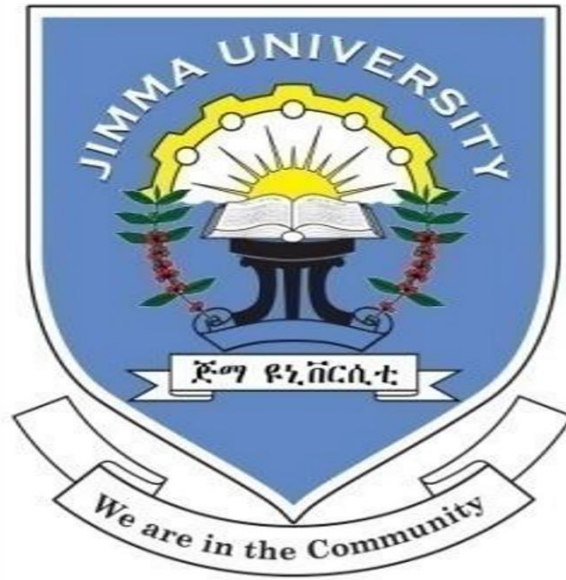**MATERNAL NUTRITIONAL CHARACTERISTICS AND IT'S ASSOCIATION ON NEWBORN WEIGHT AT BIRTH IN BEDELE TOWN, SOUTHWEST, ETHIOPIA, 2021.**

BY RAHEL TADESSE (BSC IN PUBLIC HEALTH)

A RESEARCH TO BE SUBMITTED TO FACULTY OF PUBLIC HEALTH, DEPARTMENT OF NUTRITION AND DIETETICS, JIMMA UNIVERSITY; IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR MASTERS OF SCIENCE (MSc) IN HUMAN NUTRITION

Ocrober, 2021

Jimma, Ethiopia

MATERNAL NUTRITIONAL CHARACTERISTICS AND IT'S ASSOCIATION ON NEWBORN WEIGHT AT BIRTH IN BEDELE TOWN, SOUTHWEST, ETHIOPIA, 2021.

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ABSTRACT

Background: Maternal malnourishment has significant, serious, long-term effects on both mother and child. A birth weights such as low birth weight (LBW) impose a huge burden on families, health care system, education, and social services. The association of maternal diet and nutritional characteristics on newborn birth weight is not studied in the study area. Therefore, it is necessary to assess the nutritional status of pregnant women to avoid various complications.

Objective: To assess the association between maternal nutritional characteristics and newborn birth weight among mothers who delivered in health institutions in Bedele Town, southwest Ethiopia, 2021.

Methods: Institution-based cross-sectional study was conducted among 385 pregnant mothers who delivered in both health institutions in Bedele Town from May 26 to July 26 2021. Data were entered into EPI data version 4.6 and analyzed using SPSS version 26.0. Bivariate logistic regression was used to identify independent variables for multivariable logistic regression at p-value <0.25. Multivariable logistic regression was employed to assess the association between birth weight and list of independent variables and to test statistically significant variable that was considered at p-value <0.05.

Result: Mothers with >23 cm MUAC were 1.1 times less likely to deliver LBW (AOR= 1.13 [95%CI= 1.23, 3.42]). Majority of newborns had normal birth weight (84.4%) with mean birth weight of 3029.6 ± 431.5 grams and only 11.9% of newborns had low birth weight. Rural residence are 2.5 times more likely to be low birth weight (AOR 2.5 [95%CI 1.5, 34]) and women who had family size less than five were 1.2 times have LBW baby (AOR=1.2 [95%=CI 0.2, 6.7]).Mothers who didn't take iron folate supplementation on current pregnancy (AOR = 3.4 [95% CI: 0.3, 38]) were 3.4 times more likely to be exposed to LBW.

Conclusion and Recommendation: The associated factor of newborn birth weight was maternal MUAC, parity, family size and additional meal. Improving the nutritional status of pregnant mothers through nutrition counseling at antenatal care at all levels and improving socio-economic status by creating access to micro financing is essential for both maternal and newborn health.

Key words: newborn birth weight, nutritional characteristics, MUAC

Acknowledgment

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Acronyms and abbreviations

BMI; Body mass index

CAD; Coronary artery disease

EDHS; Ethiopia demographic health survey

GDM; Gestational diabetes mellites

HBD; High birth weight

HFIAS; Household food insecurity access scale

HTN; Hypertension

IUGR; Intrauterine growth restriction

LBW; Low birth weight

LGA; Large for gestational age

MUAC; Mid-upper arm circumference

PPH; Postpartum hemorrhage

SGA; Small for gestational age

SIPI; Short inter-pregnancy interval

T2DM; Type 2 diabetes mellites

UNICEF; United nation international children's emergency fund

WFP; World food program

CHAPTER ONE
INTRODUCTION

1.1 Background

Pregnancy is a crucial time for women to be well-nourished. The added nutrient demands of fetal growth and development must be to ensure optimal birth and growth outcomes. A suboptimal maternal diet and inadequate gestational weight gain during pregnancy increase the risk for adverse health outcomes for both mother and child (1).

The maternal nutritional status could be considered as a primary predictor for the nutritional status of neonates, however, the association between maternal nutrition and birth weight is complex and influenced by many biological, socio-economic, and demographic factors. The status of maternal nutrition is one of the important environmental factors which might be expected to influence the course of pregnancy. The growth of fetal tissues and other products of conception and the metabolic alterations consequent on pregnancy imposes great stress and increase in the expectant mother's nutritional requirements (2).

Maternal nourishment and health are important factors for embryo development. Healthy women tend to produce healthy children. If a woman is malnourished then she is more prone to give birth to weak or malnourished babies resulting high infant mortality rate(3).

It was commonly accepted that the fetus was nourished adequately at the expense of maternal stores and needs, however, it is becoming clear that this may not always be the case, and that fetal development can be less than optimal if certain nutrients are not available during intrauterine life(4).

Adequate maternal nutrition during the "first 1000 days" window of opportunity is especially critical from conception through the first 6 months of life to improve the nutritional status of both the woman and infant and reduce the risk of adverse birth weights, such as low birth weight and pre-term birth. Unfortunately, many programs targeting the first 1000 days have only focused implementation and evaluation efforts on infant and child health benefits and outcomes of nutrition interventions, not maternal dietary consumption during pregnancy and lactation. An adequate maternal diet can be described as a healthy diet that contains adequate energy, protein, vitamins, and minerals obtained through the consumption of a variety of

foods, including green and orange vegetables, meat, fish beans nuts, whole grains, and fruits(5).

1.2 Statement of the problem

Poor healthiness and nutrition of females and the absence of care contribute to their passing away in pregnancy and childbirth. Also compromises the healthiness and survival of infants and children. Under nutrition takes the most negative effects on the fetus during pregnancy and in the first two years of life, and the effects of this early damage on health, brain development, intelligence, educability, and productivity are mainly irreversible(6,7)

The World Health Organization (WHO) defines Low birth Weight (LBW) as having a weight of less than 2500 grams at birth. LBW is a community health problem in developing countries, particularly in sub-Saharan Africa. Around 20 million newborns are born every year with<2500gm weight, accounting for17% of the whole births in the developing world, out of which 6% stay observed in industrial countries than 21% in unindustrialized countries. Causes of low birth weight are mostly associated with either infant or mother sideways. In developed countries, the major cause of LBW is preterm labor, however, in developing countries, intrauterine growth restrictions (IUGR) are the major reason for LBW. Mothers who ought to multiple gestations taken a greater possibility of delivering LBW infants The physical environment, specific and nonspecific infections, also plays a vital role in determining the newborn's birth weight and upcoming health status. Additionally, demographic risk factors such as premature maternal age, prime gravid, low educational level, and poor maternal nutritional status afore and through pregnancy are well predictable as threat factors for poor birth weights(8).

Maternal under-nutrition affects both the health of mothers and children and, as a result, has broad impacts on economic and social development. Undernourished pregnant women have higher reproductive risks, including death during or following child birth many women suffer from a combination of chronic energy deficiency, poor weight gain in pregnancy, anemia and other micronutrient deficiencies. These along with inadequate obstetric care, contribute to high rates of maternal mortality and poor birth outcomes. Maternal under- nutrition during pregnancy was not limited to the above consequences. It has a life-cycle (or intergenerational) element as well. Undernourished girls have a greater likelihood of

becoming undernourished mothers who in turn have a greater chance of giving birth to low birth weight babies, perpetuating an intergenerational cycle. This cycle can be compounded further in young mothers, especially adolescent girls who begin childbearing before attaining adequate growth and development(9,10).

Even though, maternal nutrition during pregnancy is crucial in reducing maternal mortality and infant mortality which are the target area in achieving millennium development goal, there is no study revealing the assaciation of maternal nutritional characterstics and new born birth weight among pregnant women in the study area.There is also a dearth of literature at country level.As a result, there is lack of comprehensive information regarding the the assaciation of maternal nutritional characterstics and new born birth weight among pregnant women in the study area. The aim of the present study was to assess the the assaciation of maternal nutritional characterstics and new born birth weight among pregnant women in the study area

1.3 Significance of the study

Diet during pregnancy and nutritional characteristics affect newborn birth weight. Maternal malnutrition is thought to result in birth weight of newborn, which in turn is one of the major causes of perinatal mortality and medical complications as adulthood. This research was helps to show the newborn birth weight and its relation with maternal diet and nutritional characteristics. Additionally, this study was examining the independent role of maternal nutritional status and characteristics in predicting newborn birth weight.

The research output was important to incorporate training for health providers and transmitting nutrition messages for general community. Finally, it was generating additional information for further research.

CHAPTER TWO
LITERATURE REVIEW

Maternal nutrition acts an essential role in placental-fetal growth and development. Maternal under nutrition during pregnancy consequences in intrauterine growth restriction (IUGR) which is related to raised perinatal morbidity and mortality. These children are affected by an increased possibility for the development of metabolic syndrome in adult life. The inner cell mass develops as the fetus and the outer cell mass becomes the placenta. This developmental process is influenced by nutrition and hormones. Maternal under nutrition at the time of conception has shown fewer cells in the inner cell mass which is associated with reduced birth weight and postnatal growth, altered organ/body weight ratios, and the development of chronic diseases as type 2 diabetes (T2DM), hypertension (HTN), coronary artery disease (CAD). Evidence has also suggested that disturbances during critical periods of fetal development alter the structure or function of distinct cells, organ systems, or homoeostatic pathways(11).

Pregnant women must get all essential nutrients and gain sufficient weight, the two main modifiable risk factors influencing maternal and infant outcomes. Appropriate nutrition and weight gain benefits pregnant women to meet the demands of her offspring, her own body needs, and to prepare her body for lactation Low weight gain during pregnancy is risk factors for the delivery of infants too small for gestational age leading to neonatal mortality and morbidity, failure to grow, slow cognitive development and chronic diseases in adulthood. Pregnant women food intake during pregnancy for different reasons such as to have smaller infants because smaller infants will carry a lower risk of delivery complications, cultural reason and perceived severity of delivery complications because big babies make delivery difficult. Thus, low intake of essential nutrients such as protein, energy, vitamins C, Vitamin A and iron due to inappropriate nutrition practices together with environmental factors, socioeconomic factors and infections are common causes of maternal mortality, low birth weight and intrauterine growth retardation(12,13).

Pregnancy related complications are a major public health problem in the world. To reduce it, Diversified food consumption is essential during pregnancy. Diversified diet intake fulfills

the Requirements of minerals and vitamins of a pregnant woman and the growing of the fetus. For healthy development of fetus taking Minerals and Vitamins are important(14).

No one can deny the importance of nutrition in any stages of life, especially during pregnancy. According to maternal nutrition during pregnancy has long-term effects on fetus health maternal nutritional deficiencies and factors that lead to a healthy pregnancy include overall health, appropriate weight gain, physical activity during pregnancy, intake of various foods, mineral supplements and vitamins. Maternal nutrition is the main determinant of fetal development, birth weight and disease of the infant, as well as the women's health and reproductive capacity. Anthropometric indicators are a simple, reliable and low-cost method for assessment of mothers' nutritional status(15).

Maternal body mass index (BMI) is one of the most important predictors of the nutritional status of a pregnant lady. Both nutritional intake and maternal weight are modifiable factors which can influence pregnancy outcome. Either underweight or overweight can have a significant impact on the outcome of pregnancy. Worldwide there has been an alarming increase in the incidence of obesity and overweight, particularly in the past two to three decades. In the latest report, the WHO has indicated that approximately 1.6 billion adults are overweight and around 400million are obese. Obesity has thus become a major contributor to the global burden of chronic diseases and disabilities. Most of the developing countries including India are facing a double burden because of extreme socioeconomic distribution. On one side, there is overweight and obesity which has reached epidemic proportions, and on another side, there is underweight and undernourishment. In India, 26% of pregnant women are overweight and 8% are obese(16).

