



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

**VALIDATION OF A FOOD FREQUENCY QUESTIONNAIRE
FOR FOOD AND NUTRIENT INTAKE OF ADULTS IN
BUTAJIRA, SOUTHERN ETHIOPIA**

BY: - ILILI FEYESA (BSC.)

**THESIS SUBMITTED TO SCHOOL OF GRADUATES STUDIES,
ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH
SCIENCES, IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTERS IN PUBLIC
HEALTH NUTRITION**

OCTOBER, 2019

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

**VALIDATION OF A FOOD FREQUENCY QUESTIONNAIRE FOR FOOD
AND NUTRIENT INTAKE OF ADULTS IN BUTAJIRA, SOUTHERN
ETHIOPIA.**

BY - ILILI FEYESA (BSc.)

ADVISORS: - BILAL SHIKUR (MD, MPH)

SEIFU HAGOS (PhD, MPH, MSc.)

ESETE HABTEMARIAM (BSc, MPH)

OCTOBER, 2019

ADDIS ABABA, ETHIOPIA

APPROVED BY THE BOARD OF EXAMINERS

This thesis, by Ilili Feyesa is accepted in its present form by the board of examiners as fulfilling for the degree of masters of public health in public health nutrition.

Validation of a food frequency questionnaire for food and nutrient intake of adults in Butajira, Southern Ethiopia.

Advisor

Full name	Rank	Signature	Date
-----------	------	-----------	------

Advisor

Full name	Rank	Signature	Date
-----------	------	-----------	------

Advisor

Full name	Rank	Signature	Date
-----------	------	-----------	------

External Examiner

Full name	Rank	Signature	Date
-----------	------	-----------	------

Internal Examiner

Full name	Rank	Signature	Date
-----------	------	-----------	------

Chairman, Department Graduate committee

Full name	Rank	Signature	Date
-----------	------	-----------	------

Acknowledgment

First and foremost, I would like to thank my God Almighty for his never-ending provision, strength and guidance throughout my research work. Without his help, this achievement would not been possible.

I would like to express my deep and sincere gratitude to my advisors Dr. Bilal Shikur, Dr. Seifu Hagos and Ms Esete Habtemariam for their invaluable guidance, enthusiastic encouragement, and useful critiques of this research work.

I gratefully acknowledge Mr Masresha Tessema, Mr Meseret Woldeyohannes and Mr Elias Merdassa, who have been helpful and cooperative in giving their heartfelt support at all times to help me achieve my goals.

I would like to offer my special thanks to my supervisors, data collectors, Butajira rural health program coordinator and study participants for their passionate participation and cooperation throughout my data collection period.

I would like to acknowledge the financial support provided by Addis Ababa University College of Health Science School of Public Health

Finally, I would like to express my profound gratitude to my parents for providing me with unfailing support, continuous encouragement and prayers throughout the process of researching and writing this thesis. Thank you.

List of Abbreviations

24-HR	24-Hour Dietary Recall
CC	Correlation Coefficient
DRs	Diet Records
EDHS	Ethiopian Demographic and Health Survey
FFQ	Food Frequency Questionnaire
GBD	Global Burden of Disease
LOAS	Limits of Agreements
HDSS	Health and Demographic Surveillance Site
NCD	Non-Communicable Disease
SNNPR	Southern Nationalities and Peoples Regional State

Table of contents

Acknowledgment	ii
List of Abbreviations	iii
List of tables.....	vi
List of figures	vii
List of Annexes	viii
Abstract.....	ix
1. Introduction	1
1. 1 Background	1
1.2 Statement of the problem	2
1.3 Significance of the study	3
2. Literature review	4
2.1 Developing FFQ	4
2. 2 Validation of FFQ.....	6
3. Objectives	9
3.1 General objective	9
3.2 Specific objectives	9
4. Methods and materials	10
4.1 Study area.....	10
4.2 Study design and period	10
4.3 Source population	10
4.4 Study population.....	10
4.5 Sample size calculation	10
4.6 Sampling procedure	11
4.7 Data collection tool and procedures	12

4.7.1 Data collection tool	12
4.7.2 Measurement and variables	12
4.7.3 Data collection procedures	14
4.8 Data quality assurance	16
4.9 Data management and analysis.....	16
4.10 Ethics consideration.....	18
4.11 Dissemination of the results	18
5. Results	19
5.1 Participant characteristics.....	19
5.2 Relative validity analysis	21
6. Discussion.....	36
8. Conclusion and Recommendations	40
9. References.....	41
7. Apendices.....	43

List of tables

Table 1: Socio-demographic characteristics of study participants in Butajira HDSS, SNNP region, 2019	19
Table 2: Mean (SD), median, and 25 th , 75 th percentiles daily nutrient intakes estimated by the average of two 24-HR dietary recalls and FFQ in Butajira HDSS, SNNP region, 2019.....	22
Table 3: mean (SD), median, and 25 th , 75 th percentiles daily food group intakes estimated by the average of two 24-HR dietary recalls and FFQ in Butajira HDSS, SNNP region, 2019.....	24
Table 4: Relative validity of nutrient intakes when comparing the FFQ to the average of two 24-HR dietary recalls in Butajira HDSS, SNNP region, 2019.....	26
Table 5: Relative validity of food group intakes when comparing the FFQ to the average of two 24-HR dietary recalls in Butajira HDSS, SNNP region, 2019.	28
Table 6: Cross-classification and Weighted Kappa statistics of daily intakes of energy, nutrients and food group in quartiles as assessed with the average of two 24 hour dietary recall and the FFQ in Butajira HDSS, SNNP region, 2019.....	30

List of figures

Figure 1: schematic presentation of sampling procedure for Adults in Butajira HDSS, SNNP region, 2019	11
Figure 2: Bland Altman analysis plot for energy and selected nutrients (macronutrient intakes: carbohydrate, protein, fat and micronutrients: iron, calcium, vitamin A, vitamin B1, vitamin B2) as predicted by FFQ and average of two 24 Hour dietary recall in Butajira HDSS, SNNP region, 2019.....	33
Figure 3: Bland Altman analysis plot for food groups (cereals, legumes, vegetables, beverages, roots and tubers, fruits, egg, meat/poultry/fish and dairy product) as predicted by FFQ and average of two 24 Hour dietary recall.....	35

List of Annexes

Annex 1: subject information sheet	43
Annex 2: Informed consent	44
Annex 3: Questionnaire.....	45
Annex 4: Amharic version of informed consent.....	72
Annex 5: Amharic version of questionnaire.....	73
Annex 6: Recipe for adults in Butajira.....	106
Annex 7: curriculum vitae	108

Abstract

Background: Food frequency questionnaires (FFQ) is the most commonly used dietary assessment tool in epidemiological studies, due to ease of administration and feasibility. However, the information collected by FFQ is associated with lower accuracy. For accurate interpretation of the food frequency results that arise from epidemiological studies, it needs to be compared with a more accurate dietary assessment method. To date, there is no culture-specific and validated FFQ available in Ethiopia.

Objective: This study aims to evaluate the validity of a locally developed FFQ for estimating food and nutrient intakes of adults in Butajira, southern Ethiopia.

Methodology: We employed a community-based cross-sectional study and included a total of one hundred fifteen adults aged 20-65 years. FFQ was developed using two sources of data; focus group discussion and previous two days 24-Hour diet recall. The relative validity of the FFQ was assessed against the average of two interactive 24-hour dietary recalls. Intakes of macronutrients (energy, protein, carbohydrate, fat), micro-nutrients (calcium, iron, vitamin, vitamin B1, vitamin B2) and food groups were measured by the two methods. The validity of the FFQ was evaluated by comparing estimates of specific nutrients and food groups derived from the FFQ against the 24-hour dietary recalls by calculating the mean or median difference, correlation coefficients, cross-classification, and Bland Altman test.

Result: Mean energy and macronutrient intakes obtained from the FFQ were significantly higher than those obtained from the mean of 24-hour dietary recalls. The correlation between energy and macro-nutrients measured by the two methods varies from 0.05 (Total fat) to 0.32 (carbohydrate) and from 0.1 (calcium) to 0.49 (vitamin B1) for micronutrients. FFQ did not adequately classify subjects with respect to energy, macro-nutrients and most of the micro-nutrients. A systematic mean difference was observed in vitamin A and iron intake in the bland–Altman agreement test. For the majority of the food groups, median differences in the intake of foods and nutrients between 24-hour dietary recall and FFQ were, overall, small and statistically insignificant. Correlation coefficients ranged from 0.12 for an egg to 0.78 for legumes. We found that the FFQ showed a fair classification agreement with the 24-hour recall for intakes of cereals, legumes, and roots and tubers. A systematic mean difference was observed in roots and tubers and beverage intake in the bland–Altman agreement test.

