

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



**FOOD CONSUMPTION PATTERN, NUTRIENT INTAKE AND ASSOCIATION WITH  
DIFFERENT MATERNAL CHARACTERISTICS AMONG ANTENATAL CARE  
ATTENDING PREGNANT WOMEN IN BISHOFTU TOWN, EAST SHOA ETHIOPIA.**

**BY**

**TIZITA WONDWOSSEN DESTA (Bsc)**

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**Addis Ababa, Ethiopia.**

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**APPROVED BY THE BOARD OF EXAMINERS**

This thesis, by Tizita Wondwossen is accepted in its present form by the board of examiners as fullfilling thesis requirement for the degree of master in public health nutrition.

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## **LIST OF ABBREVIATIONS**

ANC	Antenatal Care
CP	Consumption pattern
EPHI	Ethiopian Public Health Institute
FAO	Food and Agriculture Organization
FFQ	Food Frequency Questionnaire
HC	Health Center
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
Hr	Hour
IOM	Institute of Medicine
Kcal	Kilocalorie
K.ms	Kilometers
LBW	Low Birth Weight
Mg	Milligram
MND	Micro Nutrient Deficiency
RE	Retinol equivalent
RNI	Recommended Nutrient Intake
SPSS	Statistical Package for Social Sciences
SS	Sample size
USDA	United States Department of Agriculture
WHO	World Health Organization

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## **ABSTRACT**

**Introduction:** The consumption pattern that women adhere to during pregnancy has great potential to affect the future health condition of both the mother and the fetus. Despite maternal nutritional problems continued to be public health concerns of the country, consumption pattern studies among pregnant women is limited.

**Objective:** To assess food consumption pattern, nutrient intake and association with different maternal characteristics among Ante Natal Care attending pregnant women in Bishoftu town, East Shoa, Ethiopia.

**Method:** A facility based cross sectional study was conducted to among 369 pregnant women. Dietary intake was assessed using semi quantitative food frequency questionnaire composed of 70 food items. Consumption patterns were identified using factor analysis method. Multivariate regression in age and calorie adjusted model was done to determine characteristics of participants in each pattern identified. All analysis was done using STATA version 12.1 and a P-value<0.05 was considered statistically significant.

**Result:** Four major consumption patterns were identified. Namely “varied pattern”, “Cereal, vegetable and tea based pattern”, “Cereal, meat and sweet based pattern” and “cereal, root & tuber and coffee based pattern”. Calorie, fat, vitamin A, folate, calcium intakes and zinc particularly among third trimester pregnant women were deficient. Maternal age, marital status, maternal education and occupation, husband education, socioeconomic status, and snack habit were positively correlated whereas household size, gravidity, fasting, food restriction and chronic disease were negatively correlated with the varied consumption pattern.

**Conclusion:** Cereals dominated consumption pattern of pregnant women. Three of the patterns lack variety which may have exposed participants to nutrient deficiency. Those who are young, single/ divorced, educated at lower level and with low socioeconomic status were less likely to adhere to varied (healthier) consumption pattern and had decreased calorie intake. The findings underscore the need for nutrition counseling with more emphasis to the identified risk groups.

**Key Words:** Pregnancy, consumption pattern, nutrient intake, Semi quantitative FFQ, factor analysis

# 1. INTRODUCTION

## 1.1 Background

Pregnancy is considered to be a stress test for life because it is a period where a significant change in women physical, metabolic and physiologic state occurs. This stressful condition primarily originates from the need to support growth and development of the fetus and hence, rapidly raises pregnant women's requirement to both macro and micronutrients to fulfill this requirement (1). As a result, any woman, who intended to become pregnant, needs to maintain adequate and balanced diet before getting pregnant to prevent maternal depletion. Otherwise women will be subjected to under nutrition and adverse pregnancy outcomes (2). Even after getting pregnant, the consumption pattern that women adhere to has great potential to affect future health condition of both the mother and the fetus (3).

Future consequences of poor nutrient intake during pregnancy to the growing fetus were explained under Barker's theory of fetal origins of adult disease. The theory stated that, exposure to inadequate nutrients inside the uterus forces fetus to adapt to limited nutrients that will result in changes in metabolic state. Therefore, such children will be prone to develop chronic diseases like diabetes, hypertension and heart disease later in life when exposed to a circumstance different from this scarcity. Even the normal recommended level will be excess to these children (4). Not only future consequences but also short term outcomes like low birth weight, intra uterine growth retardation, still birth, prematurity, maternal and prenatal mortality are the results of poor consumption pattern during pregnancy (3). World health organization (WHO) in 2011 reported that, more than 13 million neonates join this world being low birth weight (LBW) per year globally (5). As seen in most developing countries, in Ethiopia too prevalence of LBW is high and has reached 11% which is attributed to poor maternal nutrition (6).

Inadequate food intake is not the only problem to impose health risks during pregnancy, but over consumption also will have its own consequences. A pregnant woman with excessive weight gain following over consumption will have increased risk of operative delivery, difficulty of labour and giving birth to big baby. Such women are also highly exposed to hypertensive disorders during pregnancy and gestational diabetes mellitus (7). Hence, pregnant women should give especial attention to what they consume in terms of amount, frequency and diversity. (8).

A healthy diet should provide pregnant woman with adequate energy along with essential multiple micronutrients particularly iron, folate, vitamin A and B<sub>12</sub> to meet the need of growing fetus (9). Food and Agricultural Organization (FAO)/WHO 2004 joint report recommends daily intake of 800 µgRE of vitamin A, 1.4 mg of vitamin B<sub>1</sub> and B<sub>2</sub> each, 55mg of vitamin C, 1200 mg of calcium, 600 mg of folate and 11 mg, 14 mg, 20 mg of zinc considering low bioavailability during first, second and third trimesters of pregnancy respectively per day for better pregnancy outcome (10). Accordingly, Institute of medicine (IOM) in 2002 recommends daily intake of 175 mg carbohydrate, 71 mg protein and 27 mg iron. IOM also recommends no need for extra energy during first trimester of pregnancy, extra 340 kcal and 452 kcal during second and third trimester of pregnancy respectively and 20- 35% of total energy intake to be derived from fat intake (11). Low micronutrient intake will result in prenatal mortality, neural tube defect, preeclampsia and maternal mortality (12).

Studies illustrated that, food consumption pattern varies greatly from place to place and tend to be affected by multiple factors like socio-demographic, economic, geographic and other factors like traditional belief, food craving, aversion and pica practice (13-18).

## **1.2 Statement of the problem**

Poor dietary pattern during pregnancy is among the major causes of maternal malnutrition (19). Maternal malnutrition in turn is the leading cause of maternal mortality and adverse birth outcome and it is still a big challenge in most developing countries (20). Malnutrition among women and children is the basic cause for 3.5 million deaths worldwide (21). It is also responsible for 800,000 neonatal deaths per year (22). In Ethiopia, much effort has been made by the government through expanding Ante Natal Care (ANC), delivering the service free of charge and increasing number of trained health professionals and health extension workers. But maternal malnutrition still continued to be major public health problem in the country (23). The result from trend analysis of the previous three Ethiopian Demographic and Health Surveys (EDHS) indicated that maternal malnutrition is still prevalent in the country with some reduction in the trend though not satisfactory (24).

As reported by WHO, inadequate nutrient intake particularly micronutrient deficiency (MND) is becoming a global problem and nearly one third of the population most living in developing countries are affected. MND currently is responsible for 7.3% of global disease burden (25). MND is a severe public health concern in our country. Particularly anemia remained to be a challenge at national level (23). Prevalence of anemia among pregnant women decreased from 30.6% to 22% in the last decade but which is still a high figure. Limited studies conducted to assess nutrient adequacy among pregnant women also indicated inadequate intake for most micronutrients particularly vitamin A, folate and zinc (26, 27).

Studies also have shown that, most health care providers in developing countries are not aware of food consumption habit of their clients. They also have difficulty in identifying risk groups to which nutrition counseling should be targeted (16, 28). To either design new strategy or make modification to existing programs, information about pregnant women's food consumption habit and identifying most deficient nutrients is very essential otherwise MND will continue to be major public health challenge with its great complications (8, 23, 29). Such information is little in the country as well as in the proposed study site particularly among pregnant women and therefore this study assessed the food consumption pattern and nutrient intake of pregnant women attending ANC in health facilities of Bishoftu town.

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

This study finding will;

- Inform the national nutrition program II to target pregnant women nutrition and plan for nutrition interventions targeting pregnant women like changing prenatal supplementation of iron with folic acid to multiple micronutrient tablets; like lipid based energy density nutrient supplement for pregnant women (pulmpy supp).
- Serve as an Input to the ministry of health and its stakeholders to evaluate existing nutrition program for pregnant women and make the appropriate decision for remedial actions on dietary habit of pregnant women like Behavioural Communication interventions to promote dietary diversification & modification.
- Also help health professionals and nutritionists to understand the consumption habit of pregnant women and act accordingly and target their counseling on commonly consumed food items.
- Help policy makers to decide on which factors to intervene more to correct dietary habit of pregnant women.
- In addition serve as an input for other researchers interested to do their study in a similar area.

## **2. LITERATURE REVIEW**

Food Consumption pattern refers to both the type and amount of food that is eaten or drunk during specified time period whereas nutrient intake refers to the intake of both macro and micronutrients that are essential to the normal functioning of the body. Various literatures have been reviewed to look over food consumption pattern and nutrient intake of pregnant women across different parts of the world and presented in subsequent sections.

### **2.1 Assessing food consumption pattern of pregnant women**

Dietary pattern among pregnant women is widely studied in the western world but very much lacking behind in developing countries. A study from south west of England identified 5 major consumption patterns among pregnant women using factor analysis. Only one pattern labeled as “Health conscious” was regarded as healthier by the investigators as it was highly loaded with food groups like cereal, fruit, salad, fish, egg, pulses and meat. Otherwise remaining patterns were either restricted to limited food group or highly loaded with fat processed food or sweets (13). Similarly semiquantitative Food Frequency Questionnaire (FFQ) using factor analysis identified seven distinct patterns among pregnant women of Finland. Only the first pattern in which investigators named as “healthy pattern” was characterized by consumption of food items from variety of food groups otherwise the rest of the patterns were characterized by consumption from limited food groups and tend to be less healthy (14).

Factor analysis identified 2 major dietary patterns among pregnant women of Rio de Janeiro, Brazil. The pattern they labeled healthy had higher score for essential food groups’ as recommended by WHO. Higher loading was given to fruits, vegetables, fish, milk and dairy products and negative loading to coffee and alcohol. The second pattern had mixed characteristic of healthier diet with sweet and fatty food (15). Cluster analysis using semi quantitative FFQ was done to identify 3 major consumption patterns in southern Brazil. Similarly, the pattern they labeled “varied” considering being healthier was highly loaded with comparable food groups as above. The “Restricted” pattern was with higher score for milk, yoghurt and sweets like cookies, chocolate, ice-cream, chips and soft drinks. The third “Traditional” pattern was limited to few healthier food groups (16). A longitudinal study using semi quantitative FFQ with factor analysis identified 4 patterns of consumption among pregnant of south eastern Brazil. Similarly the “Prudent pattern” was highly loaded with healthier food

items comparable to the above. Two patterns labeled as “Western and Snack” patterns were highly loaded with sweets and fatty foods. The third pattern labeled as “Traditional” was characterized by high intake of limited food groups like cereal, vegetables, fat and sugar (17). An observational prospective study using 24hr dietary recall in Peru presented with a much better healthier pattern except for their poor practice of not eating snack. Their diet was balanced with habitual consumption of cereals, dairy products, fruits and vegetables (29).

Studies from Asia showed consumption pattern which is not consistent with the above recommendation. Overall, 4 dietary patterns were identified using factor analysis in a sample of pregnant women New Zealand. Investigators considered “health conscious and fusion” patterns as healthier and the remaining two labeled as “junk and traditional” as less healthier patterns. The first two patterns in common gave more factors loading to food groups like cereal, fruit, legume, fish and high fiber bread. Whereas the less healthy patterns were in common loaded with processed meat and high sugar intake (18). A cross sectional study from Deyang city of china assessed dietary intake using 24 hr dietary recall and found that overall consumption of rice was high by the entire pregnant women on daily basis. Their habitual intake indicated the characteristic of healthy pattern but amount of intake was not adequate to fulfill their requirement (30). Similarly consumption for essential food groups like meat, fruit, vegetables and milk was very limited among sample pregnant women of southern Thailand (31). Similar pattern was observed among pregnant women of Iran. None of participants consumed meat. Intake of fruits, cereals, dairy products and sugar intake was higher for urban participants (32). Another cross sectional study from Gujarat, India assessed dietary pattern of pregnant women and resulted in a good consumption pattern in terms of variety but still intake was not adequate. Green leafy vegetables, milk, fruit and pulses were usually consumed. But meat consumption was rare (33). A study from urban slums area of Delhi also showed that cereals, vegetables, milk, fats and sugar were commonly consumed on daily basis. But mean intake of these food groups was below the recommended level (34).

Findings from limited studies in different parts of Africa were in agreement with the above studies and indicated the occurrence of problems with dietary intake of pregnant women. Dietary pattern of ANC attending pregnant women of Nigeria was assessed using 24 hr dietary recall and resulted in good sources of energy, fruits, vegetables, and fat and oil were highly consumed on

daily basis but intake for meat and fish was found to be moderate (35).Majority of participants from a study in Accra, Ghana practiced a habit of eating snack and increased their meal frequency once they become pregnant which can be considered as good dietary habit but essential food items like meat, fish, egg, milk, vegetables and fruits were not commonly consumed (36).

Unhealthy consumption pattern predominate dietary habit of pregnant women participating in a cross sectional study using 24hr recall in Kenya. Roasted food items with high fat content and sweets were highly consumed. As a result, their intake was poor in diversity (37). In our country a cross sectional study from Shashemene district resulted in only 33.2% of participants altered their dietary habit during pregnancy compared to pre pregnancy period (38). Another institution based cross sectional study from Guto Gida woreda of east wollega zone of Ethiopia showed that; only 33.9% of respondents were found to have good dietary practice and only 13.6% of them had meal frequency as recommended by WHO (39).

## **2.2 Assessing nutrient intake of pregnant women**

Dietary intake of sample pregnant women from Peru was reviewed to be healthier with adequate intake of energy and macronutrients but participants were still prone to some micronutrient deficiencies particularly iron, zinc, calcium and folate (29).Micronutrient intake was still below the Recommended Nutrient Intake (RNI) for pregnant women of Deyang city of china. And fat was found to be major source of energy to them (30).Majority of pregnant women who participated in a study conducted in western China had lower intake for energy, iron, zinc, vitamin B<sub>12</sub> and folate (40). Pregnant women of southern Thailand too were victims of most nutrients deficiencies mainly energy, protein, vitamins A, C, B<sub>1</sub>, B<sub>12</sub>, calcium and iron (31). Nutrient intake for Iran women was better in which intake for energy, protein, vitamins B<sub>1</sub> and B<sub>12</sub> were adequate for all participants but still intake of folate, vitamin A, iron, calcium, zinc and other micronutrients were found to insufficient (32). Even if food consumption pattern was good, only 29% and 19.3% of participants of Gujarat of India took adequate calorie and protein in their daily diet, respectively (33).Another study from slums area of Delhi showed that, nearly 36% of pregnant women, energy intake was inadequate to meet their requirement. Not only energy but also protein and most micronutrients like iron, calcium, zinc and other vitamins were found to be inadequate (34). A study conducted to assess nutrient adequacy of foods eaten by pregnant

women at Nigeria resulted in inadequate and below the standard intake for most nutrients including energy and most micronutrients like calcium, iron, vitamins A, E, C and folate (41). A study from Ghana found that intake for energy and most micronutrients mainly vitamin B<sub>12</sub>, folate, iron and zinc were below RNI except for protein and vitamin A (36).

A study from Kenya some micronutrients in particular calcium and zinc intakes were lower whereas others like energy and fiber were found to be high (37). A study from Tanzania reported macronutrient deficiency in the diet of pregnant women mainly energy and protein (42). A cross sectional study from our country Wondo Genet district, South Nations Nationalities and Peoples Republic State documented energy intake of the study participants during third trimester of pregnancy to be lower than the recommendation to support the increased demand of the women. In addition, protein and micronutrients mainly vitamin A intake was below the RNI (43).

### **2.3 Factors affecting food consumption pattern of pregnant women**

Socio-demographic factors like age, education, socioeconomic status along with other factors like traditional belief/food restriction, craving, aversion and pica practice were found to be significant factors to affect food consumption pattern and nutrient intake of pregnant women (13-18, 36).

#### **Socio demographic, economic and obstetric factors**

##### **Age**

Most consumption pattern studies found positive association between maternal age and healthier dietary pattern. As maternal age increases, the tendency to adhere to healthier diet also increases. Younger participants were found to choose more of western diet or local diet limited in variety (13, 14, 16-18, 35, 42). In contrast, cross sectional study from Shashemene district resulted in a negative association. As maternal age increases, habit of pregnant women to choose for healthy, balanced and diverse diet was low (38).

##### **Marital status**

Marital status is the other factor to affect consumption pattern of pregnant women. Those who were married/ living with a partner showed characteristics of healthier pattern compared to those

who were single (16, 17). In contrast, those who were married adhered to less healthier diet in a study conducted in Rio de Janeiro, Brazil (15).

### **Maternal education**

Maternal education is the most significant risk factor to influence consumption pattern of pregnant women. Most studies found significant positive association between maternal education and dietary intake. Pregnant women with higher maternal education tend to adhere to more healthier dietary pattern. (3,13-18, 31, 33-36, 38, 39, 42).

### **Maternal occupation**

Most studies found positive association between maternal work status and dietary intake. Pregnant women engaged with income generating activities tend to prefer healthier dietary pattern whereas unemployed women restricted their intake to either sweets or limited variety of food (13, 16, 17). In contrast employed pregnant women were restricted from taking snacks and skipped one of their regular meals due to work overload (3, 41).

### **Household size**

This was the other factor to affect consumption pattern of pregnant women. As the size of family of study participants become extended, the tendency to consume healthier diet decreases. As a result, most women are forced to consume monotonous diet that predisposed them to nutrient inadequacy (33, 36, 39, 43).

### **Socioeconomic Status**

Low socioeconomic status of participants was the most significant factor to affect consumption pattern of pregnant women. Those women with low socioeconomic status are found to have overall poor consumption pattern and inadequate intake for most nutrients (13, 15-17, 31, 33, 35, 36, 40, 42).

## **Gravidity**

This is also identified to influence dietary choices of pregnant women. As number of pregnancies increased, maternal choice for healthy and more diverse diet decreases (13-15, 17, 33, 39, 42, 43).

## **Dietary habit factors**

### **Food restriction/taboo**

Food restriction/ taboos that originated from the community and are transferred from generation to generation are also other major factors to force pregnant women avoid one or more food items. Repeatedly mentioned reasons to restrict pregnant women from consumption of certain food items are with no proven scientific background (30, 31, 35-37).

