82	0.054
2-4	22(17.6)	103(82.4)			
≥5	82(28.47)	206(71.53)			
Age at first birth					
<18	9(39.13)	14(60.87)	1	2.67	0.102
≥18	107(24.04)	338(75.96)			
Sex of neonate					
Female	71(32.27)	149(67.73)	1	12.48	<0.0001
Male	45(18.15)	203(81.85)			
Maternal MUAC					
<23	60(57.14)	45(42.86)	1	76.02	<0.0001
≥23	56(15.43)	307(84.57)			
ANC received					
No	11(36.7)	19(63.3)	1	2.43	0.119
Yes	105(24)	333(76)			
No ANC received					
<4	46(30.3)	106 (69.7)	1	3.62	0.057
≥4	70(22.2)	246(77.8)			
Dietary advice at ANC					
No	19(20.4)	74(79.6)	1	5.13	0.023
Yes	97(25.9)	278(74)			
HTN					
No	87(21)	328(79)	1	28.72	< 0.0001
Yes	29(55)	24(45)			
Anemia					
No	82(21)	309(79)	1	18.60	<0.0001
Yes	34(44)	43(56)			
Water source					
Non-improved	5(41.7)	7(58.3)	1	1.90	0.170
Improved	111(24.3)	345(75.7)			

Potential confounder control

To assess the independent effect of food insecurity on low birth weight potential confounder should be controlled, identification of these confounders was better than simply analyze using multiple regressions. For this all variables that had associated with both to the outcome variables (low birth weight) and to the major independent variables (food insecurity) were selected for further analysis. To select these variables we used odd ratio. Predictor Variables with the odd ratio value ($OR \leq 0.5$) or ($OR \geq 1.5$) when associated with both the outcome (low birth weight) and major predictor variable (food insecurity) were selected. After the potential confounders were identified further analysis was done to assess the relationship between low birth weight and food insecurity (Table 3&4).

Table 3 bivariate logistic regression result by socio-economic and obstetric covariate of low birth weight in selected hospitals, Addis Ababa, Ethiopia, May, 2017.

Explanatory variable		birth weight status		COR with 95% CI	Food insecurity		COR with 95%CI
		Low	Normal		Yes	No	
Maternal age	15-19	18	14	4.41(1.95 - 9.96) ¹	10	22	3.06(1.23-7.65) ¹
	20-24	24	103	1.13(1.7-1.90)	22	105	1.41(0.70-2.84)
	25-29	46	139	0.79(1.4 -1.50)	17	168	0.68(0.33-1.41)
	≥30	28	96	1	16	108	1
Educational status	Formal education	19	47	1	11	55	1
	Primary	49	151	0.80(0.43-1.49)	27	173	0.78(0.36-1.68)
	Secondary	40	127	0.78(0.41-1.48)	25	142	0.88(0.41-1.91)
	Degree and above	8	27	0.73(0.28-1.89)	2	33	0.30(0.06-1.45)
Occupation	Gov't employer	9	44	0.26(0.06-1.14)	4	49	0.63(0.06-6.61)
	Private employer	32	77	0.52(0.13-2.06)	15	94	1.28(0.15-10.95)
	Merchant	13	58	0.28(0.07-1.19) ¹	3	68	0.35(0.03-3.81) ¹
	House wife	58	168	0.43(0.11-1.66)	42	184	1.83(0.22-14.90)
	Farmer	4	5	1	1	8	1
Marital Status	Single	15	41	1	12	44	1
	Married	101	311	0.89(0.47-1.67)	53	359	0.54(0.27-1.01)
Wealth	1 st quintile	15	50	1.65 (0.64 - 4.26)	17	48	7.44(3.12-17.71) ¹
	2 nd quintile	32	60	2.90 (1.23-6.98) ¹	20	72	5.83(2.54-13.41) ¹
	3 rd quintile	36	77	2.50 (1.1- 6.02) ¹	19	94	4.24(1.85-9.74)
	4 th quintile	25	121	1.14 (0.48- 2.70)	9	189	1
	5 th quintile	8	44	1			
Birth interval	<2	12	43	0.70 (0.35- 1.39)	6	49	0.74(0.29-1.83)
	2-4	22	103	0.54 (0.320.91)	18	107	1.01(0.55-1.84)
	≥5	82	206	1	41	247	1
Age at 1 st birth	<18	9	14	2.03(0.85-4.82) ¹	10	13	5.45(2.28-13.03) ¹
	≥18	107	33	1	55	390	1
MUAC	<23	60	45	7.30(4.52-11.80) ¹	26	79	2.73(1.57-4.76) ¹
	≥23	56	307	1	39	324	1
Water source	Non improved	5	7	2.22(0.69-7.13) ¹	3	9	2.1(0.56-8.03) ¹
	Improved	111	345	1	62	394	1
MUAC	<23	60	45	7.30(4.52-11.80) ¹	26	79	2.73(1.57-4.76) ¹
	≥23	56	307	1	39	324	1
Food insecurity	Yes	5	30	4.64(2.67-7.99) ¹			
	No	81	322				

¹= variable taken for multiple analysis

Table 4: bivariate analysis result by ANC and toxic exposure covariates of low birth weight in selected hospitals, Addis Ababa, Ethiopia, May, 2017

Explanatory Variable		Birth weight status		COR with 95%CI	Food insecurity		COR with 95%CI
		Low	Normal		Yes	No	
ANC received	No	11	19	1.84(0.84-3.98) ¹	10	20	3.48(1.55-7.83) ¹
	Yes	105	333	1	55	383	1
No of ANC	<4	46	106	1.53(0.98-2.36) ¹	27	125	1.58(0.92-2.70) ¹
	≥4	70	246	1	38	278	1
Time of first ANC received	<16week	69	172	1.54(1.00-2.35)	35	206	1.12(0.65-1.89)
	≥16 weeks	47	180	1	30	197	1
Iron given	No	36	71	1.69(0.99-2.89)	12	65	1.36(0.68-2.73)
	Yes	80	281	1	43	318	1
Took iron	<30 days	13	30	1.35(0.68-2.69)	10	33	2.04(0.95-4.37)
	≥30 days	103	322	1	55	370	1
Dietary advice	No	19	74	2.40 (1.10-5.21)	10	53	1.38(0.66-1.91) ¹
	Yes	97	278	1	45	330	1
Alcohol drinking	Yes	79	245	1.07(0.68-1.68)	15	129	0.64(0.34-1.18)
	No	37	107	1	50	274	1
Coffee drinking	Yes	93	250	1.65(0.98-2.75)	47	296	0.94(0.53-1.69)
	No	23	102	1	18	107	1
HTN	Yes	29	24	4.56 (2.52-8.22) ¹	11	42	1.75(0.84-3.61) ¹
	No	87	328	1	54	361	1
UTI	Yes	21	28	2.56 (1.39-4.70) ¹	10	39	1.69(0.80-3.59) ¹
	No	95	324	1	55	364	1
Anemia	Yes	34	43	2.98(1.78-4.96)	11	66	1.04(0.51-2.09)
	No	82	309	1	54	337	1
Malaria	Yes	4	342	1.22(0.38-3.97)	1	13	0.47(0.60-3.64)
	No	112	10	1	64	390	1

¹ = Variables taken for multivariate analysis

Independent factor associated with low birth weight

Ten variables had association with both to the outcome variable (low birth weight) and the major independent variable (food insecurity). But ten factors were taken to multivariate logistic regression models from binary logistic regression model. Because one variable (occupation of mothers) was drop due to multicollinearity. After dropped this variable the Variance Inflation Factors (VIF) of the remain variables was range from 1.09-2.57 and tolerance test below one. Both of these values were within normal range. Based on aforementioned criteria those variables included for multiple analysis were socioeconomic related variable (maternal age, wealth and water source), obstetric and ANC related (Age at 1st birth, ANC follow up, number of ANC attended and MUAC) and medical problem during pregnancy (hypertension and UTI). Adjustment was done using three models. Model 1 included the major independent variable (food insecurity) and three variables related to socio economic profile of mothers. After adjusted socio economic related variable food insecurity was highly associated with low birth weight in model one, similarly food insecurity had association with low birth weight in model 2 and 3 but the strength was slightly decreased. As multivariate logistic regression result revealed that four factors were independently associated with low birth weight (food insecurity, age, HTN and MUAC) (Table5).