Conclusion: The FFQ provided a good validity to assess and rank individuals in terms of intakes of most food groups according to high and low intake categories. Its validity could be acceptable for estimating energy and macro-nutrient intakes at individual basis. However, estimates of minerals and vitamins should be interpreted with caution.

1. Introduction

1. 1 Background

The food consumption of individuals is measured using two groups of methods. The first group also is known as 'quantitative daily consumption method' consists of diet records and 24-hour dietary recall (24HR). The actual foods and amounts consumed by an individual over one or more specific days are the basis for 24HR and diet records. These methods allow detail food description and food preparation methods. The second group includes dietary history and Food Frequency Questionnaire (FFQ). Both are based on recall of food intake that has already been consumed over a longer, less precisely defined period(1, 2).

In, the 24HR, the respondent is asked to remember and report all the foods and beverages consumed in the preceding 24 hours or on the preceding day (3). The method has some limitations that need to be considered when using it. This includes: Reliance on memory, the need for highly trained interviewers, and the need for multiple replicate 24HR to estimate usual intake. The strength of the method includes: not requiring participant literacy, less likely to be reactive and low participant burden (1, 2). In a diet records, participants weigh all the foods and drinks at the time of consumption. Therefore, memory, portion size estimation and a restricted list of foods are not errors associated with diet record. However, the need for participants with high motivation, numeracy, and literacy limits their use in less-educated populations. Subjects change their usual eating habits for making recordings easier or to impress investigators(1).

Food frequency questionnaire asks the respondents about their usual frequency of consumption of each food during a specified time. Little detail is collected on other characteristics of the foods as eaten, such as the methods of cooking, or the combinations of foods in meals. Many FFQs also include usual portion size questions or specify portion sizes as part of each question. The limitations associated with an FFQ are due to the restrictions imposed by a fixed list of foods, memory, and perception of portion size and interpretation of questions (3).

The accuracy of the dietary method in measuring the actual intake is determined by a process called validation. Validation is needed to show the magnitude and direction of measurement error and to identify ways in which these errors can be minimized(4). Because of the lack of gold standard in dietary assessment, validation studies cannot compare a test method with absolute truth rather they compare one method with another method that is judged to be superior (relative

validity) (2, 4). Investigators have recognized that information collected by FFQs is associated with lower accuracy. Therefore, it needs to be compared with information collected by a more accurate dietary assessment method (2). The dietary assessment methods used in the validation of FFQs include Multiple dietary recalls, food records, and biomarkers (5). Approximately, 75% of the validation studies of the FFQ, are validated against multiple 24HRs (6).

1.2 Statement of the problem

Food questionnaires are often used by epidemiologists studying the association between dietary habits and disease primarily because of its low cost and ability to capture usual dietary patterns(2). In Non-communicable diseases (NCDs), the conceptual exposure is long term diet and the FFQ is a suitable method for assessing habitual diet intake over a longer reference period. In low-income and low-middle income countries, there has been a rapid rise in NCDs burden, where almost half of premature NCDs deaths occur(7). Therefore, more research is needed to discover the causes of this rising burden and help governments develop prevention policies.

In Ethiopia, although data related to diet quality remain sparse, a finding from the Global Burden of Disease (GBD) 2013 estimated that the number of deaths attributable to dietary factors was 60,402(8). The proportion of NCD deaths associated with low fruit consumption slightly increased (from 11.3% in 1990 to 11.9%). In these years, the rate of the burden of disease related to poor diet slightly decreased; however, their contribution to NCDs remained stable(8). This indicates that dietary behavior contributes significantly to disease burden in Ethiopia.

Short term recall and diet record methods are generally expensive, unrepresentative of usual intake if only a few days are assessed, and inappropriate for assessment of past diet. In contrast, FFQ is easier to administer, place less burden on respondents, have relatively low cost and provide a rapid estimate, making them more feasible and best suited for measuring long term dietary intake in for most epidemiological studies and large cohort studies(2).

Interpretation of results from studies of diet-disease that use FFQ is often difficult unless it has been validated in population reasonably similar to that being investigated(2). Incorrect information may give rise to false associations between dietary factors and diseases or disease-related markers. The null association could also be attributed to a lack of variation in the dietary exposure in the study population or the inability of the tool to find out existing differences in the diet(2). Therefore, the elucidation of diet-disease association requires an FFQ which can adequately describe and quantify intakes, minimize systematic errors and provide reasonably precise estimates of variability (6, 9). To our knowledge, the validity of an FFQ has not been evaluated for Ethiopian adults.

1.3 Significance of the study

The results from this study may substantially enhance analyses and interpretation of results of diet disease-studies. This study can be used to assess the function of specific aspects of the questionnaire; this can guide for using the questionnaire or lead to improvements in the method. We hope that this study helps in solving issues related to using methods with low feasibility and high participant burden to estimate usual nutrient and food intake. The findings can also add to a growing body of literature on validation of FFQ.

2. Literature review

2.1 Developing FFQ

Questionnaires may either be developed from basic principles or adapted from existing questionnaires. Modifying an existing questionnaire can be used as an alternative to developing a questionnaire from basic principles where time and finances are limited. Before modifying an existing questionnaire Careful consideration needs to be undertaken of the original purpose of the FFQ, the characteristics of the target population, the time the questionnaire developed, and whether a previous validation been carried out and if it was acceptable (2, 6).

In a review of FFQ validation studies, correlation coefficients were compared for newly designed food-frequency questionnaires and those adapted from other questionnaires. Newly developed questionnaires had a higher correlation for energy (0.49 Vs. 0.44) and fat (0.52 Vs. 0.49) than modified questionnaires. Adapted questionnaires had a higher correlation for vitamin C (0.50 Vs. 0.44) and vitamin A (0.41 Vs. 0.34) than newly developed questionnaires. There were no differences for calcium (0.54 Vs. 0.55) and iron (0.45 Vs. 0.44)(6).

Overall, using a modified questionnaire did not appear to be worse than using FFQs developed de novo (6). However, in the absence of FFQ which is reasonably appropriate for the cultural background of the study population, developing a new FFQ may be the best approach (2). To date, there is no culturally specific FFQ developed for use in Ethiopia.

2.1.1 Food lists in FFQ

The number of food items listed in a food-frequency questionnaire tends to vary widely. The review of validation studies found that the number of food items on a questionnaire ranged from 5 to 350 with the median number being 79 (6). Willett, citing a study conducted by Pietinen et al. in which a 44-item FFQ was compared with a more detailed 273-item one, suggests that there is a rapidly decreasing marginal gain in information obtained with increasingly detailed questionnaires. Therefore, there is little to gain in unnecessarily elongating the number of food items included when developing a food-frequency questionnaire(6). Unnecessary elongation of the FFQ may also result in questionnaire fatigue, for both participants and interviewers and discourage participants to respond it fully.

2.1.2 Frequency response section

Frequency categories of the reviewed articles ranged from three (3) to nine (9) categories, of which the later with the most commonly reported (10-15). Validation studies have used either an open-ended frequency response section allowing participants to tell their frequency of consumption (10-12) or a closed-ended section (13-16). It is recommended that frequency categories should always be continuous, with no gaps, as the sensitivity of the questionnaire will be reduced and respondents will be frustrated if they cannot find their response and also the number of choices should range between 1 and 12 but will mainly depend on the intended use of the questionnaire. The range of frequency choices should reflect the time frame of interest. The frequency categories should emphasize the more frequent end of the distribution for most foods (e.g. a number of times per week). However, for foods that are eaten infrequently but make a significant contribution to nutrient intake (e.g. liver), it is important to include a less frequent option, say less than once a month (6).