Pregnancy complications secondary to overweight and obesity have been studied from ahead of time 1945, and it has been well established that these women are more prone to developing gestational hypertension, preeclampsia (PE), gestational diabetes mellitus (GDM), microsomal, postpartum hemorrhage (PPH), an increased incidence of operative deliveries. Furthermore, it has been showing that low APGAR scores and perinatal deaths are more common in neonates of obese women. However, the effect of underweight remains a bit unclear. Some studies have reported increased incidence of anemia, intrauterine growth

retardation, low birth weight (LBW) babies, and preterm labor. While some studies have reported a protective effect on some pregnancy complications such as GDM and PE(16,17).

Maternal and child under nutrition remains pervasive and damaging conditions in low-income and middle-income countries. A framework obtained by UNICEF recognizes the basic and underlying causes of under nutrition, consist of the environmental, economic, and sociopolitical related factors, with poverty having a central role. Although addressing general deprivation and inequity would result in substantial reductions in nutrition and should be a global priority, major reductions in under nutrition can also be made through programmatic health and nutrition interventions. The focus on the disease burden attributable to under nutrition and the interventions affecting household food availability and use, maternal and child care, and control of infectious diseases (18,19).

According to the world health organization (WHO), low birth weight (LBW) is defined as the first weight after birth which is less than 2500g(5.5pounds), resulting from preterm birth (birth before 37 completed weeks) or due to intrauterine growth restriction or from both. Birth weight not only predicts the health status of the mother but also gives future information about the survival, development, and long-term health of the baby(20).

Birth weight (BW) is also a known predictor of fatal wellbeing and newborns' future chances of survival and is dependent on maternal health and nutrition during pregnancy. It is also accepted that child growth failure occurs in the critical window of opportunity, from conception up to two years of age, and about 50% of the growth failure which occurs by two years of age occurs in the uterus. Though some catch-up growth can occur among infants born LBW, they never catch up in the same way as normal birth weight (NBW). Given its prediction of fetal wellbeing, intrauterine malnutrition has more serious and far-reaching consequences because an insult that occurs during pregnancy permanently affects tissue structure and function. These concerns make the fatal period a critical window of opportunity, and nutrition intervention during this period and improving BW will help break the vicious intergenerational cycle of malnutrition (21).

A child's weight at birth is the most important determinant of perinatal and infant mortality and morbidity and may have an influence on health in adult life. Based on international epidemiological observations infants weighing less than 2500g are more likely to die than

heavier babies. Survived LBW babies are also more likely to suffer a high incidence of malnutrition, diarrhea, infection, neurodevelopment problems, and physical defects(22).

Low birth weight is a preventable public health problem. It is an important determinant of child survival and development, as well as long-term consequences like the onset of non-communicable disease in the life course. A large number of mortality and morbidity can be prevented by addressing the factors associated with low birth weight LBW is a valuable public health indicator of maternal health, nutrition, healthcare delivery, and poverty as LBW babies are at a higher risk ofdeath and illness shortly after birth and non-communicable disease in the life course. Low birth weight is associated with maternal characteristics, such as age, and obstetrics history, newborn characteristics, prenatal care, socioeconomic aspects Studies in low and middle income countries indicate that socioeconomic factors, including education, income, an urban/rural living environment, region of residence as well as access to prenatal care, are also important determinants of pregnancy and birth weight outcomes (23,24).

 Low birth weight is associated with many socio-economic factors such as residence (urban-rural difference), mother's age and occupation, birth order, 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 were all associated factors(25).

Being born with LBW is generally recognized as a disadvantage for the infant. Among all neonatal death, 60 to 80% occur due to LBW. It is an important cause of perinatal mortality and both short and long-term infant and childhood morbidity. The mortality rate of LBW infants was up to 40 times higher than infants with birth weights of at least 2500g, and they are many times more likely to end up with long-term handicapping conditions. LBW in low income countries is due to IUGR, while it is mostly due to preterm birth in high income countries. Although in many cases, the causes of prematurity are vague, they may include maternal high blood pressure, acute infections, hard physical work, multiple births, stress, anxiety, and other psychological factors such as gender-based violence. The causes of IUGR

include, poor nutritional status of the mother at conception, low weight gain during pregnancy due to insufficient dietary intake or extra expenditure of calories (hard work), short maternal height due to youthful under-nutrition and infections, anemia, acute and chronic infections that could result in under-nutrition and consecutive poor pregnancy outcomes including LBW. LBW is a global public health challenging problem. Its high priority stems from the fact that it is the major determinant of infant morbidity and that it contributes markedly to the overall burden of childhood death. (26–28).

The economic status of a household is an indicator of access to adequate food supplies, use of health services, availability of improved water sources, and sanitation facilities, which are prime determinants of child and maternal nutritional status. A study of most of the DHS surveys conducted in developing countries and a study in the southern nations, nationalities, and peoples region (SNNPR) of Ethiopia (Teller and Yimer, 2000) showed that women from low economic status households were the most affected by malnutrition(29).

Lower calorie and protein intake by a mother throughout the pregnancy can result in a small size of the baby. Micronutrient deficiency, whether clinical or sub-clinical, may affect growth, cognition, and reproductive performance. In pregnant women, moderate to severe deficiencies of iron, zinc, and folic acid has been shown to increase the risk of low birth weight, pregnancy complications, and birth defects. The study concluded that a positive relationship exists between the micronutrient intake of pregnant women and the birth weight of the infants (30).

2.1 conceptual framework

Maternal socio-demographic factors

Residence

Marital status

Maternal occupation

Sex of HH head

Education status of mother

Maternal age

Family size

Maternal nutritional character

Additional meal (snacks)

Household food security status

Iron/folate supplementation

Newborn birth weight

Obstetric and medical factors

Parity

Inter pregnancy interval

Number of antenatal care visit

Chronic medical illness (HTN and diabetes mellitus)

Maternal nutritional status

Maternal MUAC

Figure 1:- conceptual framework adapted from reviewing different literatures(12,17,25,31).

CHAPTER THREE
OBJECTIVES

3.1 General objective

❖ To assess association between maternal nutritional characteristics and newborn birth weight among mothers who delivered in health institutions in Bedele Town, southwest Ethiopia, 2021.

3.2 specific Objective

➢ To assess maternal nutritional characteristics during pregnancy among pregnant women who deliver in health institutions in Bedele Town, southwest Ethiopia, 2021.

➢ To determine factor associated with newborn birth weight among pregnant women who deliver in health institutions in Bedele Town, southwest Ethiopia, 2021.

CHAPTER FOUR

METHODS AND MATERIALS

4.1. Study area and period

This study was conducted from May 26 to July 26, 2021 in Bedele town public health facilities, Southwest, Ethiopia. Bedele town is found in southwest Ethiopia, Oromia region, Buno Bedele zone, 493 kms far away from Addis Ababa. Bedele town is the capital of Buno Bedele zone. The total population of the town is estimated to be 29,517 of whom 15,053 are men and 14,464 women. It has an average elevation of 2162 meters or 7093 feet above sea level and a total area of 40.97sqkm.A total of 6871 households were counted in this Zone, which results in an average of 3.75 persons to a household. The existing health facilities in the town include one hospital (Governmental) one health centers (governmental), five small private clinics, two drug stores and supplies, seven pharmacies. This study was conducted in one primary hospital and one health center found in Bedele town.

4.2. Study design

✓ Institutional based cross-sectional study was conducted.

4.3. Population

4.3.1. Source population

✓ All mothers who delivered a live child in both health institutions in Bedele town during the study period were the source population.

4.3.2. Study population

✓ All selected mothers who delivered a live child in both health institutions in Bedele Town during the study period were the study population.

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

✓ Mothers who delivered in public health institutions.

4.4.2. Exclusion criteria

✓ Those mothers who were critically ill or mentally ill or have problems of communication were excluded from the study.

✓ Preterm deliveries

✓ Twin or multiple deliveries.

4.5. Study variables

4.5.1. Dependent variable

- ✓ Newborn birth weight

4.5.2. Independent variables

- **Socio-demographic factors**:-
    - ➢ Residence
    - ➢ Marital status
    - ➢ Maternal status
    - ➢ Maternal occupation
    - ➢ Sex of HH head
    - ➢ Educational status of mother
    - ➢ Maternal age
    - ➢ Family size
- **Obstetric and Medical factors**:
    - ➢ Parity
    - ➢ Inter pregnancy interval
    - ➢ Antenatal care visit
    - ➢ Chronic medical illness (HTN and diabetes mellitus)
- **Maternal nutritional character:**
    - ➢ Additional meal (snacks)
    - ➢ Household food security status
    - ➢ Iron/folate supplementation
- **Maternal nutritional status**
    - ➢ Maternal MUAC

4.6 Operational definitions

➢ **Newborn birth weight:-**weight of infant that taken immediatly after delivery.

➢ **Inter-pregnancy interval:-**the time between the birth of the firstborn child and the conception of the second-born child.

➢ **Low Inter-pregnancy interval:-<** 2 year interval between the birth of the firstborn child and the conception of the second-born child.

➢ **High Inter-pregnancy interval:->**2   year interval between the birth of the firstborn child and the conception of the second-born child.

➢ **Under nutrition**:-MUAC of pregnant mother <23cm

➢ **Normal**:-MUAC of pregnant mother 23cm-26cm

➢ **Additional meal (snack):-**extra than a regular meal

➢ **Poor Additional meal (snack) taking:-**no extra meal than a regular

➢ **Good Additional meal (snack) taking:-**at least one extra meal than a regular

➢ **Iron/folate suplimentation:-**tablet of iron/folate that taken during the pregnancy

4.7. Sample size and sampling technique

4.7.1 Sample size determination

Sample size is determined by considering the parameters of single population proportion formula $n = \dfrac{(z_{\alpha/2})^2 p(1-P)}{d^2}$ were used to calculate the sample size n=382. Prevalence of LBW was 46% (27). Since the total number of source population from 1-year Bedele Town Health Bureau report was 4123(<10,000), using a finite population correction formula to calculate the final sample size fn =350. Considering the 10% non-response rate the total sample was 385. The laboring mothers attended labor ward of all health institutions were recruited consecutively until the required sample size was achieved by considering 95% confidence interval, marginal error (d) of 5 %, and 10% non-response rate. Accordingly, the total sample size was 385.

The sample size calculation using the formula for estimation of a single population formula

$$n = \frac{(z_{\alpha/2})^2 p(1-P)}{d^2} =$$

$$n = \frac{1.96^2 0.46(1-0.46)}{0.05^2} = 382$$

n = minimum sample size

p = Prevalence

$Z\frac{\alpha}{2}$= significance level at α = 0.05(standard normal variable at 95% confidence level = 1.96)

d=expected margin of error (0.05)

$$nf = \frac{no}{1+\frac{no}{N}} = \frac{382}{1+\frac{382}{4123}} = 350$$

N= population size (4123which are 1-year report of laboring mothers at Bedele town health facility)

By considering (10%) non-response rate, 350x10/100, thus, the total sample size were 385.

Therefore the final sample size were 385.