Table 5: Multivariate logistic regression result by covariates of low birth weight among selected hospitals, Addis Ababa, Ethiopia, May, 2017

Explanatory variables	Birth weight		COR with 95% CI	Model 1	Model 2	Model 3
	Low	Normal		AOR with 95% CI	AOR with 95%CI	AOR with 95% CI
Food insecurity						
Yes	35	30	4.64(2.67-7.99)	4.22(2.32-7.68)	3.69(1.89-7.18)	3.58* (1.79-7.16)
No	81	322	1	1	1	1
Maternal age						
15-19	18	14	4.41(1.96-9.96)	4.39(1.79-10.69)	4.33(1.57-11.97)	3.88*(1.35-11.15)
20-24	24	103	1.13(1.71-1.90)	0.74(0.38-1.41)	0.81(0.39-1.66)	0.92(0.43-1.94)
25-29	46	139	0.79(1.42-1.51)	1.32(0.74-2.35)	1.45(0.77-2.75)	1.65(0.85-3.22)
≥30	28	96	1	1	1	1
Wealth						
1 st quintile	15	50	1.65(0.64-4.26)	0.83(0.28-2.42)	0.54(0.17-1.75)	0.55(0.17-1.83)
2 nd quintile	32	60	2.90(1.23-6.98)	2.52(1.00-6.32)	1.94(0.72-5.23)	2.05(0.75-5.58)
3 rd quintile	36	77	2.50(1.11-6.02)	2.23(0.91-5.44)	2.28(0.87-5.97)	2.03(0.77-5.33)
4 th quintile	25	121	1.14(0.48-2.70)	1.19(0.48-2.95)	1.19(0.46-3.13)	1.12(0.42-2.97)
5 th quintile	8	44	1	1	1	1
Water source						
Non Improved	5	7	2.22(0.69-7.13)	3.11(0.77-12.55)	2.54(0.55-11.69)	2.86(0.62-13.24)
Improved	111	345	1	1	1	1
Age at 1st birth						
<18	9	14	2.03(0.85-4.82)		1.65(0.47-5.79)	0.58(0.16-2.16)
≥18	107	33	1		1	1
ANC received						
no	46	106	1.84(0.84-3.98)		1.68(0.62-4.59)	1.88(0.67-5.33)
yes	70	246	1		1	1
N₀ of ANC received						
<4	40	106	1.53(0.98-2.36)		1.54(0.90-2.63)	1.55(0.89-2.70)
≥4	70	246	1		1	1
MUAC						
<23	60	45	7.30(4.5-11.80)		7.6(4.44-13.13)	7.70*(4.39-13.60)
≥23	56	307	1		1	1
HTN						
Yes	29	24	4.56(2.52-8.22)			4.81*(2.33-9.93)
No	87	328	1			1
UTI						
Yes	21	28	2.56(1.39-4.70)			1.56(0.69-3.52)
No	95	324	1			1
* Significant at Multivariate Analysis				R ² =11.1%	R ² =22.4%	R ² =26.1

7. Discussion

The primary target of this study was to assess the relationship between household food insecurity and low birth weight using unmatched case control study among term neonate. On the basis of this study household food insecurity was independently associated with low birth weight. The effect of food insecurity at household level was prominent both at bivariate (COR 4.64 CI (2.67-7.99) and multivariate (AOR 3.6 CI (1.79 -7.16) level of analysis.

The odds of low birth weight among mother at food insecurity condition were about four times higher against mother in food security condition.

Food insecurity increases the risk of low birth weight because it compromise nutrition and increase stress which are both implicated low birth weight etiology. Women's traditional role in society as caregivers and preparers of food for the family, as well as an increasing recognition of their role as heads of households, further support the consideration of women as a special group to evaluate the effect, consequences, and areas for intervention in terms of food insecurity.

The association may also due to that the nutrient demand during pregnancy high and the effort for food preparation may be increase the risk. In addition the pregnant women may be enforce to leave the workforce especially during the late pregnancy which leads financial strain on the mother. Member in household experiencing food insecurity may reduce food intake, consumed poor quality food or have distributed eating pattern and go to bed without eating. Women may be particularly vulnerable due to gender inequalities within societies, their roles within households, and mothers adjusting their nutrition to buffer the effect of food insecurity on their children, all these potentially leading mother to gave low birth weight baby.

Because the outcome variable was multi casual an effort was made to deal with variable that was classically considered as confounder like (maternal age, wealth, medical problem during pregnancy and MUAC). This finding was consistent with the case control study done in Tehran which state that the risk of LBW babies born to mothers with food insecurity was 10.46 higher against mothers who were food security situation ($0.0001 > p$)(56)

The cohort study done in United States indicated that food insecurity was significantly associated with a low-birth-weight after adjustment for maternal age which was in line with our study(13).

But a cross sectional study done in New York City showed that there was no significant association between household food insecurity and low birth weight. This difference may be due to study design difference and time difference(57).

Studies have shown that household food security and weight status can have a paradoxical relationship—with women living in food insecure households reporting higher prevalence rates of overweight (62, 63) and related health complications. The results suggest that the experience of living in a food insecure household was associated with metabolic health indicators during pregnancy. Not only was living in a food insecure household associated with severe regravida obesity, a condition that broadly predisposes women to adverse pregnancy outcomes but also with greater weight gain and gestational diabetes mellitus(64). All this may predispose mother for low birth weight.

Maternal MUAC was another independent variable which was strongly associated with low birth weight as a proxy indicator of nutritional status of mother. The multivariate analysis finding indicated that mothers who had MUAC < 23 cm were about 8 times more likely to give low birth weight babies as compared to their counterparts with corresponding confidence intervals of (4.39-13.60). Other studies also reported a similar finding(65, 66). MUAC was found to be a good anthropometric indicator to identify acutely malnourished pregnant women and predict adverse birth outcomes(67).

Hypertension was the medical problem that showed significant association with low birth weight with AOR of 4.8 with CI (2.33 -9.93). The odds of low birth weight among mothers with a history of hypertension were about five times higher as compared to mothers who had no history of hypertension during pregnancy of this baby. Other studies also support that hypertension was an independent determinant of low birth weight(35). This was due to blood flow through spiral arteries decreasing and delivery of nutrients and oxygen to the placenta being reduced(68). Other medical problems, urinary tract infection and anemia, were not significantly associated with low birth weight in this study.

As this study showed, mothers within the age group 15-19 years were about 4 times more likely to give birth with low weight [AOR 3.88 CI (1.35-11.15)] compared to mothers aged 30 years and above. This was supported by other studies (33, 36). Different studies revealed similarly that birth

weight was generally less favorable among adolescent and women over 35 years old. Intervention aim at delaying pregnancy in young adolescent might be more effective than other modifiable risk factor of low birth weight(33)

Socio-economic variables included in this study were not independently associated with low birth weight. This might be to similar nature or living standard of mother was included in the study. Majority of mothers were housewife, married and lived in similar setting .Other study also support that Socio-economic variables (residence, marital status, occupation of mother, educational level and family size of the house hold) were not significantly associated with low birth weight (69, 70).

8. Strength and limitation of the study

The finding of this study had some strength because it is case control study. It could give strong evidence on association compared to cross sectional and other descriptive study type. Using clear selection criteria of both case and control make it decreasing selection bias during sample size selection. And also almost the entire question included in this study was close ended this may decrease information bias. The ratio of case to control may increase the strength of the study because make it more precise by increasing sample size. Being hospital based somewhat increase the strength because the quality of the information. Pretest and using standardized and validated questionnaire add value on the strength of this study. On the other hand this study did not include some potential risk factor of low birth weight. Even if the data to measure food security condition of the mother was based on standardized and validated measurement to misclassification bias was may be occur because it is based on the response of the participant and it need privacy to get more accurate response. The data collector also had experience on data collection this may make difficult to blind which increase information bias on the study.

9. Conclusion

We have shown that household food insecurity was independently associated with low birth weight among term neonates in governmental hospital in Addis Ababa. This prevents many women from meeting guideline for healthy eating during pregnancy. This finding may be help full in determining the target group of mother. In addition maternal MUAC, hypertension and age were other factors that were significantly associated low birth weight in this study.

