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# Nutrient Intake Inadequacy and its Associated factors Among 6-23 Months Aged Children in Bahirdar, 2021 G.C North West Ethiopia.

Redeat, Berhanu

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**BAHIR DAR UNIVERSITY**  
**COLLEGE OF MEDICINE AND HEALTH SCIENCES**  
**SCHOOL OF PUBLIC HEALTH**  
**DEPARTMENT OF NUTRITION AND DIETETICS**  
**NUTRIENT INTAKE INADEQUACY AND ITS ASSOCIATED FACTORS**  
**AMONG 6-23 MONTHS AGED CHILDREN IN BAHIRDAR, 2021 G.C**  
**NORTH WEST ETHIOPIA.**

**MPH THESIS**

**Redaet Berhanu (BSC)**

**FEBURARY, 2022**

**BAHIR DAR, ETHIOPIA**

**A Research Proposal Submitted to the School of Public Health,  
department of Nutrition and Dietetics**

**Bahir Dar University**

**In Partial Fulfillment of the Requirements for the Degree of  
Master of public Health with specialty public Health in  
Nutrition**

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**FEBURARY, 2022**

**BAHIR DAR, ETHIOPIA**

**BAHIR DAR UNIVERSITY**  
**COLLEGE OF MEDICINE AND HEALTH SCIENCES**

**Thesis Submission Form**

*Table 1: BDU thesis submission form for nutrient intake inadequacy and its associated factors among 6-23 months aged children in Bahir Dar, North West Ethiopia, 2021 (n 408).*

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The full title of the thesis	Nutrient intake inadequacy and associated factor among 6-23 month of children in Bahir Dar
Study Area	Bahir Dar City, Amhara region, North West Ethiopia.
Study period	February 15/2021 to March 05/2021

## DECLARATION

Currently I am graduate student at Bahir Dar University College of Medicine & Health science, School of Public Health, Department of Nutrition & Dietetics, declare that; this MPH thesis is my original work and it has not been presented for a degree in any other university. Here, I undersigned agree to accept responsibility for Scientific and Technical conduct of this thesis, the provision and presentation of the final report.

Name of student: ***Redat Berhanu***      Signature: \_\_\_\_\_ Date \_\_\_\_\_

**APPROVAL PAGE (SIGNATURE PAGE)**

**Bahir Dar UNIVERSITY**

**POST GRADUATE PROGRAM DIRECTORATE**

I hereby certify that I have read and undersigned this research Proposal entitled “Nutrient intake inadequacy and associated factor among 6-23 month of children in Bahir Dar, North West Ethiopia. Prepared under my guidance by Redat Berhanu. I recommend that it be submitted as fulfilling the research thesis requirement.

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## ABSTRACT

**Background:** An inadequate nutrient intake is a challenge among many 6-23 months of children in most developing countries. But, little study was conducted in Ethiopia regarding to nutrient intake inadequacy among in 6-23 months of children.

**Objective:** To assess nutrient intake inadequacy and its associated factors among 6-23 months of children in Bahir Dar city, North West Ethiopia, 2021.

**Methods:** Community-based cross-sectional study was conducted from February 15/2021 to March 05/2021 in Bahir Dar city. Simple random sampling technique was used to recruit a total of four hundred twenty respondents. Data were collected by interviewer administered semi structured questionnaire and a single multiphasic 24-hour dietary recall was used to assess dietary assessment. The nutrient intakes were assessed by Nutrient Adequacy Ratio (NAR) and Mean Adequacy Ratio (MAR). Data entry and analysis were carried out using EpiData and SPSS respectively. Multivariable logistic regression was performed to identify determinants of overall micronutrient intake inadequacy at a p-value of less than 0.05.

**Result:** The overall prevalence of nutrient intake inadequacy across 14 nutrients was 47.5%. (95%CI: 42.4%-52.2%) The inadequate intake of vitamin A was 97.5%. Children from informal educated mothers were 4.67 times more likely to have overall nutrient intake inadequacy as compared with those who had formal educated mother [AOR=4.67, 95%CI (2.45-8.88)]. Children who had  $\leq 2$  times meals/day were 2.83 times more likely to had nutrient intake inadequacy than who have more than 4 times a day [AOR=2.83, 95%CI (1.13, 7.07)]. Respondents who had poor nutritional knowledge were 6.18 times more likely to had nutrient intake inadequacy to the child than those who had good nutritional knowledge, [AOR=6.18, CI, (3.52, 10.84)] .Children whose mothers' age 19 -29 years were 1.7 times more likely to had nutrient intake inadequacy than those mothers' age above 29 years [AOR=1.76, 95%CI (1.11, 2.79)].

**Conclusions:** Overall, the nutrient intake in 6-23 months 'of children was lower than the recommended levels. Therefore, educating the child mother and family about appropriate dietary intake is essential. Nutritional knowledge, maternal education, maternal age, meal frequency were the significant factors of overall nutrient intake inadequacy.

**Key words:** inadequate nutrient, 6-23 months 'of child, Bahir Dar city, Ethiopia.



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## ACRONYMS

AI-----	Adequate Intake
AOR-----	Adjusted Odds Ratio
BDU-----	Bahir Dar University
CF-----	Complementary Feeding
COR-----	Crude Odds Ratio
ID-----	Iron Deficiency
EDHS-----	Ethiopian Demographic and Health Survey
DDS-----	Dietary Diversity Score
IDD-----	Iodine Deficiency Disorder
IDA-----	Iron Deficiency Anemia
WHO-----	World Health Organization
MAR-----	Mean Adequacy Ratio
NAR-----	Nutrient Adequacy Ratio
RDA-----	Recommended Dietary Allowance
UNICEF-----	United Nation Children's Fund
IYCF-----	Infant Young Child Feeding Practice

## 1. INTRODUCTION

### 1.1. Background

The word inadequacy means insufficiency in quantity or quality in meeting a need for something. Nutritional inadequacy means the low or insufficient intake for the daily recommendation of essential nutrients in the diet. The word nutritional adequacy implies the sufficient intake of essential nutrients, essential to meet nutritional requirements for optimal health adequate nutrient intake helpful for prevention of deficiency and prevent chronic diseases and limit the risk for diet associated diseases, and maintain the normal physiological balance[1].

Nutrient Adequacy Ratio (NAR) is an index, which compares the individuals daily intake of a nutrient with the corresponding current recommended allowance for nutrient given the respondent age and sex. The Mean Adequacy ratio (MAR) is a member of the class of indicators that quantifies the overall nutritional adequacy of a population based on an individual's diet using the current recommended allowance for a group of nutrients of interest. The MAR calculates the average for the NAR values for the selected nutrients individuals. NAR is the Actual intake of the nutrient per day over the recommended dietary allowance RDA of that nutrient and MAR is NAR over number of nutrients. The NAR is truncated at 1 so that a nutrient with a high NAR could not compensate for a nutrient with low NAR [1]

The selected micronutrients such as; vitamin A, vitamin B1,vitamin B2,vitamin B3,vitamin B6,vitamin C ,Vitamin B12 , foliate, Calcium, iron and zinc. These micronutrients are selected based on their potential arising from deficiencies from the child and based on its public health importance.[2]

The first 1000 day particular importance because this is the period when infants and young children experience rapid growth and development and this is a time when their brain ,body and immune system grows and develops significantly. During this period, growth faltering needs high nutritional support to prevent malnutrition, including wasting, underweight and stunting, as well as the negative consequences in adulthood .[3]

The age of 6–23 months is the golden period to the child growth and development. On this time, the child needs highly nutritional care for healthy growth and development. This period is called the window of opportunity and an important stage to optimize the growth and development of children. Inadequate feeding practices result in malnutrition and stunting problems resulting in delays in the growth and development of infants. [2]

Providing adequate nutrients along with appropriate breast-feeding is basic for the infant and young child. This period is a critical period to reduce micronutrient deficiencies and malnutrition leading to stunting, wasting, and being underweight[4]. In most developing countries, there is a high number of malnutrition at the age of 6-18 months. Inappropriate feeding practice is the basic cause of malnutrition. Children among this age group need appropriate nutrient intake to pass this problem and nutritional policies are required for optimum child nutrition and development.

In underdeveloped countries, adequacy is a big challenge because of economic status and lack of infrastructure like sanitary facilities for preparation. Most foods are simply from cereal or starchy roots and tubers, so it does not meet recommended standard. Therefore, the recommended value for children is lower than the daily-recommended value, and also because of the low bioavailability of plant-based food with the breast milk in the under developing countries have developed trace mineral deficiency [5].

## 1.2. Statement of the problem

Children between 6 and 23 months are the most vulnerable to malnutrition, because of the transition from total exclusive breastfeeding to solid foods and a period when infants and young children experience rapid growth and development. During this period, growth faltering and micronutrient deficiencies are highly prevalent.[6] Globally, about 10.9 million under-5-year deaths occurred, by malnutrition it is responsible for 60.0% of death. Over two-thirds of these deaths are associated with inappropriate and inadequate feeding practices during the first 2 years of life [7]. Globally, the complementary feeding practice is far from the WHO recommendation, and only 28.9% of children aged 6–23 months fulfill WHO criteria for a minimum acceptable diet. In developing countries, complementary food fed to children 6 – 23 months had low quality and low micronutrient density. every year 3.1million children under five die due to improper nutrition practices[8] and also inadequate intake of nutrient among this aged group contributes to severe problems , including poor academic performance, poor social skills, delay in motor and cognitive growth, and behavioral disorders. [9]

A total of 34 countries account for 90% of the global burden of malnutrition, and Ethiopia is one among them. In low and middle-income countries malnutrition and nutrient deficiency during the childhood period are the major health problem, and there is a high burden of death and disability still high in number [10].

Only 7% of these 6 - 23 months of age children achieve the recommendation and adequate minimum acceptable diet ( consumption of four or more food groups from the seven food groups and minimum meal frequency which is the consumption of two or more (at age 6–8 months), three or more (at age 9–23 months) solid or semi-solid feeds for breastfeeding children or four or more solid or semi-solid or milk feeds for non-breastfeeding children at age 6–23 months)[11].

Know a day there is a lot of study on the nutritional status of the children but a less concern on the nutrient intake adequacy of the children 6-23 months so the child nutritional problem is still the major public health problem



Now a day there is a big problem meeting the global health priority of adequate nutrition during complementary feeding on 6-24 months old children [12]. A big challenge is to promote dietary quality rather than quantity of complementary food for infants and young children [13]. In the developing country, there is inadequate nutrient on the complementary food [14].

### **1.3. Significance of the study**

It provides necessary information for the policymakers , it provide information regarding the nutrient intake adequacy of 6-23 months of children to the governmental as well as to non - governmental organizations to solve the problem, in addition act as a helpful guide for planning appropriate nutritional program in that particular place.

Furthermore, the finding of this study will be published as journal and may help as baseline information for other researchers who are interested in the same area.

## 2. Literature review

### 2.1. The overall prevalence of nutrient intake inadequacy

An estimated two billion people are affected by a chronic deficiency of essential vitamins and minerals hidden hunger. Iron, zinc, vitamin A, is among the most widespread deficiencies globally [15].

The Total Diet Study Indonesia Year 2014 showed that the proportions of children in energy and protein intake lower than the recommended dietary allowance were still high, namely 60.4% and 24.7%, respectively the intake of energy and some selected nutrients among children. [16]

In the study in India VAD among 6-23 months' of age is about 62% it is highest prevalence among South Asian countries. Also, in the Srilanka national survey, VAD of the child has been public health problem. In another study in Central Jakarta, Indonesia only 57.8% of children consumed vitamin A-rich foods, and almost one in five children had inadequate vitamin A intake respectively; [17],[18],

The study in central Jakarta, Indonesia VC inadequacy among children 6-23 month is about 30.9% and more than half of children did not consume the main source of vitamin C fruit and vegetable. The other study conducted in Northern Wollo Ethiopia showed that the vitamin c intake from the diet is below recommendation among the children. [19], [20].

Inadequate riboflavin intake is common and increases the risk of anemia. in the study of chins child was 97.2% of the child had inadequate riboflavin intake and it is below the estimated average requirement and also other studies say riboflavin deficiency is more common when the intake of animal production is low and the global prevalence is uncertain but very high prevalence were in china [21]. There are little data on the prevalence of riboflavin in sub-Saharan Africa.

According to the study in coted'ivoire riboflavin deficiency of the child was 65 %[13].

Globally 0.4 million child deaths occur due to zinc deficiency [22]. Adequate zinc intake is essential for the growth and neurobehavioral development of young children. The study showed that 17.3% worldwide and 23.9% in Africa child was at risk of zinc deficiency and 26% have inadequate access to zinc in sub-Saharan Africa [23], [24]. According to the study in Ethiopia, adequate zinc intake is about 61.8% others have adequate zinc intake[25]

Growth and development in the first two years of life are faster they need a higher amount of iron .according to the study more than half of the children are suffering from the inadequate intake of iron [26].