4.7.2 Sampling procedure

There are one general hospital and one health centers, are providing antenatal care (ANC) and delivery services. Proportional allocation of the sample to the size of women who gave birth in those public health institutions, based on number of deliveries prior to data collection (one year report) was made. Clients who fulfilled the inclusion criteria were recruited consecutively until the required sample size was achieved. random sampling technique were applied to allocate the calculated sample size to the hospital and center proportionally.

```
                    ┌─────────────────────────────────────┐
                    │  Bedele town public health facilities │
                    │              N=4123                   │
                    └─────────────────────────────────────┘
                         ↙                        ↘
          ┌──────────────────┐            ┌──────────────────┐
          │  Bedele primary  │            │  Bedele Health   │
          │     hospital     │            │     center       │
          │     N=2936       │            │     N=1187       │
          └──────────────────┘            └──────────────────┘
                    ↓                              ↓
              (  275  )                       (  110  )
                    ↘        ┌──────────────┐    ↙
                             │  Total=385   │
                             └──────────────┘
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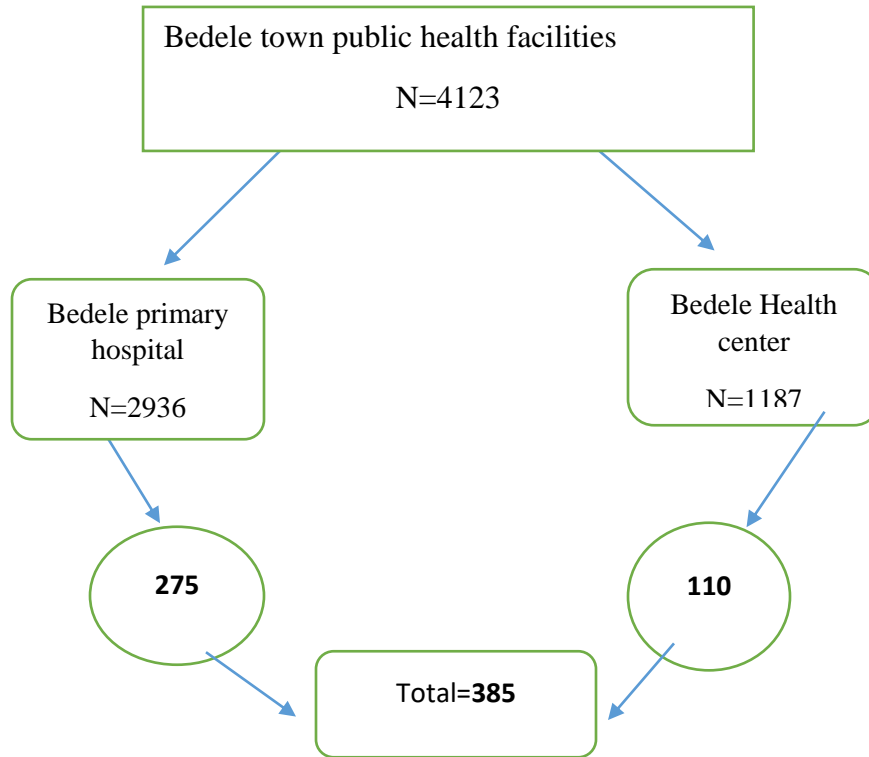
Figure 2 Schematic presentation of sampling procedure

4.8. Data collection procedure and tools

4.8.1 Data collection tools

Questionaries; The structured questionnaires which are adaptedted from three previous studie(2,15,32)were employed. This structured questionnaire was used to collect primary data. The questionnaire was used to obtain background information on the pregnant mother, Socio-demographic characteristics, maternal nutritional factors, from mother's cards (for obstetric and medical variables) and measure newborn birth weight and maternal MUAC were collected from all selected participants. In this study, the participant's household food security status was assessed using the household food insecurity access scale (HFIAS) mesurnment tools.

The initial questionnaire were prepared in English and converted into Afan Oromo and Amharic language by a professional expert and the data were conducted in the Afaan Oromo and Amharic language.

Anthropometry measure

1. Mid upper arm circumference (MUAC) of the mothers were measured to the nearest centimeter with non-stretchable tape on the left arm of the mother at the mid point by measururing length between tip of sholder and elbow then mark at the mid point with the hand hanging straight down(90 degree).Cutoff point for normal range from 23-26cm(33)

2. Newborn birth weight were measured to the nearest 10g in Seca Digital Baby Scale Table.

3. Birth defect and anomalies were recorded.

4. Blood pressure and blood glucose level were recoreded from patient's card

Household food insecurity measurement: to assess the household food insecurity status Assessed based on the Household Food Insecurity Access Scale (HFIAS) measurement tool. (FANTA, 2007).

4.8.2 Data collection procedure

Data collection was made by 2BSc nurses and 2Midwifes and one Health officer was supervisor. Training was given for 2 days about the objectives of the study, data collection instruments, data collection procedures and the ethical considerations by the principal investigator and an additional training was given for supervisor on data completeness and Cross checking. The data collection was supervised by supervisors and by principal investigator daily. Data was collected in three ways. First, the questionnaire was used to obtain information about the sociodemographic & economic factors, nutritional factors, medical and obstetric factor. Second the anthropometric data of the participant was taken by data collectors.

4.9. Data quality control

Pre-test was taken place in Danbi primary hospital among 19(5%) of the total sample size to assess its clarity, length, understandability, completeness and consistency. Before data collection the questionnaires and consent form were prepared in English and translated to local language (Afaan Oromo and Amharic) and back translated in to English language for consistency. Training was given for data collectors and supervisors. Regular supervision was

made during data collection. Collected data was manually checked for completeness, accuracy and clarity on daily basis before entering to the computer.

4.10. Data processing and analysis

The data was checked for completeness ,coded, and entered to Epi Data-version 4.6 and exported to SPSS version 26 for analysis. Data entry was made by the principal investigator. Data were presented using frequency tables, Mean and standard deviations were used for continuous variables.Bivariable and multivariable logestic regression was used respectively.

The goodness of model fit for this study was checked by Hosmer and Lemeshow's goodness-of-fittest since the dependent variable of the study is categorical and logistics regression were used for the analysis. A statistically insignificant p-value (i.e. P-value >0.05) were used to check the modelfitness. Multicollinearity among independent variables was checked by considering the standard error and tolerance. An elevated standard error of above 2 and a variance inflation factor (VIF)>10 were taken as a risk of Multicollinearity among the independent variables.

Multivariable logistic regression analyses were done for those variables with a p-value < 0.25 in the bivariate analysis to control for all possible confounders and to identify factors associated with newborn birth weight. Having a p-value < 0.05 was used to declare the presence of a statistically significant association between the independent and dependent variables with Hosmer and Lemeshow's goodness-of-fit test.

4.11. Ethical consideration

The ethical clearances were obtained from the Ethical review board of Jimma University. Letter of cooperation was obtained from Bedele woreda health office to the respective health facilities and from Bedele general hospital and Bedele health center. written informed consent was obtained from study participant by informing the purpose of the study and respondents have full right to refuse for their response.

4.12 Dissemination plan

The finding of this study was presented to the department of nutrition and dietetics, institute of health,fuculty of public health, Jimma university. The finding will be also disseminated to different stakeholders. Finally, efforts will be made to present in various seminars, workshops and for publication in an international journal.

CHAPTER FIVE

RESULT

A total of 385 postpartum women were interviewed during the study period among deliveries in Bedele town health institutions, 6 were excluded as their data was incomplete, and the remaining 379 were analyzed (with response rate of 98.4%).

5.1 Socio demographic characteristics of study participant

The age of the mothers was ranged from 15 to 49 years with mean age of 24.38 ± 5.22 and 271(70.4%) were in the age range of 15 to 24 years. Majority (92.7%) of the respondents were married, only 4.7% of the respondents were can't read and write and 233 (60.5%) were residing in urban areas. Around one-third (33.8%) of women were farmer followed by merchant (28.6%). Majority (75.1%) of the respondents had less than five family members. The detail description shown below in table 1

Table 1 Socio-demographic characteristic of mother who gave birth in health institutions in Bedele Town, Southwest Ethiopia 2021.

Variable	Categories	Frequency	Percent (%)
Age Group	15-24	271	70.4
	25-34	100	26
	>35	14	3.6
Marital status	married	357	92.7
	Single	20	5.2
	divorced	3	0.8
	widowed	5	1.8
Maternal Educational status	Unable to read and write	18	4.7
	Read and write	61	15.8
	Primary level	122	31.7

	Secondary and above	184	47.8
Occupation	Government Employ	94	24.4
	Merchant	110	28.6
	Housewife	51	13.2
	Farmer	130	33.8
Household Monthly Income	<1500	4	1.1
	1501-3000	18	4.6
	>3000	175	45.5
	Don't know	188	48.8
Residence	Urban	233	60.5
	Rural	152	39.5
Family size	< 5	289	75.1
	$\geq$ 5	96	25.9

5.2 Obstetric and medical factor of study participant

The mean age of women at marriage and first birth were 19.61 ± 2.60 and 21.18±2.90 respectively. Greater than three fourth (78.7 %.) had interpregnancy interval below 2 years and 168 (43.6%) had no antenatal care visit followed by 145(37.7%) of more than three times antenatal care visit and 188 (48.8%) of women are Para 1 while 182 (47.3%) are Para 2 to 4. Seventy eight percent of women gave birth to their last child with birth interval of less than two years and 217(56.8%), 168(43.2%) of women are primigravida and multigravida respectively. Regarding medical problems; 8(2.1%), 5(1.8%) of women had developed hypertension disorders of pregnancy and gestational diabetes respectively.