10. Recommendation

For health facilities

- Should screen mothers at risk for food insecurity during pregnancy.
- Aware that a healthier diet may not be the top priority of any client
- Help the client focus on which aspect of the diet can accommodate with current household finance.
- Early initiation of ante natal care and early screening for co-morbidity during pregnancy, early treatment and referral linkage should be assured.

For government and programmer

- Empowering and training of front line health provider to give effective nutritional education during pregnancy
- Women in the population were screened for food insecurity and solve the problem. Community based approach to solve food insecurity is foster self- help, mutual support and community development.
- Should stem the problem than providing food.
- Should promote and empower women to assure food security
- Efforts must continue to provide adequate funding and outreach to those in need, and population-based programs.
- Policies must aim to ensure that pregnant women have access to high-quality, nutritious food.

For researcher

- More strong study need to be conducted.

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12 Annex

Information sheet

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

ID: _____

Informed consent form (English version) to do an interview on determinant of low birth weight was selected hospitals in Addis Ababa.

Strict rules that should be followed by each data collector

Dear! Data collectors, before you start the data collection please strictly follow the following rules.

Rule 1: First the weight of the neonate should be measured

Rule 2: The following participants should be included in this study

- neonates who have gestational age ≥ 37 completed weeks
- mothers who have not serious disease condition
- mothers who sign the consent form

Rule 3: The following participants should be excluded in the study

- Still births
- Neonates born from multiple pregnancy
- Neonates with congenital anomalies

NB: if the visit mother and infant not fulfill aforementioned rules please stop here the interview and wait the next participant.

Give ID number only for those full fill the rule.

Greeting: Good morning /good afternoon MAM!

My name is _____ address _____

I am working as a data collector in study conducted by Degemu Sahlu, who is a postgraduate student of Addis Ababa University, college of health science, school of public health.

The objective of the study is to assess factor associated with low birth weight with special emphasis on house hold food insecurity in the Addis Ababa hospitals. The reason for why the researcher focused on this research area is, LBW is an indicator of a multifaceted public-health problem that includes long-term maternal malnutrition, ill health, and poor health care in pregnancy and still recognized as a deep rooted public health problem across the country and in this set up too. So to alleviate this problem evidence based intervention is important so strong study is necessary. Now you get the chance to participate in this study. Now the information that was get from you is very crucial to made valid conclusion on determinant of low birth weight. I would very much appreciate your participation. If you are ok to participate, the following activity was be done) yours and your neonate weight, your MUAC and height was be measured, and) there was be 20-25 minute interview that focused on history of previous pregnancy, environmental condition, socio-demographic characteristic and household food insecurity.

Participation was not have any harm and a direct financial or other benefit for you but your information helps to achieve the objective of the research. Whatever information you provide it was be kept confidentially and to assure that we was use code number , name is was not be written and in addition the document was not be shared with anyone other except people participating in this study.

Participation is purely voluntary, and if I come up with any question that you don't want to answer, just let me know it and I was go on to the next question. Besides that, you was have 100 % freedom to stop the interview at any time. I hope you was participate in this study since your information is very crucial.

At this time, do you want to ask me anything about this research?

May I begin the interview now? If she said yes proceed the next interview ,if said no ,say thank you and go to the next participant.

Signature of interviewer: _____ Date:- _____

Address of the principal investigator

Phone number: 0961914046

Gmail dagisahlu@gmail.com

Address of the interviewer

Phone number: _____ Email: _____

Address of research ethics committee

Phone number: _____

Email _____

P.O. Box _____

Verbal consent Format

I have briefly informed about the study and I clearly understood the objectives, the risk and benefit associated with it. Since it doesn't affect my personal life in any way, I here verbally approve my consent to voluntarily participate in the study as an interviewee.

Name of interviewer _____ signature _____

Address of the principal investigator

Phone number: 0961914046

Email: dagisahlu@gmail.com

Address of the interviewer

Phone number: _____

Gmail: _____

Address of research ethics committee

Phone number: _____

Email: _____

P.O. Box _____

ADDIS ABABA UNIVERSITY
 COLLEGE OF HEALTH SCIENCE
 SCHOOL OF PUBLIC HEALTH

ID _____

QUANTITATIVE QUESTIONER

Structured interviewed administered questionnaire prepared to assess the determinant of Low birth weight emphasis on house hold food insecurity among mothers of full term infant in Addis Ababa, Ethiopia.

General direction of interviewer before conducting the interview

- Check whether the questionnaire has 7 parts and 6 pages including this page.

Check the questionnaire contains socio –demographic characteristics, infant and mother characteristics, ANC service part, household wealth part, and toxic exposure during pregnancy question part, environmental condition question part, food insecurity and anthropometric measurement.

Part I Socio-demographic characteristics				
S.no	Questions	Response option	Code	Skip to
101	Age of the mother(in complete year)	_____		
102	Religion of the mother	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Traditional		
103	Have you ever attended school?	1. Yes 2. No	__	IfNo skip to "104"
104	What is the highest level of school you attended?	1. Primary(1-8) 2. Secondary (9-12) 3. Technical /vocational 4. Higher education (12+)	__	
105	What is your occupation?	1. Government employer 2. Private employer 3. Farmer 4. Merchant 5. Housewife 6. Other(specify)	__	
106	Residence	1. Addis Ababa 2. Out of Addis Ababa	__	

107	Current Marital status	1. Married 2. Windowed 3. Divorced 4. Single	<input type="checkbox"/>	If Ans is not 2 Skip to Q 111
108	Did your husband ever attend formal education?	1. Yes 2. No	<input type="checkbox"/>	
109	What is the highest level of school he attended?	1. Primary(1-8) 2. Secondary (9-12) 3. Technical/vocational /diploma 4. Higher education (12+)	<input type="checkbox"/>	
110	What is your husband occupation?	1. Gov't employer 2. private employer 3. Farmer 4. Merchant 5. Other's(specify) _____	<input type="checkbox"/>	
111	How many household live in your house?	_____		
112	How much birr does the household get per month?	_____	<input type="checkbox"/>	
113	What is the Floor of your house made of?	1. Earth 2. Sand 3. Wood 4. Wood block 5. Other	<input type="checkbox"/>	
114	What is the roof of your house made of?	1. Grass 2. Corrugated iron/metal 3. Cement 4. Other		
115	What is the wall of your house made of?	1. Wood and mud 2. Cement block 3. Sand and stone 4. Bricks 5. Other		
Does your household has				
		Yes	No	
116	Electricity	1	2	
	Electric mitad	1	2	
	A television	1	2	
	A refrigerator?	1	2	
	A radio?	1	2	
	Mobile phone	1	2	
	Non-mobile telephone	1	2	
	Bed with cotton/sponge/ spring mattress	1	2	
	Automobile like car ,Bajaj, trunk motor cycle	1	2	
Animal-drawn cart	1	2		
Part II Question on obstetric characteristic				
201	Sex of newborn	1. Male 2. Female	<input type="checkbox"/>	

202	Is he /she the first, second, third or fourth pregnancy.	_____	<input type="checkbox"/>	If first skip to Q “209”
203	Have you had other live birth since the birth of this child?	1. Yes 2. No	<input type="checkbox"/>	
204	How many pregnancies did result in live birth?	_____ number of live birth		
205	Since the birth of this child, have you had other child that is not live birth?	1. Yes 2. No	<input type="checkbox"/>	
206	How many pregnancies did result in still birth?	_____ number of still birth		
207	When the previous child was born, was he /she is large, average, small or very small?	1. Large 2. Average 3. Small 4. Very small	<input type="checkbox"/>	
208	After how many months stay from the previous child does this baby born?	-----months		
209	Was there any history of abortion?	1. Yes 2. No	<input type="checkbox"/>	
210	How old were you when you gave the first baby?	_____		
211	At the time you became pregnant did you want to become pregnant?	1. Yes 2. No	<input type="checkbox"/>	
212	At the time you became pregnant did you want to wait until later?	1. Yes 2. No	<input type="checkbox"/>	
Part III : ANC services utilization related questioners				
301	Have you ever attended ANC for this child pregnancy	1. Yes 2. No	<input type="checkbox"/>	
302	How many times did you receive antenatal care for this child pregnancy?	_____ number of times		
303	How many months pregnant were you when you first received antenatal care for this pregnancy?	_____ complete months		
304	During this pregnancy, were you given any drug for intestinal worms?	1. Yes 2. No	<input type="checkbox"/>	
305	During this pregnancy, were you given or did you buy any iron tablets.	1. Yes 2. No	<input type="checkbox"/>	
306	For how many weeks/months did you take iron tablet?	_____ days if less than week _____ weeks if less than a month _____ months if \geq a month		
307	During this child pregnancy, were you given an injection in the arm?	1. Yes 2. No	<input type="checkbox"/>	
308	As the part of antenatal care, did the doctor or nurse advise you about reducing or eliminating alcohol use, smoking and chewing chat?	1. Yes 2. No	<input type="checkbox"/>	