2.1.3 Portion size estimation

One study, allowing participants to describe their portion sizes, was found to have higher correlation (14). Similarly, a review found that measures of agreement between FFQs and a reference dietary measure were highest when subjects were able to describe their portion size (correlation coefficients 0.5–0.6) compared with no portion size specified (use of average portion weights to compute intakes: correlation coefficients 0.2–0.5) or portion size specified on the questionnaire (correlation coefficients 0.4–0.5) (6).

Several strategies have been proposed to improve portion size estimation in low-income countries (LICs). The use of photographs, that portray the range of portion sizes consumed by the subjects, was suggested as a valuable tool for quantifying food portion size at a group level. Calibrating local utensils, graduated food models and weighted salted replicas of actual staple foods are also recommended approaches for reducing errors in estimating portion size (17).

In conclusion, some estimation of portion size rather than using average portion weights appeared advantageous. However, the minor improvement in validity obtained when allowing subjects to specify their portion sizes does not justify the extra cost and time involved in development (6).

2. 2 Validation of FFQ

When designing a validation study, several factors must be taken into account to ensure the results are true representations of what would be collected when the questionnaire is used in real life, such as the population the participants will be recruited from.

2.2.1 The choice of the population for a validation study

The FFQ needs to be tested on a subsample of the main study population. Characteristics of subject selection that may influence subject selection include volunteers (self-selected subjects), overweight, and history of dieting, depression, body image, and social desirability. It has also been observed that the type of diet consumed can have an impact on the outcome of the validation study (1, 6)

2.2.2 Number of subjects and Replicate Days Required

The sample size used to validate FFQs ranged from 61-408 subjects. The size of the validation study did not make an appreciable difference, on average, to the study results (10-15). Determining an appropriate number of the study population for a validation study is a bit complex as correlations for many nutrients are likely to be examined and the precision required is somewhat arbitrary. For realistic conditions (correlation between questionnaire and ‘truth’ of 0.5-0.7) it was obvious that validation studies larger than 150-200 subjects provide little additional precision in corrected confidence interval and those with 30 subjects lead to a major increase in width of a corrected confidence interval. Thus, a reasonable size for validation seems to be about 100-200 persons (2). Cade et al (2002) suggest that for the Bland–Altman method, a sample size of at least 50, and preferably much larger (100 or more subjects, say), is desirable (6).

The assumption underlying the above sample size is that a sufficient number of days of dietary information is needed to reasonably describe an individual’s true diet, typically 14 to 28 days, over a reference period. However, few studies manage to achieve such a large number of days of good quality dietary information from their subjects and therefore most use between two and five replicates (days) per subject. If a strategy using a small number of replicates per subject is employed, the number of subjects needs to be increased to maintain the same precision of the corrected correlation coefficient (2, 6).

2.2.3 Reference Method

Food Frequency Questionnaire Versus 24-hour dietary recall

The 24- hour dietary recall is one of the reference methods used for validation of FFQ. This method was used as a primary alternative to diet records. Although 24HR is less demanding for the participant than diet recording and less likely to influence the actual diet of the subjects, it was condemned for its similar source of error to that of FFQ (e.g. reliance upon memory, the conceptualization of portion sizes and distortion of reported diet(2)).

The use of 24HR as a reference method to validate has shown that FFQ overestimated median nutrient intake (10, 13-15, 18). The reason behind this overestimation may be that people tend to overestimate their actual intake when they are asked to recall the frequency of a large number of foods consumed in the Food Frequency Questionnaire. Nutrient correlations that were energy-adjusted or de-attenuated (to reduce dependency on between-person variation) were found to have higher correlation coefficients compared with crude values. A meta-analysis of FFQ validation studies showed that pooled correlation coefficients of nutrient intakes (total fat, protein, carbohydrate, alcohol, calcium, and vitamin C) were lower for FFQ validated against 24h diet recalls rather than food record, although they were not statistically significant (16).

Studies indicated that mean correlation particularly for vitamin A, vitamin C and iron (Fe) and for macronutrients: fat and protein intake are poor (cc <0.4). Among food groups, green leafy vegetables attained a low correlation coefficient (10, 14, 18). Similarly, a review of validation studies has shown the lowest correlation coefficients for total fat and vitamin A and vegetable intake. Vegetable intakes and related nutrients such as vitamin A are particularly difficult to assess using an FFQ. Questionnaires tend to have long lists of a wide range of vegetables that may or may not include vegetables consumed as part of mixed dishes. It is possible that misreporting of vegetables can occur for several reasons such as the double counting of items or social desirability bias (19). It was also found that nutrient correlations were lower when the reference method of dietary questionnaire was conducted fewer than eight times (16).

Food Frequency Questionnaire Versus Diet record

In diet record (DR), participants weigh all the foods and drinks at the time of consumption, and therefore memory, portion size estimation and a restricted list of foods are not errors associated

with a diet record. In practice, however, portion size estimation is still an issue as there are times when the participant cannot weigh the foods(2).

The use of DRs as a reference method to validate has shown that FFQ macronutrients tended to be less overestimated compared to micronutrients (20-23). A similar result has been found in other studies and is thought to be a result of many foods each contributing a small amount to total micronutrient intake, as opposed to a small number of foods contributing to the majority of total macronutrient intake. Correlations between the FFQ and reference method also varied. Some correlations were weak for vitamin E, vitamin C and for vitamin A. While other studies found high correlations selected micronutrients (calcium, thiamin, riboflavin and niacin, Pearson coefficients ranging from(21, 22). However, some nutrients such as fiber, vitamin A and vitamin E were relatively consistent across studies. In contrast, other nutrient correlations showed greater variation across studies, this variability between nutrients may be as a result of high within-person variation, that is, the true day-to-day variation of dietary intake, particularly when the FFQs are looking at intake over different lengths of time (19).

In conclusion, diet records (weighted), have been suggested as the best comparison method for validating an FFQ. However, limitations like a reduction of the response rate, change in subject's diet and requiring highly motivated, numerate and literate participants limits their use as a reference method in validation of FFQs. For this reason, the collection of multiple 24-hour dietary recalls has been suggested as a comparison standard for validating FFQ.

2.2.4 Sequence of Administration

Some validation studies administered FFQ both after and before the study(11, 18). While other studies administered the FFQ once, either before or after the reference method (10, 13, 15). For reducing any bias introduced by using just the first or second FFQ an additional option would be to randomly use either the participant's first or second FFQ data for comparison with the reference method. This would provide a combination of the minimal and maximal validities (2).

3. Objectives

3.1 General objective

The general objective of this study is to evaluate the validity of a Food Frequency Questionnaire against 24-hour dietary recall in Butajira district, 2019.

3.2 Specific objectives

The specific objective of this study includes:-

- To evaluate the validity of Food frequency questionnaire in the estimation of energy and nutrient intakes (macronutrient intakes: carbohydrate, protein, fat, and micronutrients: iron, calcium, vitamin A, vitamin B1, vitamin B2) against the 24-hour dietary recall of adults (20-65 age).
- To evaluate the validity of Food frequency questionnaire in the estimation of the food group intakes against the 24-hour dietary recall of adults (20-65 age).

4. Methods and materials

4.1 Study area

The study was conducted in the Butajira Health and Demographic Surveillance Site (HDSS), Southern Nationalities and Peoples Regional State (SNNPR) and south central Ethiopia. Butajira District is located 130 km to the south of Addis Ababa. HDSS area consists 10 surveillance villages (nine rural and one urban kebeles) which were sampled in 1986 based on probability proportional to size technique from 82 rural and 4 urban kebeles of, Gurage Zone, in the Southern Nations, Nationalities and Peoples Regional State (SNNP) in southern Ethiopia. It has three agroecology (lowland, midland and highland).

4.2 Study design and period

A repeated cross-sectional study was conducted among adults aged (20-65) years in Butajira HDSS from March to April 2019.

4.3 Source population

The source population for the study was all adults who were residents of Butajira district.

4.4 Study population

The study population for the study included all randomly selected adults aged (20-65) in the selected kebeles.

4.5 Sample size calculation

We calculated the sample size based on the following assumptions. First, based on a correlation coefficient assuming a sufficient number of days of dietary information are obtained to reasonably describe an individual's diet which is 14 to 28 days, a sample size of no more than **100 to 200** should be sufficient. Cade et al suggest that for the Bland–Altman method, a sample size of at least 50, and preferably much larger (100 or more subjects), is desirable. Second, Validation studies larger than (150-200), provide little additional precision in the corrected confidence interval. Validation studies, with as few as 30 subjects lead to a major increase in the width of corrected CI. A reasonable size for validation studies thus seems to be about 100 to 200. This is adequate for the range of likely degrees of validity allows the appropriate exclusion of some subjects. Considering this range (100 to 200) which is a reasonable sample size of validation study we have taken 120 to be the final sample size.