### **Food craving and aversion**

Food craving and aversion play significant role in affecting dietary intake of pregnant women are also reported by some studies. Pregnant women who avoided certain essential food items or craved for unhealthy food items are exposed to limited dietary intake. Limited intake may predispose them to nutrient deficiency (30, 36, 44, 45).

In summary, the diet of women in most developing countries is mostly poor in quality which is either cereal or plant based, so makes them to be vulnerable to MND (28, 46). Consumption patterns are either healthier or mixed (nature of healthy diet with western diet) or traditional with limited intake of fewer local diets. Maternal age, education, employment and better socioeconomic status are significantly associated with healthier dietary pattern (13-18). Intake for most nutrients particularly energy, vitamins and minerals are deficient in most studies (13, 29-34, 36, 37, 40-43).

### **3. OBJECTIVE**

#### **3.1 General Objective**

To assess food consumption pattern, nutrient intake and association with different maternal characteristics among Ante Natal Care attending pregnant women in Bishoftu town, East Shoa, Ethiopia.

#### **3.2 Specific Objective**

- To assess food consumption pattern of pregnant women aged 15-49 years attending ANC at health facilities of Bishoftu town.
- To assess nutrient intake of pregnant women aged 15-49 years attending ANC at health facilities of Bishoftu town.
- To determine association between different maternal characteristics and identified consumption patterns of ANC attending pregnant women of Bishoftu town.

## **4. METHODOLOGY**

### **4.1 study area and period**

#### **Study area**

Bishoftu is one of the towns and separate woreda of Ethiopia which is found in the East Shoa zone of Oromia region with an elevation of 1,920 meters above sea level. The town is 47.9k.ms southeast of the capital city, Addis Ababa. According to the 2015 annual report of Bishoftu town health office, currently the town has a total population of 176,743 with male population of 90,846 and female were 85,897. Among those females that reached reproductive age group, approximately 6,133 of them were pregnant. The town has one public hospital, three health centers and 14 private clinics. Personal communication with the town health office and city administration officials revealed that, all the public health institutions and one private clinic are providing routine/regular ANC to their clients. Commonly cultivated and produced food items in this area include, teff especially “*Ada’a magna teff*” followed by lentils, chickpeas and poultry. The town is famous for being a resort town and has five lakes which are good attraction for tourists and rapidly growing from time to time. Bishoftu town was purposively selected for this study because the principal investigator had prior work experience at health center so has the chance to observe counseling service at antenatal care units on different occasions and know the town well.

#### **Study period**

This study was conducted from February to March 2016.

### **4.2 Study design**

Health facility based cross sectional study.

### **4.3 Source population**

All pregnant women of the town aged 15-49 years that attend ANC units.

#### **Study population**

Pregnant women who are randomly selected from ANC unit of all health facilities in the town during the data collection period.

### Inclusion and exclusion criteria

All pregnant women residing in the town of Bishoftu, aged 15-49 years and attending ANC in public and private health facilities at the time of data collection were eligible. Those pregnant who were acutely sick and those who refused to sign on the consent form were excluded.

### 4.4 Sample Size determination

Inorder to maximize the sample size for this study, prevalence of different attributes like poor dietary practice(39), anemia(6), vitamin A(26), zinc(27), craving(44), aversion(45) were used and samples were calculated for each specific objective as seen in the table below.

Table 1 Prevalences used to decide sample size of pregnant women to be part of this study.

	<b>Objective 1</b>	<b>Objective 2</b>			<b>Objective 3</b>	
Attribute	Poor dietary practice	Anemia	Zinc	Vitamin A	Craving	Aversion
Prevalence	66%	22%	76%	27%	71%	68%
Sample Size (SS)	<b>345</b>	264	264	302	316	339

The figure in bold was taken as the final sample size since it is the largest of all.

Using the following formula, the sample size was determined:

$$n = \frac{z^2 pq}{d^2} \text{ where;}$$

**n**= the required sample size.

**Z** = the standard normal deviate at 95% confidence level (1.96).

**p** = the prevalence of the attribute (66%).

**q** = 1-p (0.34)

**d** = the level of statistical significance (precision) (0.05).

Computing these into the formula gave: 
$$n = \frac{(1.96)^2(0.66)(0.34)}{(0.05)^2} = 345$$

Assuming a possibility of 10% non – response rate, ten percent of the calculated sample size (34.5 participants) was added to it and the **final sample size** inflated to **380**.

#### 4.5 Sampling procedure

After stratifying the facilities by ownership, number of ANC attendants during the last three months before the data collection was registered and average was calculated. The calculated sample size was then allocated proportionally to client flow to each facility using the formula as depicted in Figure 1. The first respondent was selected randomly thereafter systematic random sampling technique was applied. Every two eligible pregnant women to arrive ANC units were interviewed until the intended sample size for each health facility was obtained.

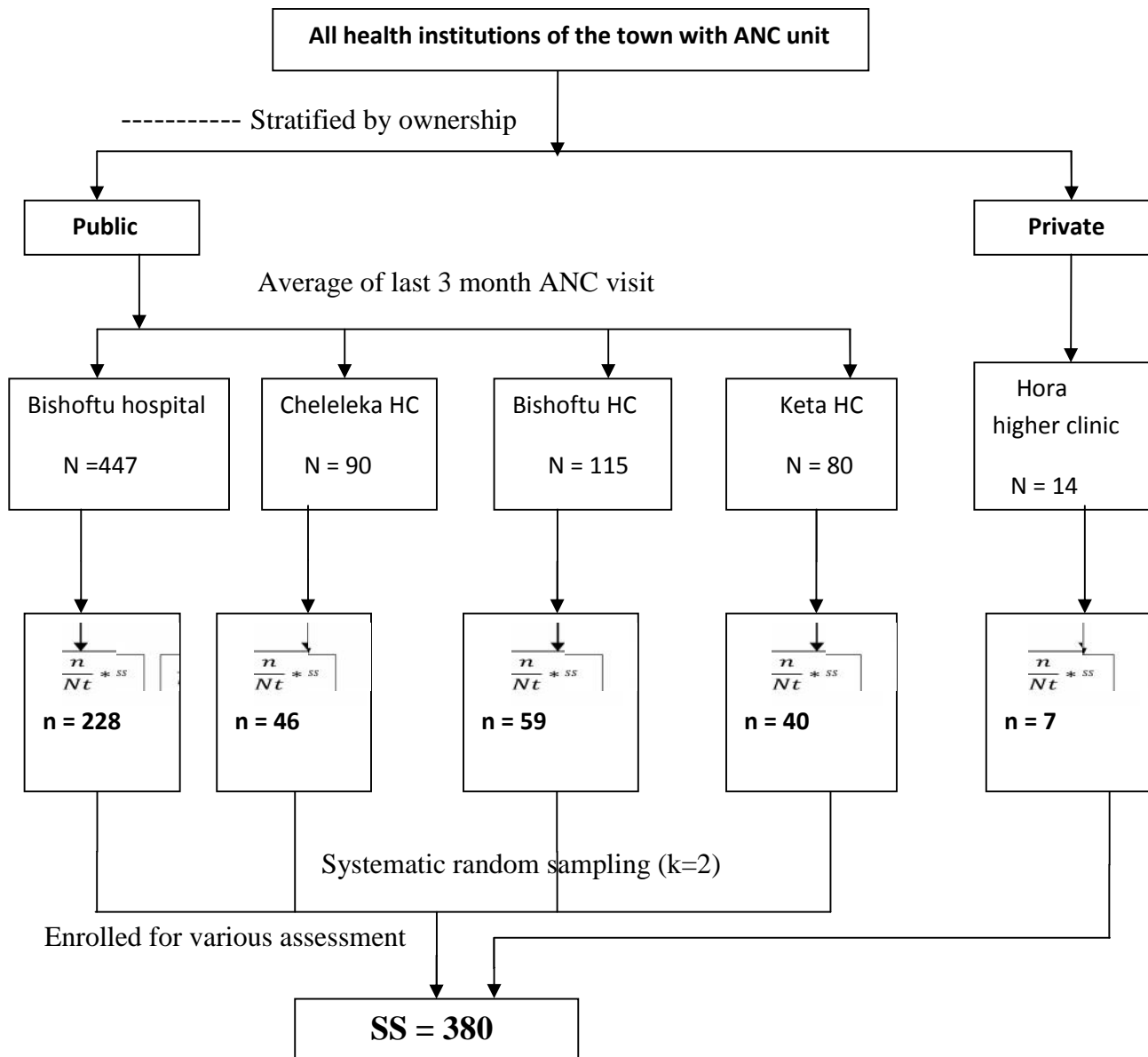


Figure 1 diagrammatic representation of sampling procedure for this study.

Where: n = sample size to each facility.

Nt = total pregnant women from all facilities.

SS = final sample size of the study.

## **4.6 Data collection technique and tools**

### **Tools**

A questionnaire with three different sections was prepared. The first section addressed socio demographic and economic information, the second section assessed dietary habit of pregnant women while the third section was concerned with usual consumption pattern for selected food items a month before interview was conducted. This was done through using semi quantitative FFQ. The format of Willets FFQ (47) was used as a base to design Semi quantitative FFQ used in this study and was further rearranged to include food items consumed in the study area. Preliminary survey using 24 hr dietary recall and market inspection was done first by the principal investigator to identify commonly consumed food items and used household utensils in the area. The survey was done on randomly selected 25 pregnant women (slightly >5% of total participants). As a result, five women from each health center and ten from the hospital were interviewed. Personal experience of the principal investigator along with the result obtained from preliminary survey helped to design semi quantitative FFQ used in this study. Then identified commonly used utensils were purchased by principal investigator and taken to Ethiopian public health institute (EPHI) for standardization. Designed Semi quantitative FFQ was composed of 9 different food groups with a total of 70 food items and a space for frequency of consumption and estimated usual portion size. Assigned Food groups were derived from FAO dietary guideline (48) and rearranged based on the type of food consumed in the area. The frequency of food intake was assessed on monthly, weekly and daily basis having nine possible responses ranging from “Never to more than three times in a day”. Majority of the food items were cooked and measured by the principal investigator at EPHI laboratory. Very few items namely “mitin shiro, difin misir and duba wot” were not cooked rather measurements of foods with similar composition like” shiro, misir kik and duba wot” were taken. Food items were limited to 2 to 3 commonly consumed portions. For countable food items like fruits, egg, potato, sweet potato and chilly medium size of each was taken as standardized portion and measured. EK01 digital weight scale was used to quantify each portion size. Average of three measurements was taken as a final

portion for a specific food item. Each quantified portion was assigned a code and photographs were taken by the principal investigator to facilitate the interview and recall process.

### **Data collectors**

A total of five grade 12 completed females from “mom to mom clinic” of each health facility and one diploma clinical nurse currently not working were selected and conducted the interview. All of them were fluent in both Amharic and Afaan Oromo languages and four of them were with previous experience of data collection.

### **Training**

A routine four days training was given by the principal investigator at Bishoftu hospital to the selected data collectors. The training focused on explaining aim of the study, familiarization with the questionnaire and photographs for portion size estimation, how to receive informed consent, how to conduct the interview and how to ethically approach participants. The Training sessions had lecture, classroom discussion and role play.

### **Data collection procedure**

Data were collected on daily basis from Monday to Friday because routine ANC service was not given during weekends. Questionnaire was delivered to respondents through face to face interview after they exit from ANC unit. For the 70 food items, respondents were asked to recall and choose how often they were currently consuming each food and beverage from the provided list of options. They were also asked to indicate which utensils they commonly use from photographic atlas and amount of portion they usually consume on average at a single meal.

#### 4.7 Study variables

##### Dependent variable:

- food consumption pattern and nutrient intake

##### Independent variables:

- **Socio demographic, economic and obstetric characters** - age, marital status, husband education, maternal education, maternal occupation, family size, socio economic status, gravidity, month of pregnancy (trimester).
- **Dietary habit characters** - Snack habit, fasting, food restriction (cultural), aversion and craving.
- **Maternal health status and service utilization characters** – chronic diseases (diabetes, hypertension, TB, HIV/AIDS and cancer), number of ANC visit and nutrition counselling.

#### 4.8 operational definitions

**Healthier consumption pattern** = consumption pattern with higher factor loading for food items strongly recommended by WHO to be consumed by pregnant women particularly all the five major food groups (vegetables, fruit, meat, milk (dairy) and egg).

**Less healthy consumption pattern** = consumption pattern with higher loading for food items from limited (one/two) food groups.

**Sufficient nutrient intake** = if mean/ median intake value of a particular nutrient is equivalent to or more than its RNI.

**Deficient nutrient intake** = if mean/median intake value of a particular nutrient is less than its RNI.

**Older women** = pregnant women whose age is above the mean age for this study.

**Currently married** = pregnant women living together with their partner/spouses (except those who were either single or divorced).

**Worker** = pregnant women who were engaged with income generating activities (except housewives and students).

**Higher education** = those educated up to secondary and higher level of education ( grade 10).

**Small household size** = if total number of households residing in a particular house is below the mean household size for this study.

**High socio economic status** = refers to upper two quintiles of wealth index (rich and richest)

**Food aversion** = strong dislike to certain food items.

**Food craving** = strong desire to consume specific food items.

**Mom to mom**= a support group who are HIV positive women and employed at health facilities to provide counseling service to those newly diagnosed and those already on anti retroviral therapy (ART).

#### **4.9 Data processing and analysis**

##### **Creating nutrient database**

Nutrient values per 100 gram of each food item in the list were primarily obtained from the Ethiopian food composition tables (49, 50). Nutrient content of certain food items that were not part of the Ethiopian food composition tables particularly folate and zinc, were supplemented by borrowing from Tanzanian food composition table (51). For values that were further missing from Tanzanian food composition table, the USDA SR24 dataset was used. Then these values were fed to ESHA FOOD PROCESSOR software version 8.1 to create nutrient database.

##### **Converting consumed portions into grams and calculating nutrient intakes**

Reported intake of each food item was converted into gram manually by multiplying consumed portion with frequency of consumption. Multiplied portion size was further converted into daily intake (16). This was done by dividing calculated portion size by 28, 7 and 1 if intake was on monthly, weekly or daily basis respectively. Then calculated daily intakes in gram were fed to the created nutrient data base. Hence, the software calculated nutrient values for consumed portions of 70 food items for every individual. Result was copied to excel and exported to STATA. Nutrients analyzed in this specific study were macronutrients (Energy, protein, fat and carbohydrate) and micronutrients (calcium, iron, vitamin A, C, B<sub>1</sub>, B<sub>2</sub>, folate and zinc).Obtained

values were compared with the recommended nutrient intake for pregnant women by WHO/FAO joint report 2004 and IOM 2002 (10,11).

### **Descriptive statistics**

The collected Data from other sections of the questionnaire and qualitative portion of semi quantitative FFQ were coded and entered into Epi info version 7.1 and exported to STATA 12.1 software where further cleaning and all statistical analysis was done. Descriptive statistics using frequency, mean, standard deviation was calculated for sociodemographic, economic, obstetric and dietary habit characteristics of respondents. In addition, once distribution of nutrient intake was checked for normality using histogram, mean intake for normally distributed and median intake for skewed nutrients was calculated.

### **Factor analysis**

Factor analysis was done to identify food consumption pattern of study subjects. Now days, factor analysis had been widely used in dietary surveys and considered as a good method to identify consumption pattern (52). Eligibility of the food list to do factor analysis was checked by Cronbach's alpha criteria that gave a value of 0.81 which was in the acceptable range (53). All food items in the list were considered for analysis and two items namely "Guava and stewed pumpkin" were dropped because of zero variance and 40 different factors were identified. Then Kaiser Criterion was used in which only those factors with Eigenvalue  $>1$  were taken into consideration (52). This criterion further reduced the factors into 9. Among the 9, those factors with factor loading  $>0.3$  (14, 16, 18, 20) were taken as final factors to best describe consumption pattern of participants. Finally identified 6 factors were each classified into tercile groups (54) named T1= low, T2= intermediate and T3= high consumers for each pattern.

### **Regression analysis**

Linear regression using Student's t-test for continuous and logistic regression using chi-squared test for categorical variables was done to look for association between independent and outcome variable (third tercile of identified consumption patterns). All factors with p-value  $<0.2$  in any of identified patterns were then fit into multivariate model adjusted for age and total calorie intake for further analysis (15). A p-value  $< 0.05$  was considered statistically significant. Those

variables with significant values were compared with reference value (mean/median/frequency of participants) if they were continuous variables and/or with those having lower score (first tercile) for that particular consumption pattern if they were categorical variables for interpretation purpose.

#### **4.10 Data quality management**

The formulated English version questionnaire was translated by two different people at the same time but in a different place to both Afaan Oromo and Amharic and back translated to English to look for its consistency. Commonly used household utensils were standardized to different portion sizes and coloured photographs were taken to help respondents easily estimate portions they usually consume and to facilitate the recall process. During standardization, single portion size was derived by taking the average of 3 consecutive measurements to reduce measurement error and approximate portion size to the actual consumption of respondents as much as possible. Digital weight scale was calibrated after measuring different portions of a single food items and before proceeding to the next. Data collectors fluent in the local language and with previous experience of data collection were selected. Training was given to data collectors. The questionnaire was tested on 5% of the total sample size on randomly selected pregnant women prior to its administration to the main study. Pretest was practiced by trained data collectors under direct supervision of principal investigator at ANC unit of health center located at Dukem town which is only 5k.ms away from the town of Bishoftu. The questionnaire was checked for easy understanding, agreement of standardized portion sizes with actual consumption of participants and finally correction for wordings, skip patterns and rearrangement of sentences was made. Survey was supervised by a supervisor and principal investigator. All completed questionnaires were checked for completeness and consistency on daily basis. Data entry and cleaning for any missing value and outliers was done by the principal investigator.

#### **4.11 Ethical considerations**

Ethical clearance was obtained from Research and Ethics committee of Addis Ababa University before conduction of this study. Then, permission/support letter was received from oromia regional health bureau and delivered to Bishoftu town health office and respective health facilities. The purpose of the study was discussed with higher officials and health professionals working in each ANC unit. Written Consent was obtained from all participants by either signing or put their finger print with an ink once they agreed to be part of this study. Interview was conducted in a private room after respondents finished their routine ANC services. Participation in the study was completely voluntary and they were assured that there will be no harm (risk) or mistreatment for their refusal. Respondents were identified by the identity number assigned to their questionnaire; rather than mentioning their names. The respondents were also assured that information will remain confidential and will be used for the purpose of this study only. The benefit of undertaking this study was also clearly described to them and received at spot counseling.

#### **4.12 Dissemination and utilization of results**

The study finding will be presented to school of public health, collage of health sciences of Addis Ababa University as partial fulfillment. Secondly, the result will be communicated through meeting to all health facilities where the study was conducted. Attempt will be made to publish the findings in reputable journals.