309	As the part of antenatal care, did the doctor or nurse advise you about eating balanced and additional foods during pregnancy? Balanced diet to mean combination of vitamins, proteins and carbohydrates	1. Yes 2. No	<input type="checkbox"/>	
Part IV question on mother behaviour during pregnancy				
401	During this child pregnancy, did you take any drinks that contain alcohol?	1. Yes 2. No	<input type="checkbox"/>	If no skip to 403
402	How often did you drink alcohol?	1. every day 2. three time per week 3. one time per week 4. one time per week 5. other	<input type="checkbox"/>	
403	During this child pregnancy, did you chew chat?	1.yes 2.No	<input type="checkbox"/>	If no skip to 405
404	How often did you chew chat?	1.every day 2.three time per week 3.one time per week 4.one time per week 5.other	<input type="checkbox"/>	
405	During this child pregnancy, did you smoke cigarrte?	1. Yes 2. no	<input type="checkbox"/>	If no skip to 407
406	How often did you smoke?	1 every day 2.three time per week 3.one time per week 4.one time per week 5.other	<input type="checkbox"/>	
407	Is there anyone who ever smokes cigarrate in your household?	1. Yes 2. No	<input type="checkbox"/>	
408	Have you drink coffee/tea during this child pregnancy?	1. Yes 2. No	<input type="checkbox"/>	If no skip to 501
409	How often did you drink coffee?	1 .every day 2.three time per week 3.one time per week 4.one time per week 5.other	<input type="checkbox"/>	
Part V: Questions on toxic exposure during her pregnancy				
501	Did you encounter hypertension during this child pregnancy?	1. Yes 2. No	<input type="checkbox"/>	
502	Did you encounter urinary tract infection during this child pregnancy?	1. Yes 2. No	<input type="checkbox"/>	

503	Did you encounter anemia during this child pregnancy?	1. Yes 2. No	<input type="checkbox"/>	
504	Did you encounter malaria during this child pregnancy?	1. Yes 2. No	<input type="checkbox"/>	
505	Other known medical problem	1. Yes 2. No		
Part VI: Water, Sanitation and hygiene related questions				
601	In your home, What is the main source of water used for cooking, drinking and hand washing? Note: More than one answer is possible	1. pipe 2. rain 3. river 4. protected spring 5. protected well 6. unprotected well 7. un protected spring 8. other (specify) _____	<input type="checkbox"/>	
602	Does the water you get from the main sources enough for daily need?	1. yes 2. No	<input type="checkbox"/>	
603	When do you wash your hand? Note: More than one answer is possible	1. before meal 2. after meal 3. after toilet 4. after bathing of the child 5. other specify _____	<input type="checkbox"/>	
604	What type of toilet do you mainly use? Note: More than one answer is possible	1. A toilet connected to a public sewer or septic tank system 2. hygienic pit toilet with cover 3. open pit toilet 4. Public or shared toilet 5. open defecation/defecation in bush other specify _____	<input type="checkbox"/>	

PART. VII Household Food Insecurity Access Scale (HFIAS) Measurement Tool				
No	Question	Response option	Code	Skip to
1	In the past four weeks, did you worry that your Household would not have enough food? Probe: By “—household” we mean those of you that sleep under the same roof and take meals together at least four days a week.	1. Yes 2. No	<input type="checkbox"/>	If NO skip to Q “2”
1.a	How often this did happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	

2.	In the past four weeks, were you or any household member not able to eat the Kinds of foods you preferred because of a lack of resources ? Probe: By “kinds of foods you preferred” we mean foods that food secure people eat that food insecure people cannot afford to eat. E.g. Eggs, meat, fish, “Dor wot”, etc. By “ lack of resources ” we mean not having money or the ability to grow or trade for the food.	1. Yes 2. No	<input type="checkbox"/>	IF NO skip to Q “3”
2.a	How often this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources? Probe: When we say “limited variety of foods”, we want to mean an undesired monotonous diet for an extended period of days.	1. Yes 2. No	<input type="checkbox"/>	If No skip to Q “4”
3.a	How often this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
4.	In the past four weeks, did you or any household member have to eat some Foods that you really did not want to eat because of a lack of resources to obtain other types of food? Probe: Foods that you really did not want to eat is Food that is considered to be undesirable or socially unacceptable.	1. Yes 2. No	<input type="checkbox"/>	If No skip to Q”5”
4a	How often this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there Was not enough food? Probe: By “ meal ” we mean the major eating occasions (not including snacks).	1. Yes 2. No	<input type="checkbox"/>	If No skip to Q “6”
5.a	How often did this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
6.	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food? Probe: “ fewer meals in a day ” than the social norm, eat fewer than three meals in a day	1. Yes 2. No	<input type="checkbox"/>	If NO skip to Q”7”
6.a	How often did this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
7	In the past four weeks, was there ever no food to eat of any kind in your household Because of lack of resources to get food?	1. Yes 2. No	<input type="checkbox"/>	If no skip to Q “8”

7.a	How often did this happen?	1. Rarely 2. Sometime 3. Often	<input type="checkbox"/>	
8.	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	1. Yes 2. No	<input type="checkbox"/>	If "no" skip to Q "9"
8a	How often did this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	1. Yes 2. No	<input type="checkbox"/>	
9.a	How often did this happen?	1. Rarely 2. Sometimes 3. Often	<input type="checkbox"/>	

1. **Rarely**= once or twice in the past four weeks
2. **Sometimes**=three to ten times in the past four weeks
3. **Often**= more than ten times in the past four weeks

English version Data extraction format

1. Anthropometric measurement record form for both the mother and neonate

	To be measured	Record
For the mothers	MUAC(mid upper arm circumference)	_____ cm
	Height	_____ cm
	Weight gain during pregnancy	_____ gm.
For neonates	Weight	_____ gm.

2 Others to be checked from patient card

To be checked	Source	Record here
Date of Last menstrual period	Clients or card/mother	
Date of delivery	Clients or card	
Total weight gain during her pregnancy	Clients card	

አዲስ አበባ ዩኒቨርሲቲ

ተራ ቁጥር : _____

ጤና ሳይንስ ኮሌጅ

የህብረተሰብ ጤና ትምህርት ቤት

የተሳተፊዎች መረጃ እና ስምምነት ማረጋገጫ ቅጽ በአማርኛ

የተሳተፊዎች መረጃ ቅጽ

የተሳተፊዎች መለያ ቁጥር _____

እኔ _____ እባላሁ። በአዲስ አበባ ዩኒቨርሲቲ ህክምና እና ጤና ሳይንስ ኮሌጅ የድህረ ምረቃ ትምህርቱን በመከታተል ላይ የሚገኘው ደገሙ ሳህሉ በሚሰራው ጥናት መረጃ ሰብሳቢ ነኝ። እርስዎ ሊቃለ መጠይቅ ለምን እንደተመረጡ እንደገልጸለዎት ሀሳብዎን ሠብሠብ አድርገዋል። እንዲከታተሉኝ በትህትና እጠይቅዎታለሁ።

የጥናቱ ርዕስ: የቤተሰብ የምግብ ዋስትና ሁኔታ እና ክብደት ቀንሶ በሚወለዱ ህጻናት መካከል ያለውን ዝምድና ለማጥናት ነው።

የጥናቱ ዓላማ: በጥናቱ የሚገኘው ወጤት ለአዲስ አበባ ጤና መምሪያ እና በእናቶች እና ህፃናት ዙሪያ ለሚሰሩ ድርጅቶች እቅድ ለማወጣት፣ ለማሰፈጸም እና ለማሻሻል ይጠቅማል። በዚህ በተጨማሪ ይህ ጥናት ለተመራማሪው በህብረተሠብ ጤና ሳይንስ የሁለተኛ ዲግሪውን ለማግኘት ይጠቅመዋል።