Table 2:- Obstetrics and medical factors among mother who gave birth in health institutions in Bedele Town, Southwest Ethiopia 2021.

Variable	Categories	Frequency	Percent
Age at marriage	<18	151	39.2
	19-24	221	57.4
	>25	13	3.4
Age at first birth	<19	77	20
	20-24	211	54.8
	>25	97	25.2
Inter pregnancy interval	<2 year	203	78.7
	≥2 year	82	21.3
Parity	1	188	48.8
	2-4	182	47.3
	≥5	15	3.9
Birth order	Primigravida	217	56.8
	Multigravida	168	43.2
Number of Antenatal visits	1-2 times	72	18.7
	3 times	77	20
	4 times	68	17.7
	No visit	168	43.6
Hypertension disorder of pregnancy	Yes	8	2.1
	No	377	97.9
Pregnancy induced DM	Yes	5	1.8
	No	380	98.2

5.3 Maternal nutrition and newborn related

Regarding maternal nutritional status using Mid-upper arm circumference (MUAC), 139 (36.1%) of mothers are malnourished with MUAC of < 23 and 246 (63.9%) are normal. Around 219 (56.9%) women had Iron folate supplementation during antenatal care. With regard to the feeding status of the women during pregnancy, 36 (9.4%) had prohibition of some food items, 42(10.9%) had strong desire to eat (craving), 268 (69.6%) were not taking additional meal and 103 (26.7%) were food insecure. Around 292(75.8%) women had planned and wanted type of pregnancy. Majority of newborns are of normal weight in 325 (84.4%) with mean birth weight of 3029.61 ± 431.45 grams (Table 3).

Table 3:- Maternal nutrition, newborn related and women autonomy among mother who gave birth in health institutions in Bedele Town, Southwest Ethiopia 2021.

Variable	Categories	Frequency	Percent (%)
Maternal MUAC	Under nutrition (<23)	139	36.1
	Normal (23-26)	246	63.9
Iron folate supplementation	Yes	219	56.9
	No	166	43.1
Food prohibition during pregnancy	Yes	36	9.4
	No	349	90.6
Additional meal	Yes	117	30.4
	No	268	69.6
Type of pregnancy	Planned and wanted	292	75.8
	Unplanned but wanted	79	20.5
	Unplanned and unwanted	14	3.6
Desire to eat (craving)	Yes	42	10.9
	No	343	89.1
Newborn birth weight (Mean birth weight =3029.61±431.454	<2500	46	11.9
	2501-3999	325	84.4
	4000 +	14	3.7

NEWBORN BIRTH WEIGHT

- Under weight
- Normal
- Over weight
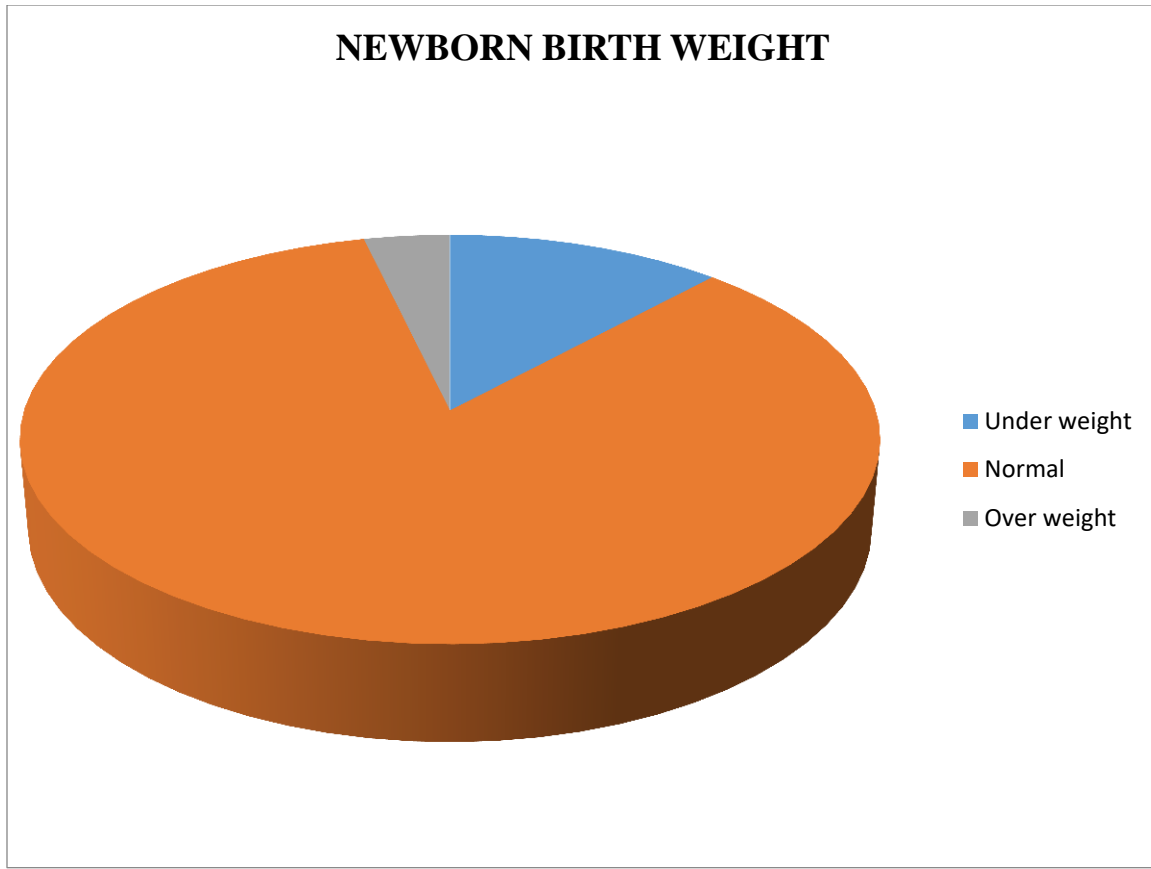
Figure 3 the overall weight of Newborn at birth in bedele town health facilities

5.4: Associated factor of Newborn birth weight

In bivariate regression analysis to identify factors associated with newborn weight at birth among pregnant women; education of mother, occupation of the mother, gap between the previous and current pregnancy, type of pregnancy, age of first pregnancy, number of antenatal care visit and maternal marital status were identified as the candidate for multivariable logistic regression analysis as shown in table below (Table 4).

Table 4:-Bivariate analysis associated factor of birth weight among newborns delivered at health institutions in Bedele Town, Southwest Ethiopia 2021.

Variable	Categories	Birth weight		COR (95% CI)	P
		Normal	Underweight		
Age Group	15-26	241(89.3)	30(10.7%)	1.2(0.54,1.88)	0.277
	27-36	88(88%)	12(12%)	1.1(0.34,1.45)	0.333
	>37	10(71.4%)	4(28.6%)	1	
Maternal Educational status	Unable to read and write	10(55.5%)	8(44.5%)	1.4(0.5,1.23)	0.611
	Read and write	51(83.6%)	10(16.4%)	1.3(1.19,2.01)	0.440
	Primary level	105(86%)	17(14%)	1.1(1.15,2.07)	0.283
	Secondary and above	173(94%)	11(6%)	1	
Occupation	Government Employ	85(90.4%)	9(9.6%)	2.1(0.76,1.75)	0.304
	Merchant	101(91.8%)	9(8.2%)	2.4(1.02,2.18)	0.262
	Housewife	47(92.1%)	4(7.9%)	1.9(0.76,1.87)	0.295
	Farmer	106(81.5%)	24(18.5%)	1	
Age at first birth	<19	57(77.1%)	20(22.9%)	1.1(0.75,1.10)	0.617
	20-24	193(91.5%)	18(8.5%)	1.2(0.19,1.17)	0.536
	>25	89(91.8%)	8(8.2%)	1	
Inter pregnancy interval	<2 year	169(85.2%)	34(14.8%)	1.8(0.43,2.04)	0.901
	≥2 year	70(85.4%)	12(14.6%)	1	
Type of pregnancy	Planned and wanted	259(88.7%)	33(11.3%)	1.6(0.16,1.30)	0.778
	Unplanned but wanted	69(87.3%)	10(12.2%)	1.2(0.22,2.71)	0.372
	Unplanned and unwanted	11(78.6%)	3(21.4%)	1	
	1-2 times	58(80.5%)	10(14.1%)	1.1(0.21,1.74)	0.302

Number of Antenatal visits	3 times	73(94.8%)	4(5.2%)	1.6(0.61,3.31)	0.415
	4 times	58(85.3%)	7(10.3%)	1.08(0.61,1.56)	0.291
	No visit	143(85.2%)	25(14.8%)	1	
Marital status	married	322(90.1%)	35(9.9%)	2.1(1.6, 16.2)	0.531
	Single	15(75%)	5(25%)	3.4(0.18, 16.1)	0.490
	divorced	1(33.4%)	2(66.6%)	1.2(1.2, 14)	0.902
	widowed	1(20%)	4(80%)	1	

COR=Crude Odds Ratio, CI = Confidence Interval

5.5 Associated factor of newborn birth weight from multivariable analysis

Among associated factor for birth weight like residence, maternal mid upper arm circumference, Parity, Family size, Iron folate supplementation and Additional meal taking during pregnancy period were included in the model.

Maternal residence was significantly associated by showing rural residence are 2.5 times more likely to be low birth weight when compared to Urban residence (AOR 2.5 [95%CI :1.5,34]) and women who had family size greater than five were 1.2 times have LBW baby when compared to those with family size five and below (AOR=1.2 [95%=CI 0.2,6.7]). women's who didn't take iron folate supplementation on current pregnancy (AOR = 3.4 [95% CI: 0.3,38]) were 3.4 times more likely to be exposed to LBW as compared to those who take iron folate supplementation, moreover, women's who didn't take additional meal (AOR =1.6 [95% CI: 0.7,3.7]) were 1.6 times more likely to be exposed for LBW than women who had taken additional meal.

The association between maternal mid upper arm circumference and birth weight was maintained after adjustment of possible confounding. Mothers with greater than 23 cm mid upper arm circumference were 1.1 times less likely to deliver low birth weight when compared to mothers with low mid upper arm circumference (AOR= 1.13 [95%CI:1.23,3.42]) more shown in Table 5.

Table 5 Association of newborn birth weight with socio-demographic and economic, pregnancy and health related characteristics among delivered in public health facilities in Bedele town, Southwest Ethiopia, 2021

Variable	Categories	Birth weight		COR (95% CI)	AOR (95%CI)	P
		Normal	Underweight			
Residence	Urban	244(92.7%)	19(7.3%)	1	1	
	rural	95(77.5%)	27(22.5%)	3.2(1.6, 7.2)	2.5(1.5,34)	<0.001
Family size	≤ 5	277(72.1%)	38(27.9%)	1	1	
	> 5	24(80.6%)	7(19.4%)	2.1(0.8, 9.3)	1.2(0.2,6.7)	0.023
Parity	1	176(93.6%)	12(6.4%)	1	1	
	2-4	151(82.9%)	31(17.1%)	1.21(1.4, 3.2)	1.6(0.7,3.7)	0.049
	≥ 5	12(80%)	3(20%)	3.65(0.9, 4.5)	2.2(0.3,3.8)	0.012
Iron folate supplementation	Yes	211(96.3%)	8(3.7%)	1	1	
	No	128(71.1%)	38(28.9%)	7.84(0.9, 4.5)	3.4(0.3,38)	0.044
Additional meal	Yes	108(92.3%)	9(7.7%)	1	1	
	No	231(86.1%)	37(13.9%)	0.9(1.4, 3.2)	1.6(0.7,3.7)	0.039
Maternal MUAC	Under nutrition (<23)	100(71.9%)	39(28.1%)	0.08(0.13,1.47)	1.13(1.23,3.42)	0.010
	Normal (23-26)	239(97.2%)	7(2.8%)	1	1	

P=P-value   COR=Crude odds ratio   AOR=Adjusted odds ratio   CI=Confidence Interval
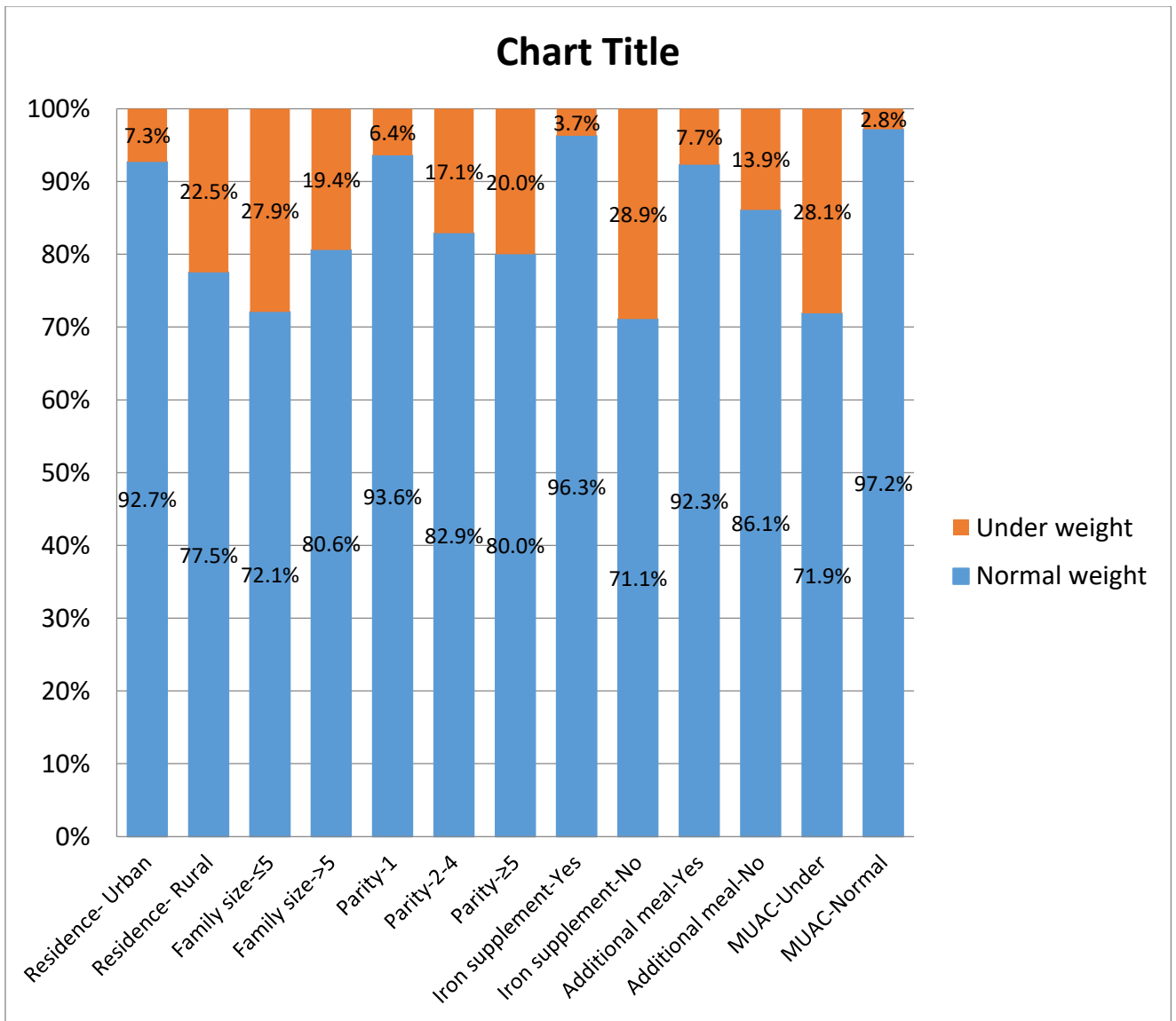
Figure 4 Factor associated with newborn weight at birth in Bedele town, southwest, Ethiopia

CHAPTER SIX
DISCUSSION

Birth weight is the most important indicator of survival of newborns during their early life and has been associated with morbidity and mortality at all ages within the human life span. Drivers of gaining each gram of a newborn weight should be well exploited. Accordingly, we have conducted the current study on 385 postpartum mothers attending in health service institution of Bedele town. In general, these socioeconomic findings were comparable with studies conducted in Wondogenet district and Northeast, Ethiopia(34,35). Low birth weight (LBW) is a major factor contributing towards high infant mortality in developing countries(36).Thus, this study attempted to assess the association of maternal nutritional status on birth weight of the new born to design prevention and intervention strategy to reduce the prevalence of low birth weight as well as child morbidity and mortality rate.