4.6 Sampling procedure

We employed simple random sampling to identify study participants. A total of Seven 7 kebeles were included to reach the desired sample size. Sampling frame with the list of households was obtained from the Butajira Rural Health Program database.

The final sample size was allocated proportionally to kebele to identify house-hold in each kebeles.

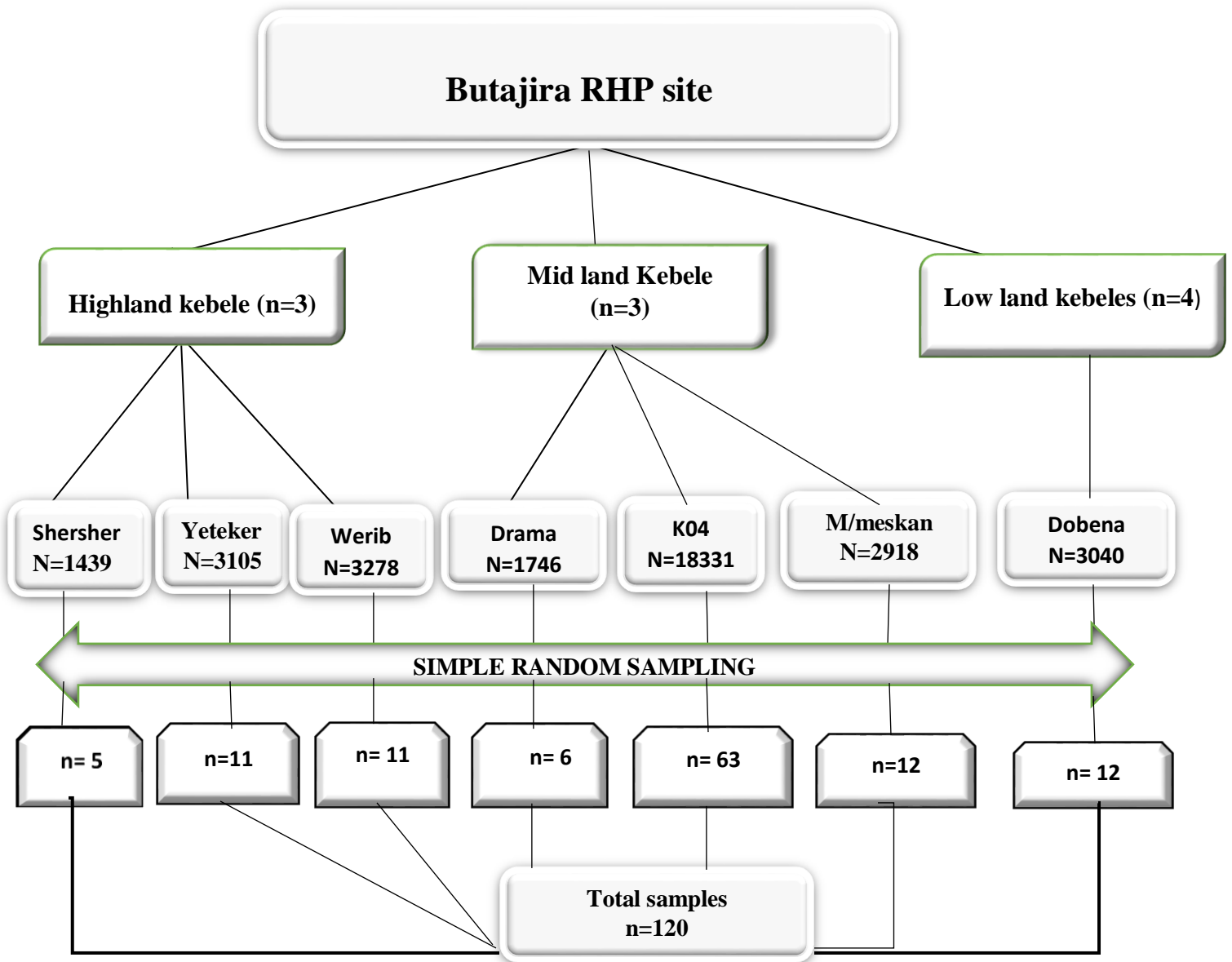


Figure 1: schematic presentation of sampling procedure for Adults in Butajira HDSS, SNNP region, 2019

4.7 Data collection tool and procedures

4.7.1 Data collection tool

Socio-demographic characteristics

We have adapted a questionnaire from the Ethiopian demographic and health survey (EDHS) to get Socio-demographic data including age, sex, occupation, educational status, and marital status.

Dietary intake assessment

We used a focus group discussion and previous unpublished dietary intake data for the development of FFQ. We employed an interactive, multiple passes 24h dietary recall question adapted and validated for use in developing countries as a reference method for the validation of a food frequency questionnaire.

4.7.2 Measurement and variables

Development of Food Frequency Questionnaire

We developed FFQ following five major steps. This includes choosing appropriate foods, Prioritization, and categorization of food items, assembling a list of selected foods, frequency and portion size and expert review and pre-testing.

First, information on food intakes was obtained from unpublished Cross-sectional survey of women living in Butajira. Data was collected from 2010-2011. A single 24Hr recall provided information on dietary intakes. Market and mini-market visits were undertaken on non-consecutive days to identify common brand names and foods that could be relevant and were added accordingly.

Besides, we conducted a focus group discussion two weeks before the interview in Butajira district (kebele 04). It was organized by the principal investigator and field supervisors. The group consisted of 6 women. They were interviewed about foods commonly consumed in the area. We undertook the discussion to identify food items that are typically consumed, including ingredients used, and methods of preparation. The information also included the availability of foods during the different seasons, traditional and ceremonial dishes consumed and foods that are infrequently consumed.

Second, we combined similar foods and beverages into single items to form groupings of food items. Third, we clustered the related food items together, such as traditional food groups. For closely related foods, and we placed more specific items before general items. We placed food groups of particular interest near the beginning of the questionnaire but not at the start to reduce errors that may be made in the responses to the first few questions while the participant is getting used to the format of the questionnaire. Additionally, towards the end of the questionnaire, the accuracy of responses may decline due to boredom or fatigue.

Forth, the Frequency of intake was evaluated based on the usual intake over the previous month. Seven frequency categories were included ranging from daily to never/one less than per month. Each food item was assigned a portion size. A pre-specified portion size estimation method was employed for the estimation of portion size in FFQ using local house-hold units such as bowl, plate, spoons of different sizes (tablespoon, teaspoon), coffeecups, teacups, water glasses, as well as using photographs.

Fifth, experts reviewed the newly developed FFQ (nutritionist from Addis Ababa University) to confirm its content validity. To ensure if all relevant food items were included, the food list was extensively discussed. And this was followed by pre-testing of the developed questionnaire in a group of 10 adult women who are comparable to the study participants from a nearby sites. Some minor changes were made as a result.

The final developed FFQ consisted of 89 food and drink items. The reference time is the previous month. The food groups include cereals products, bread and potatoes, Legumes and pulses, Roots and tubers, vegetables, fruits, egg, milk and dairy, fish and products based on fish, meat and poultry, fat and oil, sweets, drinks, and fast foods and pastry.

4.7.3 Data collection procedures

Recruiting data collectors

We recruited three (3) interviewers who had previous experience in dietary data collection and fluent in the local language. The Principal investigator trained interviewers for five days (5) on how to conduct FFQ and 24h diet recall.

For the interactive 24- hour recall: On Day 1, the purpose of the interactive 24-hour recall was explained as well as the details about the salaries and working arrangements were discussed. On Day 2, details on how to conduct the 24-hour recall interviews and any associated questionnaires were discussed, with some practice of interviews on recording and describing the foods and drinks consumed using hypothetical menus. Days 3 and 4 focus on methods to estimate portion sizes; how to complete the 3 passes of the interview protocol correctly; and practicing a 24-h recall interview among themselves. On Day 5, instructions were given on how to complete the recipe forms and how to handle difficult scenarios, and a field exercise is conducted.