## 5. RESULT

### 5.1. Socio demographic, economic and obstetric characteristics

Of the total 380 pregnant women, only 369 of them were analyzed making 97% response rate. Eleven women were excluded because one refused to be part of the study and the remaining ten discontinued the interview before completion. Table 2 shows socio demographic, economic and obstetric characteristics of respondents. The mean age of the participants was 25.97 ranging from 17 to 38 years. Majority 262(71%) were Orthodox Christian followers where as the rest 71(19.2%) were Protestant and others 36(9.8%) were either Catholic or Muslim. Regarding to their ethnicity, 208 (59.1%) were Oromo followed by Amhara 103(27.9%) and others 48(13%) were Guraghe, Tigre, and wolayita. Nearly half 182(49.3%) were educated upto the level of grade 10 and above. Concerning to their occupation, 166(45%) of them were currently engaged with different income generating activities. Almost all 349(94.6%) were currently married. Among those who were married, 246(70.5%) of their spouses were educated at the level of grade 10 and above. The mean household size in this study was found to be  $2.73 \pm 1.04$  ranging from 1 to 9. A relatively high number 88 (23.9%) of individuals were classified to the lowest wealth quintile category. The current pregnancy for 195 (52.8%) of them was for the first time and 191(51.9 %) of them were in their third trimester, median month of current pregnancy being 7[5, 8] months. For multigravida women, the average duration of birth spacing was  $5.16 \pm 3.0$  ranging from 1 to 17 years.

Table 2 Socio demographic, economic and obstetric characteristics of ANC attending pregnant women of Bishoftu town, 2016. (n=369).

Characteristics	Frequency (n)	Percentage (%)
<b>Age of respondents</b>		
15-24 yrs	151	40.9
25-34 yrs	203	55.0
35 yrs	15	4.1
Mean (SD)*	25.97 ± 4.38	
<b>Religion</b>		
Orthodox	262	71.0
Protestant	71	19.2
Other	36	9.8
<b>Ethnicity</b>		
Oromo	208	59.1
Amhara	103	27.9
Other	48	13.0
<b>Maternal education</b>		
No education	35	9.5
Read and write	23	6.2
Primary	129	35.0
Secondary	108	29.3
Higher (Collage and above)	74	20.0
<b>Maternal occupation</b>		
Currently not working	203	55.0
Currently working	166	45.0
<b>Marital status</b>		
Married	349	94.6
Single	15	4.0
Divorced	5	1.4
<b>Husband education</b>		
No education	16	4.3
Read and write	8	2.2
Primary	79	21.4
Secondary	132	35.8
Higher (Collage and above)	114	30.9
<b>Household size*</b>		
1-4	188	50.9
5	181	49.1
Median household size	2[2,3]	
<b>Socio economic status</b>		
Poorest	88	23.9
Poor	60	16.3
Middle	74	20.0

Rich	74	20.0
Richest	73	19.8
<b>Gravidity*</b>		
Primi gravida	195	52.8
Multi gravida	172	46.6
<b>Trimester</b>		
First trimester	36	9.8
Second trimester	141	38.3
Third trimester	191	51.9

\* Mean  $\pm$  SD and median value is also presented for continuous variables. ANC= Ante Natal Care

## 5.2 Maternal dietary habit characteristics

Table 3 summarizes dietary habit characteristics of participants in this study. Before pregnancy, majority 308(83.5%) of respondents consumed three meals within a day and only 39(10.6%) of them consumed four times and above. This condition had shown improvement at the time of pregnancy. After getting pregnant, 173(46.9%) of them consumed three meal within a day and 174(47.1%) of them consumed four times and above. Breakfast-lunch-dinner was the habitual meal pattern within a day for 175(47.4%) of respondents. Only half of the pregnant women 189(51.2%) had habit of eating snack regularly and afternoon snack was a common experience for 113(30.6%) of participants. Nearly one third 120(32.7%) of the respondents had habit of skipping one or more of their regular meal within a day. One of the major reasons mentioned for skipping meal were because, 48(40%) were busy at work so they forget to eat. Majority 275(74.5%) do not fast while 92(24.9%) had habit of fasting during current pregnancy.

Less than half (41.5%) of them avoided one or more of food items during their pregnancy. Coffee was commonly averted item by 31(8.4%) of the participants, 17(4.6%) of them averted egg, 17(4.6%) meat, 14(3.8%) banana, 11(2.9%) milk, 10(2.7%) porridge, 10(2.7%) “*Shiro wot*”, 7(1.9%) sesame seed, 7(1.9%) chilli, 4(1.1%) bread and 25(6.8%) of them other vegetables. Personal dislike was the major reason for 109(29.5%) of the participants to avoid one or more of mentioned food items. Some 36(9.8%) of them disliked the smell/taste of food.

Respondants also reported reasons that restricted them from consumption of certain food items. Particularly banana and potato are assumed to make baby big & labour difficult by 14(3.8%), yoghurt, potato and porridge are assumed to be plastered on fetal head & body by 11(2.9%), items like sesame seed and coca cola are assumed to bring abortion by 11(2.9%), and particularly chilli is believed to bring fetal hair loss by 6(1.6%) of respondents and one participant was medically restricted (0.3%) from consumption of milk and milk products.

Less than half (42.3%) participants craved for one or more of food items. Commonly craved items include meat 55(14.9%), vegetables 25(6.8%), fruit 15(4.1%), fish 10(2.7%), milk 6(1.6%) and other items by 45(12.2%) of them. Higher number 67(18.2%) do not know their reason for craving. Among those who practiced food craving, 14(3.8%) did not eat the food they craved because 12(3.2%) of them could not afford the food they craved.

Table 3 Dietary habit characteristics of ANC attending pregnant women of Bishoftu town, 2016 (n=369).

Characteristics	Frequency (n)	Percentage (%)
<b>Number of meal within a day before pregnancy</b>		
< 2	22	5.9
3	308	83.5
4	39	10.6
<b>number of meal within a day during current pregnancy</b>		
< 2	22	6.0
3	173	46.9
4	174	47.1
<b>Habit of eating snack during current pregnancy*</b>		
Yes	189	51.2
No	178	48.2
<b>Habitual meal pattern within a day</b>		
Breakfast- lunch- dinner	175	47.4
Breakfast-snack - lunch- dinner	22	5.9
Breakfast- lunch-snack- dinner	113	30.6
Breakfast-snack- lunch-snack- dinner	46	12.5
Breakfast-snack- lunch-snack- dinner- snack	13	3.5
<b>Habit of skipping regular meal*</b>		
Yes	120	32.5
No	247	66.9
<b>Major reasons for skipping regular meal</b>		
Busy at work so I forget	48	40.0
Tiredness	28	23.3
Fasting	17	14.2
Not feeling hungry	13	10.8
Other	14	11.7
<b>Fasting during current pregnancy*</b>		
Yes	92	24.9
No	275	74.5
<b>Food aversion after pregnancy</b>		
Yes (Coffee, Egg, Meat, Banana, Milk, Porridge, Shiro)	153	41.5
No	216	58.5
<b>Major reasons for food aversion</b>		
Personal dislike	109	29.5
Food restriction(taboo)	43	11.7
Medically prohibited	1	0.3

<b>Major reasons for personal dislike of food</b>		
Smell/taste of food	36	9.8
Heart burn/discomfort	25	6.8
Feeling of nausea/vomiting	39	10.6
Don't know the reason	9	2.4
<b>Major reasons for food restriction</b>		
Will make baby big & labour difficult	14	3.8
Will be plastered on fetal head & body	11	2.9
Fear of abortion	11	2.9
Will bring fetal hair loss	6	1.6
Other	1	0.3
<b>Craving for any food item</b>		
Yes (meat, Vegetables, Fruit, Fish, Milk)	156	42.3
No	213	57.7
<b>Major reasons for food craving</b>		
Colour of food	9	2.4
Food odour	33	8.9
Desire of the fetus	45	12.2
Don't know the reason	67	18.2
<b>Got the food craved for</b>		
Yes	141	38.2
No	14	3.8
<b>Major reasons for not eating craved food</b>		
Not affordable	12	3.2
Not available	1	0.3
Medical prohibition	1	0.3

\* Percent do not add up to 100 because of missing values. Mean  $\pm$  SD is also presented for continuous variables.

### **5.3 Maternal health status and service utilization characteristics**

Table 4 describes maternal health status and service utilization among participants. Few 78(21.1%) of participants had one form of chronic disease in particular HIV/AIDS or hypertension. Majority 304(82.4%) had previous ANC follow up prior to the interview. The mean number of ANC visit was  $2.66 \pm 1.23$  ranging from 1 to 7 visits. Half 185 (50.1%) of them received nutrition counseling during their ANC visit and 240(65.1%) of them were taking supplemental drug from ANC unit. Among those who received supplemental drug, 237(98.8%) of them were supplemented with iron with folic acid.

Table 4 Maternal health status and service utilization among ANC attending pregnant women of Bishoftu town, 2016 (n=369).

Characteristics	Number (n)	Frequency (%)
<b>Any chronic disease</b>		
Yes	78	21.1
No	291	78.9
<b>Previous ANC visit</b>		
Yes (repeat)	304	82.4
No (new)	65	17.6
Mean(SD)	2.66± 1.23	
<b>Number of current ANC visit</b>		
2	198	53.7
2-3	79	21.4
≥ 4	92	24.9
Mean(SD)	2.7± 1.0	
<b>Received nutrition counseling during ANC</b>		
Yes	185	50.1
No	184	49.9
<b>Any supplemental drug received during ANC</b>		
Yes	240	65.1
No	129	34.9
<b>Supplemented drug</b>		
Iron with folic acid (Fefol)	237	98.8
Other vitamins	3	1.2

#### 5.4. Food consumption pattern

Four major consumption patterns (CP) were identified using factor analysis method. Food items with factor loadings  $>|0.3|$  were considered to describe the CP of respondents in the best way possible. Table 5 summarizes factor loadings used to generate consumption patterns for this study. Factor 1 which was labeled as “CP1” gave more factor loadings to food items, white Ethiopian pan cake (*Nech teff injera*), cracked and boiled emmer wheat mixed with butter (*aja kinchie*), pasta, Unleavened bread cut into pieces mixed with butter (*chechebsa*), Stew made of dried splitted lentil with chilli sauce (*Misir kik wot*), peanut butter, Porridge made of refined false banana (*bullu genfo*), banana, orange, avocado, papaya, mango, lettuce or raw salad (*selata*), Boiled green peas (*Fosoliya*), raw chilli (*kariya*), Stew made from beef and chilli sauce (*Siga wot*), fried beef, fried fish, fried egg, boiled milk, yoghurt, burger, french fries, soft drink (*mirinda*) and honey. This pattern was also characterized by low consumption of Red Ethiopian pan cake (*key teff injera*) and Stew made of roasted pea flour and chilli sauce (*Shiro wot*). Since this pattern was characterized by consumption of food items from all food groups included in the list of the questionnaire, the name “Varied consumption pattern” was given to it.

Factor 2 which was labeled as “CP2” gave more factor loadings to food items, white Ethiopian pan cake (*nech teff injera*), pasta, stewed cabbage (*Tikil gommen*) and tea. This pattern was also characterized by low consumption of Red Ethiopian pan cake (*key teff injera*), fried fish and burger. Taking the food groups in which mentioned highly consumed food items belong to, this pattern was named as “cereal, vegetable and tea based consumption pattern”.

Factor 3 which was labeled as “CP3” seemed to load mainly consumption of maccaronie, fried mutton (*beg tibs*) and honey mixed with water (*birz*) hence was named as “cereal, meat and sweet based consumption pattern”.

Factor 4 which was labeled as “CP4” gave more loading to food items maccaronie, Porridge made of refined false banana (*bullu genfo*), gruel made of refined false banana (*bullu atmit*) and coffee. Hence this pattern was named as “cereal, root & tuber and coffee based consumption pattern”. The name for each pattern was assigned based on the food group to which each food item with higher factor loading belongs to (18, 19).

Table 5 Distribution of factor loadings for the four major consumption patterns identified by factor analysis among ANC attending pregnant women of Bishoftu town, 2016 (n=369).

Food item	Factor loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
white Ethiopian pan cake ( <i>Nech teff injera</i> )	0.40	0.47		
Red Ethiopian pan cake ( <i>Key teff injera</i> )	-0.41	-0.46		
cracked and boiled emmer wheat mixed with butter ( <i>Aja kinchie</i> )	0.35			
Pasta	0.36	0.32		
Maccaronie			0.31	0.32
Unleavened bread cut into pieces mixed with butter ( <i>Chechebsa</i> )	0.32			
Stew made of roasted pea flour and chilli sauce ( <i>Shiro wot</i> )	-0.39			
Stew made of dried splitted lentil with chilli sauce ( <i>Misir kik wot</i> )	0.32			
Peanut butter	0.42			
Porridge made of refined false banana ( <i>Bulla genfo</i> )	0.36			0.31
gruel made of refined false banana ( <i>Bulla atmit</i> )				0.32
Banana	0.64			
Orange	0.47			
Avocado	0.41			
Papaya	0.52			
Mango	0.38			
Stewed cabbage ( <i>Tikil gommen</i> )		0.33		
lettuce or raw salad ( <i>Selata</i> )	0.37			
Boiled green peas ( <i>Fosoliya</i> )	0.37			
raw chilli ( <i>kariya</i> )	0.31			
Stew made from beef and chilli sauce ( <i>Siga wot</i> )	0.63			
Fried beef	0.58			
fried mutton ( <i>Beg tibs</i> )			0.42	
Fried fish	0.46	-0.37		
Fried egg	0.61			
Boiled cow's milk	0.49			
Yoghurt	0.36			
Burger	0.51	-0.43		
French fries	0.49			
Soft drink ( <i>Mirinda</i> )	0.37			
Tea		0.34		
Coffee				0.36
honey mixed with water ( <i>Birz</i> )			0.37	
Honey	0.43			

Excluded food items from the table and empty cells above were those with factor loading < |0.3| for all consumption patterns identified

### **5.5. Nutrient intake of pregnant women**

Nutrient intake was assessed by comparing actual intake of individuals with RNI for each nutrient. Table 6 compares the mean/median intake of selected nutrients of study participants by trimester of pregnancy against the recommended intake by FAO/WHO and IOM. As a result, mean/median intake for carbohydrate, protein, vitamin B<sub>1</sub>, B<sub>2</sub>, C and iron was in line with the recommendation. Of the total study participants, 353 (95.7%) and 326 (88.3%) of them were deficient in calorie and fat intake respectively. Three fourth 279 (75.6%) of pregnant women were also deficient in vitamin A intake. Folate was the other micronutrient in which most 341 (92.4%) of the respondents were deficient of. Almost all 358 (97.0%) of respondents were subjected to calcium deficiency. In addition, 188 (50.9%) of third trimester pregnant women were deficient of zinc intake.

Table 6 Nutrient intake of ANC attending respondents by trimester in Bishoftu town as compared to recommended nutrient intake, 2016

Nutrient	RNI	First trimester n = 36(9.8%)		Second trimester n = 141(38.3%)		Third trimester n = 191(51.9%)	
		Intake	No <sub>0</sub> (%)	Intake	No <sub>0</sub> (%)	Intake	No <sub>0</sub> (%)
Calorie(kcal)	2200 <sup>a</sup> , 2540 <sup>b</sup> , 2652 <sup>c</sup>	1600.4±538.7*	33(8.9%)	1760.4 ± 458.8*	133(36.0%)	1708.6 ± 463.4*	187(50.7%)
Protein (g)	71	54.9 ± 19.0	-	63.2 ± 20.6	-	63.9 ± 22.7	-
Carbohydrate(g)	175	298.4 ± 91.0	-	328.3 ± 83.2	-	317.5 ± 83.2	-
Fat(g)	20 – 35%	13.2:[11.4,16.5]*	32(8.7%)	13.9: [11.4 , 17.4]*	129(34.9%)	14.3:[11.1,17.9]*	165(44.7%)
Vitamin A(µgRE)	800	94.8:[49.2, 136.5]*	27(7.3%)	88.9:[57.1, 132.1]*	106(28.7%)	87.9:[61.2,131.9]*	146(39.6%)
Vitamin B1(mg)	1.4	1.1 ± 0.4	-	1.3 ± 0.4	-	1.2 ± 0.4	-
Vitamin B2(mg)	1.4	1.1:[ 0.9, 1.7]	-	1.1:[ 0.9, 1.4]	-	1.1:[ 0.9, 1.6]	-
Vitamin C(mg)	55	44.0:[20.1, 83.4]	-	50.6 :[31.7, 84.9]	-	44.1 :[28.3, 78.4]	-
Folate(µg)	600	371.9 ± 158.3*	33(8.9%)	376.5 ± 130.5*	132(35.8%)	375.1 ± 137.0*	176(47.7%)
Calcium(mg)	1200	658.6 ± 217.8*	35(9.5%)	735.2 ± 209.6*	137(37.1%)	684.2 ± 221.2*	186(50.4%)
Iron(mg)	27	74.0:[ 63.8, 99.9]	-	80.1:[ 64.9, 103.4]	-	76.5:[57.4,108.8]	-
Zinc(mg)	11 <sup>a</sup> , 14 <sup>b</sup> , 20 <sup>c</sup>	10.4 ± 3.9	-	10.8 ± 3.2	-	10.9 ± 3.6*	188(50.9%)

Mean±SD/ median (25<sup>th</sup> & 75<sup>th</sup> percentile) is presented under nutrient intake. \* shows nutrient intaken below RNI, No<sub>0</sub> (%) shows study participants that took the specific nutrient below its RNI. 5 % bioavailability for iron and low bioavailability for zinc was assumed. a=first trimester b=second trimester c=third trimester RNI= Recommended Nutrient Intake

### **5.6. Characteristics of study participants in each consumption pattern**

Tables 7 and 8 summarize the characteristics of respondents across tercile classification for each consumption pattern identified in age and calorie adjusted model. Pregnant women with high score for “varied consumption pattern” were the older women, currently married, with higher level of education, workers, whose husbands were educated grade 10 and above, with high socio economic status, living in smaller household size, primigravida, do not fast during pregnancy, had habit of eating snack, less likely to adhere to food restriction following cultural belief, had no any chronic disease and increased calorie intake.

Pregnant women with high score for “cereal, root & tuber and coffee based consumption pattern” were those that do not crave for any food item. Otherwise there was no significant difference between low and high consumers for the rest of the two patterns identified.

Table 7 Characteristic of ANC attending pregnant women in Bishoftu town according to tercile categories based on consumption patterns, 2016.