አካሄድ እና የሚወስደው ጊዜ: እኔ በመጠይቅ በመታገዝ ስጠይቅዎ ትክክለኛ መረጃ ቢሰጡኝ ለጥናቱ ጠቃሚ ነው። በአጠቃላይ ቃለመጠይቅ 25-30 ደቂቃ ሊወስድ ይችላል። ስለዚህ ይህን ጊዜዎን ለቃለመጠይቅ መስዋዕት እንዲያደርጉልኝ በትህትና እጠይቅዎታለሁ። ከቃለ መጠይቅ በተጨማሪ የእርስዎ ቁመት፣ የክንድ ጡነቻ መጠን እና የልጅዎ ክብደት ይላካል።

ጉዳት እና ጥቅም: በዚህ ጥናት መሳተፍ 25-30 ደቂቃ ከጊዜዎ ከመወሰድ ወጭ ጉዳት የለውም። በጥናቱ ሲሳተፉ ምንም አይነት ክፍያ ባይኖረውም ጥናቱ ለአዲስ አበባ ጤና ቢሮ እና በአካባቢው ለሚገኙ የጤና አጋር ድርጅቶች ጠቃሚ መረጃ ሊያስገኝ ይችላል።

ሚስጥራዊነት: እርስዎ የሚሠጡን መረጃ በሚስጥር የሚያዝ ነው። የዚህ ጥናት ወጤት እርስዎን ወይም ልጅዎን የሚያመለክት ምንም አይነት መረጃ አይኖርም። መጠይቆቹ የመለያ ቁጥር ስለሚሠጣቸው ስምዎን አያሳዩም። እርስዎን እና ጥናቱን የሚያገናኝ የቃል ወይም የፅሁፍ መረጃ አይወሰድም።

መብት: በዚህ ጥናት መሳተፍ በፍላጎት ላይ የተመሠረተ ነው። እርስዎም የማይፈልጉትን ጥያቄ ያለመመለስ እና በፈለጉት ጊዜ የማቋረጥ መብት አለዎት።

የአቤቱታ አድራሻዎች: ስለጥናቱ ወይም ስለአካሄዱ ማንኛውንም ጥያቄ ካለዎት በሚከተለው አድራሻ ያድርሡን

የዋና ተመራማሪ ስም :-ደገሙ ሳህሉ የሞባይል ቁጥር : 09-61-91-40-46 ኢሜል dagisahlu@gmail.com

በፍቃደኝነት የተመሰረተ የስምምነት ማረጋገጫ ቅጽ

የተሳተፊዎች የመረጃ ቅጽ ተነባብሮል(አንብቤዋለሁ)። የጥናቱ ዓላማ፣ አካሄድ እና የሚወስደው ጊዜ፣ ጉዳት እና ጥቅም፣ ሚስጥራዊነት፣ ያለኝን መብት እንዲሁም የአቤቱታ አድራሻዎችን በግልፅ ተረድቻለሁ።

ግልፅ ያልሆኑ ነገሮችን እንድጠይቅ እድል ተሠጥቶኛል። የማልፈልገውን ጥያቄ ያለመመለስ እና በፈለኩት ጊዜ የማቋረጥ መብት እንዳለኝ ተነግሮኛል። ስለዚህ ለመሳተፍ በፍቃደኝነት መስማማቴን አረጋግጣለሁ።

ማሳሰቢያ

እባክዎ! ቀጥታ ወደ መረጃ ስብሰባ ከማምራታዎ በፊት በፍቃደኝነት የተመሰረተ የስምምነት ማረጋገጫ ቅጽን ያንብቡላቸው / እንዲያነቡ ያድርጉ።

በጥናቱ መሳተፍ ፍቃደኛ ነዎት? አዎ (ቃለመጠይቁን እንቀጥል) አይደለሁም(አመሰግናለሁ)

የአማርኛ መጠየቅ

የጠያቂው/ዋ ስም _____ ፊርማ _____

መጠይቁን ያረጋገጠው የሱፐርቫይዘር/የተመራማሪው ፊርማ _____ ስም _____

መጠይቁ የተካሄደበት ቀን _____ የተጀመረበት ሰአት _____ ያለቀበት ሰአት _____

የቃለ መጠይቁ ውጤት

1. ሙሉ በሙሉ የተሞላ
2. በከፊል የተሞላ
3. ምንም ያልተሞላ.

የመረጃ ስብሰባው/ዋ ሊከተላቸው የሚገቡ መመሪያዎች

ወድ! የዚህ ጥናት መረጃ ስብሰባዎች ቃለመጠይቅ ከማረጋገጫ በፊት የሚከተሉትን መመሪያዎ አንድ-ትተገበሩ አሳስባለሁ፡

1. የህፃኑ/ዋ ክብደት በመጀመሪያ ተለክቶ መረጃ በሚሰበሰብበት ቦታ መቀመጥ አለበት
2. በዚህ ጥናት ሊሳተፉ የሚችሉ እና የማይችሉ ተለይተው መታወቅ አለባቸው
3. መጠይቁ 7 ክፍሎች እና 10 ገጾች መኖሩን ያረጋግጡ

በዚህ ጥናት መሳተፍ የሚችሉት

1. የተወለደው/ችው ጨቅላ ህፃን 37 ሳምንት እና ከዚያ በላይ የእርግዝና እድሜ ያለው/ላት
በዚህ ጥናት መሳተፍ የማይችሉት
2. ሞተው የተወለዱ፣መንታና ከዚያ በላይ ሁኔታ የተወለዱ በአፈጣጠር ልዩ ሆነው የተወለዱ(የአፈጣጠር ችግር ያለባቸው) ጨቅላ ህጻናት ናቸው፡፡

አዲስ አበባ ዩኒቨርሲቲ

ጤና ሳይንስ ክሌጅ

የህብረተሰብ ጤና አጠባበቅ ትምህርት ቤት

የቤተሰብ የምግብ ዋስትና ሁኔታ እና ክብደት ቀንሶ በሚደረግ ህጻናት መካከል ያለውን ዝምድና ለማጥናት የተዘጋጀ የቃል መጠየቅ

የመጠይቁ መለያ ቁጥር _____

ክፍል 1: ማህበራዊ ጉዳዮችን በተመለከተ የተዘጋጀ መጠይቅ				
ተ.ቁ		አማራጭ መልሶች	ኮድ	የሚዘለሉ ጥያቄዎች አመልካች
101	እድሜዎ ስንት ነው?			
		ዓመት		
102	የምን ሀይማኖት ተከታይ ነዎት?	<ol style="list-style-type: none"> 1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. የባህል አምልኮ 6. የተለየ ከሆነ ይጠቀስ _____ 		
103	ከዚህ በፊት መደበኛ ትምህርት ቤት ተከታትለው ያውቀሉ?	<ol style="list-style-type: none"> 1. አዎ 2. አላውቅም 		አላውቅም ካሉ ጥያቄ 104 ይዘለሉት
104	እስከ ስንት ትምህርት ደረጃ ነው የተከታተሉት?	<ol style="list-style-type: none"> 1. የመጀመሪያ ሳይክል(1-8) 2. ሁለተኛ ደረጃ ሳይክል(9-12) 3. ቴክኒክና ሙያ/ዲፕሎማ 4. ከፍተኛ ደረጃ/ዲግሪ እና ከዛ በላይ 		
105	ባብዛኛው ጊዜ የሚሰሩት የስራ አይነት ምንድን ነው?	<ol style="list-style-type: none"> 1. የመንግስት ቅጥረኛ 2. የግል ድርጅት ቅጥረኛ 3. ግብርና 4. ንግድ 5. የቤት እመቤት 6. ሌላ _____ ከሆነ ይጥቀሱ _____ 		
106	የሚኖሩት የት ነው?	<ol style="list-style-type: none"> 1. አዲስ አበባ 2. ካዲስ አበባ ውጪ 		
107	በአሁኑ ወቅት የእርሶዎ የጋብቻ ሁኔታ ምንድን ነው?	<ol style="list-style-type: none"> 1. ያላገባች 2. ባለትዳር 3. የፈታች 4. ባሏ የሞተባት 5. ሌላ ከሆነ ይጥቀሱ _____ 		ባለትዳር ካልሆኑ ወደ 111 ይሂዱ