The participants also received training on how to administer FFQ. How to go for the frequency of consumption and portion size estimation issues and relevant issues to FFQ data collection were discussed during the training. This includes: how to introduce the purpose of the FFQ and draw the attention of the respondents on the reference period that is the previous month, the order of interviewing the questionnaire and explanations on how to get information regarding the usual portion size estimation using sample calibrated equipment. We used role-plays to help the interviewers understand more about techniques of interviewing. Corrections and feedbacks were given accordingly.

Dietary intake assessment

The FFQ was validated against the average of two unannounced 24-h recall questionnaires. The FFQ was obtained after the second 24h diet recall. There was a 15 days interval between the first 24h diet recalls and the second 24h diet recall.

24-hour dietary recall

We conducted two 24HR on non-consecutive days. The diet recall used was an interactive, multiple passes 24h dietary recall question adapted and validated for use in developing countries. The multiple pass technique was used after rigorous training and pre-test conducted before dietary

data collection. Each interview involves a stepwise series of questions, common household utensils such as bowl, plate, spoons of different sizes (tablespoon, teaspoon), coffee cups, teacups, water glasses were used to improve the memory of the respondents and to assist in completing the recall. A digital food scale (Electronic kitchen scale) was used to measure the weight of the consumed as well as the ingredients used in food preparation to the nearest 1g.

First, we asked the participants to report everything that they consumed the previous day, including during the night. The opening question was; “After you got up this morning/yesterday morning, when was the first time that you had something to eat or drink?” followed by the questions “What did you eat or drink at that time?” and “Did you eat or drink anything else at that time?” The same three questions were repeatedly been asked until the participants recall all the food and drink items consumed over the specified period. The first pass ended with the questions “Can you remember any other times you had something to eat or drink to?” In the second pass, participants were asked to provide additional detailed information about each item of food and drinks consumed. This includes the name of the food item, where they ate it, brand names, cooking methods, amounts served, and the amount consumed. For homemade dishes, participants were asked for the recipes and ingredients. The final pass reviewed all previously recalled information to confirm the accuracy of the record. During the final pass, the data collectors asked the participants to prompt for information about foods and drinks not mentioned that were considered to be easy to forget, such as snacks, fruits, water, and juices (18).

We interviewed on weekdays and weekends to capture variance in the intakes across various days of the week.

Food Frequency Questionnaire

The frequency of intake was evaluated based on the usual intake over the previous month. Nine frequency categories were included ranging from daily to never/one less than per month each food item was assigned a portion size.

Portion size estimation: a pre-specified portion size estimation method based on the average consumption was employed for the estimation of portion size using local house-hold units such as, bowl, plate, spoons of different sizes (tablespoon, teaspoon), coffee cups, teacups, water glasses, as well as using photographs. A visit to local markets and shops were held to purchase and arrange

equipment for data collection. To determine the weight of the food items used commonly consumed dishes were made in Ethiopian public Health Institute laboratory by the principal investigator. This was done using the purchased utensils assigned for that specific food type. The measurement was done by an Electronic seca scale and the average of the 3 measurements was taken. Codes were given for different prepared portions. To help standardize participants understanding the interviewer prepared photographs for each measurement done and showed them to the participants. First, the participants were asked to report whether they consumed each food item. If they answered yes, they were asked to tell how many times per day, per week, and per month. When they are asked about their usual portion size, they were asked to tell the average quantity or portion of the food item on the day of consumption which includes totals of all meals (breakfast, lunch, snacks, dinner), expressed as common household measures such as a ladle, small cup or spoon.

4.8 Data quality assurance

Rigorous training was given for the data collectors and field supervisors on FFQ and 24h diet recall for five full days. The purpose of the data collection was explained in detail. Immediately after the interview is conducted, both the principal investigator and data collectors rechecked the questionnaire for completeness and consistency. The questionnaires were also reviewed to ensure if they are neat and legible, all the information is being properly collected and recorded, and no information is missing. About 10 percent of the interviews held by each of the interviewers were monitored by the principal investigator to ensure consistency in interview methods with the participants. Each interviewer conducted only one recall per respondent to minimize any interviewer bias on the recalled intakes. A pre-test was also conducted.

After examining for outliers (energy intake <400 and >2500 Kcal/day), we excluded 10 subjects, leaving a total of 105 subjects to be included in the final analysis. The energy intake cutoffs used for the detection of outliers were calculated using mean ± 2.5 SDs, using data derived from the mean 24-HRs.

4.9 Data management and analysis

The socio-demographic characteristics of the adults were entered to epi data version 3.1 and exported to STATA 15. The data was sorted, tabulated, summarized and cleaned on STATA 15.1. Data analysis was carried out using STATA version 15.1.

Ethiopian food composition table was used to derive nutrient and energy estimates from the dietary data. The same food composition table was used for both dietary assessment methods. Descriptive statistics (mean, medians and standard deviation) were calculated for nutrient intakes assessed by 24h diet recalls and FFQ. Mean nutrient intake data was also assessed for normality.

Data entry and Calculation of daily food and nutrient intake

Food and drink items names, descriptions and cooking methods, and amounts, from both 24h diet recall and FFQ, were coded and entered into NutriSurvey2007. The nutrient composition of each item was obtained using NutriSurvey2007.

Nutrient estimate from FFQ was calculated using the product sum method:

Daily nutrient intake = \sum (reported consumption frequency of the food item, converted to times per day)*(portion size consumed of that food)*(amount of that nutrient in a standard serving of that food)

For both the FFQ and 24h diet recall data, nutrient information for individual food was taken from Ethiopia food composition table. The table includes the nutrient composition of mixed dishes.

Statistical tests for validity

We validated the performance of the FFQ against two 24 hr recalls using the following statistical tests. First, the normality of mean intakes of energy and nutrients was checked using the Shapiro-Wilk normality test and visually by using histograms. Non-parametric method was used for some variables after attempts was made for transforming. Dietary intakes (per day) were expressed as means, medians and interquartile ranges.

Second, Paired T-test was used to compare mean daily nutrient intakes obtained from the average of the two 24h diet recalls and FFQ. For non-normally distributed variables we used Wilcoxon-matched paired signed-rank test to compare median daily intake obtained from the average of the two 24h diet recalls and FFQ.

Third, we computed correlations to measure the strength and direction of the association between the two methods. Pearson correlation coefficient was used for normally distributed data and Spearman rank correlation coefficients was used where data are not normally distributed.

Fourth, for both the test and reference methods subjects were divided into categories relating to the distribution of dietary intake; quartiles of intake. A comparison of the subjects' categories showed whether subjects' are classified in the same or different categories by the two methods. The result permitted an assessment of the proportion of subjects who are classified correctly. Data were divided into four (quartiles) categories. Additionally, we also used a weighted kappa statistics to account for both the correctly classified percentage and the expected participant proportion classified by chance.

Fifth, we used a Bland and Altman plot for assessing limits of agreement between the two methods. It involved plotting for each nutrient the difference between the two methods versus the average of the two methods and calculating the limits of agreement and their corresponding 95% CI. This plot allowed outliers to be seen easily, as well as whether any trend is present with increasing intakes.

4.10 Ethics consideration

Ethical clearance was obtained from, School of Public Health, College of Health Sciences, Addis Ababa University, Research and Ethics Committee. After an explanation about the purpose, and related procedures of the study verbal informed consent was obtained from the study participants. Participants were also informed on their right to refuse or discontinue participation at any time and that the information they provide will be recorded without their names mentioned.

4.11 Dissemination of the results

The result will be presented and submitted to Addis Ababa University College of Health Sciences as partial fulfillment of the requirements for a Master's Degree in Public Health nutrition. As this is the first study in the country, it will be disseminated through publication into reputable journals, websites, and different scientific forums.

5. Results

5.1 Participant characteristics

Table 1 shows the socio-demographic characteristics of study participants. Of the 120 study participants randomly selected to participate in the study, 115 (95.8%) completed both the 2 day 24-hour dietary recall and the FFQ. A total of 105 study participants were included in the final analysis from which males 43 (41%) and females 62 (59%) for the study. The mean (SD) age of the participant was 31.9 years (SD, 9.2). The religion distribution showed that majority 89(84.8%) were Muslim. The distribution of the respondent by education status showed that 35(33.3%) of the participants had primary education. Occupationally, 43(41%) were house wives followed by merchants 25(23.9%).