Characteristics	CP1			CP2		
	T1	T3	Model	T1	T3	Model
Age (in years)	25.0 ± 4.7	26.8 ± 3.8	-	25.7 ± 4.3	26.1 ± 4.3	-
Calorie (kcal)	1472.6 ± 450.6	1964.3 ± 417.7	-	1661.8 ± 509.6	1845.5 ± 368.3	-
Currently married (Yes)	108(31.0%)	121(34.8%)	<b>0.14**</b>	116(33.3%)	118(33.9%)	0.06
Maternal education (Higher)	15(8.3%)	106(58.6%)	<b>0.48***</b>	52(28.7%)	63(34.8%)	-0.01
Currently working (Yes)	43(25.9%)	82(49.4%)	<b>0.27***</b>	56(33.7%)	53(31.9%)	-0.04
Husband education (Higher)	38(15.5%)	118(48.2%)	<b>0.36***</b>	72(29.4%)	86(35.1%)	-0.01
High socio economic status	42(28.6%)	73(49.7%)	<b>0.25***</b>	55(37.4%)	46(31.3%)	-0.05
Household size	2.9 ± 1.3	2.6 ± 0.9	<b>-0.13*</b>	2.8 ± 1.1	2.7 ± 0.9	-0.02
Gravidity (primigravida)	61(31.4%)	71(36.6%)	<b>0.13*</b>	63(32.5%)	60(30.9%)	-0.06
Month of current pregnancy	6.5 ± 2.0	6.5 ± 1.8	0.04	6.5 ± 2.0	6.4 ± 1.9	-0.02
Number of ANC visit	2.6 ± 1.4	2.7 ± 1.2	0.03	2.7 ± 1.3	2.7 ± 1.2	0.00
Nutrition counseling (Yes)	48(25.9%)	73(39.5%)	0.09	61(32.9%)	61(32.9%)	-0.02
Currently fasting (No)	85(31.0%)	104(37.9%)	<b>0.16**</b>	90(32.8%)	87(31.7%)	-0.07
Snack habit (Yes)	32(17.0%)	93(49.5%)	<b>0.26***</b>	57(30.3%)	69(36.7%)	0.02
Aversion (No)	78(36.3%)	70(32.6%)	-0.04	66(30.7%)	76(35.3%)	0.05
Craving (Yes)	41(26.3%)	51(32.7%)	-0.04	54(34.6%)	49(31.4%)	-0.05
Food restriction(yes)	18(41.9%)	9(20.9%)	<b>-0.15*</b>	15(34.9%)	11(25.6%)	-0.04
Chronic disease (No)	91(31.4%)	103(35.5%)	<b>0.13**</b>	94(32.4%)	96(33.1%)	0.01

Data is presented as mean ± SD or number (percentage) of pregnant women before adjustment.\*p <0.05, \*\*p <0.01, \*\*\*p <0.001. Model shows pattern across tercile categories based on linear and logistic regression analysis for continuous and categorical variables respectively adjusted for age and calorie intake. Standardized regression coefficients are presented under the model. CP=consumption pattern, T=tercile ANC=Antenatal care.

Table 8 Characteristic of ANC attending pregnant women in Bishoftu town according to tercile categories based on consumption patterns, 2016.

Characteristics	CP3			CP4		
	T1	T3	Model	T1	T3	Model
Age (in years)	25.6 ± 4.3	26.3 ± 4.4	-	26.1 ± 4.3	26.1 ± 4.5	-
Calorie (kcal)	1462.5 ± 428.7	1844.3 ± 452.0	-	1806.2 ± 497.8	1716.9 ± 471.9	-
Currently married (Yes)	116(33.3%)	115(33.0%)	-0.01	120(34.5%)	115(33.0%)	-0.01
Maternal education (Higher)	45(24.9%)	57(31.5%)	-0.08	67(37.0%)	58(32.0%)	-0.02
Currently working (Yes)	50(30.1%)	56(33.7%)	-0.01	59(35.5%)	49(29.5%)	-0.08
Husband education (Higher)	66(26.9%)	81(33.1%)	-0.06	87(35.5%)	81(33.1%)	0.00
High socio economic status	41(27.9%)	57(38.8%)	0.08	56(38.1%)	47(31.9%)	-0.03
Household size	2.8 ± 1.2	2.8 ± 0.9	0.02	2.8 ± 0.9	2.8 ± 1.1	0.05
Gravidity (primigravida)	68(35.0%)	56(28.9%)	-0.10	62(31.9%)	65(33.5%)	0.02
Month of current pregnancy	6.5 ± 2.2	6.4 ± 2.0	-0.03	6.4 ± 2.0	6.6 ± 1.9	0.07
Number of ANC visit	2.6 ± 1.3	2.6 ± 1.3	-0.00	2.7 ± 1.4	2.7 ± 1.1	0.02
Nutrition counseling (Yes)	61(32.9%)	61(32.9%)	-0.03	63(34.0%)	66(35.7%)	0.05
Currently fasting (No)	82(29.9%)	99(36.1%)	0.09	95(34.7%)	87(31.7%)	-0.06
Snack habit (Yes)	50(26.6%)	67(35.6%)	-0.00	75(39.9%)	59(31.4%)	-0.05
Aversion (No)	67(31.2%)	74(34.4%)	0.02	67(31.2%)	79(36.7%)	0.09
Craving (Yes)	50(32.0%)	51(32.7%)	-0.02	67(42.9%)	39(25.0%)	<b>-0.15**</b>
Food restriction	21(48.8%)	9(20.9%)	-0.13	16(37.2%)	14(32.6%)	0.07
Chronic disease (No)	92(31.7%)	91(31.4%)	-0.06	94(32.4%)	95(32.8%)	-0.01

Data is presented as mean ± SD or number (percentage) of pregnant women before adjustment.\*p <0.05, \*\*p <0.01, \*\*\*p <0.001. Model shows pattern across tercile categories based on linear and logistic regression analysis for continuous and categorical variables respectively adjusted for age and calorie intake. Standardized regression coefficients are presented under the model.

CP =consumption pattern, T= tercile ANC= Antenatal care.

## 6. DISCUSSION

This study aimed to assess the food consumption pattern, nutrient intake and association with different maternal characteristics among ANC attending pregnant women and identified four major consumption patterns. The four patterns were labeled as, “varied pattern”, “Cereal, vegetable and tea based pattern”, “Cereal, meat and sweet based pattern” and “cereal, root & tuber and coffee based pattern” to describe the consumption pattern of respondents in the best way possible. Intake for some nutrients was in line with the recommendation of FAO/WHO 2004 and IOM 2002 except for calorie, fat, vitamin A, folate and calcium. Zinc intake was also below the RNI for third trimester pregnant women. In addition, maternal age, marital status, maternal education and occupation, husband education level, socioeconomic status, and snack habit were positively correlated whereas household size, gravidity, fasting, food restriction and chronic disease were negatively correlated with the varied consumption pattern.

All of the four identified patterns were highly loaded with cereal based food items. Two of the four gave more factor loadings to the consumption of root and tubers. Except the first pattern, the rest were not characterized by higher consumption of egg, meat and dairy products. This finding should not be surprising because it was consistent with the finding from food consumption survey conducted among reproductive age group women throughout Ethiopia. This survey reported that cereal/grain groups are most commonly consumed food groups in the country followed by root & tubers, legumes and oil seeds, respectively. In addition, meat and egg consumption was found to be very limited in the country (23). Since pregnant women are part of the community their intake will not be different from this finding. In addition the study area is famous for cultivation of “*Ada’a magna teff*” therefore; Ethiopian pancake (*teff injera*) is predominantly consumed. Two patterns labeled as “varied pattern” and “cereal, vegetable and tea based consumption pattern” were characterized by intake of fast foods like chips and burger which is currently the emerging nutritional problem of people residing in the towns of most developing countries. This may be an alarming event that needs intervention since higher intake of energy dense foods will bring long lasting health risk to both the mother and the growing fetus (4).

Most dietary pattern studies so far commonly presented with three major features. Some patterns were relatively healthier, some other presented with features of the traditional/ local diet of the study area with limited food group intake and some presented with higher consumption of fast foods and sweets (13-18). This study is also consistent with these findings. Healthier dietary habit during pregnancy is strongly recommended by WHO to include food groups mainly fruit, vegetables, meat, milk, egg and fish. As the “varied CP” in this study is highly loaded with mentioned food groups, it was considered to be relatively healthier pattern (18) whereas the remaining three patterns were loaded with consumption from limited food group that lacks variety hence were considered to be less healthy. Repeated studies had shown that, the diet of pregnant women in most developing countries lack diversity which is either cereal or plant based. As a result, women are subjected mainly to multiple micronutrient deficiencies (28, 46). Therefore, it is worth nothing that participants of this study were also prone to insufficient nutrient intake particularly micronutrient deficiency.

Even though cereals dominated consumption patterns of study participants, calorie intake was found to be below the recommended intake across all trimesters. This finding was also consistent with most studies conducted in developing countries (31, 33, 36, 37, 40-43). Lower energy intake may be due to consumption of smaller portions of food items, under reporting of actually consumed amount or lack of snack habit as reported by nearly half of the respondents. Fat intake was also below the RNI for pregnant women participating in this study. Similar findings were also reported from studies conducted in Peru and western China (29, 40). In contrast, a cross sectional study from Kenya reported relatively higher consumption of fat. This may be due to difference in dietary pattern and food preferences among the two groups. Unlike to pregnant women in this study, the diet of Kenyan women was highly predominated with consumption of fried foods.

Micronutrients particularly vitamin A, folate and calcium were below the RNI across all trimesters of pregnancy and in addition zinc was deficient among third trimester pregnant women in this study. Similar findings of vitamin A deficiency were reported from studies conducted in Africa, Asia and Latin America (29, 32, 34, 41, 43). In contrast, studies from southern Thailand and Nigeria (31,41) reported intake above the RNI. This difference may be due to the restricted consumption of fruits and vegetables among pregnant women of this study.

Folate was the other deficient micronutrient in this study. Studies from most developing countries also presented with similar findings (29, 32, 36, 37, 40, 41). This lower intake will probably be due to limited consumption of foods that are good sources of folate in particular dark green leafy vegetables. Calcium was the other micronutrient that was not in line with the recommendation in this study. Similarly, other dietary assessment studies among pregnant women also presented calcium deficiency (29, 30-32, 34, 37, 41). This may be due to the limited consumption of milk and dairy products. Nutrient requirement particularly of micronutrients increases highly especially during third trimester of pregnancy. The increased requirement (RNI) along with limited consumption of meat, egg, poultry and dairy products probably made third trimester pregnant women vulnerable to zinc deficiency.

Older pregnant women who are currently married, with higher level of education, workers, whose husbands were educated grade 10 and above, with high socio economic status, living in smaller household size, primigravida, do not fast during pregnancy, had habit of eating snack, less likely to adhere to food restriction following cultural belief, had no any chronic disease and increased calorie intake tend to adhere to the varied pattern in this study. This finding was consistent with the study conducted in southern Brazil in which a pattern labeled similarly “varied pattern” was characterized by older maternal age, living with a partner, being employed with higher levels of education and higher socioeconomic status (16).

Similarly, another study from Rio de Janeiro, Brazil assessed association between socio demographic factors and dietary patterns during pregnancy and found that older women, who were married, educated at higher level and thus with higher socioeconomic status adhere to healthier dietary pattern(15). This finding was further strengthened by a result from south east of England in which a pattern labeled as “health conscious” was characterized by higher maternal education, older women who were married and currently employed (13).

Another study conducted to assess dietary pattern and association with nutrient intake and socio demographic characteristics among pregnant women of Finland similarly identified that a pattern called “healthy” pattern was characterized by older maternal age, higher maternal education and increased calorie intake (14).A study from Nigeria also found that older pregnant women with higher level of education and high socioeconomic status tend to have healthier food choices and increased calorie intake (35). A study from Tanzania also found significant positive association

between older maternal age, higher level of maternal education and high socioeconomic status to consume healthier diet with increased calorie intake during pregnancy (42). The reverse association was true between the above factors and lower consumers of the varied pattern. Similarly, marital status and maternal education were negatively associated with less healthy dietary pattern (15-17).

### **Limitation of the Study**

- The above findings observed in the study should be interpreted in the context of the following limitations. The first limitation is with the method used for dietary assessment. Semi quantitative FFQ is subjected to recall bias. Therefore, participants may either over or under estimate consumed portion of the foods though effort had been made through reducing the recall duration to one month and photographs of standardized portions were used. Similar to other dietary assessment methods, social desirability bias was likely. Unlike to 24 hr dietary recall, prepared food list was not considered at ingredient level which may affect the result of nutrient intake. Semi quantitative FFQ needs to be validated before use. This was not done in this study due to logistic and time shortage. Nutrient adequacy can not be calculated. Because, semi quantitative FFQ does not tell us the actual intake rather it is a snap shot of usual (habitual) intake of individuals.
- The other important limitation is with the analysis. Most studies consider factor analysis as a good method to identify consumption pattern and classify risk groups. But factor analysis is prone to personal decisions. Most actions taken during determining the number of factors to be retained, while naming of identified patterns and grouping of food items all depend on subjective decision of principal investigator.

### **Strength of the Study**

- Despite the above limitations, the study had the following strengths. All health facilities of the town were included. Dietary assessment studies remained to be limited in the country. And as far as I know, none of them had studied consumption patterns particularly among pregnant women in the way this study attempted. Therefore, this study can be considered as the first study that identified food consumption pattern and characteristics of pregnant women in each consumption pattern. A new method of dietary

assessment called Semi quantitative FFQ has been introduced and photographs of standardized portions of commonly consumed food items were prepared. Therefore, the tools prepared for this study can serve as an input to simplify future studies.

## **7. CONCLUSION AND RECOMMENDATION**

### **Conclusion**

Four major consumption patterns that best fit into the dietary habit of ANC attending pregnant women of Bishoftu town were identified. All of the identified patterns were highly loaded with cereal based diet. Three patterns among the four were less healthy as they lack variety. As a result, participants were subjected to deficient nutrient intake particularly for calorie, fat, folate, vitamin A and calcium. In addition, zinc intake was also deficient among third trimester pregnant women. Socio demographic, economic, obstetric, dietary habit and maternal health status characters influenced the consumption pattern that participants adhere to. Those younger pregnant women who are single /divorced, educated at lower level, currently not working and with low socioeconomic status, living in larger household size and multigravida women had lower consumption of healthier pattern and had decreased calorie intake.

### **Recommendation**

This study finding may be used by the zonal health department, woreda health office and other stakeholders to develop behavioural change communication techniques targeting pregnant women nutrition. Nutrition counseling need to be further strengthened and health professionals working with pregnant women should target and give special emphasis to identified risk groups particularly, those who are young, currently not married, educated at lower level, husbands educated at lower level with low socioeconomic status. Identified consumption patterns should be taken into consideration while counseling as it plays significant role to further reduce poor pregnancy outcome in general and in particular to the study area. During nutrition counseling, capitalize on the importance of balanced diet that includes dietary diversity with more emphasis on foods that are good sources of the deficient micronutrients like green leafy vegetables, fruits, meat, egg and milk. Fefol (iron with folic acid) supplementation need to be further strengthened to address all pregnant women. Further large scale research is recommended to look for reasons behind low coverage for nutrition counseling and fefol supplementation during ANC.

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## ANNEX

### Annex I Conceptual framework

Nutrient intake of women during pregnancy is supposed to be affected by the food consumption pattern that women will adhere to. Various result of reviewed literatures above indicated that, food consumption pattern in turn is found to be significantly affected by various socio demographic and economic variables in particular maternal age, residence, marital status, educational level, occupational status and socioeconomic level of pregnant women along with other factors (figure 2). Mentioned factors were positively associated with healthier consumption pattern whereas the reverse association was true for either a consumption pattern limited or restricted in variety (less healthy).

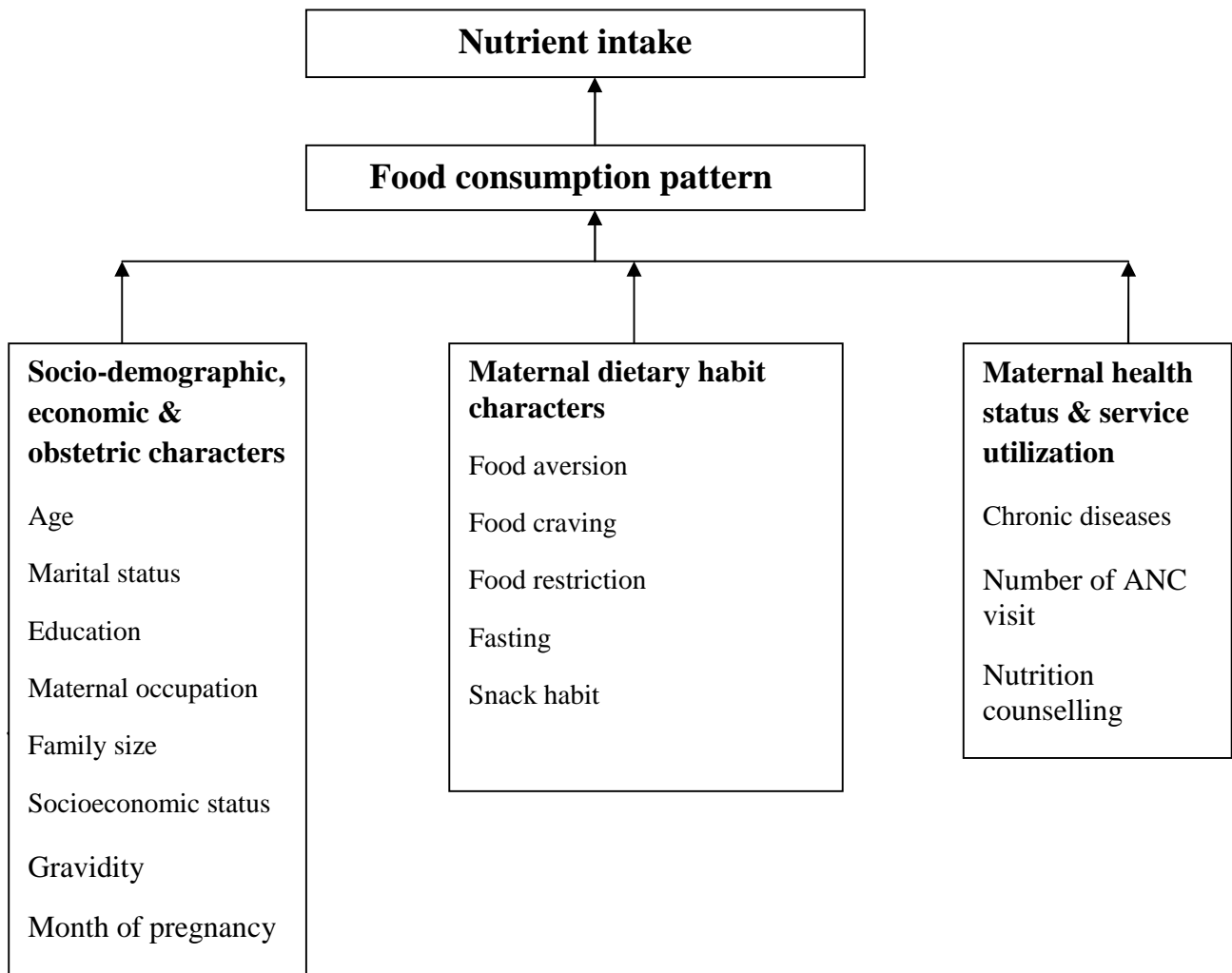


Figure 2 proposed conceptual frame work for this study.