Micronutrients are essential for growth, and maternal micronutrient deficiency, as frequently observed in developing countries, may be an important cause of IUGR. Micronutrient deficiency, whether clinical or sub-clinical, may affect growth, cognition, and reproductive performance(37). Optimal nutrition during pregnancy is important for the health of both the mother and the baby however, in many studies dietary intake during pregnancy is found to be suboptima(38). This is in agreement with different studies conducted in Ethiopia where maternal nutrition during pregnancy is generally poor because of different reasons. Among these are: one quarter of women of reproductive age in Ethiopia are undernourished and 17% are anemic, associated low birth weight, short stature, lower resistance to infections, and higher risk of disease and death (39–41). In addition, Energy and most of the nutrient's intakes of pregnant mother in Wando Genet district is also reported to be lower than recommended for pregnant mother (34). In this study majority of newborns are of normal weight (84.4%) with mean birth weight of 3029.6 ± 431.5 grams and 11.9% of new born are low birth weight. The low-birth-weight rate in this study low compared to the previous studies in Ethiopia where the prevalence of low-birth-weight ranges from 15 to 20% of all births worldwide to 17.1% in Gondor (4,32,40,42). On the other hand, the 3029.6 ± 431.5 mean birth weight of the newborn in this study is higher compared to previous studies 2945.6 ±594.3 grams in Debre Markose(43) and other African country (44). The reason why the

mean birth weight is high and the low birth weight is low in this study might be the research is conducted on term pregnancies compared to the other studies where preterm are also included. Furthermore, nearly two third of the mother are urban residents in this study in contrast to other studies where majority are rural residents which is found to be positively associated with birth weight. This is because Urban residents are thought to have better education, health information and access to health facilities for antenatal care which subsequently promotes birth weight(34,45).

In this study history of iron/folate supplementations during pregnancy was significantly associated with newborn birth weight. Women who didn't take iron/folate supplementation during antenatal care were more likely to be exposed to low birth weight as compared to those who take iron/folate supplementation. This is consistent with study conducted in south Africa and Ethiopia(46,47).

Malnutrition is one of the main health problems facing many women and children in Ethiopia. Ethiopia has the second highest rate of malnutrition in Sub-Saharan Africa (SSA). One major contributing factor for LBW is the poor nutritional status of women both before and during pregnancy Malnutrition impacts on health, mental development, and work productivity of mothers which have enormous impact on the economic growth and poverty reduction effort of the country, reduction of maternal and child health and affects the achievement of MDG(48).

From this study maternal additional meal taking during pregnancy was significantly associated with newborn birth weight. Women who didn't take additional meal during pregnancy were more likely to be exposed to low birth weight as compared to those who take additional meal. This finding is similar with study done in west Gojam Ethiopia(49).

The parity of mother being multigravida was found to be significantly associated with developing LBW as compared to the women with primigravida. Also this finding is similar with study done in North Wallo(31).

Periods of fetal and infant growth are vital predictors of child's health status which are largely determined by maternal characteristics. Hence, maternal anthropometry and indicators of maternal nutritional status are crucial prognosticators of pregnancy outcomes (50).

They're existed alarming level of (36.1%) maternal under nutrition defined as Mid-upper arm circumference (MUAC) of < 21 cm among the study subjects. Though an increased level of maternal under nutrition to USAID report on Ethiopia nutrition profile (25%) (51).

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

➢ Majority of newborns had normal birth weight with mean birth weight of 3029.6 ± 431.5 grams and 11.9 percent of low birth weight.

➢ Maternal nutritional status using Mid-upper arm circumference (MUAC), 139 (36.1%) of mothers are malnourished with MUAC of < 21 and 246 (63.9%) are normal.

➢ The associated factor of newborn birth weight was resident, maternal MUAC, parity, family size, irone/folet supplementation and additional meal. This is significant because newborn birth weight is important determinant of newborn survival.

7.2 Recommendation

The following points are recommended for the government, Ministry of health, Ministry of finance, Health Office of Bedele Town and Other responsible bodies.

➕ Nutrition counseling at antenatal care at all levels is essential for both maternal and newborn birth weight.

➕ Improving socio-economic status by creating access to micro financing.

➕ Promotion of awareness on nutritional benefits especially consumption of iron-rich foods, Additional meals and healthy diets at pregnancy period

For researchers

➕ Further studies on underline, basic and immediate causes of maternal malnutrition in the study area.

CHAPTER EIGHT
LIMITATION AND STRENGTH OF THE STUDY

8.1 Limitation of the study

- As it is crossectional study its ability to draw cause effect relationship was limited. Some of the findings in this study may not show the seasonal variation in maternal nutrion and newborn birth weight.

- Since the study depends on self-report there might be recall bias, especially for food frequency questionnaires and monthly income of the family.

8.2 Strength of the study

- Inclusion of all health facilities providing delivery services in the town is strength of the study and the study used sample size with response rate 98.4%.

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JIMMA UNIVERSITY

FACULTY OF PUBLIC HEALTH

DEPARTMENT OF NUTRITION AND DIETETICS

MSC IN HUMAN NUTRITION

Annex1: - English version consent form and information sheet

✓ Data collection tool developed to assess impact of maternal nutritional characteristics and status on newborn birth weight who delivered in health institutions in Bedele Town, southwest Ethiopia, 2021.

Appendix 1.1 Written consent forms for study participant

Name of principal investigator: Rahel Tadesse

Research title: To assess impact of maternal nutritional characteristics and status on newborn birth weight who delivered in health institutions in Bedele Town, southwest Ethiopia, 2021.

1. I confirm that I understand the information sheet for the above study and have had the opportunity to ask questions.

2. I understand that my participation is completely voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

3. I agree to take part in the above study. I would like to confirm my agreement by signing.

Participant's name _____ Signature_____ date_____

Name of the data collector: _____ Signature: _____date_____

Thank you for your participation and cooperation!

Appendix 1.2 Information sheets

Participants' information sheet

Name of the principal investigator: Rahel Tadesse

Name of study area: Bedele Town

Research objective: To assess impact of maternal nutritional characteristics and status on newborn birth weight who delivered in health institutions in Bedele Town, southwest Ethiopia, 2021 from May 26 to July 26.

Data collection procedure: The data collectors will interview participants using questionnaire, MUAC measurement from mothers after obtaining written informed consent from the participants. All data are accessible to researchers, supervisors and data collectors. Only research team members will have access to full data of study participants. The data from participants will used for research purpose only.

Risks: There were no risks to participants

Beneficial: The study is beneficial for participants 'in improving the quality of diet practice and control associated factors of birth weight.

Participants' right: The participants have a right to stop the interview at any time, or to skip any question that she does not want to answer.

Incentives: The participants will not be provided any specific incentive for taking part in the research other than acknowledgment.

Confidentialities: The study result will not include participants name and address.

Agreement: Participants are expected to be fully voluntary and give written consent to participate in the study.

QUESTIONNAIRES

S.No	Question	Response	skip
	Name of health facility	_____	
	Date of interview	_____	
	Kebele	_____	
	code	_____	
Part I	**Sociodemographic and Clinical Characteristics**		
101	Age (in years)	_____	
102	Marital status	1. Married 2.Unmarried 3. Divorced 4. Widowed	
103	Educational status of Mother	1. Unable to read and write 2. Read and write 3. Elementary 4. Secondary and above	
104	Residence	1. Urban 2. Rural	
105	Monthly income	_____	
106	Occupation	1. Government employee 2. Merchant 3. Housewife 4. Farmer 5. Others	
107	How many members of the household are below age 15 and above 65?	_____	