Table 1: Socio-demographic characteristics of study participants in Butajira HDSS, SNNP region, 2019 (n=105).

Variable	Frequency	Percent (%)
Sex		
Male	43	41
Female	62	59
Age category		
20-29	49	46.7
30-39	35	33.3
40-49	13	12.4
50-65	8	7.6
SD	9.2	
Educational status		
Primary	35	33.3
Secondary	21	20
College/university	10	9.5
No education	39	37.2
Religion		
Orthodox Christian	10	9.5
Muslim	89	84.8
Protestant	6	5.7
Ethnicity		

Gurage	77	73.3
Silte	22	21
Amhara	2	1.9
Tigre	4	3.8
Occupation		
Farmer and housewife	5	4.8
House wife	43	41
Employee/private	3	2.9
Merchant	25	23.8
Daily laborer	8	7.6
Unemployed	8	7.6
Farmer and merchant	5	4.8
Others	8	7.6
Marital status		
Currently married	76	72.4
Separated	4	3.8
Divorced	2	1.9
Widowed	9	8.6
Never married	14	13.3

5.2 Relative validity analysis

5.2.1 Extent of agreement between methods on a group basis

5.2.1.1 Comparison of mean and median intakes

Table 2 shows mean (SD), median, and 25th, 75th percentiles daily nutrient intakes estimated by the average of two 24-HRs and FFQ. We found that energy and macronutrient intakes obtained from the FFQ were significantly higher than those obtained from the mean of 24-HRs. The highest significant mean difference was observed for energy 367.6 (CI: 259.0, 476.1) and the lowest was observed for total fat intake 4.1 (CI: 2.5, 5.7). Similarly, a significant median difference was found in micronutrient intakes between the two measures. The median difference ranged from 0.01mg/day for vitamin B1 intake to 39ugRAE for vitamin A intake.

Table 2: Mean (SD), median, and 25th, 75th percentiles daily nutrient intakes estimated by the average of two 24-HR dietary recalls and FFQ in Butajira HDSS, SNNP region, 2019 (n=105).

Energy and nutrients	Average of 24-HR diet recalls		FFQ		Mean difference
	Mean	SD	Mean	SD	
Energy (Kcal)	1449.5	421.6	1817.1	482.3	367.60*
Protein (g)	39.4	12.2	49.9	12.5	10.50*
Total fat (g)	17.2	5.7	21.3	6.1	4.40*
Carbohydrate (g)	297.6	92.3	375.2	109.3	77.6*
	Median	(25%, 75%)	Median	(25%, 75%)	Wilcoxon signed Rank test
Calcium (mg)	463.1	337.6, 587.9	684.4	518.0, 796.8	0.000**
Iron (mg)	56	41.9, 83.7	67.4	54.3, 86.8	0.009**
Vitamin (ugRAE)	259.3	51.5, 581.4	651.1	295.9, 976.6	0.000**
Vitamin B1 (mg)	0.7	0.49, 0.98	0.81	0.54, 1.17	0.002**
Vitamin B2 (mg)	0.7	0.54, 0.84	0.79	0.64, 0.94	0.002**

***p-value < 0.05**

****p-value < 0.01**

Table 3 presents mean (SD), median, and 25th, 75th percentiles daily food group intakes estimated by the average of two 24-HR dietary recalls and FFQ. The average of the two 24-HR dietary recalls and FFQ gave similar median intake estimates for fruits, eggs, meat/poultry/fish, and dairy products. For roots and tubers FFQ gave a higher estimate of median intake. A statistically significant median difference was only observed for roots and tubers, eggs and vegetable intake.

Table 3: mean (SD), median, and 25th, 75th percentiles daily food group intakes estimated by the average of two 24-HR dietary recalls and FFQ in Butajira HDSS, SNNP region, 2019 (n=105).

Food group	Average of 24-HR diet recalls		FFQ		Wilcoxon signed Rank test
	Median	(25%, 75%)	Median	(25%, 75%)	
Cereals	710	(548.5, 817)	648	(520.9, 852)	0.997
Legumes	94.5	(0, 145.5)	93	(21, 134.9)	0.347
Roots and Tubers	24.5	(0, 45)	11.2	(0, 31.3)	0.013*
Vegetables	79.5	(23.5, 156)	109	(45.3, 159)	0.048*
Fruits	0.0	0.0	0.0	(0, 15.4)	0.367
Eggs	0.0	0.0	0.0	0.0	0.000**
Dairy products	0.0	0.0	0.0	(0, 4.9)	0.087
Meat/Poultry/Fish	0.0	0.0	0.0	0.0	0.068
Beverages	243	(152, 334)	230.4	(183, 320.6)	0.971

*p-value ≤ 0.05

**p- value < 0.01

5.2.2 Extent of agreement between methods on individual basis

5.2.2.1 Strength of the relationship between FFQ and Average 24 hr recall

Table 4 presents the results of correlations between nutrient intakes obtained from the average of two 24-HRs and the FFQ. The Pearson correlation coefficient varied from 0.05 (total fat) to 0.32 (carbohydrate). Except for total fat the correlations were statistically significant. Spearman correlation (ρ) obtained for micronutrients ranged from 0.1 (calcium) to 0.49 (vitamin B1). A statistically significant correlations was obtained for vitamin A ($p < 0.05$) and vitamin B1 ($p < 0.05$).

Table 4: Relative validity of nutrient intakes when comparing the FFQ to the average of two 24-HR dietary recalls in Butajira HDSS, SNNP region, 2019 (n = 105).

		Bland and Altman statistics	
Macro-nutrients	Pearson Correlation	Mean Difference (95% CI)	95% Limit of Agreement
Energy (Kcal)	0.24*	367.6 (259.0, 476.1)*	-731.9, 1467.1
Protein (g)	0.22*	10.5 (7.6, 13.5)*	-19.7, 40.8
Total fat (g)	0.05	4.4 (2.5, 5.7)*	-13.7, 22.5
Carbohydrate (g)	0.32*	77.6 (54.5, 100.6)*	-155.9, 311
		Bland and Altman statistics for Log transformed data	
Micro-nutrients	Spearman correlation	Mean Difference (95% CI)	95% Limit of Agreement
Calcium (mg)	0.10	0.15 (0.11, 0.18)*	-0.26, 0.55
Iron (mg)	0.12	0.06 (0.007, 0.11)*	-0.45, 0.61
Vitamin A (ugRAE)	0.45*	0.5 (0.34, 0.66)*	-1.1, 2.1
Vitamin B1 (mg)	0.49*	0.1 (0.02, 0.11)*	-0.4, 0.5
Vitamin B2 (mg)	0.17	0.05 (0.01, 0.09)*	-0.41, 0.51

*p-value \leq 0.05

**p- value < 0.01

Table 5 shows the results of correlations between food group intakes obtained from the average of two 24-HRs and the FFQ. Spearman correlation coefficients ranged from 0.12 for egg to 0.78 for legumes. Greater than 0.5 correlation coefficient was observed for legumes ($r=0.78$). Correlation (0.2-0.49) were observed for cereals ($r=0.54$), Meat/poultry/fish ($r=0.47$), fruits ($r=0.46$), dairy products ($r=0.45$), roots and tubers ($r=0.34$), vegetables ($r=0.3$) and beverages ($r=0.2$). Correlation was low (<0.2) for egg ($r=0.12$). Except for egg intake, all correlation was statistically significant.

Table 5 shows relative validity of food group intakes when comparing the FFQ to the average of two 24-HRs. For cereals (9.9g/day), legumes (2.6g/day), vegetables (7.1g/day) and beverages (2.9g/day), the FFQ estimated a higher intake compared to the average of two 24-HR dietary recalls

Table 5: Relative validity of food group intakes when comparing the FFQ to the average of two 24-HR dietary recalls in Butajira HDSS, SNNP region, 2019 (n = 105).