**Annex II Information sheet**  
**English version**

Good morning/ afternoon. My name is \_\_\_\_\_ and I am here on behalf of Tizita Wondwossen Desta student of Addis Ababa University, school of public health. She is doing a research on consumption pattern and nutrient intake of pregnant women attending antenatal care unit of health facilities found here in the town of Bishoftu. She has got permission from Addis Ababa University and the respective health facilities to conduct this study. Candidates for this study will randomly be selected from each ante natal unit and you have got the chance to be the one. Participation in this study is completely voluntary and I hope you will agree to participate and answer the questions as truly as possible since your practice is very essential. If you agreed to participate, and I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time. You will face no harm for your refusal or later withdrawal from this study.

You will be asked questions about your personal information, dietary habit and to recall your previous one month food intake and mention the frequency of consumption with estimated usually eaten portion size with the aid of photographs that I will show you for the listed food items. Interview usually takes 35 minutes on average. The information collected will be used by government policy makers and health professionals to find ways to improve maternal nutrition. Do not give your name and all of the answers you give will be coded to keep the information confidential. Data will not be shared with anyone except for members of this research team for the purpose of this work only. Your willingness and active participation is very important for the success of this study.

Address: Cell phone +251 (0) 912038132

Email: titiwondwossen@gmail.com

Questionnaire ID: \_\_\_\_\_

Amharic version

**ለጥናቱ ተሳታፊዎች መረጃ መስጫ ቅፅ**

አንደኛውን አድራ/ዋሉ፡፡ \_\_\_\_\_ አባላለሁ፡፡አዚህ የተገኘሁት በዋናነት በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል የሁለተኛ ዲግሪ ለማግኘት በተማሪ ትዝታ ወንድወሰን የሚደረግ የምርምር ጥናትን ወክዬ ነው፡፡ ጥናቱ በቢሾፍቱ ከተማ በሚገኙ የተለያዩ ጤና ተቋማት የቅድመ ወሊድ እርግዝና ከትትል ለማግኘት የሚመጡ ነፍሰጡር እናቶችን የአመጋገብ ሁኔታና ንጥረ ነገር አወሳሰድ መጠን ላይ ያተኮረና ከአዲስ አበባ ዩኒቨርሲቲ እንዲሁም ከሚመለከታቸው የጤና ተቋማት ሙሉ እውቅና ያገኘ ነው፡፡በዚህ ጥናት ላይ የሚሳተፉ እናቶች በእጣ የሚመረጡ ሲሆን እርስዎም እድሉ ደርሰዎት አንዷ ለመሆን በቅተዋል፡፡ በዚህ ጥናት ላይ መሳተፍ በተሳታፊው ሙሉ ፍቃደኝነት ላይ የተመሰረተ ነው፡፡በመሆኑም የርስዎ ተሳትፎ ለዚህ ጥናት ከፍተኛ አስተዋፅዖ ስለሚያደርግ መልካም ፈቃድዎ ሆኖ በመሳተፍ በተቻለ መጠን እውነተኛ ልምድዎን እንደሚያካፍሉን ተስፋ አደርጋለሁ፡፡ፍቃደኛ ሆነው መሳተፍ ከጀመሩ በኋላ መመለስ የማይፈልጉትን ጥያቄ የምጠይቅዎት ከሆነ ወደ ቀጣዩ ጥያቄ እንዳልፍ ሊያሳውቁኝ ወይም ቃለ መጠይቁን በፈለጉበት ጊዜ ሊያቋርጡ ይችላሉ፡፡ነገር ግን ጥናቱ ላይ ባለመሳተፍዎ ወይም ጥናቱን በማቋረጥዎ ምክንያት የሚደርስብዎ አንዳችም ችግር /ጉዳት አይኖርም፡፡

መጠይቁ በአማካኝ 35 ደቂቃ ይወስዳል፡፡በመጠይቁ ስለ አጠቃላይ ግላዊና ማህበረሰባዊ መረጃዎች እና የዘወትር አመጋገብ ልምድዎን የሚዳስሱ የምግብ ዝርዝሮችን የያዙ ጥያቄዎች ተካተዋል፡፡የተመገቡትን የምግብ መጠን በቀላሉ ለማስታወስ ይረዳዎት ዘንድ ደግሞ በተለያዩ የምግብ መጠን የተዘጋጁ ፎቶግራፎችን በማሳየት አግዝዎታለው፡፡ይህ የሚሰበሰበው መረጃ ለተለያዩ የመንግስት አካላትና ለጤና ባለሙያ ሠራተኞች የነፍሰጡር እናቶችን አመጋገብ ሁኔታ ለማሻሻል የሚረዱ ዘዴዎችን ለመቅረብ እንደግብአትነት ያገለግላል፡፡እርሶ የሚሰጡን ማንኛውም መረጃ በሚስጥር ይጠበቅ ዘንድ መጠይቁ የሚስጥር ቁጥር ስለሚሰየምለት ማንነትዎ እንዳይታወቅ ስምዎትን መግለፅ አይጠበቅብዎትም፡፡የሰጡት መረጃ ከዚህ ጥናት ውጪ ለሌላ አላማ ፈፀሞ የማይውልና ሚስጥራዊነቱ በከፍተኛ ደረጃ የተጠበቀ ይሆናል፡፡የእርስዎ መልካም ፈቃደኝነትና ትብብር ለዚህ ጥናት እውን መሆን ከፍተኛ ድርሻ ይኖረዋል፡፡

## Afaan Oromo version

### Fuula Odeffanoo

Akkam bultan / oltan. Ani maqaan koo \_\_\_\_\_ Kanan asiti argamef Tizitaa Wondasan Dasita bakka bu'uudhan ishiinis Baratu Yunivarsitii Addis Ababa ti, Mana barumsa sayinsii Faayyaa Hawasati. Ishiin qoranoo fi qo'anoo kana kan hojjetu hawwaan ulfaa irraati kutaa tajaajila fayyaa da'umsa duraa yeroo ulfaa itti kenamuti akkataa fi adeemsa ittin fayyadam sorata dhabilee faayyaa magalaa Bishooftuu. Qoranoo fi qo'anoo kana hojjechufheyama Yunivarsitii Addis Ababa fi dhabilee faayyaa irraa argate jirti. Kadhimaman qoranoo fi qo'ananaa kanakutaa tajaajili da'umsa duraa itti kenamu irraati caradhan filatama kanafu atile caraadhan filatamte. Gutumaan gututi hirmananqoranoo fi qo'anoo kanaa fedhinaa irrati kan huda'edha .kanaafu hirmata qoranoo fi qo'anoo kana waan tatef akka toole jetu fi hanga danda'ameen gafi fi debii kanaf akka ati debii sirii naaf kenitu abdin qaba. Ati hirmachuf walii galtee gaffii kamuyuu si gafadhe yoo debisuu hin barbane gara gaffii itti anuti darba ykn yeroo kamituu gafi fi debii kan dhabuu fi addan kutuu dandesa. ati gafi fi debii qoranoo fi qo'anoo kana addan kutuu ketin wanti midhamtu tokkolee hin jiru.

Gaffii dhunfaa enyumaa ketti, barmaati sirna sorata keeti, sorata baati tokko dura sorate hangam takka akka yadatu ni gafatamta akkasumas yeroo meeqa akka soratee tilmaaman fi hama isaa gosa sorataa tarefaman keessa kan suraadhan degarame siti agarsifama. Gaffii debiin kuni walakesati hanga daqiqaa 35 fudhachuu danda'a. Odeeffannoon sassabamu kuni kan itti fayyaadamu qamni motumman "polisii" basu fi ogeyyiin faayyaa karaa kamin sirna sorata hawwan ulfaa ittin foyyessanif. Icitii dhunfaa ketii egudhaf maqaan kee guca gafi fi debii irrati hin galma'u deebin ati kenitu hundi koditi fayyaadamudhan barefama. Kayoo hojjetifodeffannoon kuni garee qoranoo fi qo'aa kanaf male nama kamifiyuu hin qodamu. Fedhinaan kee fi hirmana cimaa godhuun milkaa'ina qoranoo fi qo'anoo kanaf murtessadha.

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Email: titiwondwossen@gmail.com

Lakk.Enyumaa Guccaa gafi fi debi: \_\_\_\_\_

**Annex III Informed consent**

**English version**

Based on the clarification I gave you above, 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).

May I start now?

**Respondent**

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

**Interviewer**

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

Questionnaire ID number \_\_\_\_\_

Address of principal investigator

Mobile: +251 (0) 912038132

p.o.box: 219

Email: **titiwondwossen@gmail.com**

Addis Ababa University,

School of public health.

**Amharic version**

**ስምምነትን ማስታወቅ**

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 ይጻፉ \_\_\_\_\_ ቃለ መጠይቁን እዚህ ጋር አቁመው ወደ ቀጣይዎ ተሳታፊ ይለፉ። መጠይቁን ከመጀመራችን በፊት ግልፅ ያልሆነሎት ማንኛውም አይነት ጥያቄ ይኖርዎታል? (ለሚጠየቁት ጥያቄዎች ምላሽ ይስጡ)

መጀመር እንችላለን?

የተሳታፊው ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

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

የመጠይቅ መለያ ቁጥር \_\_\_\_\_

Address of principal investigator  
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Email: [titiwondwossen@gmail.com](mailto:titiwondwossen@gmail.com)  
አዲስ አበባ ዩኒቨርሲቲ  
የማህበረሰብ ጤና አጠባበቅ ትምህርት ክፍል

### **Afaan Oromo version**

Ibsa arman oliti sii kene irrati hunda'udhan , qoranoo fi qo'anoo kana irrati hirmachudhaf fedhi qabda?

Eyee \_\_\_\_\_ Lakki \_\_\_\_\_ “Eyee”, yoo ta'e gaffii itti anuti darbi; “Lakki” yoo ta'e,gafi fi debii dhabiti didu isaa erga baresiten bodati gara kadhimami iti anuti darbi.

Gaffii fi debii galuu keynan durat gaffii qabda?(Debi debisi)

Egaluu dandanya?

### **Kan debii kenu**

Malatoo \_\_\_\_\_ guyyaa \_\_\_\_\_

### **Kan gafi fi debii ademsisu**

Maqaa \_\_\_\_\_ Malatoo \_\_\_\_\_ Guyyaa \_\_\_\_\_

Lakk.Enyumaa Guccaa gafi fi debi \_\_\_\_\_

Idoo teesso Qaranaa fi qo'anaa

Bilbil mobayilaa: +251 (0) 912038132

p.o.box: 219

Email:[titiwondwossen@gmail.com](mailto:titiwondwossen@gmail.com)

Yunivarsitii Addis Ababa

Mana barumsaa sayinsii fayyaa fi hawwasumaa

**Annex IV Questionnaire**  
**English version**

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

Questionnaire designed to assess food consumption pattern and nutrient intake of antenatal care attending pregnant women of Bishoftu town.

**Instruction:** This questionnaire is designed for the purpose of face to face interview to collect data from pregnant women participating in this study. It will have three major sections. First section will deal with socio demographic characteristics of participants while second section contains questions assessing maternal dietary habit. The third section contains list of 70 selected food items to assess habitual consumption pattern of participants.

**Note:** This questionnaire has to be filled only by the interviewer once informed consent is obtained from respondents. Please circle the numbers that contain answers you received.

Questionnaire ID No	_____.
Health facility type	1. Public 2. Private
Name of health Facility	_____.
Date of Interview	___/___/___
Time interview started	___:_____
Time interview ended	___:_____
Interviewer	Name _____ signature _____
Checked by Supervisor	Name _____ Signature _____ Date ___/___/___
Result code	001. Completed 002. Discontinued interview _____. 003. Refused. Reason for refusal_____.

**Section 1** Socio- demographic characteristics: From now on I will ask you few questions about yourself and your family status.

No.	Questions and filters	Coding and Categories	Skip
101	How old are you? ( age in completed years)	_____ Years.	
102	What is your religion?	Orthodox .....1 Protestant ..... 2 catholic .....3 Muslim .....4 Other(specify) _____ .....5	
103	What is your ethnicity?	Oromo ..... 1 Amhara ..... 2 Tigre .....3 Guraghe ..... 4 Other (specify) _____ ..... 5	
104	Your marital status?	Married ..... 1 Single ..... 2 Divorced ..... 3 Widowed ..... 4	If answer is 2, 3 or 4 skip to Q. 107.
105	Husband's educational status	No education .....1 Can read and write .....2 Primary ..... 3 Secondary ..... 4 Higher (collage and above) ..... `5	
106	Occupation of your husband?	Employed .....1 Merchant .....2 Daily labourer .....3 Driver .....4 Other (specify) _____ .....5	
107	Where is your place of residence?	Urban ..... 1 Rural ..... 2	
108	What is the highest level of education you ever completed?	No education ..... .....1 Can read and write .....2 Primary ..... 3 Secondary ..... 4 Higher (collage and above) ..... `5	
109	What is your occupation?	Attended to house chores ..... 1 Employed (private/public) ..... 2 Merchant ..... 3 Daily labourer ..... 4 Student ..... 5	

		Other(specify) _____ ..... 6																																								
<b>110</b>	Is this your first pregnancy?	Yes ..... 1 No ..... 2	If answer is "yes" skip to Q.113																																							
<b>111</b>	If no, how many times? (including current pregnancy )	_____ Times.																																								
<b>112</b>	How much is the birth interval (spacing) between pregnancies?	_____ Years.																																								
<b>113</b>	How many months of pregnant you are now?	_____ Months.																																								
<b>114</b>	What is the size of your family? (total number of individuals living in your house)	Male children _____ Female children _____ Adults _____ Total household size _____																																								
<b>115</b>	How much is the total monthly income of your family?	_____ Birr.																																								
<b>116</b>	Do you own the following properties in your household? 1.Electricity 2. watch/clock 3. radio 4. television 5.mobile telephone 6. non mobile telephone 7. refrigerator 8. table 9. chair 10.bed with cotton/ sponge/spring mattress 11. electric mitad 12. kerosene lamp/pressure lamp	<table style="width:100%; border:none;"> <thead> <tr> <th></th> <th style="text-align:center">Yes</th> <th style="text-align:center">No</th> </tr> </thead> <tbody> <tr> <td>1. Electricity</td> <td>..... 1</td> <td>..... 2</td> </tr> <tr> <td>2. watch/clock</td> <td>..... 1</td> <td>..... 2</td> </tr> <tr> <td>3. Radio</td> <td>..... 1</td> <td>.....2</td> </tr> <tr> <td>4.television</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>5.mobile telephone</td> <td>..... 1</td> <td>.....2</td> </tr> <tr> <td>6. non mobile telephone</td> <td>..... 1</td> <td>.....2</td> </tr> <tr> <td>7. refrigerator</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>8. table</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>9. chair</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>10. Bed with cotton/ sponge/spring mattress</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>11.electric mitad</td> <td>.....1</td> <td>.....2</td> </tr> <tr> <td>12. kerosene lamp/pressure lamp</td> <td>.....1</td> <td>.....2</td> </tr> </tbody> </table>		Yes	No	1. Electricity	..... 1	..... 2	2. watch/clock	..... 1	..... 2	3. Radio	..... 1	.....2	4.television	.....1	.....2	5.mobile telephone	..... 1	.....2	6. non mobile telephone	..... 1	.....2	7. refrigerator	.....1	.....2	8. table	.....1	.....2	9. chair	.....1	.....2	10. Bed with cotton/ sponge/spring mattress	.....1	.....2	11.electric mitad	.....1	.....2	12. kerosene lamp/pressure lamp	.....1	.....2	
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9. chair	.....1	.....2																																								
10. Bed with cotton/ sponge/spring mattress	.....1	.....2																																								
11.electric mitad	.....1	.....2																																								
12. kerosene lamp/pressure lamp	.....1	.....2																																								
<b>117</b>	Does any member of this household own? 1. Bicycle 2.Motorcycle/scooter 3.Animal drawn cart	<table style="width:100%; border:none;"> <thead> <tr> <th></th> <th style="text-align:center">Yes</th> <th style="text-align:center">No</th> </tr> </thead> <tbody> <tr> <td>1. Bicycle</td> <td>.....1</td> <td>..... 2</td> </tr> <tr> <td>2. Motorcycle/scooter</td> <td>..... 1</td> <td>.....2</td> </tr> <tr> <td>3.Animal drawn cart</td> <td>.....1</td> <td>.....2</td> </tr> </tbody> </table>		Yes	No	1. Bicycle	.....1	..... 2	2. Motorcycle/scooter	..... 1	.....2	3.Animal drawn cart	.....1	.....2																												
	Yes	No																																								
1. Bicycle	.....1	..... 2																																								
2. Motorcycle/scooter	..... 1	.....2																																								
3.Animal drawn cart	.....1	.....2																																								

	4.Car/truck 5.Bajaj	4.Car/truck .....1 .....2 5.Bajaj .....1 ..... 2	
<b>118</b>	Does any member of this household own any agricultural land?	Yes ..... 1 No ..... 2	If answer is "2" skip to Q. 120
<b>119</b>	If yes, how much of agricultural land do members of this household own? Local units (specify) _____	_____	
<b>120</b>	Does this household own any livestock, herds, other farm animals or poultry?	Yes ..... 1 No ..... 2	
<b>121</b>	Does your household own any of the following animals? 1.Milk cows, oxen or bulls 2.Horses, donkeys or mules 3.Goats 4.Sheep 5.Chicken 6.Beehives	<u>Yes</u> <u>No</u> <u>Number</u> 1 .....2 ..... _____ 1 ..... 2 ..... _____ 1 .....2 ..... _____ 1 .....2 ..... _____ 1 .....2 ..... _____ 1 .....2 ..... _____	

<b>Section 2</b> Maternal dietary habit questions: following I will ask you few questions regarding your dietary intake habit during this pregnancy.			
<b>No.</b>	<b>Questions and filters</b>	<b>Coding and Categories</b>	<b>Skip</b>
<b>201</b>	Have you ever had ante natal care visit other than today for this pregnancy?	Yes .....1 No .....2	
<b>202</b>	How many times you visited ante natal care?	_____ Times.	
<b>203</b>	Have you ever been counseled about maternal nutrition for this pregnancy during your ANC visit?	Yes .....1 No .....2	
<b>204</b>	How many meals do you usually eat within a day?	Once ..... 1 Twice ..... 2 Thrice ..... 3 Four times ..... 4 Five times and above ..... 5	
<b>205</b>	Do you have a habit of eating snack?	Yes ..... 1 No ..... 2	
<b>206</b>	What is your most typical meal pattern within a day?	Breakfast- lunch- dinner .....1 Breakfast-snack - lunch- dinner.....2 Breakfast- lunch-snack- dinner .....3	