108	ባለቤቶች ከዚህ በፊት መደበኛ ት/ት ተከታትሎ ያውቃል?	1. አዎን 2. አያውቅም	<input type="checkbox"/>	
109	ባለቤቶች እስከ ስንት ትምህርት ደረጃ ነው የተከታተለው?	1. የመጀመሪያ ሳይክል (1-8) 2. ሁለተኛ ደረጃ ሳይክል (9-12) 3. ቴክኒክና ሙያ/ዲፕሎማ 4. ከፍተኛ የት/ት ደረጃ/ድግሪ	<input type="checkbox"/>	
110	ባለቤቶች በአብዛኛው ጊዜ የሚሰራው የስራ አይነት ምንድን ነው?	1. የመንግስት ቅጥረኛ 2. የግል ድርጅት ቅጥረኛ 3. ግብርና 4. ንግድ 5. ሌላ ከሆነ ይጠቀስ	<input type="checkbox"/>	
111	በቤትዎ ውስጥ ስንት የቤተሰብ አባል አለ?			
112	ቤተሰብዎ በወር ምን ያክል ብር ያገኛል?		<input type="checkbox"/>	ብር
113	የቤትዎ ወለል የተሰራው ከምንድነው?	1. ከአፈር 2. ከሲሚንቶ 3. ከእንጨት 4. ከሸምበቆ 5. ሌላ ይጠቀስ	<input type="checkbox"/>	ከሆነ
114	ቤተሰብዎ የሚኖርበት ቤት ጣሪያ የተሰራው ከምንድነው?	1. ከሳር 2. ከእንጨት 3. ከቆርቆሮ 4. ከሲሚንቶ 5. የተለየ ከሆነ ይጠቀስ	<input type="checkbox"/>	
115	ቤተሰብዎ የሚኖርበት ቤት ግድግዳ የተሰራው ከምንድነው?	1. ከእንጨት እና ከጭቃ 2. ከብሎኬት 3. ከሲሚንቶ እና ከድንጋይ 4. ከሸክላ 5. የተለየ ከሆነ ይጠቀስ	<input type="checkbox"/>	
እቤቶች ውስጥ የሚከተሉት አሉት? (መረጃ ሰብሳቢ መልሱ በማክበብ ያስቀምጡ)		አዎ	<input type="checkbox"/>	የለም
116	መብራት	1	<input type="checkbox"/>	2
	የኤሌልክትሪክ ምጣድ	1	<input type="checkbox"/>	2
	ቴሌቪዥን	1	<input type="checkbox"/>	2
	ፍሪጅ	1	<input type="checkbox"/>	2
	ሬድዮ	1	<input type="checkbox"/>	2
	ተንቀሳቃሽ ስልክ	1	<input type="checkbox"/>	2
	መደበኛ ስልክ	1	<input type="checkbox"/>	2
	የጥጥ/የስፖንደር/የስፕሪንግ ፍራሽ	1	<input type="checkbox"/>	2

	ተሽከርካሪ ማለትም መኪና፣ባጃጅ፣ጋሪ፣ሞተር ሳይክል የመሳሰሉ ተሽከርካሪዎች	1	2	
	በእንስሳት የሚገተት ጋሪ	1	2	

ክፍል 2. ከእናቶች ሥነ-ተዋልዶ ጋር የተያያዙ ጥያቄዎች

201	የዚህ/የዚች ጨቅላ ህፃን ስታ ምንድ ነው?	1. ወንድ 2. ሴት	<input type="checkbox"/>	
202	ይህንን ጨቅላ ህፃን ስታረግኸር እርግዝናው ሰንተኛሽ ነበር?	1. የመጀመሪያ 2. ሁለተኛ 3. ሶስተኛ 4. አራተኛ 5. ሌላ ከሆነ ይጠቀስ	<input type="checkbox"/>	የመጀመሪያ ከሆነ ወደ 209 ይሂዱ
203	ከዚህ ጨቅላ ህፃን ውጭ በህይወት የተወለዱ ልጆች አሉሽ?	1. አዎ 2. የሉኝም	<input type="checkbox"/>	
204	ይህን ጨቅላ ህፃን ጨምሮ ምን ያክል በህይወት የተወለዱ ልጆች አሉሽ?	_____ ያክል		
205	በህይወት ያልተወለዱ (ሞተው) የተወለዱ ነበሩሽ?	1. አዎ 2. የሉኝም	<input type="checkbox"/>	
206	ምን ያክል (ሞተው) የተወለዱ ነበሩሽ?	_____ ያክል		
207	ከዚህ ልጅ በፊት የተወለደው/ቺው ልጅ ትልቅ፣መካከለኛ፣ ትንሽ ነበር/ች?	1. በጣም ትልቅ 2. ትልቅ 3. መካከለኛ 4. ትንሽ 5. በጣም ትንሽ 6. ሌላ ከሆነ ይጠቀስ	<input type="checkbox"/>	
208	በዚህ ጨቅላ ህፃን እና ከዚህ በፊት ባለው ልጅ መካከል ምን ያክል ወር/ዓመት ልዩነት ነበር?	_____ ወር _____ ዓመት		
209	የተቋረጠ ፅንሰ ነበር?	1. አለ 2. የለም	<input type="checkbox"/>	
210	የመጀመሪያ ልጅሽን ስትወልድ ስንት ዓመትሽ ነበር?	_____ ዓመት		
211	ይህንን ጨቅላ ህፃን በረገዝሽበት ጊዜ እርግዝናውን ፈልገሽው ነበር?	1. አዎ 2. አልፈለኩም 3. አላስታውስም	<input type="checkbox"/>	
212	ይህንን ጨቅላ ህፃን ስታረግኸር እርግዝናው የተወሰነ ጊዜ እንዲራዘም ፈልገሽ ነበር?	1. አዎ 2. አልፈለኩም 3. አላስታውስም	<input type="checkbox"/>	

ክፍል 3. ከወሊድ በፊት (ቅድመ ወሊድ) ክትትል ጋር የተያያዙ ጥያቄዎች

301	ለዚህ ጨቅላ ህፃን የቅድመ ወሊድ ክትትል አድርገው ያውቃሉ?	1. አዎ 2. አላዳረኩም	<input type="checkbox"/>	
302	ለዚህ/ች ጨቅላ ህፃን ስንት የቅድመ ወሊድ ክትትል አድርገዋል?	_____ የክትትል ብዛት በቁጥር		