According to a European country study prevalence of iron intake inadequacy among 6-23 months' of child was 30%, 6%, 13%, 50% in France, in Poland and Sweden, Netherlad respectively. [27],[28],[29],[30]. the study in Ethiopia showed iron intake inadequacy among the child is about 39% and their adequate intake of iron is about 61.8%.[25] World widely iodine deficiency disorder (IDD) is a major problem and it causes high prenatal mortality and mental retardation. As UNICEF and MOH report in Ethiopia 78% of the total population are exposed to iodine deficiency, 35 million (62%) are iodine deficient, 14 million (26%) have goiter and at least one in 1000 people is cretin; with about 50,000 prenatal deaths. [31],[32]

According to a study in America, around 50% of the child has adequate calcium intake.[26]. countries, such as India, Bangladesh, Nigeria, and South Africa, reports have highlighted the role that low dietary calcium intakes play in the pathogenesis of rickets [33]. The prevalence of inadequacy of calcium intake among the child was about 76% according to the southern part of Ethiopia study [2]. nutrient inadequacy prevalence was > 90% for energy, vitamin A, riboflavin, vitamin C and was 100% for calcium, zinc, and niacin.[34]

The study in southern part of Ethiopia show more than one-third of children 6–71 months (38%) have anemia and vitamin A deficiency.[35] In Ethiopia, inappropriate feeding practices were account for 57% of the deaths of under-five children, and 8.3% current workforce loss. It has also contributed to 40% child stunting, 9% child wasting, and 25% child underweight in Ethiopia.[36]

The study show in Ethiopia among 6-23 months of child inadequacy prevalence of energy, protein and eight selected micronutrients (calcium, iron, zinc, vitamin A, thiamin, riboflavin, niacin, vitamin C) intake were 96.2, 44.9, and 95.5%, respectively. Calcium and zinc were the highest (100%) deficits observed across all age groups.

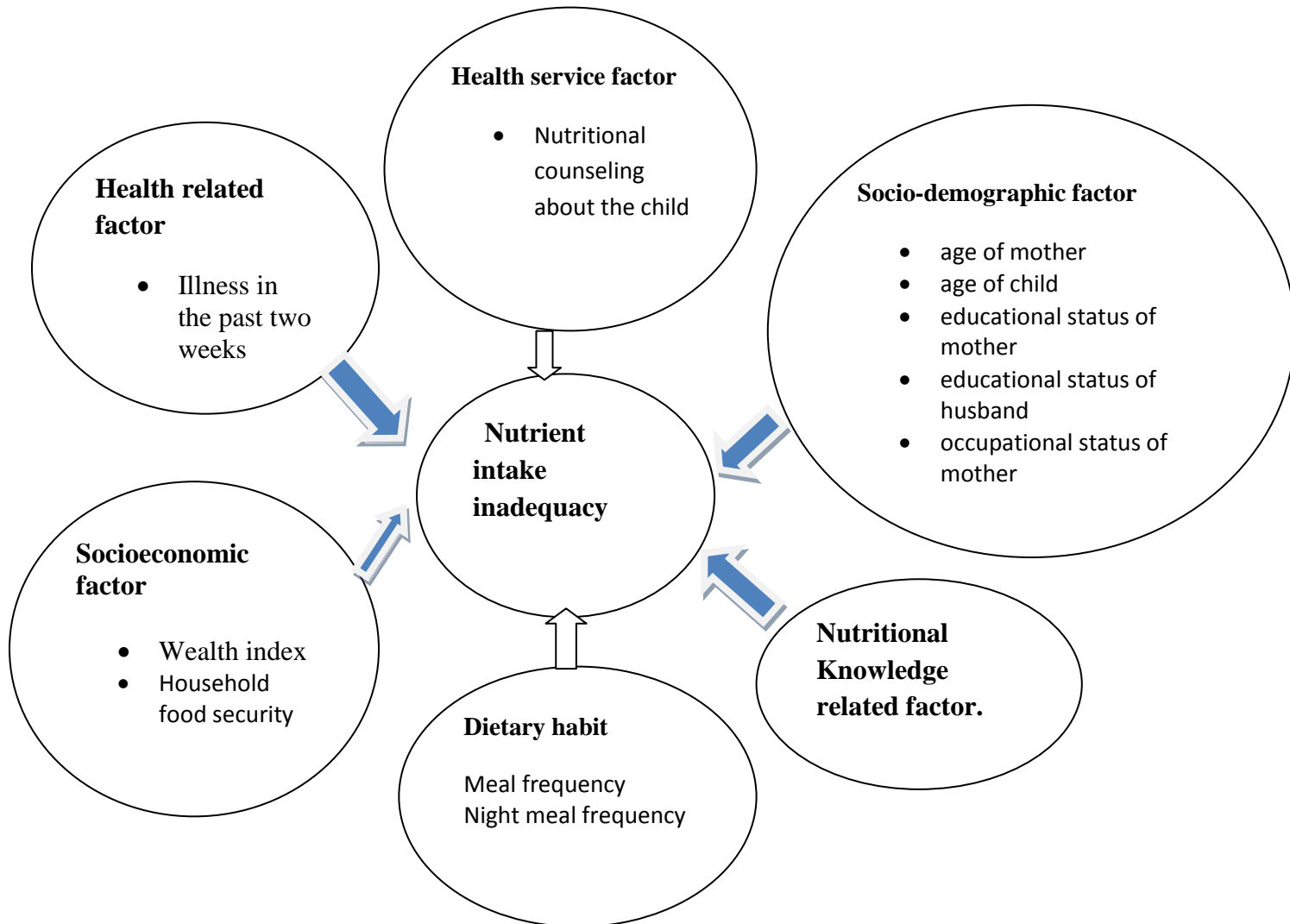
study conduct among 6-23 months of child in Ethiopia's southern part, about 68.20% were at risk of protein inadequacy [2]. But there is high protein intake among 6-23 month of child in the study conduct on UK [37]. In the study of China recommended intake of fat intake of the child are below recommendation [38]. The study in the UK showed carbohydrate intake inadequacy is about 29% [39] and also study in the urban west Oromia show carbohydrate intake adequacy is about 54.3% [25].

## **2.2. Factor affecting inadequacy intake of the nutrient**

Both in India and Sri Lanka, fewer antenatal clinic visits were associated with delay in the introduction of complementary food this leads to inadequate intake of nutrient. Both in India and Nepal, inadequate maternal exposure to media, such as newspaper, radio or television, was found to be a predictor of inadequate dietary intake [40]. According to the study in the southern part of Ethiopia poor feeding practice among 6-23 months of child was 21.8% that associated to inadequate nutrient intake. Also low economic status associated with poor inadequate nutrient intake [34]. Wealth index and food security level was a significant predictor of inadequate nutrient intake According to the study in North Wollo.

According to the study in southern Ethiopia half (48.4%) of the households were food insecure that associated to nutrient intake inadequacy among children [41]. A study found in the North Wollo received IYCF information using health services during ANC and PNC checkups is factor in nutrient intake inadequacy among 6-23 month of children [20]. The study showed child illness condition reduce the macro and micro nutrient intake and associated to low intake of protein, energy, and lipids [42].

### 3. Conceptual Framework



**Figure 1:** A conceptual framework for factors associated with nutrient intake inadequacy among 6-23 months of children in Bahir Dar city.

## **4. Objective of the study**

### **4.1. General Objective**

To assess the nutrient intake inadequacy and associated factor among 6-23 months aged of children in Bahr Dar 2021G. C

### **4.2. Specific Objectives**

To determine the overall prevalence of nutrient intake inadequacy among 6-23 months of aged in Bahr Dar city North West Ethiopia,2021.

To identify factors associated with the overall nutrient intake inadequacy among 6-23 months of aged in Bahir Dar city North West Ethiopia, 2021.

## **5. METHOD AND MATERIALS**

### **5.1. Study setting and period**

The study was conducted in Bahir Dar city, North West Ethiopia, which is the capital city of the Amhara region. The city Bahir Dar is 565 km far from Addis Ababa, the capital city of Ethiopia. From the report of Bahir Dar city municipality report in 2019/2020, the total population was 312,410. the total number of 6-23 months were 11,520 Bahir Dar city has six sub cities and twenty six Kebeles, which are; Fasilo subcity (fasilo1 to fasilo 4 kebeles), Belay Zeleke subcity (Hagere Selam, Bisrat, and 07 Kebele), Tana subcity (Rasageze, Midre Genete, Shimbit, Hidasie, and Bata Kebele), Dagmawi Minilik Subcity (Adisamba, Midre Genete, Marzeneb, and Finote Kebele), Atsie Tewodros Subcity (Teyima, Abay Ras, Ayer Tena, Adis Alem, and Maraki), and Gishabay Subcity (Abinet, Gion, Selamber, and Hidasie Kebele).

### **5.2. Study period**

The study was conducted among 6-23 months of children in Bahir Dar, North west Ethiopia, from February 15/2021 to March 05/2021.

### **5.3. Study design**

The community based cross-sectional study design was used.

### **5.4. Population**

#### **5.4.1. Source population**

All 6-23 months of the child who were living in Bahir Dar city during the study period were source population

#### **5.4.2. Study population**

6-23 months who were living in the selected kebeles of Bahir Dar city during the study period were study population

## 5.5. Eligibility criteria

### 5.5.1. Inclusion criteria

Children aged between 6-23 months of age who lived in Bahr Dar city was part of the study and start complementary feeding were included in the study.

### 5.5.2. Exclusion criteria

Who were not residents of Bahir Dar City were excluded from study.

## 5.6. Sample size determination

The sample size was determined by using the epi info software and After testing different values of prevalence of inadequacy, thereafter took P (53%) was the overall prevalence of nutrient intake inadequacy among 6-23 month of children in the study Southern Ethiopia [2]. The total sample size of the study was 420 after adding a non-response rate of 10%.

The sample size was calculated using single population proportion formula.

$n = \frac{(Z^2 \alpha / 2) p (1-p)}{d^2}$ , Where **n**= estimated sample size **z**=standard normal distribution corresponding to significance level (**α**) = 0.05, **Z** = 1.96, **p**=prevalence of overall nutrient intake inadequacy.

Table 2: Sample size determination of overall nutrient intake inadequacy among 6-23 months aged children in Bahir Dar, North West Ethiopia,2021 (n 408).

Objective 1	Prevalence of overall nutrient intake inadequacy among 6-23 months of children = 53%[2]	$n = \frac{(Z^2 \alpha / 2) p (1-p)}{d^2}$ , n=382
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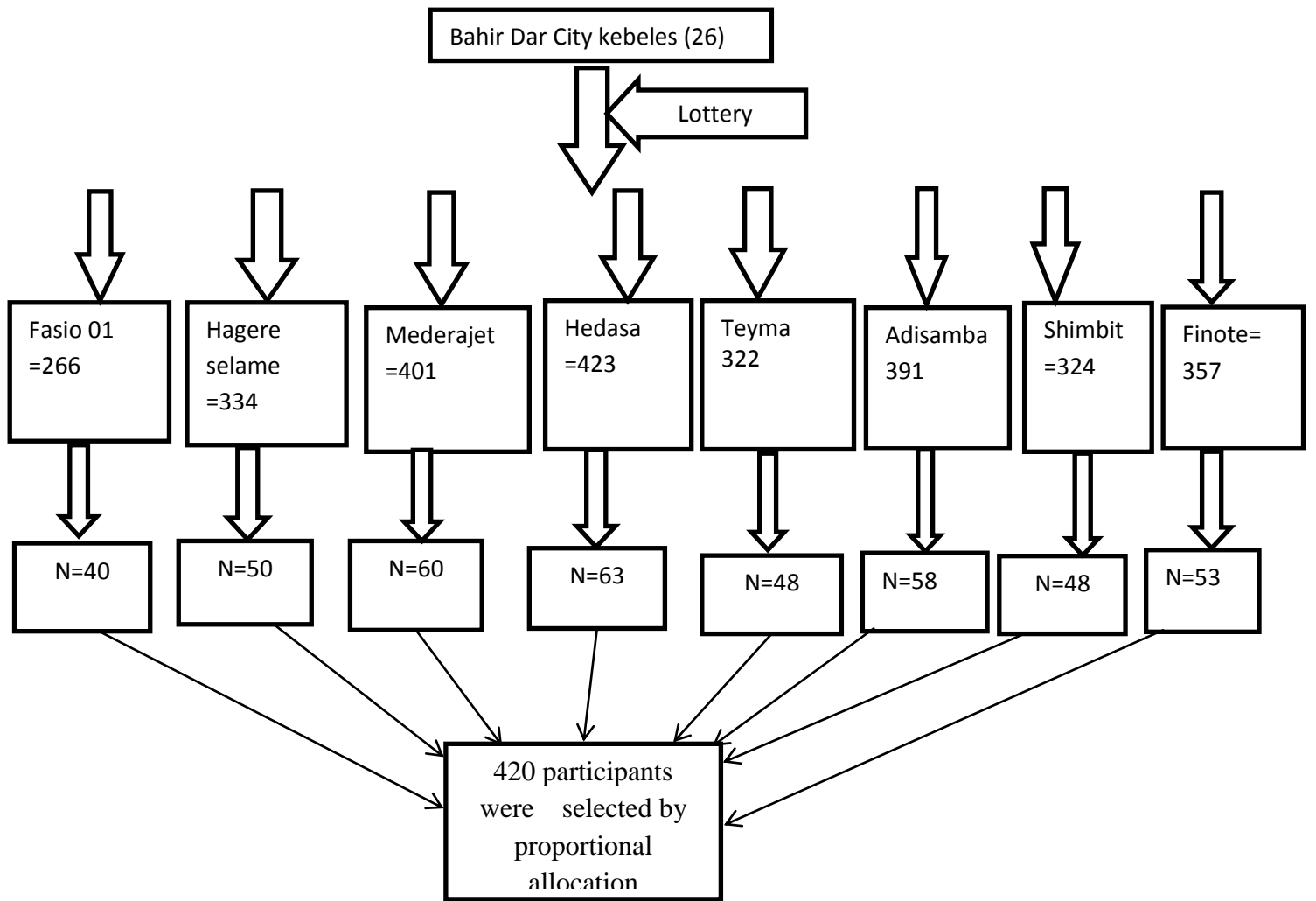
The final sample size became 420 after considering 10% non- response rate