108	How many members of your household are between the age b/n 15-65?	_____	
109	Age of mother	_____	
110	Age of father	_____	

111	Age at first marriage (mother)	_____	
112	Age at first birth (mother)	_____	
113	Age difference between spouses	_____	
Part II	**Antenatal and pregnancy-related history**		
201	Parity (total number of live birth)	_____	
202	Birth Order	_____	
203	Birth interval	_____	
204	Do you have an antenatal visit	1. Yes 2. No	
205	What is the Source of antenatal visit	1. Health center 2. Hospital 3 Private clinics	
206	Number of antenatal visits	_____	
207	Did you get prenatal diet advice	1. Yes 2. No	
208	Type of pregnancy	1.planned and wanted 2.Unplanned but wanted 3. Unplanned and unwanted	
209	Is the pregnancy supported	1. Yes 2. No	
210	Was fetal heartbeat positive at admission to labor ward	1. Yes 2. No	
211	Do you have illness during pregnancy	1. Yes 2. No	If no skip to 213
212	If yes for Q 211, what type of illness	1. Placental abruption 2. Pregnancy induced diabetes mellitus 3 Others, specify	
213	Did you take tetanus toxoid (TT) during this pregnancy	1. Yes 2. No	
214	During this pregnancy, have you developed pregnancy-induced hypertension	1. Yes 2. No	
215	During this pregnancy, have you developed gestational diabetes	1. Yes 2. No	

Part III	Household Food Insecurity Access Scale (HFIAS) Measurement Tool		
301	In the past four weeks, did you worry that your household would not have enough food	1 = No 2 = Yes	If no skip to 303
302	If yes Q 301, how often did this happen	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)	
303	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	1 = No 2 = Yes	If no skip to 305
304	If yes Q 303, how often did this happen	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)	
305	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	1 = No 2 = Yes	If no skip to 307
306	If yes Q 305, how often did this happen	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)	
307	In the past four weeks, did you or any household member have to eat some foods that you did not want to eat because of a lack of resources to obtain other types of food	1 = No 2 = Yes	If no skip to 309
308	If yes Q 307, how often did this	1 = rarely (once or twice in the past four weeks)	

	happen	2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
309	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	1 = No 2 = Yes	If no skip to 311
310	If yes Q 309, how often did this happen	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)	
311	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	1 = No 2 = Yes	If no skip to 313
312	If yes Q 311, how often did this happen	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)	
313	In the past four weeks, was there ever no food to eat of any kind in your household because of a lack of resources to get food	1 = No 2 = Yes	If no skip to 315
314	If yes Q 313, how often did this happen	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)	
315	In the past four weeks, did you or any household member go to sleep at night hungry because there was	1 = No 2 = Yes	If no skip to 317

		not enough food		
316	If yes Q 315, how often did this happen	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)	
317	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 = No 2 = Yes	If no skip to 401
318	If yes Q 317, how often did this happen	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)	
Part-IV: **Nutrition-related history**			
401	What is the source of drinking water	1. Tap water 2. Protected spring 3. Unprotected spring 4. Dug well 5. Pond/river 6. Others, specify	
402	Have you ever used Iron folate supplementation during this pregnancy	1. Yes 2. No	If no skip to 405
403	If yes to Q 402, for how long in months	_____	
404	How many iron/folate pills you take in the last 7 days	_____	
405	Have you ever been counseled about an additional meal for this pregnancy during your ANC Visit	1. Yes 2. No	

406	How many meals do you usually eat within a day	1. One time 2. two times 3. three times 4. four times 5. five times and above	
407	Do you believe that an additional meal is required during pregnancy	1. Yes 2. No	If no skip to 409
408	If yes to Q 407, how many times do you take an additional meal per day	_____	
409	Do you use iodized salt	1. Yes 2. No	
410	Do you use a bed net	1. Yes 2. No	
411	Do you have any food prohibition for pregnancy	1. Yes 2. No	If no skip to 415
412	If Yes Q 411, what type of foods are prohibited during pregnancy	1. Meat 2. Mango 3. Banana 4. Egg 5. Maize 6. Other	
413	Who told you to do so	1. Elderly 2. Neighbors 3. Husband 4. Religious leaders 5. Others	
414	What is the reason you did not take the above food	1. No health benefit for the fetus 2. it Will make baby big & labor difficult 3. Will be plastered on fetal head & body 4. Fear of abortion 5. Evil eye 6. Fetal abnormality 7. Others	
415	What special food do you take to improve strength, Endurance, and/or vitality	_____	
416	Do you avoid any food item because you are pregnant	1. Yes 2. No	If no skip to 420

417	If yes Q 416 which food Specify	_____	
418	What is the reason you did not take the above food	1. No health benefit 2. Personal dislike (aversion) 3. To Will make baby big & labor difficult 4.Will be plastered on fetal head & body 5. Fear of abortion 6. Evil eye 7. Fetal abnormality 8. Other	
419	If personal dislike, what do you think is the reason for your dislike	1. smell/taste of food 2. Heartburn/discomfort 3.Feeling of nausea/vomiting 4. I don't know the reason	
420	Is there any food item that you desire strongly to eat especially during this pregnancy	1. Yes 2. No	If no skip to 423
421	If, yes Q 420 what do you crave? (Probe for pica practice). Specify	_____	
422	What is your reason to crave these food items	1. Color of food 2. Food odor 3. Desire of the fetus 4. I don't know the reason 5. Other (specify)	
423	Do you have a latrine	1. Yes 2. No	If no skip to 425
424	If yes 423, what type of latrine	1. Private pit 2. Shared latrine 3. Flush to pit latrine 4.Open pit 5. Ventilated improved pit latrine 6. Open defecation	
425	When do you wash your hands 1. Before meal 2. After meal 3. After toilet	1. Yes 2. No 1. Yes 2. No 1. Yes 2. No	
426	How do you wash your hand	1. Using water only 2. Using soap some times	

		3. Using soap always 4. Using ash some times	
427	Behavioral factor Chewing chat Cigar rate smoking Drink alcohol	1. Yes 2. No 1. Yes 2. No 1.Yes 2. No	
Part-V Anthropometry			
501	Maternal MUAC	_____cm	
502	Newborn birth weight	_____gram	

YUNIIVERSIITII JIMMAA
MUMMEE FAYYAA HAWWAASAA
DIPAARTIMENTII Saayinsii Qorannoo sirna nyaataa namaa (MSc)

Guca 1ffaa

1. **Guca odeefannoon ittiin funaanamu kan Afaan Oromoon qophahe**

 1.1Uunka barrefamaa eyyama hirmaattotaa ittin gafaatan

Maqaa nama qohannoo adeemsisuu: Raaheel Tadaasaa

Kayyoo qohannoo: Dubartoota ulfaa kanneen mana yaalaatti dahan keessaa, sirna nyaataa haadholee fi qabiyyee nyaataa akka ibsituu fayyadamuun walitti dhufeenya inni ulfaatina daa'imman haaraa dhalatan waliin qabu madaaluu, Magaalaa Badaallee, Lixa Itoopiyaa, camsaa 18 hanga Adolessaa18, 2021..

1. Qohannoo armaan olitti ibsameef odeefannoo dhuunka kanaan hubaachuu danda'uu kootiif waliin galuun carraa gaafachuu argadheera.

2. Hirmaannaan koo guutummaan guutuutti fedhi qabeessa tahuu isaa hubachuun, mirgi koo osoo hin dhiibamiin bilisa tahuun sababii tokko malee yeroo kam iyyuu hirmaataa tahuu koo hubadheera.

3. Qohannoo armaan olii keessatti qooda fudhannaa koof waliin gala. Waliif galuu koos malattoo kootiinan mirkaneessa.

Maqaa hirmaattotaa_____ Malattoo Guyyaa_____

Maqaa nama raga funaane_____ Malattoo Guyyaa_____

Hirmaannaa fi deeggarsa nuuf taasiftaniif ulfaadha!

1.2 Uunka odeefanoo

Maqaa nama qohannoo adeemsisuu: Raaheel Tadaasaa

Bakka qohanoon itti adeemsifamu: Magaalaa Badaallee

Kayyoo qohannoo: Dubartoota ulfaa kanneen mana yaalaatti dahan keessaa, sirna nyaataa haadholee fi qabiyyee nyaataa akka ibsituu fayyadamuun walitti dhufeenya inni ulfaatina daa'imman haaraa dhalatan waliin qabu madaaluu, Magaalaa Badaallee, Lixa Itoopiyaa, Camsaa 18 hanga Adoleesaa 18, 2013.

Bu'ura qohannoo kanaa: Qohannoon kun yeroo qophii tarsiimooti, taatee sirni nyaataa yeroo ulfaa gahumsa hin qabne walitti dhufeenya inni ulfaatina da'iman dhalatanii waliin qabu ittisuu fi to'achuuf gargaara.

Adeemsa raga funaanuu: Ogeesotni raga funaanan waliigaltee tarreeffame irratti hundaa'uudhaan hirmaattoota ni gaafatu, akkasumas safarrii ‗MUAC' ni raawwatu. Ragaan fuunaname hundinuu abbaa qohannaa adeemsisuuf, suupparvaayizeeraa fi kanneen raga funaananiif akka dhihaatu ni taasifa. Guutumman guututti raga hirmaattota qohannoo kan arguu qabu miseensa garee qohannichaa qofa. Ragaan hirmaattota irraa waliitti qabamu qohannoof qofa kan ooludha.

Dhibbaa: Hirmaattota irratti rakkoon qaqabuu danda'u tokko illee hin jiru.