Food groups	Spearman Correlation	Bland and Altman statistics			
		Bland and Altman statistics		Bland and Altman statistics for Log transformed data	
		Mean Difference (95% CI)	95% Limit of Agreement	Mean Difference (95% CI)	95% Limit of Agreement
Cereals	0.33*	9.9 (-41.9, 61.8)	535.3, -515.5		
Legumes	0.79*	2.6 (-8.9, 14.1)	-113.8, 118.9		
Vegetables	0.33*	7.1 (-15.7, 29.8)	-223.7, 237.8		
Beverages	0.2*	2.9 (-30.9, 36.6)	-339, 344.7		
		Mean Difference (95% CI)	95% Limit of Agreement	Mean Difference (95% CI)	95% Limit of Agreement
Roots and Tubers	0.34*	16.2 (6.2, 26.3)*	-87.5, 120.1	-0.04 (-0.23, 0.15)	-1.96, 1.88
Fruits	0.46*	7.9 (1.4, 14.6)*	-60.2, 76.2	0.15 (0.01, 0.29)*	-1.25, 1.55
Eggs	0.12	-2.1 (-3.4, -0.8)*	-15.9, 11.7	0.19 (0.11, 0.27)*	-0.64, 1.03
Dairy products	0.45*	6.2 (1.9, 10.4)*	-37.8, 50.1	0.04 (-0.07, 0.14)	-1.03, 1.1
Meat/Poultry/Fish	0.47*	3.8 (-0.8, 8.4)	-43.2, 50.8	0.06 (-0.01, 0.13)	-0.68, 0.8

*p-value < 0.05

**p-value < 0.01

5.2.2.2 Agreement on classification into intake categories between FFQ and Average 24 hr recall

Table 6 shows cross-classification and weighted Kappa statistics of daily intakes of energy, nutrients and food group in quartiles as assessed with average of two 24 hour dietary recall and the FFQ. The proportion of individuals classified by the FFQ and the average of two 24 hour dietary recalls into the same quartile ranged from 13.4% for total fat to 38.1% for vitamin A. However, the proportion classified into opposite quartiles varied from 3.8% (vitamin B1) to 23.8% (total fat). Weighted kappa values ranged from -0.04 (total fat) to 0.18 (vitamin A).

For food groups, the highest correct classification into the same quartile was observed for “cereals” and “legumes”-i.e, 50.5% and 51.4%, respectively. For the other food groups, the classification into same quartile ranged from 30.5% (beverages) to 40% (roots and tubers). Oppositely classified individuals ranged from 1% (cereals) to 11.4 (beverages). No gross misclassification was observed for intake of legumes. Weighted kappa values ranged from 0.07 (beverages) to 0.35 (legumes).

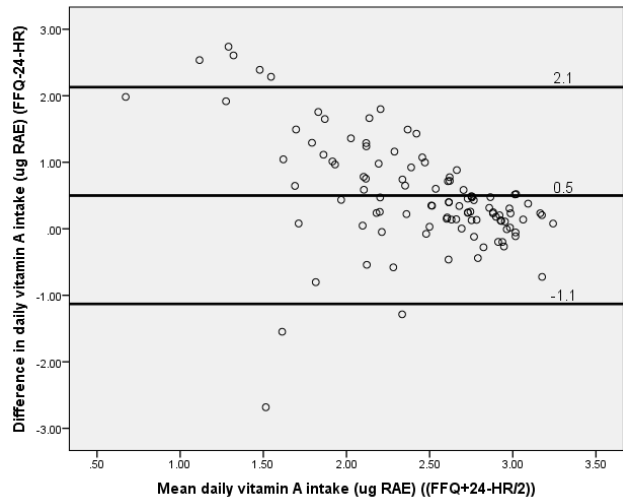
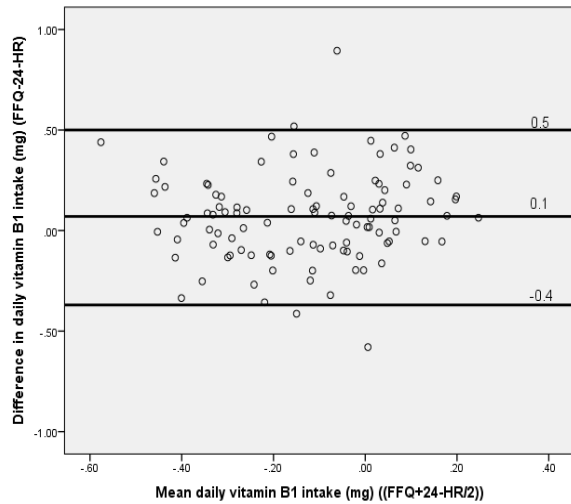
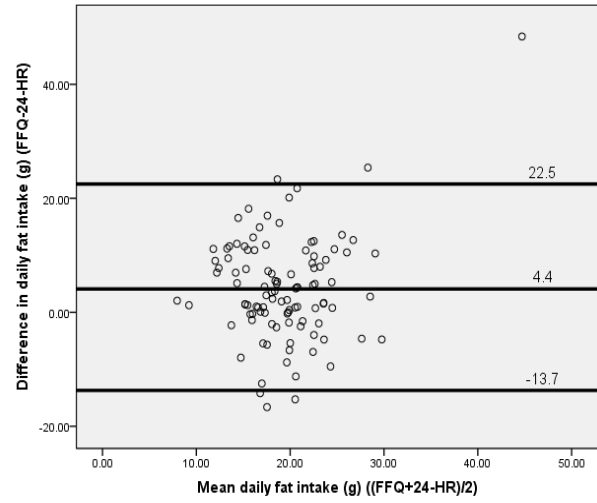
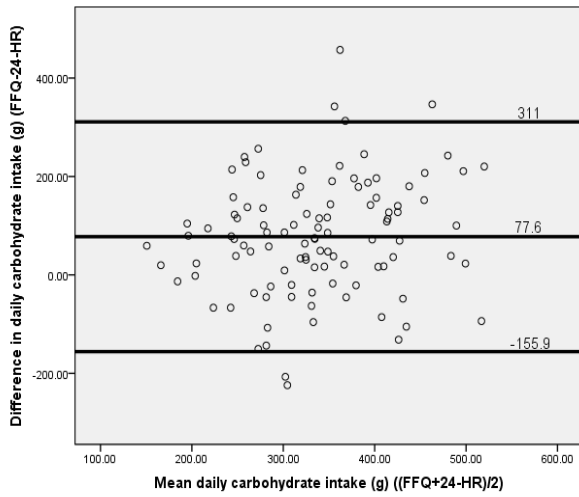
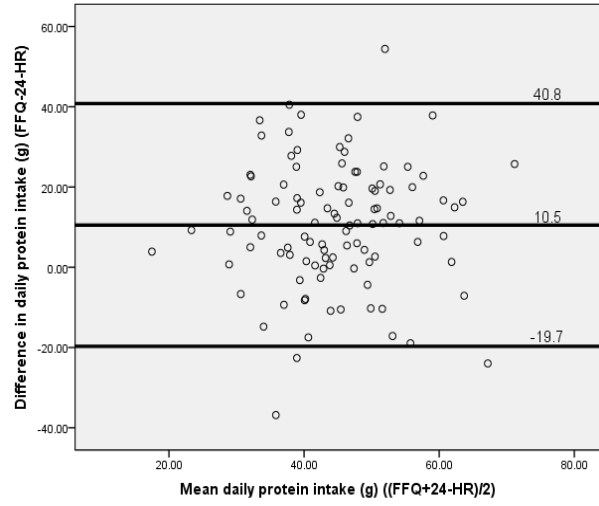
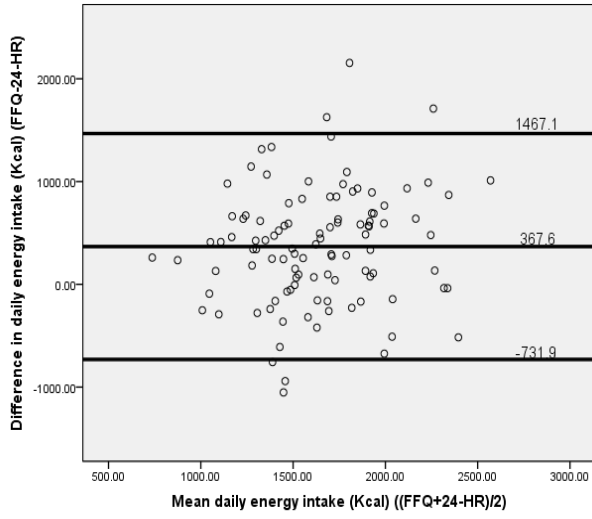
Table 6: Cross-classification and Weighted Kappa statistics of daily intakes of energy, nutrients and food group in quartiles as assessed with the average of two 24 hour dietary recall and the FFQ in Butajira HDSS, SNNP region, 2019 (n=105).