303	የመጀመሪያ የቅድመ ወሊድ ክትትል ሲያደርጉ እርግዝናው የስንት ወር ነበር?	1. _____ ወር 2. አላስታውስም	<input type="checkbox"/>	
304	በቅድመ ወሊድ ክትትል ወቅት የደም ማነስ መድኃኒት ተሰጥቶታል? የመዳኒቱን ቀለም በመናገር /መድኃኒቱን በማሳየት እንዲያስታውሱ ያድርጉ	1. አዎ 2. አልተሰጠኝም	<input type="checkbox"/>	
305	በቅድመ ወሊድ ክትትል ወቅት የደም ማነስ መድኃኒት ለስንት ሳምንት /ወር ወስደዋል?	_____ ቀን(ከሳምንት ካነሰ) _____ ሳምንት(ከወር ካነሰ) _____ ወር		
306	በቅድመ ወሊድ ክትትል ወቅት የመንጋጋ ቆልፍ ክትባት ተሰጥቶታል ነበር? (ከቀኝ የላይኛው ክንድ ጡንቻ መርፌ ተሰጥቶታል ነበር በማለት እንዲያስታውሱ ያድርጉ)	1. አዎ 2. አልተሰጠኝም	<input type="checkbox"/>	
307	በቅድመ ወሊድ ክትትል ወቅት የአንጀት/የሆድ ትላትል መድኃኒት ተሰጥቶታል ነበር? የመዳኒቱን ቀለም በመናገር /መድኃኒቱን በማሳየት እንዲያስታውሱ ያድርጉ	1. አዎ 2. አልተሰጠኝም	<input type="checkbox"/>	
308	በቅድመ ወሊድ ክትትል ወቅት ሀኪሞች/ካርሶዎች አልኮል እና ሲጋራ እንዲቀንሱ ወይም እንዲያቆሙ የምክር አገልግሎት ሰጥተዋል ነበር?	1. አዎ 2. አልተሰጠኝም	<input type="checkbox"/>	
309	በቅድመ መወሊድ ክትትል ወቅት ሀኪሞች/ካርሶዎች ተጨማሪ ወይም የተመጣጠነ ምግብ እንዲመጡ የምክር አገልግሎት ሰጥተዋል ነበር? የተመጣጠነ ምግብ ማለት ገንቢ፣ በሽታ ተከላካይ እና ሀይልና ሙቀት ሰጭ ለማለት ነው	1. አዎ 2. አልተሰጠኝም	<input type="checkbox"/>	
ክፍል 4 በእርግዝና ወቅት አጠቃላይ የእናቶችን ባህሪ በተመለከተ የሚጠየቁ ጥያቄዎች				
401	በዚህ እርግዝና ወቅት አልኮል/ካርሶዎችን ያላቸው መጠጦችን እንደጠላ/ጠጅ/አረቂ/ቢራ/ወይን እና የመሳሰሉትን መጠጦች ጠጥተው ነበር?	1. አዎ 2. የለም	<input type="checkbox"/>	መልስዎ 2 ከሆነ ወደ 403 ይሂዱ
402	ለምን ያህል ጊዜ የአልኮል መጠጦችን ይጠጡ ነበር?	1. በየቀኑ 2. በሳምንት ሦስት ጊዜ 3. በሳምንት አንድ ጊዜ 4. በወር አንድ ጊዜ 5. የተለየ ከሆነ ይጠቀስ _____	<input type="checkbox"/>	
403	በዚህ እርግዝና ወቅት ጫት ይቅሙ ነበር?	1. አዎ 2. የለም	<input type="checkbox"/>	መልስዎ 2 ከሆነ ወደ 405 ይሂዱ
404	ለምን ያህል ጊዜ ይቅሙ ነበር?	1. በየቀኑ 2. በሳምንት ሦስት ጊዜ 3. በሳምንት አንድ ጊዜ	<input type="checkbox"/>	

		4. በወር አንድ ጊዜ 5. የተለየ ከሆነ ይጠቀስ _____		
405	ከቤተሰብ መካከል ሲጋራ የሚያጨስ አለ?	1. አዎ 2. የለም	<input type="checkbox"/>	
406	በዚህ እርግዝና ወቅት እርሶዎ ሲጋራ ያጨሱ ነበር ?	1. አዎ 2. የለም	<input type="checkbox"/>	መልስዎ 2 ከሆነ ወደ 408 ሂዱ
407	ለምን ያህል ጊዜ ያጨሱ ነበር?	1. በየቀኑ 2. በሳምንት ሦስት ጊዜ 3. በሳምንት አንድ ጊዜ 4. በወር አንድ ጊዜ 5. የተለየ ከሆነ ይጠቀስ _____	<input type="checkbox"/>	
408	በዚህ እርግዝና ወቅት ቡና ይጠጡ ነበር?	1. አዎ 2. የለም	<input type="checkbox"/>	
409	በቀን በአማካይ ስንት ሲኒ ቡና ይጠጡ ነበር? (መረጃ ስብሰባ: መጠኑን በመካከለኛ የቡና ሲኒ ይተምኑ)	-----ሲኒ		
ክፍል 5. በእርግዝና ወቅት ከሚከሰቱ በሽታዎች ጋር የተያያዙ ጥያቄዎች				
501	በዚህ ጨቅላ ህፃን እርግዝና ወቅት የደም ግፊት ህመም ይዘሽ ነበር?	1. አዎ 2. አላዘኝም	<input type="checkbox"/>	
502	በዚህ ጨቅላ ህፃን እርግዝና ወቅት የሽንት ቱቦ ህመም ይዘሽ ነበር?	1. አዎ 2. አላዘኝም	<input type="checkbox"/>	
503	በዚህ ጨቅላ ህፃን እርግዝና ወቅት የደም ማነስ በሽታ ይዘሽ ነበር?	1. አዎ 2. አላዘኝም	<input type="checkbox"/>	
504	በዚህ ጨቅላ ህፃን እርግዝና ወቅት ወጣ በሽታ ይዘሽ ነበር?	1. አዎ 2. አላዘኝም	<input type="checkbox"/>	
505	በሀኪም የተረጋገጠ ማንኛውም ህመም አለብዎት?	1. አዎ 2. የለብኝም	<input type="checkbox"/>	
ክፍል 6 ከሽንት ቤት አጠቃቀም፣ ንጹህ ወሃ አቅረቦት እና ንፅህና አጠባበቅ ጋር የተያያዙ ጥያቄዎች				
601	በአብዛኛው ጊዜ ለመጠጥ ለእጅ መታጠቢያ ወይም ለምግብ ዝግጅት የሚጠቅሙትን ውሀ ከየት ነው የሚያገኙት? ከአንድ በላይ መልስ መመለስ ይቻላል ▪ መልሱ ከአንድ በላይ ከሆነ በማክበብ ያስቀምጡ	1. ቧንቧ 2. ዝናብ 3. ወንዝ 4. የተከለለ የምንጭ ውሀ 5. የተከደነ የጉድጓድ ውሀ 6. ያልተከደነ የጉድጓድ ውሀ 7. ያልተከለለ የምንጭ ውሀ 8. ሌላ(ይጠቀስ) _____	<input type="checkbox"/>	
602	ከዋናው ውሃ ምንጭ የሚገኙት የውሀ መጠን ለዘወትር ፍጆታዎ በቂ ነው?	1. አዎ 2. አይደለም	<input type="checkbox"/>	

603	<p>መቼ ነው እጅሽ የምትታጠቢው?</p> <p>ከአንድ በላይ መልስ መመለስ ይቻላል</p> <p>መልሱ ከአንድ በላይ ከሆነ በማክበብ ያስቀምጡ</p>	<ol style="list-style-type: none"> 1. ከምግብ በፊት 2. ከምግብ በኋላ 3. ሽንትቤት ከተጠቀምኩ በኋላ 4. ልጄን ከፀዳዳዬ በኋላ 5. ሌላ(ይጠቀስ) 	<input type="checkbox"/>	
604	<p>በአብዛኛው ጊዜ የሚጠቀሙበት መጻዳጃ ቤት ምን ዓይነት ነው?</p> <p>ከአንድ በላይ መልስ መመለስ ይቻላል</p> <p>መልሱ ከአንድ በላይ ከሆነ በማክበብ ያስቀምጡ</p>	<ol style="list-style-type: none"> 1. ከፈሳሽ ማስዎገጃ ጋር የተገናኘ ሽንት ቤት 2. ቆሻሻ መጣያ እና መክደኛ ያለው የጉድጓድ ሽንት ቤት 3. መክደኛ የሌለው የጉድጓድ ሽንት ቤት 4. የጋራ / የህዝብ ሽንት ቤት 5. ሜዳ ላይ/ ቁጥቋጥ ስር 6. ሌላ ይጠቀስ 	<input type="checkbox"/>	