Fayyadamtoota: Qohannoon kun fayyadamummaa sirna nyataa madalawaa foyyeessudhaan rakkoo uulfaatina daa'iman dhalatanii qaqabuu danda'u akka to'ataniif isaan gargaara.

Mirga hirmaattotaa: Hirmaattotni gaaffii kanaa yeroo kamittuu akkasumas gaafii barbaadan kam iyyuu deebisuu dhiisuudhaaf mirga qabu.

Durgoo: Galateeffachuu irraa kan hafe hirmaattotaaf qohannoo kana keessatti durgoo yookiin faayidaan addaa argata hin jiru.

Icciitii eeguu: Qohannoon kun maqaa fi teessoo hirmaattotaa of keessatti hin hammatu.

Walii galtee: Hirmaattota irraa kan eegamu fedhii guutuun hirmaachuu fi qohannaa kana irratti hirmaachuu isaanii barreeffamaan walii galuudha.

Lakk.	Gaaffii	Deebii	Filannoo dhiisanii darbuu
	Maqaa dhaabbata tajaajila fayyaa	_____	
	Guyyaa gaaffiifi deebiin adeemsifame	_____	
	Ganda	_____	
	koodii	_____	
Kuutaa - I :Ragaalee eenyummaa hawaasummaa fi dinagdee			
101	Umurii	_____	
102	Haala fudhaa fi heerumaa	1. Kan heerumte/e 2. Kan hin heerumne 3. Kan jalaa du'e 4. Kan adda bahan	
103	Haala barnoota haadholee	1. Barreessuu fi dubbisuu kan hin dandeenye. 2. Barreessuu fi dubbisuu qofa kan dandeessu. 3. Sadarkaa tokkoffaa (kutaa 1-8) 4. Sadarkaa lammaafaa fii isaa ol	
104	Bakka jireenyaa	1. Maagaalaa 2. Baadiyyaa	
105	Galii Ji'a	_____	
106	Haala hojii/dalagaa	1. Hojjetaa mootummaa 2. Daldaltuu 3. Haadha manaa 4. Qonnaan bulttu 5. Kan biro(adda baasi)-------	
107	Miseensa maatii keessaa namootni	_____	

	umuriin isaanii waggaa 15 gadii fi waggaa 65 ol tahan meeqa		
108	Miseensa maatii keessaa namootni umuriin isaanii waggaa 15 fi 65 gidduuti argaman meeqa	_____	
109	Umurii haadhaa	_____	
110	Umurii abbaa	_____	
111	Umurii heeruma jalqabaa (kan haadhaa)	_____	
112	Umurii jalqaba itti daa'ima argatte (haadhaaf)	_____	
113	Garaagartummaa umurii haadhaa fi abbaa gidduu	_____	
Kuutaa- II: Ulfaa fi dahumsa waliin walqabatee			
201	Baay'ina daa'ima dhalatanii	_____	
202	Tartiiba dhalootaa	_____	
203	Garaagartummaa yeroo dhaloota gidduu jiru	_____	
204	Hordofii dahumsa duraa ni taasifta turtee	1. Eeyyee 2. Lakki	
205	Dhaabbatni fayyaa ati hordoffii itti adeemsiftu eessa ture	1. Buufata fayyaa 2. Hospitaala 3. Kiliinika dhuunfaa	
206	Baay'ina yeroon ati hordoffii dahumsa dura taasiftee meeqa	_____	
207	Gorsa sirna nyaataa dahumsaan duraa argatteta	1. Eeyyee 2. Lakki	
208	Gosa ulfaa	1. Kan karoorfamee fi barbaadamu 2. kan hin karoorfamnee fi barbaadamu 3. Kan hin karoorfamnee fi	

		hin barbaadamne	
209	Deeggarsi barbaachisaan ulfichaaf taasifamee ture	1. Eeyyee 2. Lakki	
210	Yeroo cinniinsuuti rukkutaan onnee daa'immaa haala gaarii irratti argama ture	1. Eeyyee 2. Lakki	
211	Yeroo turtii ulfaa dhukkubaan qabamtee beekta	1. Eeyyee 2. Lakki	→ 213
212	Yoo deebiin gaaffii 211 eeyyee tahe, dhibee maaliiti	1. Miixuu/ciniinsuun dura dhangala'aan obaatii dursee dhangala'uu. 2. Dhukkuba sukkaaraa ulfa waliin wal qabatu 3. kan biroo ibsi	
213	Yeroo ulfa turtetti talaallii TT fudhattee turte	1. Eeyyee 2. Lakki	
214	Wayita ulfa turtetti ulfa waliin kan wal qabatu rakkoo dhibbaa dhiigaa qabamteeta	1. Eeyyee 2. Lakki	
215	Yeroo ulfaa dhibeen sukkaaraa si qabateera	1. Eeyyee 2. Lakki	
Kuutaa -III:Meeshaa safartuu Wabii nyaataa fi Qabiyyee			
301	Torban arfun darban keessatti mana keessa nyaati gahaa hin jiru jettan yaaddofitanii beekitu	1. Miti 2. Eeyyee	→ 303
302	Yoo gaaffii 301 Eeyyee tahe, kun yeroo hagamiif uumame	1. Baay'ee xiqqoo (torban arfun darban keessa yeroo tokko ykn lama) 2. Darbe darbee (torban arfun darban keessa yeroo 3 hanga 10) 3. Yeroo baay'ee (torban	

		arfun darban keessa yeroo 10 oli	
303	Torban arfun darban keessa ati ykn miseensa maatikee dhabumma irra kan ka'e nyaata soorachuu dhabuu sin muudattee beeka	1. Miti 2. Eeyyee	→ 305
304	Yoo gaaffii 303 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
305	Torban arfun darban keessa ati ykn miseensa maatikee dhabumma irra kan ka'e nyaata gosa murtaa'e soorachuu isin muudateera	1. Miti 2. Eeyyee	→ 307
306	Yoo gaaffii 305 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
307	Torban arfun darban keessa ati ykn miseensa maatikee dhabumma irra kan ka'e nyaata ati jaalattu (feetu) soorachu dhabuun si qunamee beeka	1. Miti 2. Eeyyee	→309
308	Yoo gaaffii 307 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
309	Torban arfun darban keessa ati ykn miseensa maatikee mana keessatti dhabumma nyaata irra kan ka'e dhiyaanaratti nyaata baay'inni isa xiqaa kan ta'e soorachuun isin	1. Miti 2. Eeyyee	→311

	muudateera		
310	Yoo gaaffii 309 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
311	Torban arfun darban keessa ati ykn miseensa maatikee mana keessatti dhabumma nyaata irra kan ka'e dhiyaanaratti nyaata baay'inni isa xiqaa kan ta'e soorachuun isin muudateera	1. Miti 2. Eeyyee	→ 313
312	Yoo gaaffii 311 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
313	Torban arfun darban keessa dhaburraa kan ka'e nyaati cirumaa mana keessa dhibuun isin muudateera	1. Miti 2. Eeyyee	→ 315
314	Yoo gaaffii 313 Eeyyee tahe, kun yeroo hagamiif uumame	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)	
315	Torban arfun darban keessa ati ykn miseensa maatikee mana keessatti dhabumma nyaata irra kan ka'e oto hin nyaatin rafuun ni jira	1. Miti 2. Eeyyee	→ 317
316	Yoo gaaffii 315 Eeyyee tahe, kun yeroo hagamiif uumame	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)	

317	Torban keessa ati ykn miseensa maatikee mana keessatti dhabumma nyaata irra kan ka'e oto hin nyaatin oolanii buluun ni jira arfun darban	1. Miti 2. Eeyyee	→ 401
318	Yoo gaaffii 317 Eeyyee tahe, kun yeroo hagamiif uumame	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)	

Kuutaa- IV:Sirna nyaataa ilaaalchisee

401	Maddi dhiheessii bishaan dhugaatii maali	1. Bishaan sararaan dhihaatu 2. Burqaa kunuunfamne 3. Burqaa hin kunuunfame 4. Bishaan boollaa 5. Haroo 6. Kan biraa (ibs-------)	
402	Yeroo ulfa turtetti _Iron folate' dabalataan fayyadamaa turteetta	1.Eeyyee 2.Miti	→ 405
403	Yoo deebiin gaaffii 402 Eeyyee tahe, ji'a meeqaaf fudhatte	_____	
404	Guyyoottan darban torba keessatti Iron folate pilsii meeqa fudhatte	_____	
405	Yeroo turtii ulfaatti, ulfichaaf nyaatni dabalataa akka barbaachisu gorsa dabalataa argattee turte?	1.Eeyyee 2.Miti	
406	Guyyaatti nyaataa yeroo meeqa nyaata	1. Yeroo tokko 2. Yeroo lamma 3. Yeroo sadii 4. Yeroo afur 5. Yeroo shaniif fi isaa ol	

407	Nyaata dabalataa yeroo ulfaa dabalataan fayyadamuun barbaachisaa tahuu isaati ni amanta	1.Eeyyee 2.Miti	→ 409
408	Yoo deebiin gaaffii lakk. 407 Eeyyee tahe, guyyaati yeroo meeqaaf dabalataan fayyadamu	_____	
409	Ashaboo ayodinaayizdii nifayyadamta	1.Eeyyee 2.Miti	
410	Saaphana siree nifayyadamtu	1.Eeyyee 2.Miti	
411	Yeroo ulfaa nyaata dhowoomtee/dhiistee qabda	1.Eeyyee 2.Miti	→ 415
412	Yoo deebiin gaaffii 411 Eeyyee tahe nyaata gosa kam yeroo ulfaa dhiistee	1. Foon 2. Maangoo 3. Muuzii 4. Hanqaaquu 5. Boqqolloo 6. Kan biro(adda baasi)	
413	Kana akka raawwattuuf eenyutu sitti hime	1. Maanguddoo 2. Ollaa 3. Abbaa manaa 4. Abbootii amantii 5. Kan biroo	
414	Nyaata armaan olitti sababiin ati itti hin fayyadamne maaliif	1. Ulfichaaf fayidaa fayyaa hin qabu 2. Ulfaatina ulfichaa dabaluu fi daa'imni guddaa akka tahuuf 3. Qaama fimataa micireeti waan maxxanuuf 4. Sodaa ulfa baasuu 5. Ija seexanaa 6. Ulficha irra rakkoo waan	

		geessisuuf	
415	Ciminaa fi fooyya'iinsaf nyaatni addaa ati fayyadamtu maali	_____	
416	Sababa ulfa tahuu keetiif gosa nyaataa of irraa fageessitu qabda	1.Eeyyee 2.Miti	→ 420
417	Yoo deebiin gaaffii lakk 416 Eeyyee tahe nyaata gosa kami?	_____	
418	Sababiin fayyadamuu dhiisuu keetii maali	1. Faayidaa fayyaa hin qabu. 2. Jibbiina 3. Ulfaatina ulfichaa dabaluu fi daa'imni guddaa akka tahuuf 4. Qaama fimataa micireeti waan maxxanuuf 5. Sodaa ulfa baasuu 6. Ija diinaa 7. Ulficha irra rakkoo waan geessisuuf 8. kan biraa	
419	Yoo namni jibbe sababiin inni jibbuuf maal jettee yaada	1. Foolii yookiin dhandhama nyaataa 2. Gubiinsa lappee 3. Sodaa olgurritii/balaqamuu 4. sababa isaa hin beeku	
420	Gosa nyaataa adda tahe yeroo ulfaatti soorachuuf kan karoorfatte qabda	1.Eeyyee 2.Miti	→ 423
421	Yoo deebiin gaaffii lakk 420 Eeyyee tahe, maal si arraasisa?Ibsi	_____	
422	Sababni gosa nyaataa kana si arraasisu maaliif	1. Halluu nyaataa 2. Foolii nyaataa 3. Barbaachisummaa inni ulfaaf qabu 4. Sababa isaa hin beeku	

		5. Kan biroo yoo jiraate ibsi--- -------	
423	Mana fincaanii qabda	1.Eeyyee 2.Miti	→ 425
424	Yoo deebiiin lakk 423 Eeyyee tahe, gosa mana fincaanii isaan qaban?	1. Mana fincaanii dhunfaa 2. Mana fincaanii walinii 3. Kan bishaan dhumarrati itti dhangala'u 4. Kan ijaarsa of irraa hin qabne 5. Kan ujummoo qilleensa baasu dabalataan qabu 6. Bakkeetti boba'uu	
425	Harki kan dhiqatamu yeroo kami 1. Nyaata dura 2. Nyaata booda 3. Mana fincaanii booda	1.Eeyyee 2.Miti 1.Eeyyee 2.Miti 1.Eeyyee 2.Miti	