## 5.7 Sampling techniques

There are 26 kebeles in Bahir Dar city, of them 8 kebele were selected randomly using lottery method from the total kebeles .According to Bahir Dar city municipality report, the total number



of 6-23 months of the children in the city were 11,520 but in the selected kebele, study participant were 2818 out of them 420 study participants were selected by simple random sampling by using sampling frame from each kebele health center registration book and select the participant by lottery method .The study participant were proportionally allocated in the selected kebele by using the proportional allocated formula;  $Kn = (n/N) * KN$  where, n sample size, N= total number of 6-23 month of child in all selected kebele (2818), KN= the total number of 6-23 month of child in each selected kebele, Kn = the study participants in each kebele



**Figure 2:** schematic presentation of sampling procedure for nutrient intake inadequacy among 6-23 months of child in Bahir Dare city west Ethiopia, 2021.

## 5.8 Study variables

### 5.8.1 Dependent variable

The outcome variable of the study is Nutrient intake inadequacy (yes, no).

### 5.8.2 Independent variable

The explanatory variables of the study are

**Socio-demographic characteristics Factors:** like age, mother education and husband, mother occupation and husband occupation and husband.

**Socio-economic characteristics:** HFIAS, Wealth index.

**Health-related factor:** illness within two weeks before data collection.

**Nutritional Knowledge-related factor:** nutritional need of infant and young child, the benefit of nutrient and sources of the nutrient.

**Health service factor:** nutritional counseling about child nutrition.

**Dietary habit meal:** frequency, night meal, quacking frequency.

## 5.9 Operational Definitions of terms

**Recommended dietary allowance (RDA):**- the average daily dietary intake level sufficient to meet the nutrient requirement of nearly all (97 to 98%) healthy individuals in a particular life-stage and gender group. It is the goal for usual intake by an individual[43].

**Adequate intake of particular nutrient:** daily intake value of a particular nutrient equivalent to or more than its RDA. [44]

**Inadequate intake of particular nutrient:** daily intake value of a particular nutrient less than its RDA.[44]

**Nutrient adequacy ratio (NAR):** The ratio of the subject's nutrient intake to the requirement (RDA).[45]

**Mean adequacy ratio (MAR):** Is the sum of NARs for 14 micronutrients divided by the number of nutrients evaluated[46]

**Overall micronutrient adequacy: Adequate:** when an individual's MAR for 14 micronutrients is greater than or equal to 1(100%).

**Inadequate:** when an individual's MAR for 14 micronutrients is less than 1(100%).

**Household food security status:** Household experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely was considered as secured, otherwise considered food insecure.[47]

### **Nutrition knowledge**

Knowledge of the respondent towards the requirement of additional meals during 6-23 months of child, nutrient intake benefits and its food sources

**Meal frequency:** The proportion of 6–8 months and 9–23 months children who receive meals at least two times and three times per day, respectively[48].

**Illness:** identifies by the mother or the caregiver based on signs like fever, abdominal pain, cough, headache, and diarrhea.

## 5.10. Data collection tools

The data was collected by six BSc Nurse Students and by two public health officer students, supervised by investigator .by standardized structured questionnaire to assessed socio-demographic and economic factor, knowledge-related factor, health service factor, dietary habit factor and health related factor. the dietary data was assessed by food and agriculture organization of united nation (FAO) standardized tool[49]

### 5.10.1. Measurements

**The wealth index of the households** Information on the wealth index was based on data collected in the household questionnaire. This questionnaire includes questions concerning the household's ownership of a number of consumer items such as a television and car; dwelling characteristics such as flooring material; type of drinking water source; toilet facilities; and other characteristics that were related to wealth status. Each household asset for which information was assigned a weight or factor score generated through principal components analysis. The resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. These standardized scores are then used to create the break points that define five groups of wealth quintiles as: poorest, poor, Middle, rich, and richest[6]

**Food insecurity** was measured by the Household Food Insecurity Access Scale (HFIAS) which consists of nine occurrence questions that represent a generally increasing level of severity of food insecurity (access), and nine "frequency-of-occurrence" questions that were asked as a follow-up to each occurrence question to determine how often the condition occurred during the previous 4 weeks (last one month). The respondent was first asked an occurrence question that was, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers "yes" to an occurrence question, a frequency-of-occurrence question was asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks[50].

**Knowledge:** Knowledge of the respondent towards the requirement of additional meals during 6-23 months the importance of iron-folic acid supplementation, nutrient benefits, and its food source were assessed.

Poor knowledge: The respondent answers less than 50% of knowledge questions (0-11),  
Medium knowledge: The respondent answer 50-80% of knowledge questions (12-19) and

Good knowledge: the respondent answers more than 80% of knowledge questions (>\_20),  
knowledge questions from a total of 24 knowledge questions.[51]

### **5.10.2. Dietary Assessment/measurement of nutrient intake**

A single multiple-pass 24 hour recall was used at the community. Respondent were asked to name all foods and beverages eaten during the previous day (24hour), including everything consumed outside the home as well as the cooking method.

Initially survey was done among 20 children and supermarket, to identify the common food items and to be took photographs of apparatuses which were typically used in households. For each apparatuses a code was given for actual data collection. After coding the photographs of apparatuses, the actual data collection was start. The respondents were asked which apparatuses were used from the photograph banner. Some food items like orange, mango, banana, was recorded in number and its size as large, medium, and small.

**Procedure** After actual data collection, the coded household utensils, and each consumed food items were ready for standardization. The digital food weighing scale and dish was used for standardization. Initially the dish was put on the digital food weighing scale and calibrates it to zero. Then the food items which were consumed by the child were measured by the corresponding household utensils. After that the measured (excluding the household utensil) food items put on dish and record the estimated weight in gram. A single measurement for single food item with corresponding utensils was enough. The total consumed amount was calculated by multiplying the estimated weight in gram and its frequency.

### 5.11 Data quality control

The data collection tool (Questionnaire) was prepared in English and translated into the local language (Amharic) and translated back into English to check its consistency. Photographs of commonly used utensils were used for better estimation of portion size. training were given for data collectors regarding the aim of the study and data collection procedure, photographs of utensils for portion size estimation, and the way of approaching the study participant. Data were checked for any missing values and corrected accordingly by the principal investigator

### 5.12 Data management and analysis

The data was entered and analyzed using EpiData version.3.0 and using IBM SPSS Statistics for Windows version 24.0 respectively. After the data were checked by Kolmogrove smirnov and Shapiro Wilk test of normality, mean and standard deviation (mean, SD) was used to present normally distributed variables ( $p \geq 0.05$ ), while median and interquartile range was used to present skewed distribution ( $p < 0.05$ ). Both descriptive and binary logistic regression analysis was done.

The Ethiopian food composition table (FCT) was compiled for different foods, and beverages.[52] The nutrient value of each food item per 100 gram was obtained from the Ethiopian FCT table and world food composition table. The world food composition table (Kenya and Tanzania) was used to extract the nutrient values of certain food items, and incomplete data of nutrient values, which were not included in Ethiopian food composition table[53] In order to create nutrient database; each food items which were consumed by participant and the corresponding nutrient values of studied nutrient must entered in to the ESHA Food Processor Version 8.1 software. The actual intake of the nutrient was calculated from the nutrient value of each food item multiplied by the estimated portion size of food item per 100 gram, which was taken from 24hr dietary recall during data collection. Finally the calculated nutrient values of each participant by ESHA Food Processor Version 8.1 software transferred to excel and then to SPSS for analysis. The estimated prevalence of inadequate intake of macronutrient (carbohydrate, protein, and fat) and micronutrients (vitamin C, iron, niacin, riboflavin, thiamine, vitamin B<sub>6</sub>, vitamin B<sub>12</sub> vitamin A, folate zinc, and calcium) were calculated by NAR and the overall prevalence of nutrient intake was calculated by MAR. NAR of macronutrients and micronutrients and MAR all nutrients included in the study for 6-23

months of child was calculated by using the following formula[54] This reflected what percentage of the recommended intake was consumed by the child in the last 24 hours.

Both bivariable and multivariable binary logistic regression analyses were employed to identify the factors of affecting overall nutrient intake inadequacy among 6-23 month of children. Variables observed in bivariable binary logistic regressions ( $p \leq 0.25$ ) were subsequently included into the multivariable binary logistic regression analysis to identify their independent effect. In multivariable binary logistic regression models, the Hosmer-Lemeshow goodness of fit test was performed for model fitness and  $p$ -value  $> 0.05$  is considered as a good fit. Variables with  $P$ -value less than 0.05 on multivariable binary logistic regression analysis were considered as statistically significant factors. The strength of association between dependent variable and independent variables were expressed by odds ratio (COR/AOR). Then the final result presented by texts, tables and graphs.

### **5.13 Ethical Considerations**

Ethical clearance was obtained from Ethical Review Board of Bahir Dar University, College of Medicine and Health Science. Permission was also obtained from concerned authority of Bahir Dar city municipality administrative and presented to the local government representative bodies of the selected kebeles. Prior to data collection, the objective of the study was discussed with the concerned officials of the Kebeles and written consent was obtained. In addition to this, before conducting the study, consent was secured from study respondents by notifying the data to be gathered from them should be kept confidential and important for the study. The respondent was based on their willingness, privacy and confidentiality of collected information insurance at all level.



## 6. Result

### 6.1 Socio-demographic and socio-economic characteristics of the respondents

A total of 408 children were participated in this study and from those children's 210 (51.5%) were male and 48.5% were female. From the total 67% of participants were 12-23 months. From the total of respondent 47.5% of the child-mother age are 30-39. Around 87.7% of respondent was orthodox. About 46.3% of the mother is housewife. Around 35.5% of the child father education status is college and above. From the total 48.3% of the father was government employer. About 86.5% of the households were food secured and the rest 13.5% were food insecure.

**Table 3:** Socio-demographic and socio-economic characteristics for nutrient intake inadequacy and its associated factors among 6-23 months aged children in Bahir Dar, North West Ethiopia,2021 (n 408).

	Variable	Frequency	Percentage %
Sex of child	Male	210	51.5
	Female	198	48.5
Age of the child	6-8 months	59	14.5
	9-11 monthes	72	17.6
	12-23monthes	277	67.9
Age of mother	15-19	2	0.5
	20-29	208	51
	30-39	194	47.5
	40-49	4	1
Religion	Orthodox	358	87.7
	Muslim	39	9.6
	Protestant	11	2.7
Education Status of mother	cannot read and write	17	4.2
	only read and write	55	13.5
	Primary school	85	20.8
	Secondary school	73	17.9
	Preparatory	55	13.5
	College and above	123	30.1
Occupation of mother	House wife	189	46.3
	Private employer	8	2
	Government employee	151	37
	Merchant	41	10

	Variable	Frequency	Percentage %
	Daily laborer	12	2.9
	Other	7	1.7
Education status of husband	Cannot read and write	10	2.5
	Only read and write	28	6.9
	Primary school	25	6.1
	Secondary school	46	11.3
	Preparatory	40	9.8
	Collage and above	259	63.5
Occupation of father	Private employee	47	11.5
	Merchant	100	24.4
	Government employee	198	48.3
	Student	2	0.5
	Daily laborer	56	13.7
	Other	5	1.2
Food insecurity status	Secure	353	86.5
	Insecure	55	13.5
Wealth index	Poorest	77	18.9
	Poor	85	20.8
	Middle	84	20.6
	Rich	77	18.9
	Richest	85	20.8

## 6.2. Nutrition related to the child ,child health related and health service factor .

About 40.9% of the child has 5-6 times meal frequency .About 71.1% of the child has a history of night meals. Around 46.8% participants have more than three times a day cooking frequency. From the total respondent, 228 (55.9%) have good knowledge.