ክፍል 7. የምግብ ዋስትና ሁኔታ በተመለከተ የሚጠየቁ ጥያቄዎች

1	<p>ባለፉት አንድ ወር ጊዜ ውስጥ ቤተሰቤ በቂ ምግብ የለውም የሚል ስጋት ገብቷችሁ ነበር?</p> <p>ቤተሰብ ማለት ቢያንስ በሳምንት ለአራት ቀን ያህል በአንድ ጣርያ ስር አብራችሁ የምታድሩና የምትመገቡ ለማለት ነዉ።</p>	<ol style="list-style-type: none"> 1. አይ 2. አዎ 	<input type="checkbox"/>
1ሀ	<p>ለምን ያህል ጊዜ ትሰጉ ነበር?</p>	<ol style="list-style-type: none"> 1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ 	<input type="checkbox"/>
2	<p>ባለፉት አንድ ወር ጊዜ ውስጥ አንተ/ቺ ወይም ሌላ የቤተሰቡ አባል የፈለገውን ወይም የመረጠውን የምግብ አይነት ለመብላት የአቅም ማነስ ችግር ገጥሟችሁ ነበር?</p> <p>የመረጠውን የምግብ ዓይነት ማለት ማንኛውም በምግብ እራሱን የቻለ ቤተሰብ የሚመገበው ዓይነት ማለት ነዉ።</p> <p>ለምሳሌ እንቁላል; ሥጋ; አሣ; ዶሮ ወጥና የመሳሰሉት ማለት ነዉ። የአቅም ማነስ ችግር ማለት ለመግዛት የሚሆን ገንዘብ ማጣት ወይም ማምረት አለመቻል ማለት ነዉ።</p>	<ol style="list-style-type: none"> 1. አይ 2. አዎ 	<input type="checkbox"/>
2ሀ	<p>ለምን ያህል ጊዜ ነበር የተከሰተዉ?</p>	<ol style="list-style-type: none"> 1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ 	<input type="checkbox"/>
3	<p>ባለፉት አንድ ወር ጊዜ ውስጥ አንተ/ቺ ወይም ሌላ የቤተሰቡ አባል የሚያስፈልገውን አቅም ከማጣት የተነሳ ዉስን የሆኑ የምግብ ዓይነቶችን ለመመገብ ተገዳችሁ ነበር? ዉስን የሆኑ ሲባል ተመጋቢዉ መመገብ የማይፈልገዉ አንድ ዓይነት ምግብ ለብዙ ጊዜያት ለማለት ነዉ።</p>	<ol style="list-style-type: none"> 1. አይ 2. አዎ 	<input type="checkbox"/>
3ሀ	<p>ለምን ያህል ጊዜ ነበር የተከሰተዉ?</p>	<ol style="list-style-type: none"> 1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ 	<input type="checkbox"/>

4	ባለፉት አንድ ወር ጊዜ ውስጥ አንተ/ች ወይም ሌላ የቤተሰቡ አባል አቅም ስለማይፈቅድና ሌላ ምግብ መመገብ ስላልቻላችሁ ፈጽሞ ልትመገቡ የማትፈልጉትን ምግብ ለመመገብ ተገዳችሁ ነበር? ፈጽሞ ልትመገቡ የማትፈልጉት ምግብ ማለት በህብረተሰቡ ዘንድ የማይወደድና ተቀባይነት የሌለው ለማለት ነው።	1.አይ 2.አዎ	<input type="checkbox"/>
4ሀ	ለምን ያህል ጊዜ ነበር የተገደዳችሁት?	1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ	<input type="checkbox"/>
5	ባለፉት አንድ ወር ጊዜ ውስጥ አንቺ ወይም ሌላ የቤተሰቡ አባል በቂ ምግብ ስለሌላችሁ በቀን ከምትመገቡት 3 ዋና ዋና ምግቦች ከምትፈልጉት በመጠን ያነሰ የመሰላችሁን ምግብ ለመመገብ ተገዳችሁ ነበር?	1. አይ 2. አዎ	<input type="checkbox"/>
5ሀ	ለምን ያህል ጊዜ ነበር የተገደዳችሁት?	1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ	<input type="checkbox"/>
6	ባለፉት አንድ ወር ጊዜ ውስጥ አንቺ ወይም ሌላ የቤተሰቡ አባል በቂ ምግብ ስለሌላችሁ በቀን መመገብ ከነበረባችሁ 3 ዋና ዋና ምግቦች ቢታች ለመመገብ ተገዳችሁ ነበር? ምሳሌ: ከሶስቱ አንዱን ወይም ከዛ በላይ መተወ ማለት ነው።	1.አይ 2.አዎ	<input type="checkbox"/>
6ሀ	ለምን ያህል ጊዜ ነበር የተገደዳችሁት?	1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ	<input type="checkbox"/>
7	ባለፉት አንድ ወር ጊዜ ውስጥ ምግብ ለማግኘት የሚያስፈልጋችሁ አቅም ስላልነበራችሁ ምንም ዓይነት ምግብና ለምግብ የሚሆን ነገር ከቤታችሁ ጠፍቶ ነበር?	1.አይ 2.አዎ	<input type="checkbox"/>
7ሀ	ለምን ያህል ጊዜ ነበር ይህ ችግር የገጠማችሁ?	1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ	<input type="checkbox"/>
8	ባለፉት አንድ ወር ጊዜ ውስጥ በቂ ምግብ ስላልነበረ አንተ/ች ወይም ሌላ የቤተሰቡ አባል ሳይመገብ ወደ መኝታ የሄደበት ጊዜ ነበረ?	1. አይ 2. አዎ	<input type="checkbox"/>
8ሀ	ለምን ያህል ጊዜ ነበር የተከሰተዎ?	1. በጣም አልፎ አልፎ 2. አንድ አንድ ጊዜ 3. ብዙ ጊዜ	<input type="checkbox"/>
9	ባለፉት አንድ ወር ጊዜ ውስጥ በቂ ምግብ ስላልነበረ አንተ/ች ወይም ሌላ የቤተሰቡ አባል ምንም ዓይነት ምግብ ሳይመገብ ቀኑን ሙሉ ውሎ ለሊትም ያደረ አለ?	1.አይ 2.አዎ	<input type="checkbox"/>
9ሀ	ለምን ያህል ጊዜ ነበር የተከሰተዎ?	1 በጣም አልፎ አልፎ 2 አንድ አንድ ጊዜ 3 ብዙ ጊዜ	<input type="checkbox"/>

- 1. በጣም አልፎ አልፎ = ባለፈው አንድ ወር አንዴ ወይም ሁለቱ (1 ወይም 2)
- 2. አንድ አንድ ጊዜ = ባለፈው አንድ ወር ከ 3 እስከ 10 ጊዜ (3-10)
- 3. ብዙ ጊዜ = ባለፈው አንድ ወር ከ 10 ጊዜ በላይ (>10)

1. የጨቅላ ህፃኑ/ኗ እና የእናቷ የሰውነት ልኬት የሚሞላበት ቅጽ

	የሚለካው	መጠን
የእናቷ	ቁመት	ሳ.ሜ
	የእናቷ ከንድፍ ጡንቻ መጠን	ሳ.ሜ
የጨቅላ ህፃኑ/ኗ	ከብደት	ግ.ም

2. ከእናቷ ካርድ በማየት የሚሞሉ ተጨማሪ ነገሮች

	የሚታይበት	የሚመዘገብበት
የመጨረሻ የወር አበባ የታየበት ቀን	ከካርዱ/እናቷን በመጠየቅ	
የወለደችበት ቀን	ከካርዱ/እናቷን በመጠየቅ	
የዚህ ህፃን አጠቃላይ የርግዝና እድሜ	ከካርዱ/እናቷን በመጠየቅ ከላይ ያሉት በማስላት	ወር ሳምንት
በርግዝና ጊዜ ያገኘችው አጠቃላይ ከብደት	ከካርዱ	ኪ.ግ

በመጨረሻም በዚህ ቃለ መጠይቅ ላይ ፈቃደኛ ሆነው በመሳተፍ ላበረከቱት አስተዋፅኦ ከልብ እናመሰግናለን

Curriculum vitae

1. Personal Information

Name: Degemu Sahlu

Sex: male

Date of birth: September 5, 1989

Current Address: Addis Ababa

Nationality: Ethiopian

Marital status: Single

Contact address: Mizan Aman Health Science College

Mobile: 0961914046

Email: dagisahlu@gmail.com

Qualification: bachelor of Science degree in nursing from Hawassa University

2. Training participation

- ❖ Effective teaching skill
- ❖ Electronic Health Management and Information System
- ❖ Long term family planning

3. Work experience

- ✓ Working for one year at Jeba health center, Bench Maji Zone
- ✓ For two year (till now) working at Mizan Aman Health Science College as Graduate Assistant.

4. Skill and hobbies

- ✚ Language skill
 - ✓ Amharic;- listen, speak, write and read
 - ✓ English :- listen, speak, write and read
 - ✓ Guragegna: listen ,speak and read
- ✚ Computer skill :SPSS, STATA , Epi info, Internet basic ,MS word, excel, power point, access
- ✚ Hobbies: Reading books and writing poem.

5. Reference

- ❖ Andamlak Dendier – MPH(lecturer) in Wolkite University
 - Phone -0912242332
- ❖ Lencho Girma —BSc(assistant lecturer) in Mizan Aman Health Science College
 - Phone – 0924823720
- ❖ Nana chaha- MPH(lecturer) in Hawassa University
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