426	Harka kan dhiqattu haala kamiini	1. Bishaan qofa fayyadamuu 2. Darbee darbee sammunaa fayyadamuu 3. Saamuna qofa fayyadamuu 4. Darbee darbee daraa fayyadamuu	
427	Behavioral factor 1.Caatii/jimaa qama'uu 2/Tamboo xuxuu 3.Alkoolii dhuguu	1.Eeyyee 2.Miti 1.Eeyyee 2.Miti 1.Eeyyee 2.Miti	
Kuutaa- V: Safara			
501	MUAC haadhaa	_____saantimetiraa	
502	Ulfaatina daa'ima haaraa dhalatee	_____graamaa	

ጅማ ዩኒቨርስቲ
የጤና ሳይንስ ኢንስቲትዩት
የስነ ህዝብ ትምህርት ክፍሌ
MSc (የሰዉ ሌጅ የአመጋገብ ጥናት ሳይነስ**)**

የአማርኛ ትርጉም የመጠይቅ ይሁንታ እና መረጃ ገፅ

✓ በደቡብ ምእራብ ኢትዮጵያ ፥ በበደሌ ከተማ ጤና ተቋማት ሊይ እርግዝናን አስመልክቶ በሚገኙ የአመጋገብ ባህሪ እና ደረጃ ወሊድ እና አዲስ ህፃናት ክብደት ጨምር በዝርዝር ሇማጥናት የተዘጋጀ መተግበሪያ።

መጠየቅያ ቅፅ 1.1 የስምምነት ቅፅ፤

ጥናቱን የሚያካሄዴ ሰዉ: ራኄል ታደሰ

የጥናቱ አሊማ: በጤና ተቋማት የሚወሌዴ እናቶች የአመጋገብ ስረዓታቸዉ እና የአመጋገብ መገሆጫ በመጠቀም አዱስ በሚወሃዮዉ ህፃን ክብዮት ሊይ ያሃዉን ተጊኖ ማየት፣ በበደሌ ከተማ በደቡብ ምዕራብ ኢትዮጵያ፤ ከግንቦት 18 ኢስከ ሃምሌ 18፤ 2013 ዓ.ም ።

1. ከሊ በመረጃ ቅፁ ስጥናቱ የተገሇፀዉን በመረዲት የመጠየቅ እዴሇ ማገኘትን አረጋግጣሇዉ።

2. ተሳታፉነቴ ሙሇ በሙሇ በፈቃዮኝነት ሊይ የተመሰረተ መሆኑን እና ምን አይነት መብቴ ሳይነካ በነፃሁት ያሃምንንም ምክንያት በማንኛዉ ግዜ ተሳታፉ መሆኔን እገሌፃሇዉ።

3. ከሊይ የተገሇፀዉ ጥናት ተከፈይ መሆኑ እስማማሇዉ። ስምምነቱንም በፈርማዬ አረጋግጣሇዉ።

የተሳታፉዉ ስም፤ _____ፈርማ _____፤ ቀን_____

የመረጃ ሰብሳቢ ስም፤ _____ፈርማ _____፤ ቀን_____

ስሇ ትብብሮት እናመሰግናሇን!!!

መጠየቅያ 1.2 መረጃ መሰጨቅጽ፤

የተሳታፊዎች መረጃ ቅጽ

የጥናቱ የሚያከያሄደው ሰው: ራሄል ታደሰ

ጥናቱ የካሄዱበት ቦታ: በበደሌ ከተማ፣

የጥናቱ ኢላማ: በጤና ተቋማት የሚወለደዱ እናቶች የአመጋገብ ስርዓታቸዉን እና የአመጋገብ መርህ በመጠቀም አዲስ በሚወለደው ህፃን ክብደት ላይ ያለዉን ተፅኖ ማየት፣ በበደሌ ከተማ፣ በደቡብ ምዕራብ፣ ኢትዮጵያ፣ ከግንቦት 18 ኢስከ ሃምሌ 18፣ 2013 ዓ.ም ።

የጥናቱ አስፈላጊነት: ይህ ጥናት በእስትራቴጂ አዘገጃጀት ወቅት በእርግዝና ጊዜ ያልተመጣጠነ የአመጋገብ ስርዓት አዲስ በሚወለደው ህፃናት ክብደት ጋር ተያያዥነት ያላቸዉን ችግሮች ለመከላከል እና ለመቆጣጠር እንዲጠቅም ለማስቻል ነዉ።

የመረጃ አሰባሰብ ሂደት: መረጃዉን የሚሰበስቡት ባለሙያዎች የተገለፀውን ስምምነት መሰረት በማድረግ ተሳታፎችን ይጠይቃሉ፤ ከዚ በመቀጠል MUAC ይለካል። የተሰበሰበዉ መረጃ በሙሉ ለተቆጣጠሪዉ እና ለአጥኚዉ ሰዎች እንዱቀርብ ይደረጋል። ሙሌ በሙሌ የተሳታፉዉን መረጃ ማየት የሚችሉት የጥናቱ ቡድን አባላት ብቻ ናቸዉ። ከተሳታፉዉ የሚሰበሰበዉ መረጃ የሚዉለው ለጥናት ብቻ ነዉ።

ሊያጋጥም የሚችል ችግር/አደጋ: ተሳታፊዉ ላይ ምንም አይነት ሊያጋጥም የሚችል ችግር/አደጋየለም።.

ተጠቃሚዎች ይህ ጥናት የተመጣጠነ አመጋገብ ስርዓትን በማሻሻል በወሊድ ጊዜ አዲስ በሚወለዱት ህፃናች ክብደት ላይ ሊደርስ የሚችል ተያያዥ ችግሮችን ለመቆጣጠር እንዲቻል ያስችላል።

የተሳታፊዉ መብት: በዚህ መጠየቅp ላይ የሚሳተፉ ማንኛዉም ተሳታፊ በፈለገዉ ጊዜ እና የሚፈልገዉን ማንኛዉንም ጥያቄ ያለመመለስ መብት አለዉ።

ጥቅማ ጥቅም: ተሳታፊዉን ከፍተኛ አክብሮት ከመስጠት ያለፈ ምንም አይነት ጥቅማ ጥቅም አይሰጥም።.

ምስጢር መጠበቅ: ይህ ጥናት የተሳታፊዉን ስም እና አድራሻ አያካትትም።

ስምምነት: ከተሳታፉዎች የሚጠበቀዉ በዚህ ጥናት ላይ በሙሉ ፍላጎታቸዉ መሳተፍ እና መስማማታቸዉን በፊሑፍ መግለጽ ነዉ።

ተ.ቁ	ጥያቄ	መልስ	
	አገሌግልት የሚሰጥ ጤና ተቋም	_____	
	ጥያቄና መሌስ የተከናዮበት ቀን	_____	
	ቀበሌ	_____	
	መሇያቁትር		
	ማህበራዊ እና ኢኮኖሚያዊ መጠየቅያ		
101	እድሜ	_____	
102	የጋብቻ ሁኔታ	1. ያገባ	
		2. ያላገባ	
		3. የተፋታ	
		4. የትዳር አጋር የሞተበት	
103	የትምህርት ደረጃ	1.ማንበብ እና መፃፍ የማይችል	
		2.ማንበብ እና መፃፍ የሚችል	
		3.መደበኛ ደረጃ	
		4.ሁለተኛ ደረጃ እና ከዚያ በላይ	
104	መኖሪያ ስፍራ	1. ከተማ	
		2. ገጠር	
105	ወርሃዊ ገቢ	_____	
106	የስራ አይነት	1. የመንግስት ተቀጣሪ	
		2. ነጋዴ	
		3. የቤት እመቤት	
		4. የግብርና ስራ	
		5. ሴላ	
107	በቤት ውስጥ ከሚገኙ ነዋሪዎች ምንያክሉ ከ15 አመት በታች እና ከ65 አመት በላይ ይገኛሉ?	_____	
108	በቤት ውስጥ ከሚገኙ ነዋሪዎች		

	ምንያክሉ ከ15 እስከ 65 ዓመት መካከል ይገኛሉ?	_____	
109	የእናት እድሜ	_____	
110	የአባት እድሜ	_____	
111	ወደ ጋብቻ የተገባበት እድሜ (የእናት)	_____	
112	የመጀመሪያ ልጅ የተወለደበት እድሜ (የእናት)	_____	
113	ከትዳር አጋር ጋር ያለ የእድሜ ልዩነት	_____	
እርግዝና እና ወሉዴ ጋር በተያያዘ			
201	የወሊድ ብዛት	_____	
202	የወሊድ ቅደም ተከተል;	_____	
203	በልጆች መካከል ያለ የእድሜ ልዩነት	_____	
204	የቅድመ ወሊድ ክትትል አለዎት?	1. አዎን, 2. አይደለም	
205	የቅድመ ወሊድ/እርግዝና ክትትል ቦታ?	1. ጤና ጣቢያ 2 ሆስፒታል 3 የግል ክሊኒክ	
206	የቅድመ ወሊድ/እርግዝና ክትትል ብዛት	_____	
207	የቅድመ ወሊድ/እርግዝና የአመጋገብ ምክር አግኝተዋል?	1. አዎን 2. አይደለም	
208	የእርግዝና አይነት	1. በእቅድ እና ተፈላጊ 2. ያለእቅድ ግን ተፈላጊ 3. ያለእቅድ እና ያልተፈለገ	
209	እርግዝናው ድጋፍ አለው?	1. አዎን, 2. አይደለም	
210	ወደ ማዋለጃ በምትገቢበት ጊዜ የልጅ የልብ ምት ይሰማ ነበር?	1. አዎን, 2. አይደለም	

211	በቅድም ወሊድ/እርግዝና ጊዜ ህመም ነበረቦት?	1. አዎን, 2. አይደለም	→213
212	ለጥያቄ ቁጥር 211 መልሶት አዎን ከሆነ ፣ ምን አይነት በሽታ ነበር?	1 = የማህፀን ቦታ መልቀቅ(Placental abruption) 2 = እርግዝናን ተከትሎ የሚመጣ የስኳር በሽታ) 3= ሌላ	
213	በእርግዝና ጊዜ ቴታነስ ቶኮይድ (tetanus toxoid (TT)) ወስደው	1. አዎን, 2. አይደለም	
214	በዚህ የእርግዝና ጊዜ በእርግዝና ጊዜ የሚከሰት ግፊት ተከስቶ ነበር?	1. አዎን, 2. አይደለም	
215	በዚህ የእርግዝና ጊዜ በእርግዝና ጊዜ የሚከሰት የስኳር በሽታ ተከስቶ ነበር?	1. አዎን, 2. አይደለም	
የአመጋገብ ልምድና እንክብካቤ መለክያ			
301	በባለፉት አራት ሳምንታት ውስጥ በቤት ውስጥ የሚገኝ አስፈላጊ የምግብ አቅርቦት አስጨንቆት ነበር?	1= አይደለም 2= አዎን	→303
302	ለጥያቄ ቁጥር 301 መልሶት አዎን ከሆነ ፣ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
303	በባለፉት አራት ሳምንታት, ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ የሚፈልገውን ምግብ ሳይመገብ የቀረበት አጋጣሚ ነበር?	1= አይደለም 2= አዎን	→305
304	ለጥያቄ ቁጥር 303 መልሶት አዎን ከሆነ	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት)	

		2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
305	በባለፉት አራት ሳምንታት፣ ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ የተወሰነ አይነት ምግብ ብቻ ለመመገብ ተገዷል?	1= አይደለም 2= አዎን	→307
306	ለጥያቄ ቁጥር 305መልሶት አዎን ከሆነ ፡ ይህ ችግር ምን ያህል አስጫንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
307	በባለፉት አራት ሳምንታ፣ ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ የማይፈልገው ወይም የማይወደው የምግብ አይነት ለመመገብ የተገደደበት ሁኔታ ተፈጥሮ ነበር?	1= አይደለም 2= አዎን	→309
308	ለጥያቄ ቁጥር 307 መልሶት አዎን ከሆነ ፡ ይህ ችግር ምን ያህል አስጫንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
309	በባለፉት አራት ሳምንታ፣ ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ መመገብ ከሚገባው መጠን ቀንሶ	1= አይደለም 2= አዎን	→311

	ሊወስድ የተገደደበት ሁኔታ ነበር?		
310	ለጥያቄ ቁጥር 309 መልሶት አዎን ከሆነ ፥ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
311	በባለፉት አራት ሳምንታት, ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ በቀን አነስተኛ የሆነ የምግብ መጠን ለመውሰድ የተገደደበት ሁኔታ ነበር?	1= አይደለም 2= አዎን	→313
312	ለጥያቄ ቁጥር 311 መልሶት አዎን ከሆነ ፥ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
313	በባለፉት አራት ሳምንታት, ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ ምንም አይነት ምግብ የሌለበት ሁኔታ ነበር?	1= አይደለም 2= አዎን	→315
314	ለጥያቄ ቁጥር 313 መልሶት አዎን ከሆነ ፥ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
315	በባለፉት አራት ሳምንታት, ከምግብ	1= አይደለም	→317

	አቅርቦት ችግር የተነሳ ቤተሰቡ ምንም አይነት የሚበላ ምግብ የሌለበት ሁኔታ ነበር?	2= አዎን	
316	ለጥያቄ ቁጥር 315 መልሶት አዎን ከሆነ ፥ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
317	በባለፉት አራት ሳምንታት, ከምግብ አቅርቦት ችግር የተነሳ ቤተሰቡ በምሽት ያለምግብ ወደ እንቅልፍ ለመሄድ የተገደደበት ሁኔታ ነበር?	1= አይደለም 2= አዎን	→401
318	ለጥያቄ ቁጥር 317 መልሶት አዎን ከሆነ ፥ ይህ ችግር ምን ያህል አስጨንቆት	1 = በትንሹ (አንዴ ወይ ሁለቴ በባለፉት አራት ሳምንት) 2 = አልፎአልፎ (ከሶስት እስከ አስር ጊዜ በባለፉት አራት ሳምንት) 3= በብዛት (ከአስር ጊዜ በላይ በባለፉት አራት ሳምንት)	
የአመጋገብ ስረዓት ጋር የተያያዘ			
401	የመጠጥ ወሃ ከምን ይጠቀማሉ?	1. የቧንቧ መስመር ውሃ 2. ንፁህ የምንጭ ውሃ 3. ንፁህ ያልሆነ የምንጭ ውሃ 4. ጉድጓድ 5. ወንዝ 6. ሌላ, ይግለፁ	
402	በእርግዝና ጊዜ አይረን ፎሌት (Iron folate supplementation) ተጠቅመው ነበር?	1. አዎን, 2. አይደለም	→405

403	ለጥያቄ ቁጥር 402 መልሶ አዎን ከሆነ ለምን ያክል ጊዜ ወሰደ	_____	
404	ምን ያክል አይረን ፎሌት (iron/folate) በባለፉት 7ቀናት ውስጥ ተጠቅመዋል?	_____	
405	በእርግዝና ክትትል ጊዜ ስለ ተጨማሪ የእርግዝና ምግብ አወሳሰድ ምክር አግኝተው ነበር?	1. አዎን, 2. አይደለም	
406	በቀን ለምን ያክል ጊዜ ይመገባሉ?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት ጊዜ 4. አራት ጊዜ 5. አምስት ጊዜ እና ከዚያ በላይ	
407	በእርግዝና ጊዜ ተጨማሪ ምግብ መመገብ አስፈላጊ ነው ብለው ያስባሉ?	1. አዎን, 2. አይደለም	→409
408	ለጥያቄ ቁጥር 407 መልሶ አዎን ከሆነ, በቀን ተጨማሪ ስንት ጊዜ ይመገባሉ	_____	
409	አዮዳይዝድ ጨው (iodized salt) ይጠቀማሉ?	1. አዎን, 2. አይደለም	
410	የአልጋ መከላከያ ወንፊት ይጠቀማሉ?	1. አዎን, 2. አይደለም	
411	በእርግዝና ጊዜ የተከለከሉት ምግብ ነበር?	1. አዎን, 2. አይደለም	→415
412	ለጥያቄ ቁጥር 411መልሶ አዎን ከሆነ, በእርግዝና ጊዜ ምን አይነት ምግብ ተከልክለው ነበር?	1 ስጋ 2.ማንጎ 3.ሙዝ 4.እንቁላል 5.በቆሎ 6.ሌላ	

413	ይህንን እንዲያደርጉ ማን ነገሮት?	1.ሽማግሌ 2.ጎረቤት 3.ባለቤቴ 4.የሃይማኖት አባት 5.ሌላ	
414	ከላይ የተጠቀሱትን ያልተመገቡበት ምክንያት ምን ነበር?	1.ለሚወለደው ልጅ ጥቅም ስለሌለው 2.ህፃኑን ትልቅ እና ምጥ ከባድ ስለሚሆን 3.የህፃኑ አናት እና አካል ላይ ስለሚጣበቅ 4.ውርጃ እንዳይከሰት ፈርቼ 5.መጥፎ እይታ 6.የህፃኑ የተዘባ እድገት ያስከትላል 7.ሌላ	
415	ጥንካሬን ፤ ለመቁቁም እና ንቃትን ለማሻሻል ምን የተለየ ምግብ ይመገባሉ?	_____	
416	በእርግዝና ምክንያት መመገብ ያቆሟቸው ምግቦች አሉ?	1. አዎን, 2. አይደለም	→420
417	ለጥያቄ ቁጥር 416 መልሶ አዎን ከሆነ ፤ የትኞቹ ምግቦች? ይዘርዝሩ	_____	
418	ከላይ የተጠቀሱትን ምግቦች ያልተመገቡበት ምክንያት ምንድን ነው?	1.የጤና ጥቅም ስለሌለው 2.ስለማልወድድ 3.ህፃኑን ትልቅ እና ምጥ ከባድ ስለሚሆን 4.የህፃኑ አናት እና አካል ላይ ስለሚጣበቅ 5.ውርጃ እንዳይከሰት ፈርቼ 6.መጥፎ እይታ	

			7.የህፃኑ የተዘባ እድገት ያስከትላል	
419	ይህንን ምግብ ያልወደዱት በምን ምክንያት ይመስሎታል?	1.የምግብ ሽታ/ጣእም 2.ልብ ማቃጠል/አለመመቸት 3.ወደ ላይ ወደ ላይ ማለት/ማስታወክ 4.ምክንያቱን አላውቅም	
420	በእርግዝና ጊዜ ለመመገብ በጣም ፈልገውት የነበረ ምግብ ነበር?	1. አዎን, 2. አይደለም	→423
421	ለጥያቄ ቁጥር 420 መልሶ አዎን ከነበረ ፤ ምን አምሮት ነበር? ይዘርዝሩ	_____	
422	ይህ ምግብ ያማሮት ምክንያት ለምን ነበር?	1.የምግቡ ቀለም 2.የምግቡ ሽታ 3.የፆንሱ ፍላጎት 4.ምክንያቱን አላውቅም 5.ሌላ (ይዘርዝሩ)	
423	መፅዳጃ አለዎት?	1. አዎን, 2. አይደለም	→425
424	ለጥያቄ ቁጥር 423 መልሶ አዎን ከሆነ, ምን አይነት መፅዳጃ?	1.የግል ጉድጓድ 2.የጋራ መፅዳጃ 3.በውሃ የሚፅዳ መፅዳጃ 4.ክፍት ጉድጓድ መፅዳጃ 5.የተሻሻለ መፅዳጃ 6.ሜዳ ላይ መፅዳት	
425	እጅትን መች መች ይታጠባሉ 1. ከምግብ በፊት 2. ከምግብ በኋላ 3. ከመፅዳጃ በኋላ	1. አዎን, 2. አይደለም 1. አዎን, 2. አይደለም 1. አዎን, 2. አይደለም	
426	እጅትን እንዴት ይታጠባሉ?	1.በውሃ ብቻ 2.አንዳንዴ ሳሙና በመጠቀም 3.ሁልጊዜ በሳሙና 4.አንዳንዴ በአመድ	
427	ስነ ባህሪ		

	ጨት መቃም	1. አዎን, 2. አይደለም	
	ሲጋራ ማጨስ	1. አዎን, 2. አይደለም	
	መጠጥ መጠጣት	1. አዎን, 2. አይደለም	

መለክያ

501	የእናት የወሊድ መጠን(Maternal MUAC)	_____ሳ.ሜ	
502	የጨቅላ ህፃን ክብደት	_____ግራም	

Declaration

I, Rahel Tadesse declared that this thesis was my original work in partial fulfillment for the requirement for the degree of masters in Human Nutrition. All source of material used for this thesis work and all people and institution who gave support during this thesis work were fully acknowledged. The advisors and examiners' comments have been duly taken in to account.

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Date _____/_____/_____ signature _____

Name of chairman:_____

Date _____/_____/_____ signature _____