**Table 4:** Nutrition-related status for nutrient intake inadequacy and its associated factors among 6-23 months aged children in Bahir Dar, North West Ethiopia,2021 (n 408).

Variable		Frequency	Percentage%
Meals frequency	≤ 2 times	295	83
	2-3 times	83	20.3
	More than 3	30	7.4
Night meals	Yes	118	28.9
	No	290	71.1
Cooking frequency	one time	43	10.5
	Two times	174	42.6
	three times or more	191	46.8
Nutritional knowledge	Poor knowledge	165	40.4
	Medium knowledge	122	29.9
	Good knowledge	121	29.7
History of illness previous 2 week	Yes	93	22.8
	No	315	77.8
Nutritional counseling about child nutrition	No	49	12
	Yes	359	88

### 6.3. Overall Nutrient intake inadequacy among 6-23 months of child both micro and macronutrients intake.

NAR was truncated at 1 so that a nutrient with a high NAR cannot compensate for a nutrient with low NAR. The overall prevalence of nutrient intake inadequacy among 6-23 months of the child was about 47.5 % ( 95%CI: 42.4%-52.2%) it was computed from 14 nutrients.

The nutrient data distribution was skewed with the results of kolmogorov smirnov and shaper-wilk test ( $p < 0.05$ ), so it was represented by median and IQR. The median intake of carbohydrates among the child was 107 gram and median intake of protein was 12.g similarly the median intake of fat is about 28 gram. The median intake of VA was about 6.09 mcg and the median intake of VB2, VB6, VB1, VB3, VB12, and VC was 0.5g, 0.46g, 0.33g, 4.34g, and 0.67 mcg. About 4g was the median intake of zinc and 400g, 13.g, 92.g was a median intake of calcium, iron and folate respectively.

Table 5: Macronutrient and micronutrient intake for nutrient intake inadequacy and its associated factors among 6-23 months aged children in Bahir Dar, North West Ethiopia, 2021 (n 408).

Nutrients	Median $\pm$ ( IQR (Q1, Q3))	Percentage %
Carbohydrate Intake	107.0 $\pm$ (97,130)	46.80%
Protein Intake(G)	12.0 $\pm$ (9.140,14.67)	51.50%
Fat intake (g)	28.0 $\pm$ (23.39,33.07)	65.%
Zinc Intake (G)	4 $\pm$ (3,5)	10.80%
Vitamin A Intake (Mcg)	6.070 $\pm$ (3.750,26.00)	97.50%
Calcium Intake	400 $\pm$ (356.4,33.07)	39.00%
Iron Intake (G)	13.0 $\pm$ (11.0,16.0)	9.10%
Vitamin B2 Intake (G)	.051 $\pm$ (.41,.58)	29.40%
Vitamin B6 Intake (G)	.46 $\pm$ (.29,.69)	52.70%
Vitamin B1 Intake (G)	.33 $\pm$ (.30,.50)	54.90%
Vitamin B3 Intake (G)	4.34 $\pm$ (3.5,6.10)	52.00%
Vitamin B12 Intake (Mcg)	.67 $\pm$ (.56,78)	46.30%
Folate Intake (Mcg)	92.0 $\pm$ (67.0,119.0)	47.30%
Vitamin C Intake (G)	28.0 $\pm$ (20.0,33.0)	62%
Mar(14)		47.5%

## 6.6. Factors Affecting overall nutrient intake inadequacy among 6-23 months of the child.

In binary logistic regression analysis; nutritional knowledge of the respondents, maternal age, occupational status of father, nutritional counseling, child age, meal frequency, maternal educational status were significant factors at p value less than 0.25 and these were entered into the multivariable binary logistic analysis. The multivariable logistic regression analysis was done on those factors to filter the net effect of the independent variable on the dependent variable. Finally, maternal educational status, nutritional knowledge of mothers, age of mother and meal frequency of child was statistically significant factors with overall nutrient intake inadequacy at p-value < 0.05. Children from informal educated mothers were 4.67 times more likely to have overall nutrient intake inadequacy as compared with those who had formal educated mother [AOR=4.67, 95%CI (2.45-8.88)]. Children who had  $\leq 2$  times meals/day were 2.82 times more likely to had nutrient intake inadequacy than who have more than 3 times a day [AOR=2.82, 95%CI (1.12, 7.07)]. Respondents who had poor nutritional knowledge were 6.18 times more likely to had child nutrient intake inadequacy than those who had good nutritional knowledge, [AOR=6.18, CI, (3.52, 10.84)] .Children whose mothers' age 19 -29 years were 1.7 times more likely to had nutrient intake inadequacy than those mothers' age above 29 years [AOR=1.76, 95%CI (1.11, 2.79)].

Table 6: Multivariable logistic regression analysis for nutrient intake inadequacy and its associated factors among 6-23 months aged children in Bahir Dar, North West Ethiopia, 2021 (n 408).

Variable	Category	Overall nutrient intake Inadequacy		COR(95 5% CI)	AOR(95% CI)
		Yes (n %)	No (n %)		
Educational status of the mother	Informal	55(76.4%)	17(23.6%)	4.58(2.55,8.236)*	4.67(2.45,8.88) **
	Formal	139(41.1%)	195(58.6%)	1	1
Age of child	6-11 months	62(52.7%)	69(48.3%)	1.27(.863,1.88)*	1.06(.657,1.73)
	11-23 months	152(45.1%)	125(45.8%)	1	1
Nutritional knowledge of the respondent	Poor knowledge	113(68.5%)	52(31.3%)	5.34(3.2,8.91)*	6.18(3.52,10.84) **
	Medium knowledge	46(37.7%)	76(62.3%)	1.48(.869,2.54)*	1.57(.880,2.81)
	Good Knowledge	35(28.9%)	86(71.1%)	1	1
Occupation status of father	Private employer	18(38.3%)	29(61.7%)	.759(.374,1.540)	.582(.257,1.31)
	Daily labor	31(55.4%)	25(44.6)	.1.51(.785,2.92)*	1.20(.568,2.56)
	Government employer	95(48%)	103(52%)	1.13(.696,1.83)	1.18(.678,2.08)
	Student	5(71.4%)	2(28.6%)	3.05(.566,16.5)	2.66(.429,16.52)
	Merchant	45(45%)	55(55%)	1	1
Meal frequency	Less than 2 times a day	145(49.2%)	150(50.8%)	2.25(.100,5.08)*	2.82(1.12,7.07) **
	2-3 times a day	40(48.2%)	43(51.8%)	2.17(.89,5.09)*	2.70(.990,7.36)
	More than 3 times	9(30%)	21(70%)	1	1
Getting nutritional counseling	No	18(36.7%)	31(63.3%)	.59(.326,1.118)*	652(.317,1.34)
	Yes	176(49%)	183(51%)	1	1
Age Of the mother	19-29	106(50.5%)	104(49.5%)	1.27(.863,1.88)*	1.77(1.11,2.79) **
	Above 29	88(44.4%)	110(55.6%)	1	1

Note: \*\* indicates p value less than 0.05, 1=reference group, COR=adjusted odds ratio, AOR: Adjusted odds ratio, CI=confidence interval

## 7. DISCUSSION

This study intended to assess the nutrient intake inadequacy among 6-23 months of children and. In addition, we identify factors that associated with the overall nutrient intake inadequacy among 6–23 months

The overall prevalence of nutrient intake inadequacy among 6-23 months of children was 47.5%. Similar reports show in the northern part of Ethiopia overall nutrient intake inadequacy is 53% [2]. Another supportive study in Ghana the overall nutrient intake of the child were below the recommendation level. [55] The reason for this result is mostly children's diet was plant-based this plant-based diet are poor for basic micronutrients and macro nutrients so most of this age group was affected by inadequate intake.

Our study showed nutrient intake from the food was inadequate similarly in northern Wollo study most of the nutrient intake from complementary food was inadequate. [20] This might be due to low compliance with the recommended amount and lack of nutritional knowledge and most of the study participants diet was grains, roots, and tubers it lack of animal source. If there is good Consumption of animal source of food improves the micronutrient density of complementary food.

The present study shows the total intake of protein and other nutrient were below the recommendation also there is a supportive result found in the southern part of Ethiopia the total intake of protein and micronutrients by infants and young children were not in accordance to WHO/FAO recommendations. [34]

In our study basic nutrients intake was below the daily recommendation level also in the previous study the intake of nutrient from the complementary foods was below the estimated need. Intakes of Ca, vitamin A and vitamin C from complementary foods were far below to the estimated needs [56]. This is because mostly focus on the locally available diet on starchy staples less in fruit, and animal products so it can put the child on the risk of inadequate nutrient intake.

Another study in from Ethiopia, shows there is lower intake of vitamin-A and C. [57] this result support our study.

The inadequate intake of VA and VC was 97.5% and 62% this high result was due to less concern for the child nutrition and lack of knowledge about the sources of VA, VC and other

essential nutrients and also the amount and the frequency of diet is not increased by the age as recommended and the consumption of fruits and vegetables rich in vitamin A and VC were very low. In addition the calcium intake inadequacy was about 39% in our study in another supportive study in Ethiopia showed the intake of calcium did not meet the estimated amount. [57].

One of the significant factors for overall nutrient intake inadequacy was nutritional knowledge of the respondent towards the requirement of additional meal for the child, frequency of additional meal for the child, source, type and benefits of nutrients. Respondents who had poor nutritional knowledge were more times for overall nutrient intake inadequacy to child than respondents who had good nutritional knowledge. Nutritional knowledge is a key element for the child nutrient intake, having a good knowledge towards child nutrition is helpful for adequate nutrient intake because of easily understood the source of nutrient, types and benefit of nutrients and the amount as recommended.[58]

Our study showed that the child who had less than or equal 2 times a day meal frequency was more times likely to had nutrient intake inadequacy than who had more than 4 times a day. This result also supported by in Mongolia study [59]. This is because of the child need energy and nutrient for growth and development these nutrients came from to the appropriate meal frequency when the meal frequency increase the child nutrient intake also increase. Appropriate meal frequency helps the child to get consistent nourishment and adequate nutrients intake as daily recommended.

In the present study, the mother's educational status is the estimator of the child nutrient intake inadequacy those Child who had an informal educational status of mother were more times risky to had overall nutrient intake inadequacy than those who had formal educated mother. The supportive study in Ghana the child who had illiterate mothers had a high risk inadequate nutrient intake.[55] Maternal education is crucial in meeting the requirements for adequate nutrient intake by increasing meal as the age of child and understands the basic sources of nutrient so it can prevent inadequacy and it is a key to apply appropriate feeding practice.

Furthermore maternal age was associated with overall child nutrient intake inadequacy a child who had a mother age between 19 -29 were 1.7 times more likely to had nutrient intake inadequacy than above 29 years. The mother 'between' 19-29 is mostly a prime gravida they



have one or two children so they have less skill to care their children properly and they have less skill about preparation of the child food and feeding practice and they have less attention to the child as age increase the child caring experience also increase.

### **LIMITATION OF THE STUDY**

The limitations of this study were: Usual dietary intake measure was not addressed because it was a single day record, and it was very complex; these conditions could have caused inevitable bias in data reporting, in particular, under reporting of intake, and it also had social desirability bias.

## **8. CONCLUSION AND RECOMMENDATION**

### **8.1. Conclusion**

Overall, dietary intake in 6-23 was lower than the recommendation. Vitamin A intake from the diet is below the recommendation and other macro and micronutrient were also below the recommendation. Both macro and micro nutrient deficiency are public health concerns in Bahir Dar City, parity due to monotonous, cereal and legume based diet. In the multivariable logistic regression analysis, respondents Nutritional knowledge, maternal educational status, maternal age, meal frequency were the significant factors of overall nutrient intake inadequacy of 6-23 months old children.

## **8.2. Recommendations**

Based on the finding of this study, the following recommendations were forwarded to different stakeholders:

### **1. For regional health bureau and other concerned nongovernmental organizations:**

Health education on nutrition during 6-23 months of child promoted in the nation and promotes the importance of vital nutrients in milk products, such as calcium, iron, and vitamins that can be found in local food, such as grains, meats, milk, fruit, vegetable, and other to have each vitamin.

### **2. for agricultural organization**

Bio fortification and supplementation of essential nutrients that could not meet in the dietary intake for the child should be focused.

### **3. for local health facility**

Continuing to improve primary health care services for the child family that could get integrated nutrition and health intervention .Health sectors of the city should uphold awareness on the postnatal care (PNC) follow up to improve their dietary intake through educational health care practices.

### **4. for researchers**

The future researcher should focus on multiple 24-hour recall dietary diaries biochemical assessments, and dietary recorded methods.