		Breakfast-snack- lunch-snack- dinner....4 Breakfast-snack- lunch-snack- dinner- late night snack .....5	
207	What was your meal frequency within a day before this pregnancy?	_____ Times.	
208	Do you have a habit of skipping meal?	Yes .....1 No .....2	If answer is "No" skip to Q.210.
209	What is your reason to skip your meal?	Tiredness .....1 Busy at work so I forget .....2 Not to increase weight .....3 Other (specify).....4	
210	Do you fast while you are pregnant?	Yes ..... 1 No ..... 2	
211	Is there any food item that you avoided after you became pregnant?	Yes ..... 1 No ..... 2	If answer is "No" skip to Q.216.
212	Which food item you avoid most?	coffee ..... 1 porridge, "atmit", bread, linseed..... 2 "shiro wot"(other legumes) ..... 3 key sir, tomato, chilly (other <i>vegetables</i> ) ..... 4 egg, milk and milk products..... 5 banana or other fruits..... 6 meat ..... 7 other(specify) _____..... 8	
213	What is your reason to avoid this food item?	Personal dislike (aversion)..... 1 Not allowed to pregnant woman to eat (Cultural belief) ..... 2 Religion .....3 Other(specify) _____..... 4	→ Ask Q.214 → Ask Q.215
214	If personal dislike, what do you think is the reason for your dislike?	Smell/taste of food ..... 1 Heart burn/discomfort ..... 2 Feeling of nausea/vomiting ..... 3 I don't know the reason ..... 4	Then skip to Q216.
215	What cultural reasons are given for forbidding the above food items?	Will make baby big & labour difficult ..... 1 Will be plastered on fetal head & body..... 2 Fear of abortion ..... 3 Evil eye ..... 4 Fetal abnormality ..... 5 Will bring fetal hair loss ..... 6 Other(specify) ..... 7	

<b>216</b>	Is there any food item that you desire strongly to eat especially after this pregnancy?	Yes ..... 1 No ..... 2	If answer is "No" skip to Q.221.
<b>217</b>	If, yes what do you crave for? (Probe for pica practice).	Please specify_____.	
<b>218</b>	What is your reason to crave for these food items?	Colour of food ..... 1 Food odour ..... 2 Desire of the fetus ..... 3 I don't know the reason ..... 4 Other(specify) ..... 5	
<b>219</b>	Did you get the food you crave?	Yes ..... 1 No ..... 2	If answer is yes skip to Q.221.
<b>220</b>	If "No" why?	Not affordable ..... 1 Not available ..... 2 Not allowed to pregnant woman to eat...3 Other(specify) .....4	
<b>221</b>	Do you have any medically proven chronic disease like diabetes, hypertension, TB, HIV/AIDS or cancer?	Yes ..... 1 No ..... 2	
<b>222</b>	Are you taking any supplemental drugs received from antenatal care?	Yes ..... 1 No ..... 2 If yes, which one? (Show her the tablet/capsule). Iron with folic acid (Fefol)..... 11 Other if any _____ .....21	

**Section 3: Assessing food consumption pattern using Semi quantitative food frequency questionnaire. Instruction:**

Please take some time to memorize foods and drink you usually consumed in the previous one month period. Then I will call you a number of food items from the list. For the food items you consumed only, within the intended time period, try to memorize your usual frequency of intake and portion sizes. I will show you a number of photographs to help you easily estimate portion sizes.

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
<b>1.Cereals</b>												
1. Teff nech injera		slice										
2. Teff key injera		slice										
3. Injera firfir												
4. Sinde nech dabo		slice										
5. Ambasha		slice										
6. Ye aja kinchie												
7. Pasta												
8. Maccaronie												

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
9. Rice												
10. Ye aja at'mit												
11. Chechebsa												
12. Nechgebs genfo												
13. chiko												
14. Shimbira kolo												
<b>2.legumes &amp; nuts</b>												
15. Shiro wot												
16. Mitin shiro wot												
17. Misir kik wot												
18. Difin misir wot												
19. Ater kik wot												
20. Ye ocholonie kibe												
21. Bakela ashuk												
<b>3.roots and tubers</b>												

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
22. Dinich wot												
23. Sikuar dinich kikil		<u>No</u>										
24. Bulla genfo												
25. Bulla at'mit												
26. Key sir												
27. Carrot alicha												
28. dinich kikil		<u>No</u>										
<b>4.fruits</b>												
29. Banana		<u>No</u>										
30. Orange		<u>No</u>										
31. Avocado		<u>No</u>										
32. Lemon		<u>No</u>										
33. Papaya												

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
34. Mango		No										
35. Zeytune		No										
<b>5. vegetables</b>												
36. Tikil gommen												
37.Habesha gommen												
38. Kosta												
39. Selata												
40. Timatim kurt												
41. Timatim sils												
42. Fasoliya												
43. Duba wot												
44. Kariya sinig		No										

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
<b>6. meat &amp; fish</b>												
45. Siga wot												
46. Yebere siga tibs												
47. Yebeg siga tibs												
48. Fiyel tibs												
49. Kitfo												
50. Asa tibs		<u>No</u>										
<b>7. egg (hens)</b>												
51. Yetetebese inkulal		<u>No</u>										
52. Yetekekele inkulal		<u>No</u>										
<b>8. milk and milk products</b>												
53. Yefela yelam wetet												
54. Ayib												
55. Irgo												

Food group and item list (ask for consumption of food items beneath, in the previous one month)	Did you eat _____ in the previous one month?  1.Yes 2.Never	How much _____ you eat at one meal?		Once per month	2-3 per month	1 per week	2 per week	3-4 per week	5-6 per week	daily	2-3 per day	> 3 per day
		Photo code/slice /NO.	Frequency									
<b>9. fast foods, beverage and sweets</b>												
56. Burger		slice										
57. Pizza		slice										
58. dinich tibs												
59. Mirinda		<u>No</u>										
60. Coca cola		<u>No</u>										
61. Sprite		<u>No</u>										
62. Tea												
63. Coffee												
64. Makiyato												
65. Beer		<u>No</u>										
66. Birz												
67. Tella												
68. Sugar												
69. Honey												
70. Marmalade												

**Thank You!**

**Amharic version**

**አዲስ አበባ ዩኒቨርሲቲ**

**የማህበረሰብ ጤና አጠባበቅ ትምህርት ክፍል**

በቢሾፍቱ ከተማ በሚገኙ የጤና ተቋማት ውስጥ የቅድመ ወሊድ ክትትል የሚያደርጉ ነፍሰጡር እናቶችን የአመጋገብ ሁኔታ እና ንጥረ ነገር አወሳሰድ ለማጥናት የተዘጋጀ መጠይቅ።

**መመሪያ፡-** ይህ መጠይቅ የተዘጋጀው በቃለ ምልልስ መልክ እዚህ ጥናት ላይ ከሚሳተፉ ነፍሰጡር እናቶች ላይ መረጃ ለመሰብሰብ ነው። መጠይቁ ከታች እንደሚከተለው ሦስት ዋና ዋና ክፍሎች አሉት። የመጀመሪያው ክፍል የተሳታፊዎቹን ግላዊና ማህበራዊ መረጃ የሚዳስስ ሲሆን ሁለተኛው ክፍል ደግሞ የእናቶችን ያመጋገብ ልማድ የሚመለከቱ ጥያቄዎችን ይዟል ። ሦስተኛው እና የመጨረሻው ክፍል ደግሞ 70 የተመረጡ የምግብ አይነት ዝርዝሮችን የያዘ እና የተሳታፊዎችን የዘውትር ምግብ አወሳሰድ ሁኔታን የሚጠይቅ ይሆናል።

**ማስታወሻ፡-** ይህ መጠይቅ የተሳታፊዎቹ ፍቃደኝነት ከታወቀ በኋላ መሞላት ያለበት በጠያቂው ብቻ ነው። እባክዎን የተቀበሉዎቸውን መልሶች የያዘውን ፊደል ያክቡ።

የመጠይቁ መለያ ቁጥር	_____
የጤና ተቋሙ አይነት	1. የመንግስት 2. የግል
የጤና ተቋሙ ስም	_____.
መጠይቁ የተደረገበት ቀን	____/____/____
መጠይቁ የተጀመረበት ሰአት	____:____
መጠይቁ ያለቀበት ሰአት	____:____
የጠያቂው	ስም _____ ፊርማ _____
ያረጋገጠው ተቆጣጣሪ	ስም _____ ፊርማ _____ ቀን ____/____/____
የውጤት መለያ	001. ሙሉ-በሙሉ ተሞልቶአል 002. መጠይቁ ተቋርጧል _____ 003. ለመሳተፍ ፍቃደኛ አልሆኑም  ፍቃደኛ ያልሆኑበት ምክንያት _____.

**ክፍል 1** ግላዊና ማህበራዊ መረጃ፡፡ከዚህ በመቀጠል ስለራስዎ እና ስለሌሎች ሁኔታ ጥቂት ጥያቄዎችን እጠይቃለሁ።

ተ.ቁ	ጥያቄዎች	ምድብ	እለፍ
101	እድሜዎት ስንት ነው?	_____ ዓመት	
102	እምነትዎ ምንድነው?	አርቶዶክስ ..... 1 ፕሮቴስታንት ..... 2 ካቶሊክ ..... 3 ሙስሊም ..... 4 ሌላ ከሆነ ይጥቀሱ ..... 5	
103	ብሄርዎት ምንድነው?	አሮሞ ..... 1 አማራ ..... 2 ትግሬ ..... 3 ጉራጌ ..... 4 ሌላ ከሆነ ይጥቀሱ ..... 5	
104	የጋብቻ ሁኔታ?	ያገባች ..... 1 ያላገባች ..... 2 የፈታች ..... 3 የሞተባች ..... 4	መልሱ፡2፣3 ወይም 4 ከሆነ ወደ ጥያቄ ቁጥር 107 ይለፉ
105	የባለቤትዎ የትምህርት ደረጃ?	ያልተማረ ..... 1 ማንበብ እና መጻፍ የሚችል ..... 2 አንደኛ ደረጃ ..... 3 ሁለተኛ ደረጃ ..... 4 ከፍተኛ (ኮሌጅ እና ከዚያ በላይ) ..... 5	
106	የባለቤትዎ የስራ ሁኔታ?	ተቀጣሪ .....1 ነጋዴ .....2 የቀን ስራተኛ .....3 ሹፌር ..... 4 ሌላ ከሆነ ይጥቀሱ .....5	
107	የመኖሪያ ቦታ?	ከተማ ..... 1 ገጠር ..... 2	
108	የትምህርት ደረጃዎ?	ያልተማረች ..... 1 ማንበብ እና መጻፍ የምትችል ..... 2 አንደኛ ደረጃ ..... 3 ሁለተኛ ደረጃ ..... 4 ከፍተኛ ((ኮሌጅ እና ከዚያ በላይ) ..... 5	
109	ስራዎት ምንድነው?	የቤት እመቤት ..... 1 ተቀጣሪ ..... 2 ነጋዴ ..... 3 የቀን ስራተኛ ..... 4 ተማሪ ..... 5 ሌላ ከሆነ ይጥቀሱ ..... 6	
110	ይህ እርግዝና የመጀመሪያዎት ነው?	ነው ..... 1 አይደለም ..... 2	መልሱ ነው ከሆነ ወደ ጥ. ቁ 113 ይለፉ
111	አይደለም ካሉ ስንት ጊዜ አርግዘዋል?(የአሁኑን _____ ጊዜ		

	ጨምሮ)																																									
112	በሰንት አመት ልዩነት አራርቀው ያረግዛሉ?	_____ አመት																																								
113	የአሁኑ እርግዝና ስንት ወር ይሆነዋል?	_____ ወር																																								
114	የቤተሰብዎ ብዛት ምን ያህል ነው?(በቤትዎ ውስጥ የሚኖሩ አቃላይ ሰዎች ብዛት )	ወንድ ልጆች _____ ሴት ልጆች _____ ትልልቅ ሰዎች _____ ጠቅላላ የቤተሰብ ብዛት _____																																								
115	የቤተሰብዎ አጠቃላይ ወርሀዊ የገቢ መጠን ምን ያህል ነው?	_____ ብር																																								
116	የሚከተሉት እቃዎች በቤት ውስጥ ይኖራሉ? 1. መብራት 2. የግድግዳ ሰአት 3. ሬድዮ 4. ቴሌቪዥን 5. ተንቀሳቃሽ ስልክ(ሞባይል) 6. የቤት መደበኛ ስልክ 7. ፍሪጅ(ማቀዝቀዣ) 8. ጠረጴዛ 9. ወንበር 10. ጥጥ(ስፓንጅ)ስፕሪንግ ፍራሽ ያለው አልጋ 11. የኤሌትሪክ ምጣድ 12. በጋዝ የሚሰራ አምፖል(ኩራዝ)	<table border="0"> <thead> <tr> <th></th> <th>አለ</th> <th>የለም</th> </tr> </thead> <tbody> <tr> <td>1. መብራት .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>2. የግድግዳ ሰአት .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>3. ሬድዮ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>4. ቴሌቪዥን .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>5. ተንቀሳቃሽ ስልክ(ሞባይል) .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>6. የቤት መደበኛ ስልክ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>7. ፍሪጅ(ማቀዝቀዣ) .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>8. ጠረጴዛ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>9. ወንበር .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>10. ጥጥ(ስፓንጅ)ስፕሪንግ ፍራሽ ያለው አልጋ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>11. የኤሌትሪክ ምጣድ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>12. በጋዝ የሚሰራ አምፖል(ኩራዝ) .....</td> <td>1</td> <td>2</td> </tr> </tbody> </table>		አለ	የለም	1. መብራት .....	1	2	2. የግድግዳ ሰአት .....	1	2	3. ሬድዮ .....	1	2	4. ቴሌቪዥን .....	1	2	5. ተንቀሳቃሽ ስልክ(ሞባይል) .....	1	2	6. የቤት መደበኛ ስልክ .....	1	2	7. ፍሪጅ(ማቀዝቀዣ) .....	1	2	8. ጠረጴዛ .....	1	2	9. ወንበር .....	1	2	10. ጥጥ(ስፓንጅ)ስፕሪንግ ፍራሽ ያለው አልጋ .....	1	2	11. የኤሌትሪክ ምጣድ .....	1	2	12. በጋዝ የሚሰራ አምፖል(ኩራዝ) .....	1	2	
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117	ከቤተሰቡ አባላት ውስጥ የሚከተሉት እቃዎች ያሉት ይኖራል? 1. ብስክሌት 2. ሞተር ብስክሌት 3. በእንስሳ የሚጎተት ጋሪ 4. መኪና(የጭነት መኪና) 5. ባጃጅ	<table border="0"> <thead> <tr> <th></th> <th>አለ</th> <th>የለም</th> </tr> </thead> <tbody> <tr> <td>1. ብስክሌት .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>2. ሞተር ብስክሌት .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>3. በእንስሳ የሚጎተት ጋሪ .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>4. መኪና (የጭነት መኪና) .....</td> <td>1</td> <td>2</td> </tr> <tr> <td>5. ባጃጅ .....</td> <td>1</td> <td>2</td> </tr> </tbody> </table>		አለ	የለም	1. ብስክሌት .....	1	2	2. ሞተር ብስክሌት .....	1	2	3. በእንስሳ የሚጎተት ጋሪ .....	1	2	4. መኪና (የጭነት መኪና) .....	1	2	5. ባጃጅ .....	1	2																						
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118	ከቤተሰቡ አባላት ውስጥ የእርሻ መሬት ያለው ይኖራል?	አለ ..... 1 የለም ..... 2	የለም ካሉ ወደ ጥ.ቁ 120																																							
119	አለ ካሉ የእርሻ መሬቱ ስፋት ምን ያህል ይሆናል? መጠኑን ይግለጹ?	_____																																								
120	በቤት ውስጥ የሚኖሩ ለእርሻ ወይም ለእርባታ የሚውሉ የቤት እንስሳት ይኖራሉ?	አለ ..... 1 የለም ..... 2																																								
121	ከዚህ በታች ያሉት የቤት																																									

እንስሳት በቤትዎ ውስጥ ይገኛሉ? 1. የወተትላሞች፣በሬዎች፣ ጥጃች፣ ጥጃ 2. ፈረሶች፣ አህያዎች፣ በቅሎ 3. ፍየሎች 4. በጎች 5. ዶሮዎች 6. የንብ ቀፎ	<u>አለ</u> <u>የለም</u> <u>ብዛት</u>
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	3.ፍየሎች ..... 1 ..... 2.....
	4.በጎች ..... 1 ..... 2 .....
	5.ዶሮዎች ..... 1 ..... 2 .....
6.የንብ ቀፎ ..... 1 ..... 2 .....	