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## ANNEX

### Annex I: English version Information sheet

Good morning/ afternoon. My name is \_\_\_\_\_ and I am here on behalf of Redat Berhanu, student of Bahir Dar University, school of public health. She is doing a research on nutrient intake of 6-23 months' of age in Bahir Dar city. She has got permission from Bahir Dar University. Candidates for this study will be randomly selected from the community and you have got the chance to be one of the participant. You will participate if you give me consent/assent after you have understood the following information.

**Purpose of the study:** The purpose of this study is to assess 6-23 months of child enough amount of nutrients from their diet and to investigate factors for inadequacy.

**Procedure and duration:** If you agree to participate in this study, I will conduct an interview With you. The interview will include questions about the child and you socio-demographic characteristics, your dietary intake of the previous day (yesterday), and your awareness regarding nutrients, so I kindly request you to participate in answering the interview.

**Confidentiality:** The information you will provide will be confidential. There will be no information that will identify you in particular. All of the answers you give will be coded to keep the information confidential. Data will not be disclosed with anyone except for members of this research team for the purpose of this work only.

**Rights:** Participation in this study is fully voluntary and you can skip any question that you don't want to answer. If you decide to participate, you have the right to withdraw from the study at any time. You can contact the principal investigator for any question or concern you have.

### Annex II: English version informed consent

I \_\_\_\_\_; the selected participant of the study have listened the information sheet carefully while the data collector read it. I understood the purpose, benefit, and what is required from me and what are the consequences of the study on me if I take part in the study. I understood that personal information regarding me; like name will not register and all answers given by me should not be transferred to the third party without my permission. I also understand that I can decide whether or not to take part in the study or even withdraw from the study at any time.

Are you willing to be part of this study?

Yes \_\_\_\_\_ No \_\_\_\_\_ if “Yes”, continue to the next question; if “No”, stop the interview and move to the next candidate once writing reason for refusal.

Do you have any question before we start? (Answer questions).

**Interviewer**

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Questionnaire code \_\_\_\_\_

Address of principal investigator

Mobile: +251934592786

**Bahir Dar University College of medicine and health science and School of public health.**

**Instruction:** This questionnaire is a face to face interview to collect data from 6-23 months in Bahr Dar city.

**Note:** These entire questionnaires will have been filled by the data collector/interviewer after informed consent is obtained from the respondent/ the child mother or other car giver of the child. Put the answer in the following manner: if the question is yes/no writing as (mark write symbol) for each space to the given answer, write the possible answer for the open-ended question and circle for multiple choice question.

Code of the questionnaire	
Name of the data collector	Name ----- signature ----
Time of data collection	Started-----ended
Date of data collection	Date---/month-----/year---

<b>Part 1: Socio demographic characteristics of the study participant mother or care giver</b>			
<b>no</b>	<b>Questions</b>	<b>Responses (categories)</b>	<b>Skip</b>
100	How old are you?	_____	



101	What is your religion?	1.Orthodox Christian 2.Muslim 3.protetant	
102	What is the mother/caregiver educational status?	1.Can't read and write 2,Can read and write 3,Primary(1-8) 4,Secondary(9-10) 5.preparatory(11-12) 6,college and above	
103	What is the occupation of the mother?	1.House wife 2.Farmer 3.Employee 4.Merchant 5.daily laborer 6.Student 7.Other (specify_____	
104	What is the husband educational status?	1.Can't read and write 2,Can read and write 3,Primary(1-8) 4,Secondary(9-12)	

		5.preparatory(11-12) 5,college and above	
105	What is the occupation of the husband?	1.Farmer 2.Merchant 3 government Employee 4.Student 5.daily laborer 6. Other (specify)_____	

**Part 2: Questions for assessing house hold socio economic status (wealth index)**

<b>A. Housed hold assets and housing condition</b>			
200	What is the condition of owner ship of the house?	1.private 2. rental/governmental	
201	What is the main construction material used for wall of house?	1.cement 2.wood 3. mud 4.other	
202	What is the main construction material used for the Roof of house?	1. Corrugated iron/metal 2. Plastic 3.chipud/modern kornes	

203	What is the main construction material used for the floor of your house?	1.sand 2.sand with plastic cover 2.Cement
204	Did you have a separating room for sleep?	1.yes      2.no, <b>if no skip to Q206</b>
205	If yes for Q 204 how many rooms does your house have?	_____in number
206	Can you tell me please if any member of your house have any of the following? (multiple answers are possible)	1.Electricity:-1.yes,2.no 2.wall Clock:-1.yes,2.no 3.Television:-1.yes,.2.no 4. Home phone:-1.yes,2.no 5. Refrigerator:-1.yes,2.no 6 Electric Mitad/stove:-1.yes,2.no 7. Bed with cotton, sponge mattress:- 1.yes,2.no 8 hand watch :-1.yes,2.no 9 Sofa:-1.yes,2.no 10 Mobile:-1.yes,2.no 11 Radio:-1.yes,2.no 12 Dining table:-1yes,2.no 13 Solar:-1.yes,2.no
207	What type of fuel does your household mainly use	1.Electricity/stove

	for cooking? (multiple answer is possible)	2.charcol 3.wood 4. Animal dung 5 natural gas
208	Does any member of the household own the following? (multiple answer is possible)	1.Bicycle:-1.yes,2.no 2.Motor cycle:-1.yes,2.no 3.Animal drawn cart:-1.yes,2.no 4.Car/truck:-1.yes,2.no 5.Bajaj:- 1.yes,2.no

**B. Wash, Sanitation and Hygiene**

209	What is the main source of water for the member of your house hold?	1.Pipe water 2.Public tap 3.ground water
210	Did you have toilet for use of your family?	1.yes                      2 no ,if no skip to Q212
211	If yes for Q216 What kind of toilet your households use?	1.Traditional pit latrine 2.Pit latrine with slab 3. Ventilated improved pit latrine
212	Did you have solid waste storage/disposal material?	1.yes                      2 no

**Part 3: Occurrence and Frequency of Household Food Insecurity.**

S.no	Questions	Response Option	Skip
300	In the past four weeks, did worry that household would not have enough food?	0 = No 1=Yes	If no skip to Q501

300a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
301	In the past four weeks, were the children or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No 1=Yes	If no skip to Q502
301a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
302	In the past four weeks, did the child or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No 1 = Yes	(skip to Q503)
302a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
303	In the past four weeks, did child or any HH member have to eat some foods that the child really did not want to eat because of a lack of resources to obtain other types of food?	0 = No 1 = Yes	If no skip to Q504
303a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
304	In the past four weeks, did the child or any HH member have to eat a smaller meal than he/she felt they needed because there was not enough food?	0 = No 1 = Yes	If no skip to Q505)
304a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times ) 3 = Often (more than ten times)	

305	In the past four weeks, did the child or any other HH member have to eat fewer meals in a day because there was not enough food?	0 = No 1 = Yes	If no skip to Q506
305a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
306	In the past four weeks, was there ever no food to eat of any kind in the child HH because of lack of resources to get food?	0 = No 1 = Yes	If no skip to Q507
306a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
307	In the past four weeks, did the child or any HH member go to sleep at night hungry because there was not enough food?	0 = No 1 = Yes	If no skip to Q508
307a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	
308	In the past four weeks, did the child or any Member go a whole day and night without eating anything because there was not enough food?	0 = No 1 = Yes	If no skip to Q600
308a	How often did this happen?	1 = Rarely (once or twice) 2 = Sometimes (3-10 times) 3 = Often (more than ten times)	

#### 4. Child and Health related and health service question

400	Sex of the child	1.male 2.female	
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401	What is age of the child? age in months	.....	
402	Has ever the child been ill in the last 2 weeks?	1.yes      2.no	
403	Did you get nutritional counseling about child nutrition and food consumption while you vesting health center	1.yes      2.no	
404	Do you think it is good for you when health care provider provide you education for nutrition during child hood	1.yes      2.no	

**Part 5: Questions for assessing Nutrition related (meal pattern, meal frequency, and dietary habit of the child).**

<b>S.N O</b>	<b>Questions</b>	<b>Categories or responses</b>	<b>SKIP</b>
<b>500</b>	How many meals does the child usually eat within a day?	1.lee2 time per day  1.2-3 time per day  2. more than 3 times day.	
<b>501</b>	Dos the child get up at night to eat	0.No  1.yes	

**Part 6.knowledge related factor towards food consumption of infant and young child 6-24 months**

No	Questionnaire	Response
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601	What is/are the use of protein foods? (multiple answer is required)	1= provide energy.1.yes 2.no 2=maintenance and building of body tissues and muscle.1.yes 2.no 3= helps to make antibodies 1.yes 2.no
602	What is/are the source of protein foods? (multiple answer is required)	1=Fish and seafood 1.yes 2.no 2= eggs, Meat .1.yes 2.no 3= Beans, chickpeas, lentils, 1.yes 2.no
603	What is/are the use of carbohydrate foods? (multiple answer is required)	1= provide energy 1.ye 2.no 2=improving brain performance,1.yes 2.no 3=reducing cancer risk, supporting weight loss 1.yes 2.no
604	What is/are the source of carbohydrate foods? (multiple answer is required)	1= Bread, pasta, beans.1.yes 2.no 2= potatoes, rice, and cereals.1.yes 2.no 3= wheat, maize and sugars 1.yes 2.no
605	What is/are the source of fat foods? (multiple answer is required)	1. Avocados, Cheese olives 1.yes 2.no 2. Peanut, flaxseed, and corn oils.1.yes 2.no 3. Nuts, Fish, meat, Seafood 1.yes 2.no
606	What is/are the use of vitamin and mineral foods? (multiple answer is required)	1= build strong bones and teeth1.yes 2.no 2= essential for growth of children.1.yes 2.no 3= regulation of blood pressure and blood volume. 1.yes 2.no
607	What are the best sources of vitamin and mineral foods? (multiple answer is required)	1= Fruits 1.yes 2.no 2= vegetables 1.yes 2.no 3= animal foods 1.yes 2.no

**Part 7: Dietary assessment questionnaire (24-hour dietary recall questioner for assessing nutrient intake and dietary practice of 6-24 months** Now I would like to ask you about some liquids, solid or semi-solid food that the child had eat yesterday during the day and night. Should recall all foods the child ate yesterday both at home and outside the home. Try to recall starting from the morning. (After recalling facilitate the recalling by reading the staple foods listed in annex 4).



700. Recall(24 hr recall )

<b>Occasion</b>	<b>Place of eaten</b>	<b>Food or Drink</b>	<b>Description and cooking method</b>	<b>Condition of Bowel (shared or lonely)if shared bowel try to list the number, sex and age of persons eaten together</b>	<b>Amount eaten (by equipment /number/ photo code</b>	<b>Brand name(for purchased food ) for candey,biscuit , ,pasta,gum,alcohol,soft drinks</b>
Morning before breakfast						
Breakfast						
After breakfast						
Lunch						
After lunch						
Snack						
After snack						
dinner						