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ተ.ቁ	ጥያቄዎች	ምድብ	እለፍ
201	ከዛሬ በፊት ለዚህ እርግዝና ቅድመ ወሊድ ከትትል ለማድረግ ወደ ጤና ተቋም ሄደው ያውቃሉ?	አውቃለው ..... 1 አላውቅም ..... 2	
202	ለዚህ እርግዝና ምን ያህል ጊዜ ከትትል አድርገዋል ?	_____ ጊዜ	
203	ከትትል በሚያደርጉበት ጊዜ ስለምግብ አወሳሰድ ምክክር አድርገው ያውቃሉ?	አውቃለው ..... 1 አላውቅም ..... 2	
204	አብዛኛውን ጊዜ በቀን ውስጥ ስንት ጊዜ ምግብ ይመገባሉ?	አንድ ጊዜ ..... 1 ሁለት ጊዜ ..... 2 ሶስት ጊዜ ..... 3 አራት ጊዜ ..... 4 አምስት ጊዜ እና ከዚያ በላይ ..... 5	
205	ተጨማሪ ምግብ (መክሰስ) የመመገብ ልምድ አለዎት?	አለኝ ..... 1 የለኝም ..... 2	
206	በቀን ውስጥ የሚከተሉት መደበኛ የአመጋገብ ስርአት ምን ይመስላል?	ቁርስ ፣ምሳ ፣እራት ..... 1 ቁርስ ፣መክሰስ ፣ምሳ ፣እራት ..... 2 ቁርስ ፣ምሳ ፣መክሰስ ፣እራት ..... 3 ቁርስ ፣መክሰስ ፣ምሳ ፣መክሰስ ፣እራት ..... 4 ቁርስ ፣መክሰስ ፣ምሳ ፣መክሰስ ፣እራት፣ለሊት መክሰስ..... 5	
207	ከማርገዝዎ በፊት በቀን ውስጥ ስንት ጊዜ ምግብ ይመገቡ ነበር?	_____ ጊዜ	
208	መደበኛ የምግብ ጊዜዎን የመዝለል ልምድ አሎት?	አለኝ ..... 1 የለኝም ..... 2	መልሱ የለኝም ከሆነ ወደ ጥ.ቁ 210 ይለፉ
209	የምግብ ጊዜዎን የሚዘሉበት ምክንያት ምንድነው?	ስለሚደክመኝ ..... 1 ስራ ስለሚበዛብኝ እረሳለሁ .....2 ከብድር እዳይጨምር (እንዳልወፍር) ..... 3	

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210	በዚህ እርግዝና ወቅት የም ይሰማሉ?	እሰማለሁ ..... 1 አልሰማም ..... 2	
211	ነፍሰጡር ከሆኑ በኋላ መብላት የማይፈልጉት ወይም መመገብ ያቆሙት የምግብ አይነት ይኖራል?	አለ ..... 1 የለም ..... 2	መልሱ የለም ከሆነ ወደ ጥያቄ ቁጥር 216 ይለፉ
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213	ይህንን ምግብ ላለመመገብዎ ምክንያት ምንድነው?	ስለሚያስጠላኝ ..... 1 ነፍሰጡር እናት ልትመገብው የተፈቀደ ስላልሆነ(ባህላዊ ) ..... 2 ሀይማኖቱ ስለማይፈቅድ ..... 3 ሌላ ከሆነ ይጥቀሱ _____ ..... 4	ወደ ጥ.ቁ 214 ይለፉ ወደ ጥ.ቁ 215 ይለፉ
214	ምግቡ ስለሚያስጠላኝ ካሉ በምን ምክንያት ነው የሚያስጠላዎ?	የምግቡ ሽታ (ጣዕም)..... 1 ደረቴንስለሚያቃጥለኝ(ቃር)/ምቻትስለማይሰጠኝ/..... 2 ስለሚያቅለሽልሽኝ/ስለሚያስመልሰኝ/..... 3 ምክንያቱን አላውቀውም ..... 4	ወደ ጥ.ቁ 216 ይለፉ
215	የላይኞቹ ምግቦች በነፍሰጡር እናቶች እንዳይበሉ የሚከለክልበት ባህላዊ ምክንያት ምንድነው?	ልጁን ትልቅ በማድረግ ምጥ አስቸጋሪ እንዲሆን ያደርጋል ..... 1 የፅንሱ ጭንቅላትና ሰውነት ስለሚለጠፍ..... 2 ውርጃ ስለሚያመጣ ..... 3 የቡዳ አይን እንዳይበላ ..... 4 ፅንሱ ላይ ችግር ስለሚያመጣ ..... 5 የሕፃኑን ፀጉር ይመልጣል ..... 6 ሌላ ከሆነ ይጥቀሱ _____ ..... 7	
216	ነፍሰጡር ከሆኑ በኋላ በተለየ ሁኔታ ለመመገብ የሚሙኙት ምግብ ይኖራል?	አለ ..... 1 የለም ..... 2	መልሱ የለም ከሆነ ወደ ጥያቄ ቁጥር 221 ይለፉ
217	አዎ ካሉ ምን ያምርታል?	እባክዎ ይግለጹ? _____	
218	ምግቡን በተለየ ሁኔታ ለመመገብ ምክንያት ምንድነው?	የምግቡ ቀለም ..... 1 የምግቡ ሽታ ..... 2 የፅንሱ ፍላጎት (ምቻት)..... 3 ምክንያቱን አላውቀውም ..... 4 ሌላ ከሆነ ይጥቀሱ _____ ..... 5	
219	የተመኙትን /ያማረዎትን/ ምግብ አግኝተው ተመገቡ?	አዎ .....1 አልተመገብኩም ..... 2	መልሱ አዎ ከሆነ ወደ ጥ.ቁ 221 ይለፉ
220	አልተመገብኩም ካሉ ለምን?	መግዛት ስላልቻልኩኝ /ዋጋው ከፍተኛ ስለሆነ/ ..... 1 በአከባቢው ስለማይገኝ ..... 2 ነፍሰጡር እናት ልትመገብው የተፈቀደ ስላልሆነ ..... 3 ሌላ ከሆነ ይጥቀሱ _____ ..... 4	

221	<p>በህክምና የተረጋገጠ እንደ ስኳር፣ ደም ግፊት የሳንባ በሽታ፣ ኤች አይ ቪ ኤድስ ወይም ካንሰር የመሳሰሉ የህመም አይነቶች አለብዎት?</p>	<p>አሉብኝ ..... 1 የለኝም ..... 2</p>	
222	<p>ተጨማሪ የድጋፍ መድሃኒቶች ይወስዳሉ?</p>	<p>እወስዳለሁ ..... 1 አልወስድም ..... 2</p> <p>ከወስዱ የትኛውን? (መድሃኒቱን ያሳዩዋቸው) አይረገግ .....11 ሌላ _____ ..... 21</p>	

**ከፍል 3: የዘወትር አመጋገብ ሁኔታና የምግብ መጠን የሚያሳይ መጠይቅ:**

**መመሪያ:-** እባክዎ ትንሽ ጊዜ ይውሰዱና ባላለፍነው አንድ ወር ጊዜ ውስጥ አዘውትረው የተመገቡዎቻቸውን ምግቦች ያስታውሱ? የተለያዩ የምግብ አይነቶችን ስለጠራሎት የተመገቡዎቻቸውን ምግቦች ብቻ ባላለፍነው አንድ ወር ጊዜ ውስጥ ምን ያህል ጊዜ እንደተመገቡና በአብዛኛው የተመገቡትን መጠን ይነግሩኛል። መጠኑን ለመገመት እንዲረዳዎ የተለያዩ ምስሎችን አሳይዎታለሁ። ምን ያህል ጊዜ እንደተመገቡ ጠይቀው ቁጥሩን ባዶ ቦታው ላይ ይጻፉ።

የምግብ አይነት ዝርዝር (ከዚህ በታች የተዘረዘሩትን ምግቦች ባላለፍነው አንድ ወር ውስጥ መመገባቸውን ይጠይቁ)	ባለፈው ወር ----- ተመግበዋል ነበር? 1 አዎ 2 አልበላሁም	አንዴ ሲመገቡ ምን ያህል ----- ይመገባሉ?	በወር 1 ጊዜ	በወር 2-3 ጊዜ	በሳምንት 1 ጊዜ	በሳምንት 2 ጊዜ	በሳምንት ከ3-4 ጊዜ	በሳምንት ከ5-6 ጊዜ	በየቀኑ	በቀን 2-3 ጊዜ	በቀን ከ 3 ጊዜ በላይ
		የፎቶ ኮድ / በቁርጥ /ብዛት									
<b>1. የእህል ዘር</b>											
1.ነጭ የጤፍ እንጀራ		በቁርጥ ብዛት									
2.ቀይ የጤፍ እንጀራ		በቁርጥ ብዛት									
3.እንጀራ ፍርፍር											
4.ነጭ የስንዴ ዳቦ		በቁርጥ ብዛት									
5. አንባሻ		በቁርጥ ብዛት									
6. የአጃ ቁንጭ											
7. ፓስታ											
8. ማካሮኒ											
9. ሩዝ											
10. የአጃ አጥሚት											
11. ጨጨብሳ											
12.ነጭየገብስ ገንፎ											
13.ጭኮ											
14. ሽምብራ ቆሎ											

የምግብ አይነት ዝርዝር (ከዚህ በታች የተዘረዘሩትን ምግቦች ባላለፍነው አንድ ወር ውስጥ መመገባቸውን ይጠይቁ)	ባለፈው ወር ----- ተመገበው ነበር? 1 አዎ 2 አልበላሁም	አንዴ ሲመገቡ ምን ያህል ----- ይመገባሉ?	በወር 1 ጊዜ	በወር 2-3 ጊዜ	በሳምንት 1 ጊዜ	በሳምንት 2 ጊዜ	በሳምንት ከ3-4 ጊዜ	በሳምንት ከ5-6 ጊዜ	በየቀኑ	በቀን 2-3 ጊዜ	በቀን ከ 3 ጊዜ በላይ
		የፎቶ ኮድ / በቁርጥ /ብዛት									
<b>2. ጥራጥሬ</b>											
15.ሸሮ ወጥ											
16.ምጥን ሸሮ ወጥ											
17.ምስር ከክ ወጥ											
18.ድፍን ምስር ወጥ											
19.አተር ከክ ወጥ											
20.የለውዝ ቅቤ											
21.ባቄላ አሹቅ											
<b>3. ሰራሰር</b>											
22. ድንች ወጥ											
23.ሰኩዋር ድንች ቅቅል		በቁጥር									
24. ቡላ ገንፎ											
25.ቡላ አጥሚት											
26. ቀይ ስር											

የምግብ አይነት ዝርዝር (ከዚህ በታች የተዘረዘሩትን ምግቦች ባላለፍነው አንድ ወር ውስጥ መመገባቸውን ይጠይቁ)	ባለፈው ወር ----- ተመገበው ነበር? 1 አዎ 2 አልበላሁም	አንዴ ሲመገቡ ምን ያህል ----- ይመገባሉ?	በወር 1 ጊዜ	በወር 2-3 ጊዜ	በሳምንት 1 ጊዜ	በሳምንት 2 ጊዜ	በሳምንት ከ3-4 ጊዜ	በሳምንት ከ5-6 ጊዜ	በየቀኑ	በቀን 2-3 ጊዜ	በቀን ከ 3 ጊዜ በላይ
		የፎቶ ኮድ / በቁጥጥ /ብዛት									
27. ካሮት አልጫ											
28. ድንች ቅቅል		በቁጥር									
<b>4. ፍራፍሬ</b>											
29. ሙዝ		በቁጥር									
30. ብርትኳን		በቁጥር									
31. አቮካዶ		በቁጥር									
32. ሎማ		በቁጥር									
33. ፓፓያ											
34. ማንጎ		በቁጥር									
35. ዘይቱን		በቁጥር									
<b>5. አትክልት</b>											
36. ጥቅል ጎመን											
37. ሀበሻ ጎመን											
38. ቆስጣ											
39. ሰላጣ											

የምግብ አይነት ዝርዝር (ከዚህ በታች የተዘረዘሩትን ምግቦች ባሳለፍነው አንድ ወር ውስጥ መመገባቸውን ይጠይቁ)	ባለፈው ወር ----- ተመገበው ነበር? 1 አዎ 2 አልበላሁም	አንዴ ሲመገቡ ምን ያህል ----- ይመገባሉ?	በወር 1 ጊዜ	በወር 2-3 ጊዜ	በሳምንት 1 ጊዜ	በሳምንት 2 ጊዜ	በሳምንት ከ3-4 ጊዜ	በሳምንት ከ5-6 ጊዜ	በየቀኑ	በቀን 2-3 ጊዜ	በቀን ከ 3 ጊዜ በላይ
		የፎቶ ኮድ / በቁጥጥ /ብዛት									
40.ቴማቲም ቁርጥ											
41.ቴማቲም ስልስ											
42.ፎሶፊያ											
43.ዱባ ወጥ											
44.ቃሪያ ስንግ		በቁጥር									
<b>6. ስጋ እና አሳ</b>											
45.ስጋ ወጥ											
46.የበሬ ስጋ ጥብስ											
47.የበግ ስጋ ጥብስ											
48.የፍየል ጥብስ											
49.ከትፎ											
50.አሳ ጥብስ		በቁጥር									
<b>7. እንቁላል(የዶሮ)</b>											
51.እንቁላል ጥብስ		በቁጥር									
52.የተቀቀለ እንቁላል		በቁጥር									

የምግብ አይነት ዝርዝር (ከዚህ በታች የተዘረዘሩትን ምግቦች ባላለፍነው አንድ ወር ውስጥ መመገባቸውን ይጠይቁ)	ባለፈው ወር ----- ተመግበው ነበር? 1 አዎ 2 አልበላሁም	አንዴ ሲመገቡ ምን ያህል ----- ይመገባሉ?	በወር 1 ጊዜ	በወር 2-3 ጊዜ	በሳምንት 1 ጊዜ	በሳምንት 2 ጊዜ	በሳምንት ከ3-4 ጊዜ	በሳምንት ከ5-6 ጊዜ	በየቀኑ	በቀን 2-3 ጊዜ	በቀን ከ 3 ጊዜ በላይ
		የፎቶ ኮድ / በቁርጥ ብዛት									
		ድግግሞሽ (ምን ያህል)									
<b>8. ወተትና የወተት ውጤቶች (የላም )</b>											
53. የፈላ ወተት											
54. አይብ											
55. አርጎ											
<b>9. ፈጣን ምግቦች መጠጦችና ጣፋጮች</b>											
56. በርገር		በቁርጥ ብዛት									
57. ፒዛ		በቁርጥ ብዛት									
58. ድንች ጥብስ (ችብስ)											
59. ሚሪንዳ		በቁርጥ									
60. ኮካኮላ		በቁርጥ									
61. ስፕራይት		በቁርጥ									
62. ሻይ											
63. ቡና											
64. ማክያቶ											
65. ቢራ		በቁርጥ									
66. በርዝ											
67. ጠላ											
68. ስኳር											
69. ማር											
70. ማርማላት											

አመሰግናለሁ!

**Afaan Oromo version**

**YUNIVARSITII ADDIS ABABA MANA BARUMSAA  
SAYINSII FAYYAA HAWWASUMAA**

Gucni gafi fi debii kuni kan qopa'e hawwaan ulfaa tajaajila fayyaa da'umsa duraa argata jiran irrati qoranaa nyata fudhatamufi sirna sorta fudhatamu ademsisufmagalaa Bishooftuu.

**Seensa kayyoon:** kayoon guccaa gafi fi debii kana qoranoo fi qo'anoo kanaf hawwaan ulfaa iraa gafii fi debii kallatin gochudhan oddefannoo walitifunaanufi. Akka armaangaditi ibsameti kutaa afur qaba.. Kutaawan gurgudoo sadii qaba. Kutaa tokkoffaan Hawaas-dinaagdee Hirmatoota ilaalat. Kutaa Lammaffaanbarmaatile sirna sorataa hawwaan ulfaa. Kutaa sadaffaan taree gosa sorataa filatamoo torbatama (70) barmatile sorata fudhachu fi adeemsa isaa qorachuf hormaatota.

**Hubachisa:** Gučni gafi fi debii kuni kan gutamu nama kalati dha gafi fi debi rawatuni ,innins kan rawatamu yoo hirmata heyyame qofa dha. Debi siri kenameti ittimarsi.

Lakk.Enyumaa Guccaa gafi fi debi	_____.
Dhabata fayyaa	2. Kan umataa 2. Kan dhunfaa
Maqaa dhabata fayyaa	_____.
Guyyaa gafi fi debii	___/___/___
Yeroo gafi fi debii iti jalqabame	___:_____
Yeroo gafi fi debii iti xumurame	___:_____
Gafi fi debii kan ademsise	maqaa _____ malatoo _____
Suparvayizarii mirkanese	Maqaa _____ malatoo _____ guyyaa ___/___/___
Bu'aa koodii	001. xumure 002. addan mure _____. 003. dide. Sababa didef _____.

**Kutaa tokkooffaa – Hawaas-dinaagdee Hirmatoota, yeroo amma iraa egalee wa’ee keti fi matii keti sin gafadha .**

<b>101</b>	Umuriin kee meqaa	-----wagadhan
<b>102</b>	Amantiin kee mali?	1) Ortoodoksii      4) Muslima 2) Katolikii      5) Kanbiroo _____ 3) Protestaantii
<b>103</b>	Sabnii kee mali?	1) Amaara      4) Guragee 2) Oromoo      5) Kanbiroo _____ 3) Tigree
<b>104</b>	Haala ga’ilaa kee hoo?	1) Fudhee jira 2) Qenxee 3) Seran addaba’e 4) Du’anadda bane 5) Nara demte/deme
<b>105</b>	Haala barumsa abba manaa keeti	1) Hin barane 2) Dubisu fi baresu kan danda’u 3) Sadarkaa duraa 4) Sadarkaa gidugalesa 5) Sadrkaa olaana(koleejii fi sanaa ol
<b>106</b>	Hojji abba manaa keeti	1) Hojji qaba 2) Daldaladh 3) Dalaga guyaati 4) Konkolachisadh 5) Kan biraa
<b>107</b>	Essa jirata?	1) Magaala 2) Badiyaa
<b>108</b>	Sadarkaa barumsaa kee hoo?	1) Hin barane 2) Dubisu fi baresu kan danda’u 3) Sadarkaa duraa 4) Sadarkaa gidugalesa 5) Sadrkaa olaana(koleejii fi sanaa ol
<b>109</b>	Hojjin kee malini?	1) hadhamanaa 2) Hojjatuu 3) Daldaltuu 4) Hojjetuu guyaa 5) Baratu 6) Kanbiroo _____
<b>110</b>	Yeroo jalqabaf ulfoofte?	1) Eyee

		2) Lakii																																							
111	“Lakkii” yoo ta’e yeroomeqa? (kan amaa dabalatee)	yeroo _____																																							
112	Hangam waliraa fagesitee dese?	yeroo _____																																							
113	Ulfi kee batii kee batii meeqa?	Batii _____																																							
114	Bayiini matii keeti meqa	Dhira _____ Dhalaa _____ Ge’eesa _____ Waliigalata _____																																							
115	Waligalati matii ketif batii kessati hami galii ketii meqa	_____birr																																							
116	Qabeenya armaan gadi kan mataa keti ni qabdaa 1.Ifaa 2.sa’aatii 3.Radionii 4.Televisiyoona 5.Mibayilii 6.Silkii sarara 7.Firjii 8.Minjaala 9.Tessoo 10.Alгаа fi firashi jirbii/spoonjii/springii 11.Elee elektrikaa 12.Ampooli kerisina/mashoo	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Eyee</th> <th style="width: 20%; text-align: center;">Lakki</th> </tr> </thead> <tbody> <tr> <td>1.Ifaa-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>2.sa’aatii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>3.Radionii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>4.Televisiyoona-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>5.Mibayilii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>6.Silkii sarara-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>7.Firjii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>8.Minjaala-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>9.Tessoo-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>10.Alгаа fi firashi jirbii /spoonjii/springii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>11.Elee elektrikaa-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>12.Ampooli kerisina /mashoo-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> </tbody> </table>		Eyee	Lakki	1.Ifaa-----	1	-----2	2.sa’aatii-----	1	-----2	3.Radionii-----	1	-----2	4.Televisiyoona-----	1	-----2	5.Mibayilii-----	1	-----2	6.Silkii sarara-----	1	-----2	7.Firjii-----	1	-----2	8.Minjaala-----	1	-----2	9.Tessoo-----	1	-----2	10.Alгаа fi firashi jirbii /spoonjii/springii-----	1	-----2	11.Elee elektrikaa-----	1	-----2	12.Ampooli kerisina /mashoo-----	1	-----2
	Eyee	Lakki																																							
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3.Radionii-----	1	-----2																																							
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12.Ampooli kerisina /mashoo-----	1	-----2																																							
117	Meseensi matii qabeenyawwan armaan gadi ni qaba 1.Biskileeti 2.Biskiletii motoraa ( doqdoqee) 3.Garii 4. 5.Bajaajii	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Eyee</th> <th style="width: 20%; text-align: center;">Lakki</th> </tr> </thead> <tbody> <tr> <td>1.Biskileeti-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>2. Doqdoqee-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>3.Garii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>4.Konkolataa-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> <tr> <td>5.Bajaajii-----</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----2</td> </tr> </tbody> </table>		Eyee	Lakki	1.Biskileeti-----	1	-----2	2. Doqdoqee-----	1	-----2	3.Garii-----	1	-----2	4.Konkolataa-----	1	-----2	5.Bajaajii-----	1	-----2																					
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3.Garii-----	1	-----2																																							
4.Konkolataa-----	1	-----2																																							
5.Bajaajii-----	1	-----2																																							
118	Miseensi matii mana lafa qonnaa kamiyyu ni qaba.	Eyee-----1 Lakkii-----2																																							
119	Eyee yoo ta’e, miseensi matii kana lafa hangamiti of harka qaba? Mesha safari naannotin _____	_____																																							
120	Wari mana lowwaani fi beladoota kan biro ni qabu?	Eyee-----1 Lakkii-----2																																							
121	Wari mana beladoota arman gaditi tuqaman ni qabu?	<table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Eyee</th> <th style="width: 20%; text-align: center;">Lakki</th> </tr> </thead> <tbody> <tr> <td>1.Loona,qotiyoo</td> <td></td> <td></td> </tr> </tbody> </table>		Eyee	Lakki	1.Loona,qotiyoo																																			
	Eyee	Lakki																																							
1.Loona,qotiyoo																																									