List of food staples in Bahir Dar city

<ul style="list-style-type: none"> <li>❖ <b>Cereals and grains</b></li> <li>✓ Ambasha, circular flat bread dough</li> <li>✓ Anebabero, double injera covered with butter and chilli in the middle</li> <li>✓ Atmit, very thin barley porridge</li> <li>✓ Atmit, very thin wheat porridge</li> <li>✓ Besso, roasted and milled</li> <li>✓ barleyflour served with butter</li> <li>✓ Biscuit, homemade fried dough bread</li> <li>✓ Bonbolino, homemade fried dough bread containing sugar</li> <li>✓ Bread, wheat</li> <li>✓ Cake</li> <li>✓ Chechebisa, pieces of barley bread mixed with butter</li> <li>✓ Chechebisa, pieces of wheat bread mixed with butter</li> <li>✓ Cukis</li> <li>✓ Dabo-kolo, very small size roasted bread dough</li> <li>✓ Fetira, fried filo dough cooked with egg and covered with honey</li> <li>✓ Firfir, pieces of barley injera with stew</li> <li>✓ Firfir, pieces of bread with stew containing butter</li> <li>✓ Firfir, pieces of teff injera with stew containing beef</li> <li>✓ Firfir, pieces of teff injera with stew containing butter</li> </ul>	<ul style="list-style-type: none"> <li>❖ <b>Sugar / Confectionary</b></li> <li>✓ Sugar</li> <li>✓ Honey</li> <li>✓ Sugar cane</li> <li>❖ <b>Fats and oil</b></li> <li>✓ Oil</li> <li>✓ Butter</li> <li>❖ <b>Water</b></li> <li>✓ water</li> <li>❖ <b>Alcohol beverages</b></li> <li>✓ Tela, local beer</li> <li>✓ Keribo, hops free local drinks</li> <li>✓ Tej, mead honey or sugary wine</li> <li>✓ Areke, homemade hard liquor</li> <li>✓ Wine</li> <li>✓ Beer</li> <li>❖ <b>Eggs</b></li> <li>✓ Chicken eggs</li> <li>❖ <b>Dairy products</b></li> <li>✓ Aguat, whey</li> <li>✓ Arera, butter milk</li> <li>✓ Ayib, Cheese</li> <li>✓ Butter</li> <li>✓ Milk</li> <li>✓ Yoghurt</li> <li>❖ <b>Meat</b></li> </ul>
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<ul style="list-style-type: none"> <li>✓ Firfir, pieces of teff injera with stew containing dried beef</li> <li>✓ Fitfit, pieces of teff injera mixed with beef broth</li> <li>✓ Fitfit, pieces of teff injera mixed with pea flour, onion and oil sauce</li> <li>✓ Fitfit, pieces of teff injera mixed with sunflower sauce</li> <li>✓ Injera, barley</li> <li>✓ Injera, teff</li> <li>✓ Injera, wild oat</li> <li>✓ Kinche, boiled splitted barley served with butter</li> <li>✓ Kinche, boiled splitted wheat served with butter</li> <li>✓ Kita, unleavened flat barley bread</li> <li>✓ Kita, unleavened flat teff bread</li> <li>✓ Kita, unleavened flat wheat bread</li> <li>✓ Kolo, roasted and mixed barley, chickpea and pea</li> <li>✓ Kolo, roasted and mixed wheat, chickpea and sunflower</li> <li>✓ Kolo, roasted barley</li> <li>✓ Kolo, roasted chickpea</li> <li>✓ Kolo, roasted pea</li> <li>✓ Kolo, roasted wheat</li> <li>✓ Macaroni</li> <li>✓ Nifro, boiled wheat</li> <li>✓ Pizza</li> <li>✓ Porridge, barley served with butter and chili</li> </ul>	<ul style="list-style-type: none"> <li>✓ Beef with steamed rice</li> <li>✓ Dulet, semi roasted organ meat (sheep and goat) with butter</li> <li>✓ Kikil, boiled beef</li> <li>✓ Kikil, boiled egg</li> <li>✓ Kikil, boiled goat meet</li> <li>✓ Kikil, boiled mutton</li> <li>✓ Kitfo, raw or sautéed minced beef mixed with chili and clarified spicy butter</li> <li>✓ Milas na senber, roasted cow tongue and rumen</li> <li>✓ Raw beef</li> <li>✓ Roasted beef</li> <li>✓ Roasted goat meat</li> <li>✓ Roasted mutton</li> <li>✓ Shoriba, beef broth</li> <li>✓ Wot, beef with kale</li> <li>✓ Wot, minced beef and egg stew</li> <li>✓ Wot, red beef stew</li> <li>✓ Wot, red chicken stew</li> <li>✓ Wot, red dried beef stew</li> <li>✓ Wot, red mutton stew</li> <li>❖ <b>Fruits</b></li> <li>✓ Avocado</li> <li>✓ Banana</li> <li>✓ Juice, mixed</li> <li>✓ Juice, avocado</li> <li>✓ Juice, mango</li> <li>✓ Mango</li> <li>✓ Orange</li> </ul>
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<ul style="list-style-type: none"> <li>✓ Porridge, wheat served with butter and chili</li> <li>✓ Sambusa</li> <li>✓ Sandwich, sliced bread with fried egg in the middle</li> <li>✓ Spaghetti, pasta</li> <li>✓ Steamed rice</li> <li>✓ Tirosho, flat barley bread dough covered with butter</li> <li>✓ Tirosho, flat wheat bread dough covered with butter</li>   <li>❖ <b>Legumes/ pulses</b></li> <li>✓ Shorba, lentil, carrot, and macaroni soup</li> <li>✓ Shorba, lentil, pea and carrot soup</li> <li>✓ Siljo, fermented faba bean, sunflower and mustard slurry</li> <li>✓ Wot, beyeyinet -varieties of stews</li> <li>✓ Wot, faba bean, chili, onion and oil stew</li> <li>✓ Ashuk, roasted and boiled faba bean</li> <li>✓ Bokolt, germinated faba bean Ashuk</li> <li>✓ Endushdush, soaked and roasted</li> </ul>	<ul style="list-style-type: none"> <li>✓ Temir, dates</li> <li>✓ Tringo, citron</li>   <li>❖ <b>Vegetables and tubers</b></li> <li>✓ Atkilt, mixed vegetables and fruits</li> <li>✓ Bula - false banana porridge served with butter</li> <li>✓ Ethiopian kale</li> <li>✓ Fried potatoes</li> <li>✓ Kariya, green pepper</li> <li>✓ Kariya, sinig - green pepper stuffed with onion and oil</li> <li>✓ Kikil, boiled potatoes</li> <li>✓ Kikil, boiled potatoes</li> <li>✓ Kikil, boiled sugar beet</li> <li>✓ Lettuce with onion, oil and aceto vinegar</li> <li>✓ Raw tomatoes with onion, green peppers and oil</li> <li>✓ Samma, Stinging nettle</li> <li>✓ Shorba, vegetables soup</li>   <li>❖ <b>Salts and spices</b></li> <li>✓ Salt</li> <li>✓ Bird's eye chili</li> <li>✓ Bishop's weed</li> <li>✓ Black cumin</li> <li>✓ Cardamom</li> <li>✓ Cinnamon</li> <li>✓ Cloves</li> <li>✓ Coriander seeds</li> <li>✓ Rue</li> </ul>
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faba bean

- ✓ Fool, pureed stewed faba bean
- ✓ Nifro, boiled chickpea
- ✓ Nifro, boiled faba bean
- ✓ Nifro, boiled faba bean and maize
- ✓ Nifro, boiled faba bean and wheat

**Annex III. Consent Form of Amharic Version**

**ቅጽ 6 : ለጥናቱ ተሳታፊዎች መረጃ መስጫ ቅፅ**

እንደምን አድሩ/ዋሉ? \_\_\_\_\_ እባላለሁ። ከዚህ የተገኘሁት በዋናነት በባህር ዳር ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ፣ የህብረተሰብ ጤና አጠባበቅ የስነ-ምግብ ትምህርት ክፍል የሁለተኛ ዲግሪ ለማግኘት በተማሪ ረድእት ብርሀኑ የሚደረግ የምርምር ጥናትን ወክዬ ነው። ጥናቱ ዕድሜያቸው ከ 6-23 ወር ልጆች ከምግብ የሚያገኙት ንጥረ ነገር ላይ ያተኮረና ከባህርዳር ዩኒቨርሲቲ እንዲሁም ከሚመለከታቸው ተቋማት እና ከትምህርት ቤታቸው ሙሉ እውቅና ያገኘ ነው። በዚህ ጥናት ላይ የሚሳተፉ ልጆች በእጣ የሚመረጡ ሲሆን እርስዎም እድሉ ከደርሰዎት አንዷ ለመሆን በቅተዋል። ጥናቱ ውስጥ የሚሳተፉት የሚከተለውን መረጃ ከሰማቼህና ከተሰማማቼ ብቻ ነው።

**1. የጥናቱ ዋና አላማ:** የዚህ ጥናት ዋና አላማ እድሜያቸው ከ 6-23 ወር የሆኑ ልጆች ከሚመገቡት ምግብ ምን ያክል ንጥረ-ምግብ እንደሚያገኙና ከነዚህ ውስጥ ምን ያክሉ በቂ ንጥረ-ምግብ እንደሚያገኙ ለማወቅ ነው።

**2 እኔ የምጠይቅዎት/ሽ ነገሮች:** ጥናቱ ውስጥ ለመሳተፍ ከተሰማሙ ከአንች ጋር ቃለመጠይቅን አካሄዳለሁ። ቃለመጠይቁ ስለአንች እና ልጄ ስለ ትላንት የልጄ አመጋገብ ያካትታል። ተሳትፎዎ በጣም ይደገፋል።

**3. ሚስጥራዊነት:** እርስዎ የሰጡን መረጃ ሁሉ በሚስጢር ይያዛል። አንድም የግልዎ መረጃ አይፈቀድም። ለዚህ ጥናት እርስዎ የሰጡት መረጃ በግል ይያዛል። የጥናቱን ውጤት ለሌሎች አካላት ገለጻ በምናደርግበት ጊዜ እንኩዋን እርስዎ እንዲታወቁ የሚያስችል መረጃ አይፈቀድም። ለጥናቱ የተሰበሰበ መረጃ ቁልፍ ባለው ፋይል ውስጥ ይቀመጣል። ከአጥኚው በቀር ሌላ ሰው ሊያገኘው አይችልም።

**4. የተሳታፊው ፍቃደኝነት እና መብት:** ተሳትፎው በሙሉ በፈቃደኝነት ላይ የተመሰረተ ነው። ስለዚህ ጥናቱ ውስጥ ለመሳተፍም ሆነ መመለስ የማይፈልጉትን ጥያቄ ለመመለስ አይገደዱም። የምትጠየቁት ጥያቄ ካልተመቻቀነ ያለመመለስና መሃል ላይ የማቋረጥ መብት አለዎት። መልካም ፈቃደኝነትና ትብብር ለዚህ ጥናት እውን መሆን ከፍተኛ ድርሻ ይኖረዋል። ጥያቄ ካላቸው አጥኝዎን ከዚህ በታች በተጠቀሰው አድራሻ ማግኘት ትችላላችሁ።

**አድራሻ:** ሞባይል: +251934592786

**ቅጽ : የስምምነት ቅፅ**

እኔ የጥናቱ ተሳታፊ ሆኜ የተመረጥኩ የመረጃ ቅፅ ሲነበብ በጥንቃቄ አዳምጫለሁ። የጥናቱን ዋና አላማ፣ ጥቅምና ግርዶህም ከእኔ ምን እንደሚጠበቅተኛለሁ። የግል መረጃ እንደማይፈቀድ እና እኔ የሰጠው ኃቸው መረጃዎች ለሌሎች ሰው ተላልፎ እንደማይሰጡ ተረድቻለሁ። ጥናቱ ውስጥ ለመሳተፍ መወሰን እንደምችልና በፈለግሁት ጊዜ ጥናቱን አቋርጬ መተው እንደምችልም ተረድቻለሁ። ስለዚህም ጥናቱ ውስጥ ለመሳተፍ ተስማምቻለሁ። ይህንንም በፍርማዬ አረጋግጣለሁ።

ከላይ በሠጠሁዎት ማብራሪያ መሠረት የዚህ ጥናት አካል ለመሆን ፍቃደኛ ነዎት?

ፍቃደኛ ነኝ \_\_\_\_\_ ፍቃደኛ አይደለሁም \_\_\_\_\_

ተሳታፊው ፈቃደኛ ከሆኑ ወደ ቀጣዩ ጥያቄ ይለፉ። ነገር ግን ለመሳተፍ ፍቃደኛ ካልሆኑ የማይሳተፉበትን ምክንያት

ጠይቀው ይጻፉና \_\_\_\_\_  
 ቃለ መጠይቁን እዚህ ጋር አቁመው ወደ ቀጣይ ይደገቡ

ተሳታፊዎች::

መጠይቁን ከመጀመሩ በፊት ግልፅ ያልሆነ ለውጥ ማንኛውም አይነት ጥያቄ ያደርግዎታል? (ለሚጠየቁት ጥያቄዎች ምላሽ ይስጡ)

የጠያቂው ስም \_\_\_\_\_ ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

የመጠይቅ መለያ ቁጥር \_\_\_\_\_

የአጥኝ አድራሻ Mobile: 0934592786

Email: redub2020@gmail.com

ባህር ዳር ዩኒቨርሲቲ የማህበረሰብ ጤና አጠባበቅ ስነ-ምግባር / ትክክል

**Annex IV. Questionnaire in Amharic Version**

ቃለ ቅጽ ማጠይቅ በአሜሪካ ማጠይቅ በባህር ዳር ከተማ፣ በሰሜን ምዕራብ ኢትዮጵያ በ 2013 ዓ.ም ወስጥ 6-23 ወር ልጆች መካከል በምግብ አወሳሰድ አለመመጣጠን ቀጥተኛ እና ተጓዳኝ ምክንያቶችን ለመገምገም ይጠቅማል ፡ ፡

መሆኑም ይህ ማጠይቅ በባህር ዳር ከተማ 6-23 ወር ልጆች መረጃ ለመሰብሰብ የፊት ለፊት ቃለ መጠይቅ ነው ፡ ፡

ማሳሰቢያ - እነዚህ ማጠይቆች በሙሉ ፈቃድ ከተገኘ በኋላ በመረጃ ሰብሳቢው ይሞላሉ ፡ ፡ መልሱን በሙከራው መገንዘብ ያስቀምጡ ጥያቄው አዎ ከሆነ አዎ / ካልሆነ አይደለም ፡ ብዙ ምርጫ ላሉት ምርጫዎች ይከበሩ ፤ ለባዶ ቦታ ጥያቄ የሚቻለውን መልስ ይጻፉ ፡ ፡

የ ማጠይቅ ኮድ	
የ ቀበሌው ስም	
የ መረጃ ሰብሳቢው	ስም ----- ፊርማ ----
የ ተቆጣጣሪው	ስም ----- ፊርማ ----
የ መረጃ አሰባሰብ ጊዜ	የ ተጀመረበት ሰዓት ----- ያለቀበት ሰዓት -----
የ መረጃ መሰብሰቢያ	ቀን --- / ወር ---- / አ.ም ---

ክፍል I: የጥናቱ ተግባር (ህጻናት/6-24 ወር) ማህበራዊ ጥናት ሥነ-ምግባር ባህሪ ይኖራል			
ተቁ	ጥያቄዎች	ምላሾች (ምድቦች)	ዝላል
100	እድሜዎ ስንት ነው?	_____ ዓመት	
101	ሃይማኖትዎ ምንድን ነው?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮታስታንት 4. ሌላ	
102	የትምህርት ደረጃዎ ምንድን ነው?	1. ማንበብ እና መጻፍ የማትችል 2. ማንበብ እና መጻፍ የምትችል 3. አንደኛ ደረጃ (1-8) 4. ሁለተኛ ደረጃ (9-12) 5. ቅድመዝግጅት (11-12) 6. ኮሌጅ እና ከዚያ በላይ	
103	ሥራዎ ምንድን ነው?	1. የቤት አመቤት 2. ገበሬ 3. የመንግስት ሰራተኛ 4. ነጋዴ 5. የቀንሰራተኛ 6. ሌላ (ይጥቀሱ)	
104	የልጁ/ልጅቱ አባት የትምህርት ሁኔታ ምንድን ነው?	1. ማንበብ እና መጻፍ የማይችል 2. ማንበብ እና መጻፍ የሚችል 3. አንደኛ ደረጃ (1-8) 4. ሁለተኛ ደረጃ (9-12) 5. ቅድመዝግጅት (11-12) 6. ኮሌጅ እና ከዚያ በላይ	
105	የልጁ/ልጅቱ አባት ሥራ ምንድን ነው?	1. ገበሬ	



		2.ኃጋዴ 3የመንግስት ሰራተኛ 4.ተማሪ 5የቀንሰራተኛ 6. ሌላ(ይግለጹ _____)	
106	የቤተሰብ ብዛት (በቤትዎ ውስጥ የሚኖሩ ሰዎች ብዛት )	_____ ቁጥር	

**ክፍል2 የቤት የሃብት ሁኔታ ለመገምገም የተዘጋጁ ጥያቄዎች (ኢኮኖሚያዊ ሁኔታን የያዘ) ወይም የሀብት መገለጫ**

ቤት-ውስጥ ያሉ ንብረቶችን እና የቤት ሁኔታን በተመለከተ ለከተማ			
ተቁ	ጥያቄዎች	ምላሾች (ምድቦች)	ዝልል
200	ቤታችሁ ባለቤትነቱ የማን ነው?	1. የግል 2. የኪራይ/የመንግስት/ሌላ	
201	የቤቱ ግድግዳ የተሰራበት ቁስ ምንድን ነው?	1 ሲሚንት 2 ከአንጨት 3.ከጭቃ 4. ሌላ (ይግለጹ)	
202	የቤቱ ጣሪያ የተሰራበት ቁስ ምንድን ነው?	1. ቆርቆሮ 2. ማዳበሪያ 3 ችግር	
203	ቤትዎ የተለየ መኞታ ክፍል አለው?	1. አዎ _____ ክፍል 2 የለም	የለም ከሆነ መልስ ወደ <b>ጥያቄ 204</b> ይላፉ
204	የሚከተሉት እቃዎች በቤት ውስጥ አለዎት?  (ከአንድ በላይ መልስ ይቻላል)	1.ኤሌክትሪክ መብራት 1 .አለ 2 የለም 2..የግድግዳ ሰላት አለ 2 የለም 3.ቴሌቪዥን 1.አለ 2 የለም 4.የቤት ስልክ	

		<p>1 አለ 2 የለም</p> <p>5. ማቀዝቀዣ/ ፍሪጅ</p> <p>1 አለ 2 የለም</p> <p>6. ኤሌክትሪክምጣድ/ ምድጃ</p> <p>1 አለ 2 የለም</p> <p>7. አልጋናየጥጥ/ስፖንጅ/ስፕሪንግፍራሽ</p> <p>1 አለ 2 የለም</p> <p>8. የእጅሰአት</p> <p>1 አለ 2 የለም</p> <p>9. ሶፋ</p> <p>1 አለ 2 የለም</p> <p>10. ሞባይል</p> <p>1 አለ 2 የለም</p> <p>11. ሬዲዮ</p> <p>1 አለ 2 የለም</p> <p>12. የመመገቢያጠረጤዛ</p> <p>1 አለ 2 የለም</p> <p>13 የፀሐይሙብራት</p> <p>1 አለ 2 የለም</p>	
205	<p>ምግብ ለማብሰል በሞኝነት ምንትጠቀሟላችሁ ?</p> <p>(ከአንድ በላይ መልስ ይቻላል)</p>	<p>1 ኤሌክትሪክምጣድ/ስፖንጅ</p> <p>2 ከሰል</p> <p>3 እንጨት</p> <p>4 ኩብት</p> <p>5 ጋዝ</p> <p>6. ሌላ (ይግለጹ)</p>	
206	<p>ከቤተሰቡ አባላት ውስጥ የሚከተሉት እቃዎች ያሉት ይኖራል?</p> <p>(አለ የሚሉትን ያክብቡ)</p>	<p>1. በስክሌት</p> <p>1 አለ 2 የለም</p> <p>2. ሞተር በስክሌት</p> <p>1 አለ 2 የለም</p>	

		3. በእንስሳት የሚገኙት ጋሪ 1.አለ 2.የለም 4. መኪና 1.አለ 2. የለም 5. ባጃጅ 1. አለ 2. የለም	
ለ የመጠጥ ዉሃ እና ንፅህናን በተመለከተ			
207	ለ መጠጥ የምትጠቀሙትን ውሃ የምታገኙት ከየት ነው ?	1 የቧንቧ ዉሃ 2 የጋራ-ቧንቧ ዉሃ 3. የጉድጓድ ውሃ 4 ምንጭ/ወንዝ	
208	ለቤተሰብዎ የሚሆን መጻዳጃ ቤት/ ሽንት ቤት አላችሁ ?	1 አለ 2 የለም	የለም ከሆነ ወደ ጥያቄ 210 ይለፉ
209	መጻዳጃ ቤት አለ ካሉ ምን ዓይነት መጻዳጃ ይጠቀማሉ?	1.ባህላዊጉድጓድ መጻዳጃ ቤት 2.መረባርብ ያለው የጉድጓድ መጻዳጃ ቤት 3.ሽታአልባየጉድጓድ መጻዳጃ ቤት	
210	የደረቅቆሻሻ ማጠራቀሚያ አላችሁ ?	1 አለ 2 የለም	

<b>ክፍል ሰባት- በቤት ውስጥ የምግብ ዋስትና መከሰት እና ድግግሞሽ።</b>			
300	ባለፈው እንደ ወር ውስጥ የቤተሰብ አባል በቤት ውስጥ የምግብ እጥረት ያጋጥመናል ብሎ ተጨንቆ ያውቃል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደጥያቄ30 1ይለፉ
300ሀ	መልስዎ አዎ ከሆነ ይህ ለምን ያህል ጊዜ ተከስቷል?	1- አልፎአልፎ (1_2ጊዜ) 2- የተወሰነጊዜ (3-10) 3- ብዙጊዜ (ከ10 ጊዜበላይ)	
301	ባለፈው እንደ ወር ውስጥ ህጻኑ/ና ወይም ሌላ የቤተሰብ አባል በገንዘብ / በምግብ እጥረት ምክንያት የሚፈልጉትን ምግብ ሳይመገቡ ቀርተዋል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደጥያቄ30 2ይለፉ
301ሀ	መልስዎ አዎ ከሆነ ይህ ለምን ያህል ጊዜ ተከስቷል?	1_ አልፎአልፎ(1_2 ጊዜ) 2- የተወሰነጊዜ (3-10) 3- ብዙጊዜ(ከ10 ጊዜበላይ)	
302	ባለፈው እንደ ወር ውስጥ ህጻኑ ወይም ሌላ የቤተሰብ አባል በገንዘብ እጥረት ምክንያት የሚመገቧቸው ምግብ አይነቶች ቀንሰዋል?	0-አያውቅም	አያውቅም ካሉ ወደጥያቄ 303ይ ለፉ

		1-አዎ	
302ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1-አልፎአልፎ (1-2 ጊዜ) 2- የተወሰነጊዜ(3-10) 3-በዙጊዜ(ከ10ጊዜበላይ)	
303	ባለፈው አንድ ወር ውስጥ ህጻኑ/ና ወይም ሌላ የቤተሰብ አባል በገንዘብ/ በምግብ እጥረት ምክንያት የሚያፈልጉትን የምግብ አይነት ተመግብዋል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደ ጥያቄ 30 4 ይለፉ
303ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1-አልፎአልፎ (1-2 ጊዜ) 2- የተወሰነጊዜ(3-10) 3-በዙጊዜ(ከ10ጊዜበላይ)	
304	ባለፈው አንድ ወር ውስጥ በገንዘብ/ በምግብ እጥረት ምክንያት ህጻኑ/ና ወይም ሌላ የቤተሰብ አባል በቀን የሚበሉ ባች ውጫዎችን ቀንሰዋል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደ ጥያቄ 30 5 ይለፉ
304ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1- አልፎአልፎ ( 1_2 ጊዜ ) 2- የተወሰነጊዜ (3-10) 3- በዙጊዜ(ከ10 ጊዜበላይ)	
305	ባለፈው አንድ ወር ውስጥ በገንዘብ/ በምግብ እጥረት ምክንያት ህጻኑ/ና ወይም ሌላ የቤተሰብ አባል በቀን የሚበሉ ባች ውጫዎችን ቀንሰዋል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደ ጥያቄ 30 6 ይለፉ
305ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1- አልፎአልፎ ( 1_2 ጊዜ ) 2- የተወሰነጊዜ (3-10) 3- በዙጊዜ(ከ10 ጊዜበላይ)	
306	ባለፈው አንድ ወር ውስጥ በገንዘብ/ በምግብ እጥረት ምክንያት ማንኛውም የሚበሉ ምግብ ከቤት ጠፍቶ ያውቃል?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደ ጥያቄ 30 7 ይለፉ
306ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1- አልፎአልፎ ( 1_2 ጊዜ ) 2- የተወሰነጊዜ (3-10) 3- በዙጊዜ(ከ10 ጊዜበላይ)	
307	ባለፈው አንድ ወር ውስጥ ህጻኑ /ና ወይም ሌላ የቤተሰብ አባል በገንዘብ/ በምግብ እጥረት ምክንያት እየተራቡ ምግብ ሳይበሉ ተኝተው ያውቃሉ?	0-አያውቅም 1-አዎ	አያውቅም ካሉ ወደ ጥያቄ 30 8 ይለፉ
307ሀ	መልስዎ አዎ ከሆነ ይህ ለ ምን ያህል ጊዜ ተከስቷል?	1- አልፎአልፎ ( 1_2 ጊዜ ) 2- የተወሰነጊዜ (3-10) 3- በዙጊዜ(ከ10 ጊዜበላይ)	
308	ባለፈው አንድ ወር ውስጥ ማንኛውም የቤተሰብ አባል በገንዘብ/ በምግብ እጥረት ምክንያት እየተራቡ ቀን ና ሌሊት ሙሉ ምግብ ሳይበሉ ቀርተው ያውቃሉ?	0-አያውቅም	አያውቅም ካሉ ወደ ጥያቄ 30 0 ይለፉ

		1-አዎ	
309ሀ	መልስዎ አዎ ከሆነ ይህ ለምን ያ ግዙተ ከስቷል?	1- አልፎአልፎ ( 1_2 ጊዜ ) 2- የተወሰነጊዜ (3-10) 3- ብዙጊዜ(ከ10 ጊዜበላይ)	

**ክፍል 4.የልጅ(ቱ) የጤናሁኔታየተመለከተጥያቄዎች እናየጤናአገልግሎትሁኔታ**

400	የህጻኑ/ናእድሜስንትነዉ.(በወር)		
401	ባለፈውሁለትሳምንትውስጥህጻኑ/ናታመውያውቃሉ?	0-አያውቅም 1-አዎ	
402	ጤና ባለሙያው ስለ እና ስለ ህፃናት አመጋገብ ትምህርት እና ምክር ሰጦታታል?	0-አያውቅም 1-አዎ	