1.Loon,qotiyoo ykn effana	ykn effana-----1 -----2
2.Farda, Haree ykn gange	2.Farda, Haree
3.Re'ee	ykn gange -----1 -----2
4.Holaa	3.Re'ee-----1 -----2
5.Lukkuu	4.Holaa-----1 -----2
6.Gagura kanisa	5.Lukkuu-----1 -----2
	6.Gagura kanisa-----1 -----2

<b>Kutaa 2: Barmatilee sorata hawan ulfaa : itti ansudhan gaffiwwan murasa barmatilee sorta ati yeroo ulfaa kee fudhatutin si gafadha</b>		
<b>201</b>	Ulfa kanan alati, Amma dura tajaajila fayya da'umsa duraa ni qabda?	Eye-----1 Lakkii-----2
<b>202</b>	Tajaajila fayya da'umsa duraa yeroo meqa argate?	Yeroo_____
<b>203</b>	Ulfa kanaaf wa'ee sirna sorata irrati gorsi sif kename beka?	Eye-----1 Lakkii-----2
<b>204</b>	Guyyati yeroo meqa sorata sorata?	1)Yeroo tokko 2)Yeroo lama 3)Yeroo sadi 4)Yeroo afur 5)Yeroo shan
<b>205</b>	Yeroo ulfa keeti barmatile maksasa nyachuu ni qabda?	Eye-----1 Lakkii-----2
<b>206</b>	Guyya kessati calaati adeemsi sorata keti mali?	1) Ciree-laqaana-irbata 2) Ciree-maksasa-laqana-irbata 3) Ciree-laqana-maksasa-irbata 4) Ciree-maksasa-laqana-maksas-irbata 5) Ciree-maksasa-laqana-maksasa-irbat-laqana-maksasa galgala
<b>207</b>	Osoo hin ulfayin dura guyyati yeroo meqa sorata?	Yeroo_____.
<b>208</b>	Barmatile sorata dhisu ni qabda	Eye-----1 Lakkii-----2
<b>209</b>	Sababni ati sorata itti dhistee maal ture?	1) Dadhabii 2) Iraanfachuu 3) Furdachuu dhabudhan 4) Kan biraa
<b>210</b>	Yeroo ulfa keeti yeroo ati sorata it agaabde ni jira?	Eye-----1 Lakkii-----2
<b>211</b>	Yeroo ulfaa keetiti gosa sorata ati dhorgamte ni jira	Eye-----1

		Lakkii-----2
<b>212</b>	Eyee yoo ta'e, gosa sorata kami?	Buna-----1 Marqaa, buluqa, daboo-----2 Ito shiroo-----3 Hude dimaa, timatima, corqaa—4 Hanqaqu, anaan fi bu'a anaani—5 Muzii fi kan biro-----6 Foon -----7 Kan biraa-----8
<b>213</b>	Sorata lagachuf sababni kee maal ture?	Na jibise-----1 Aadaadhan hadha ulfatif kan dhorkame-----2 Amantii-----3 Kan biro-----4
<b>214</b>	Yoo jibitee ta'e sababni isaa mali?	Fooli/dhandham sorata-----1 Wanlaphee na gubuf-----2 Waan na haqisisuf-----3 Hin beku -----4
<b>215</b>	Gosa sorata tuqame irra sababni itti dhorkamte Aadaa yoo ta'e, aadaa isa kami?	Da'imti guda ta'a -----1 Qamaa fi mataa irati kufama-----2 Aboorshini sodachudhan-----3 Ija sodachudhan -----4 Qama hir'uu -----5 Rifeensa dhabuu-----6 Kan biro-----7
<b>216</b>	Ulfa kana booda gosa sorata ati siriti sorachuf fetu ni jira?	Eyee-----1 Lakkii-----2
<b>217</b>	Eyee yoo ta'e, maalif siriti barbade?	Maloo ibsaa _____
<b>218</b>	Gosa sorata kana maalif siriti barbade?	Haluu sorata-----1 Urgaa sorata-----2 Garafulduratif -----3 Sababa isaa hin beku -----4 Kan biro -----5
<b>219</b>	Sorata siriti barbadu argate?	Eyee-----1 Lakkii-----2
<b>220</b>	Lakki yoo ta'e, maalif?	Human hin qabu -----1 Hin argamu-----2 Hadha ulfatif hin eyamamu-----3 Kan biro-----4
<b>221</b>	Dhukkuboota rakko fayyaa ni qabda fkn sukaara, dhibba dhigaa, sombaa, HIV/AIDS ykn kansarii	Eyee-----1 Lakkii-----2
<b>222</b>	Kutaa tajaajil da'umsa durati dawaan fudhatee bektaa	Eyee-----1 Lakkii-----2 Eye yoo ta'e, isa kami ?ayirani fi folik asidii-----11 Kan biro-----21

**Kutaa3: Gucca gaffii fi debii gidu gala lakkoofsa sorata irra dedebi’ani fayyadamu**

Maloo yeroo fudhadhaati gosa sorata fi dhugaati batii tokko dura fudhatan yadadha.ani moo achuman gosa sorata tarefaman kessa maqa sifan dhawa .gosa sorata yeroo murta’e kessati fudhate hama isaa fi yeroo meqa akka fudhate yadachudhaf yali, akka salphati si yadachisudhaf suraa gosa sorata siti agarsisa kanafu “proporshini” hanga sorata fudhate yadachuf yali sizes.

Garee sorata fi gosa isaani (gosa sorata batii tokko dura sorate gafadhu)	Batii tokko dura____ _sorate jirta 1.eyee 2.lakki	Sorata tokko hangam _____ sorate	Baatiti al 1	Batiiti 2 hang 3 ti	Torbaniti al 1	Torbaniti al 2	Torbaniti 3-4	Torbaniti 5-6	Guyya guyyan	Guyyati 2-3	Guyyati yeroo 3 ol
<b>1.Gosa soratamidhani</b>											
1.Bidena xafii adii											
2.Bidena xafii dimma											
3. Fifi bidena											
4.Daboo qamadii adii											
5. Ambasha											
6.Qinchee ajaa											
7. Pastaa											
8.Makaroonii											
9.Ruzii											
10.Bulluqa ajj’aa											
11. Caccabsaa											
12. Marqaa											

garbuu adii											
13.Cuukkoo											
14.Akayii shumbura											
<b>2.Gosa sorataDhedhii</b>											
15. ItooShiroo											
16. Itoo shiroo walliti dabalama											
17. Kikii Itoo misira											
18. Misira dheedhi											
19. Itoo kikii atara											
20. Zayita ocholonii											
21. Ashuqii Baqilaa											
<b>3.Hidda fi jirma</b>											
22. Itoo dinichaa											
23. Miaaxisax											
24. Marqaa bulla											
25. Bulluqa bulla											
26. Hunde dimaa											
27. Karootii											
28. Dinicaha afelama											

<b>4.Fuduraa</b>											
29. Muzii											
30. Burtukaana											
31. Abookadoo											
32. Lomii											
33. Papayaa											
34. Maango											
35. Zayitunaa											
<b>5. Kudurawwaan</b>											
36. Gomana marama											
37. Gomana habasha											
38. Kositaa											
39. Salataa											
40. Timaatima dhedhi											
41."Silsii" timaatima											
42. Fosoliyaa											
43.Itoo dabaqulaa											
44."kariyaa sinig"											
<b>6. Foon fi Qurxumii</b>											
45. Itoo fooni											
46. Foon wadama kan											

qotiyoo											
47. Fooni wadama kan hola											
48. foon wadama kan re'ee											
49. Kitfoo											
50.foon wadama kan qurxumi											
<b>7.Hanqaaqu (Lukkuu)</b>											
51.Hanqaaqu dhedhi											
52.Hanqaaqu afelame											
<b>8.Anaan fi bu'aa anaani</b>											
53. Anaan danfaa (sa'aa)											
54.Hayiiba(sa'aa)											
55. Ittitu(sa'aa)											
<b>9.Sorata misira sooma fi dhugaatiwan</b>											
56. Bargarii											
57. Pizzaa											
58. dinichaa wadama											
59. Mirindaa											

60.Kokakolaa												
61.Spirayitii												
62.Shayii												
63.Buna												
64,makiyaatoo												
65.Biraa												
66.Dadhii dammaa												
67.farsoo												
68. Shukaara												
69. dammaa												
70. marmarataa												

**GALATOOMA!**



**ADDIS ABABA UNIVERSITY**  
**College of Health Sciences**  
**School of Public Health**  
**Ethical Clearance Form**

Version 01.Dec. 2016

Date: /14/\_1\_/\_\_2016\_\_/  
 Ref.No. SPH/ 2008

Project number / 040 /

Date of approval (D/M/Y) <u>/14_/1/2016/</u>	
Project Title: Food consumption pattern and nutrient intake of antenatal care attending pregnant women of Bishofitu town, East Shea Ethiopia	
Name of PI <u>Tizita Wondwossen</u>	Phone Number
Institution	School of Public Health
Department	Prevent Medicine
Decision of Research and Ethics Committee:	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Approved with Recommendation <input type="checkbox"/> Resubmission <input type="checkbox"/> Disapproved
Valid until	09 Jan. 2016 – 08 June. 2016

Dean, School of Public Health

Signature [Signature]

Date 14 / 01 / 2016

**Annex V Standardized portions in gram and photograph atlas**

የምግብ አይነት ዝርዝር	Portion 1	Portion 2	Portion 3	Portion 4	Portion 5
<b>1. የአህል ዘር</b>					
1. ነጭ የጤፍ እንጀራ	93(1)	178(2)	224(3)	311(4)	
2. ቀይ የጤፍ እንጀራ	97(1)	168(2)	251(3)	311(4)	
3. እንጀራ ፍርፍር	91(4)	113(5)	166(6)		
4. ነጭ የሰንደ ዳቦ	89(1)				
5. አንባሻ	159(1)				
6. የአጃ ቋንጫ	60(3)	107(4)	151(5)		
7. ፓስታ	183(1)	260(2)	382(3)		
8. ማካሮኒ	227(1)	331(2)	496(3)		
9. ሩዝ	156(4)	263(5)	423(6)		
10. የአጃ አጥሚት	273(1)				
11. ጨጨብሳ	81(3)	115(4)	151(5)		
12. ነጭ የገብስ ገንፎ	276(1)	426(2)			
13. ጭኮ	23(1)	70(2)	81(3)		
14. ሽምብራ ቆሎ	54(1)	89(2)	141(3)		
<b>2. ጥራጥሬ</b>					
15. ሽሮ ወጥ	56(4)	112(5)	168(6)		
16. ምጥን ሽሮ ወጥ	56(4)	112(5)	168(6)		
17. ምስር ከክ ወጥ	60(4)	85(5)	159(6)		
18. ደፍን ምስር ወጥ	60(4)	85(5)	159(6)		
19. አተር ከክ ወጥ	62(4)	78(5)	135(6)		
20. የለውዝ ቅቤ	7(0)	12(1)	21(2)		

21. ባቁላ አሹቅ	117(1)	172(2)	246(3)		
<b>3. ስራ-ስር</b>					
22. ድንች ወጥ	103(4)	206(5)	309(6)		
23. ስኩዋር ድንች ቅቅል	130				
24. ቡላ ገንፎ	276(1)	426(2)			
25. ቡላ አጥሚት	273(1)				
26. ቀይ ስር	26 (3)	58 (4)	81 (5)		
27. ካሮት አልጫ	103(3)	206(4)	309(5)		
28. ድንች ቅቅል	134				
<b>4. ፍራፍሬ</b>					
29. ሙዝ	154				
30. ብርትኳን	180				
31. አቮካዶ	172				
32. ሎሚ	57				
33. ፓፓያ	132(1)	241(2)	481(3)		
34. ማንጎ	214				
35. ዘይቱን	62				
<b>5. አትክልት</b>					
36. ጥቅል ጎመን	45(3)	90(4)	135(5)		
37. ሀበሻ ጎመን	51(3)	102(4)	153(5)		
38. ቆሰጣ	51(3)	102(4)	153(5)		
39. ሰላጣ	35(2)	53(3)	66(4)	106(5)	

40.ተማተም ቁርጥ	35(2)	53(3)	66(4)	106(5)	
41.ተማተም ስልስ	59(4)	74(5)	134(6)		
42.ፎሶፊያ	32(2)	49(3)	66(4)	98(5)	
43.ዱባ ወጥ	103(3)	206(4)	309(5)		
44.ቃሪያ ስንግ	14				
<b>6. ስጋ እና አሳ</b>					
45.ስጋ ወጥ	52(4)	104(5)	156(6)		
46.የበሬ ስጋ ጥብስ	30(3)	49(4)	76(5)		
47.የበግ ስጋ ጥብስ	30(3)	49(4)	76(5)		
48.የፍየል ጥብስ	30(3)	49(4)	76(5)		
49.ክትፎ	20(2)	59(3)	78(4)	118(5)	
50.አሳ ጥብስ	406				
<b>7. እንቁላል የዶሮ</b>					
51.እንቁላል ጥብስ		85(2)	115(3)	151(4)	
52.የተቀቀለ እንቁላል	42(1)				
<b>8. ወተትና የወተት ውጤቶች (የላም)</b>					
53.የፈለ ወተት	105(1)	218(2)	127(3)		
54.አይብ	28(3)	57(4)	108(5)		
55.እርጎ	198(1)	225(2)	295(3)		
<b>9. ፈጣን ምግቦች መጠጦችና ጣፋጮች</b>					
56. በርገር	176( <sup>1</sup> / <sub>2</sub> )	376(1)			
57.ፒዛ	110(1)	184(2)	306(3)	364(4)	
58.ድንች ጥብስ (ችብስ)	109(1)	168(2)			
59.ሚሪንዳ	205(1),300	250(2)	275(3)	275(4)	400(5)

60.ከካኮላ	205(1),300	250(2)	275(3)	275(4)	400(5)
61.ስፕራይት	205(1),300	250(2)	275(3)	275(4)	400(5)
62.ሻይ	105(1)	223(2)	105(3)		
63.ቡና	57(1)	61(2)			
64.ማክያቶ	105(1)	223(2)	105(3)		
65.ቢራ	205(1),330	250(2)	275(3)	275(4)	400(5)
66.ብርዝ	205(1)	250(2)	275(3)	275(4)	400(5)
67.ጠላ	205(1)	250(2)	275(3)	275(4)	400(5)
68.ስኳር	5(0)	7(1)	14 (2)		
79.ማር	7(0)	12(1)	21(2)		
70.ማርማላት	7(0)	12(1)	21(2)		

የምግብ መጠን ማካያ ይቆይላችኋል

መሠረታዊ: ተገቢውን መጠን አገመገሙ የይቆይላችኋል ገቢ ለመጠቀም ስህተት ይገባል::

የምግብ አይነት = 1, 2, 4, 5, 10, 23, 25, 28, 29, 30, 31, 32, 34, 35, 44, 50, 51, 52, 56, 57. (መጠናቸውን ለቀጥታ ለመለካት:: ምሳሌ ገንጽ ቁጥር:: ገንጽ ገንጽ ወዘተ -----).

የምግብ አይነት = 20, 68, 69, 70



የምግብ አይነት = 6, 11, 26, 27, 36, 37, 38, 39, 40, 41, 42, 46, 47, 48, 49, 54.



የምግብ አይነት = 3, 9, 15, 16, 17, 18, 19, 22, 43, 45.



የምግብ አይነት = 53, 62, 64.



7 (Jnt)



4



5



6

8 (o97e2)



4



5



6

14 (Яяоо-н фто)



1



2



3

21

(ገብገብ አገልግ)



1



2



3

13 (ግግሩ)



1



2



3

JJS (33)



1



2



3

55



1



2



3

73B (12, 24)



1



2

58



2



3

63 (ns)



1



2

የመጠን አገላግሎት = 60, 61, 62, 66, 67, 68.



1

2



3

4

5

## Curriculum vitae

### 1. PERSONAL DATA

Name = Tizita Wondwossen Desta

Sex= Female

Place of birth= Addis Ababa

Date of birth = June 25, 1979 E.C

Nationality= Ethiopian

Marital status= Not married

Religion= Orthodox Christian

Languages= Amharic, English and Afaan Oromo

### 2. EDUCATION

YEAR OF STUDY	LEVEL OF EDUCATION	PLACE
1986-1994 E.C	K.G - Grade 8	Guardian angels school
1995-1996 E.C	Grade 9- 10	Ada'a secondary school
1997- 1998 E.C	Grade 11-12 (pp1 and pp2)	Bishoftu technical and vocational preparatory school

Higher institution study

University	Field of study	Year of graduation
University of Gondar	Bsc in public health	2002 E.C
Addis Ababa university	Masters of public health	Ongoing

### 3. WORK EXPERIANCE

- I worked at chilalo health science and Technology College located at Assela town as lecturer and department head of health science unit for one year and 3 months immediately after my graduation.

- From June 2003 till February 2006 I had been working at serofta health center located at dodola worda of west arsi zone of oromia region as clinician in different units particularly OPD and ART clinics.

#### **4. TRAINING**

- I have taken training and successfully completed being certified on the following areas:
  - Adult and pediatric comprehensive ART care.
  - PHICT
    - TB and leprosy
- Management of SAM
- MCH nutrition counseling

#### **5. REFERENCES**

- Abreham Hailemariam (former department head of health science unit of chilalo health science and Technology College) – Mobile 0911894338
- Tadesse Silku (head of serofta health center) – Mobile 0911180832
- University of Gondar registrar – Tel 0581110174

#### **6. CONTACT ADDRESS**

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