**ክፍል5.6-24 ወር ህጻናት የምግብ ድግግሞሽ ለመገምገም የተዘጋጀ መጠይቅ**

6-24ወርህጻናትየምግብድግግሞሽለመገምገምየተዘጋጀመጠይቅ			
ተ.ቁ	ጥያቄ	አማራጭመልስ	ዝላል
500	ህጻኑ በየቀኑ ምንያህል ጊዜ ይመገባል/ች	1= በቀን 2 ጊዜ 2 = 2-3 ጊዜበየቀኑ 3 = በቀንከ 3 ጊዜበላይ	
501	ህጻኑ ለመብላት በሌሊትይነሳል/ች?	0 = አይ 1 = አዎ	
502	በአንድ ቀን ውስጥ ለህጻኑ ስንት ጊዜ ምግብያ በስላሉ?	1 = 1 ጊዜ 2 =2-3 ጊዜ 3 = በቀንከ 3 ጊዜበላይ	

**ክፍል6.ከአውቀትጋርተያያዥነትያላቸውጥያቄዎች**

ተ.ቁ	አውቀትንየሚለኩጥያቄዎች	መልስ	
601	ስለ ፕሮቲን ምግቦች የሚያውቁት የቱን ነዉ [ከአንድበላይመልስየቻላል]	1= ኃይልይሰጣል  1. አዉ 2. አላዉቅም  2=የሰውነትን መገንባት  1. አዉ 2. አላዉቅም  3= ሀመም ተከላካይ አካላትን ለመሥራት ይረዳል  1. አዉ 2. አላዉቅም	
602	የ ሚያውቀቸው የፕሮቲን ምግብ ምንጮች ማንማን ናቸዉ [ከአንድበላይመልስየቻላል]	1= የዓሳ እና የባህርምግቦች  1. አዉ 2. አላዉቅም  2= እንቁላል፣ስጋ	



		2. ከፍራፍሬ 1. አዉ. 2. አላዉቅም	
		3. ከአንስሳትተዋጽኦ1. አዉ. 2. አላዉቅም	
608	ህናንት በቀን ውስጥ ምን ያህል ተጨማሪ ምግብ መውሰድ እንዳለባቸው ያውቃሉ?	1. አንድጊዜ 1. አዉ. 2. አላዉቅም 2. ሁለትጊዜ 3. ሶስትናከዛበልይ 1. አዉ. 2. አላዉቅም	

**ክፍል7 የምግብ ንጥረ ነገሮችን አለ መመገጠን ለማስላት የሚያገለግሉ የምግብ መጠይቆች**

ትናንት በቀን እና በሌሊት ጊዜ ስለ በሉት አንዳንድ ፈሳሾች፣ምግቦች ወይም ከፊል-ፈሳሽ ምግቦች ልጣይቅዎ እፈልጋለሁ፡፡ትናንት በቤቱም ሆነ ከቤት ውጭ ከጧቱ ጀምሮ በልተዋቸው የነበሩትን ምግቦችን በሙሉ ለማስታወስ መሞከር አለብዎት፡፡ (ካስታወሰን በኋላ በክፍል 8 የተዘረዘሩትን ዋናዋና ምግቦችን ያስታውሱ)

700. (በ24 ሰዓት ውስጥ ያለውን ህጻኑ የተመገበውን አስታውሽ)						
ምግብ የተበላበት ጊዜ	የተበላበት ወይም የተጠጣትበታ	የምግብ ወይም መጠጥኦይነት	ዝርዝር መግለጫ እና የምግብ ስያዘዴ	በጋራ ከተበላ ከስንት ሰው ጋር እንደተበላና አብረው የበሉትን ጾታና እድሜ ይጻፉ	ሊበላ የሚችል መጠን (በቤት ዕቃዎች / በፎቶ ክድ / በግምት መጠን	የምርት መለያ ስም (ለተገዛ ምግብ) ለክረምት፣ በስኩት፣ ለፓስታ፣ ለአልኮል፣ ለስላሳ መጠጦች)
ጠዋት ከቁርስ በፊት						
ቁርስ						
ከቁርስ በሁዋላ						
ከምሳ በፊት						
ምሳ						
ከምሳ በኋላ						
ከመክሰስ በፊት						
መክሰስ						
ከመክሰስ በኋላ						
ከእራት በፊት						
እራት						

ከአራት በኋላ					
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**በባህር ዳር ከተማ የሚገኙ የምግብ ዝርዝሮች**

<ul style="list-style-type: none"> <li>❖ <b>የብዕርና የአገዳ አህሎች</b></li> <li>✓ አምባሻ ፣ ክብ ጠፍጣፋ ዳቦ</li> <li>✓ አናባቦሮ ፣ ድርብ ኢንጀራ በመሃል ላይ በቅቤ እና በቅቤ ተሸፍኗል</li> <li>✓ አጥሚት ፣ በጣም ቀጭን የገብስ ገንፎ</li> <li>✓ አጥሚት ፣ በጣም ቀጭን የስንዴ ገንፎ</li> <li>✓ በሶ ፣ ገብስ ዱቄት በቅቤ</li> <li>✓ ብስኩት ፣ በቤት ውስጥ የተሰራ የተጠበሰ</li> <li>✓ ቦንቦሊኖ ፣ በቤት ውስጥ የተሰራ</li> <li>✓ ስኳር የያዘ ዳቦ</li> <li>✓ ዳቦ ፣ ስንዴ</li> <li>✓ ኬክ</li> <li>✓ ጨቆቢሳ ፣ የገብስ ዳቦ ቁርጥራጭ ከቅቤ ጋር ተቀላቅሏል</li> <li>✓ ጨቆቢሳ ፣ የስንዴ ዳቦ ቁርጥራጭ ከቅቤ ጋር ተቀላቅሏል</li> <li>✓ ኩኪስ</li> <li>✓ ዳቦ-ኮሎ ፣ በጣም ትንሽ መጠን የተጠበሰ</li> <li>✓ የዳቦ ሊጥ</li> <li>✓ ፈቲራ ፣ የተጠበሰ የፊሎ ሊጥ የበሰለ እንቁላል እና በማር ተሸፍኗል</li> <li>✓ ፍርፈር፣ የገብስ እንጀራ ቁርጥራጭ ከስጋ ጋር</li> <li>✓ ፍርፈር ፣ ቅቤን ከያዙ ወጥ ጋር የዳቦ ቁርጥራጭ</li> <li>✓ ፍርፈር ፣ የጤፍ እንጀራ ቁርጥራጭ ሥጋ ከያዙ ወጥ ጋር</li> <li>✓ ፍርፈር ፣ የጤፍ እንጀራ ቁርጥራጭ ቅቤ ከያዙ ወጥ ጋር</li> <li>✓ ፍርፈር ፣ የደረቀ የበሬ ሥጋ የያዘ የጤፍ እንጀራ ቁርጥራጭ</li> <li>✓ የጤፍ እንጀራ ቁርጥራጭ ከከብት ሾርባ ጋር ተቀላቅሏል ፣</li> <li>✓ የጤፍ እንጀራ ቁርጥራጭ ከአተር ዱቄት ፣ ከሸንኩርት እና ከዘይት መረቅ ጋር ተቀላቅሏል</li> <li>✓ የጤፍ እንጀራ ቁርጥራጭ ከሱፍ አበባ ሰሃን ጋር ተቀላቅሏል</li> <li>✓ እንጀራ ፣ ገብስ</li> <li>✓ እንጀራ ፣ ስንዴ</li> <li>✓ እንጀራ ፣ በቆሎ</li> <li>✓ እንጀራ ፣ ጤፍ</li> <li>✓ ኢንጄራ ፣ የዱር አጃ</li> <li>✓ ቅንጨፍ ፣ የተቀቀለ የተከተፈ ገብስ በቅቤ ያገለገለው</li> <li>✓ ቅንጨፍ ፣ የተቀቀለ የተከተፈ ስንዴ በቅቤ</li> <li>✓ ቂጣ ፣ እርሾ ያልገባ ጠፍጣፋ የገብስ እንጀራ</li> <li>✓ ቂጣ ፣ እርሾ ያልገባ ጠፍጣፋ የጤፍ እንጀራ</li> <li>✓ ቂጣ ፣ እርሾ ያልገባ ጠፍጣፋ የስንዴ ዳቦ</li> <li>✓ ቆሎ ፣ የተጠበሰ እና የተደባለቀ ገብስ ፣ ሽምብራ እና አተር</li> <li>✓ ቆሎ ፣ የተጠበሰ እና የተደባለቀ ስንዴ ፣ ሽምብራ እና የሱፍ አበባ</li>   <li>❖ <b>አትክልቶች እና ሀረጎች</b></li> <li>✓ አትክልት ፣ የተቀላቀሉ አትክልቶችና ፍራፍሬዎች</li> <li>✓ ቡላ - የሐሰት የሙዝ ገንፎ በቅቤ አገልግሏል</li> <li>✓ የኢትዮጵያ kale</li> </ul>	<ul style="list-style-type: none"> <li>❖ <b>ስኳር / ጣፋጭ</b></li> <li>✓ ስኳር</li> <li>✓ ማር</li> <li>✓ የስኳር አገዳ</li> <li>❖ <b>ስብ እና ዘይት</b></li> <li>✓ ዘይት</li> <li>✓ ቅቤ</li>   <li>❖ <b>ዉሃ</b></li> <li>✓ ዉሃ</li>   <li>❖ <b>የአልኮሆል መጠጦች</b></li> <li>✓ ጠላ ፣ የአከባቢ ቢራ</li> <li>✓ ኬሪቦ ፣</li> <li>✓ ጠጅ ፣ ስኳር ያለው ወይን</li> <li>✓ አረቂ ፣ በቤት ውስጥ የተሰራ ጠንካራ አልኮል</li> <li>✓ ቢራ፣ ኬኔቶ</li>   <li>❖ <b>እንቁላል</b></li> <li>✓ የዶሮ እንቁላል</li> <li>❖ <b>የወተት ተዋጽኦዎች</b></li> <li>✓ አጓት ፣</li> <li>✓ አረራ ፣</li> <li>✓ የቅቤ</li> <li>✓ ወተት</li> <li>✓ እርጎ</li>   <li>❖ <b>ስጋ</b></li> <li>✓ የበሬ ሥጋ በእንፋሎት ሩዝ</li> <li>✓ ዱሌት ፣ ከፊል የተጠበሰ የአካል ሥጋ (በግ እና ፍየል) በቅቤ</li> <li>✓ ቅቅል ፣ የተቀቀለ የበሬ ሥጋ</li> <li>✓ ቅቅል ፣ የተቀቀለ እንቁላል</li> <li>✓ ቅቅል ፣ የተቀቀለ ፍየል ስጋ</li> <li>✓ ቅቅል ፣ ጥሬ ወይንም የተቀቀለ የተከተፈ የበሬ ሥጋ ከፔሊ ጋር ተቀላቅሎ እና የተጣራ የቅመም ቅቤ</li> <li>✓ ምላስ ና ሰንበር ፣ የተጠበሰ</li> <li>✓ ጥሬ የበሬ ሥጋ</li> <li>✓ የተጠበሰ የበሬ ሥጋ</li> <li>✓ የተጠበሰ የፍየል ሥጋ</li> <li>✓ የተጠበሰ የበግ ሥጋ</li> <li>✓ ሾርባ ፣ የበሬ ሥጋ</li> <li>✓ ወጥ ፣ የበሬ ሥጋ ከኩሬ ጋር</li> <li>✓ ወጥ ፣ የተፈጨ የበሬ እና የእንቁላል ወጥ</li> <li>✓ ወጥ ፣ ቀይ የከብት ሥጋ ወጥ</li> <li>✓ ወጥ ፣ ቀይ የዶሮ ወጥ</li> <li>✓ ወጥ ፣ ቀይ የደረቀ የበሬ ወጥ</li> <li>✓ ወጥ ፣ ቀይ የበግ የበሰለ ወጥ</li>   <li>✓ <b>ፍራፍሬዎች</b></li> <li>✓ አቮካዶ</li> <li>✓ ሙዝ</li> <li>✓ ጭማቂ ፣</li> <li>✓ ጭማቂ ፣ አቮካዶ</li> </ul>
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<ul style="list-style-type: none"> <li>✓ የተጠበሰ ድንች</li> <li>✓ ቃሪያ ፣ አረንጓዴ በርበሬ</li> <li>✓ ቃሪያ ፣ ስንግ - አረንጓዴ በርበሬ በሽንኩርት እና በዘይት ተመቶ</li> <li>✓ ቅቅል፣ የተቀቀለ ድንች</li> </ul>	<ul style="list-style-type: none"> <li>✓ ጭማቂ ፣ ማንጎ</li> <li>✓ ማንጎ</li> <li>✓ ብርቱካናማ</li> <li>✓ ቴምር ፣ ትርንጎ ፣</li>   <li>❖ ጨው እና ቅመሞች</li> <li>✓ ጨው</li> <li>✓ አዮዲን ጨው</li> <li>✓ የወፍ ዐይን ቃሪያ</li> <li>✓ ጥቁር አዝሙድ</li> <li>✓ ካርማም</li> <li>✓ ቀረፋ</li> <li>✓ ክሎቭስ</li> </ul>
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