Energy and nutrients	Cross – classification (quartiles)		Weighted Kappa statistics
	% in same quartile individuals	% in opposite quartile Individuals	Kappa value
Energy (Kcal)	34.3	8.6	0.13
Protein (g)	33.4	8.6	0.11
Total fat (g)	13.4	23.8	-0.04
Carbohydrate (g)	34.3	8.6	0.12
Calcium (mg)	25.7	7.6	0.09
Iron (mg)	28.6	9.5	0.05
VitaminA (ugRAE)	38.1	5.7	0.18
Vitamin B1 (mg)	33.3	3.8	0.11
Vitamin B2 (mg)	33.3	8.6	0.11
Food groups			
Cereals	50.5	1	0.32
Legumes	51.4	0	0.35
Roots and Tubers	40	7.6	0.18
Vegetables	38.1	6.7	0.17
Beverages	30.5	11.4	0.07

5.2.2.3 Bland-Altman Analysis

Figure 1 presents the Bland-Altman plots for energy, protein, carbohydrate and total fat. Visually inspection of the Bland-Altman plots for both energy and macronutrients shows no systematic difference across the intake values. The FFQ overestimated energy and macronutrient intakes. Except for total fat intake, increased variability of data points was observed for all nutrients both at low, average and high values (wider limits of agreement). Overall, majority of the data points lied between the Limits of Agreements (LOAs). Some outliers were observed for energy and macro-nutrients. Since differences in nutrient intakes were associated with the mean measurement, data related to the micro-nutrient intake were log transformed for Bland and Altman statistics. The result indicates a systematic bias as the FFQ consistently over estimated vitamin A and iron intake at lower value. For other micro-nutrients a moderate level of agreement was shown.

Figure 2 shows the Bland-Altman plots for food group intakes. Data related to roots and tubers, fruits, egg, dairy products and meat/poultry/fish intake were log transformed for Bland and Altman statistics. A systematic trend of overestimation for roots and tubers and under estimation of beverage intakes at higher values was observed when we used FFQ. Majority of the data points are in the 95% of limits of agreement for almost all food groups. A wide limit of agreement was observed for roots and tubers.



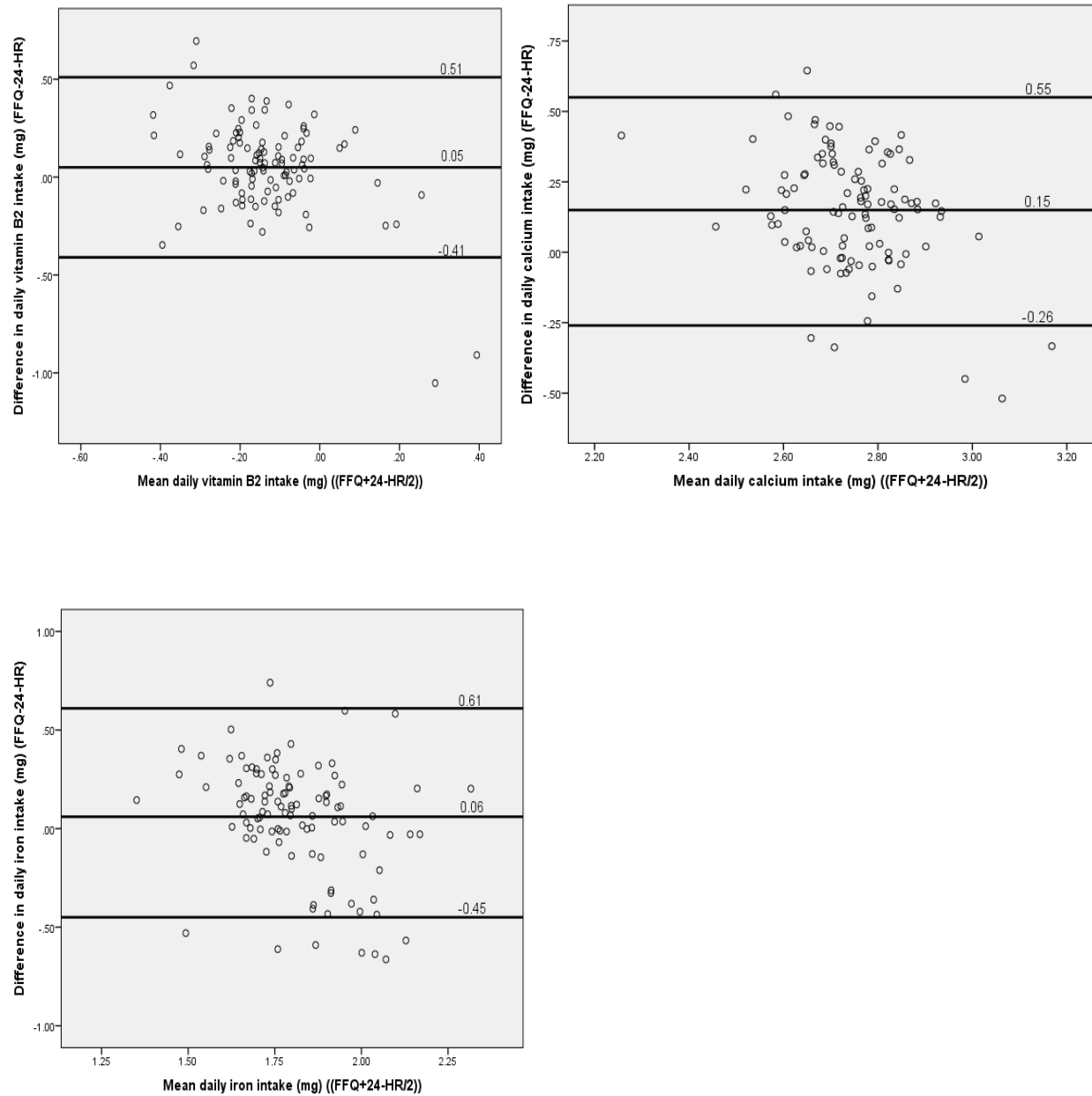
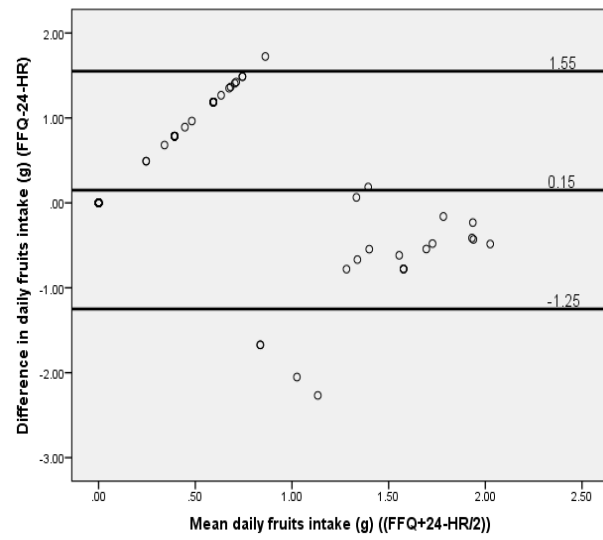
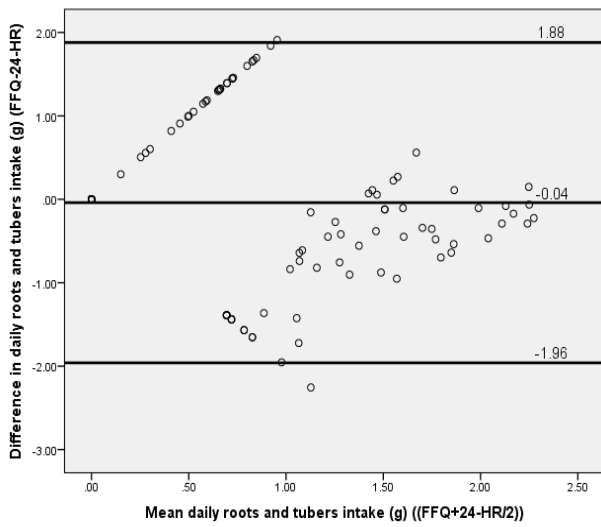
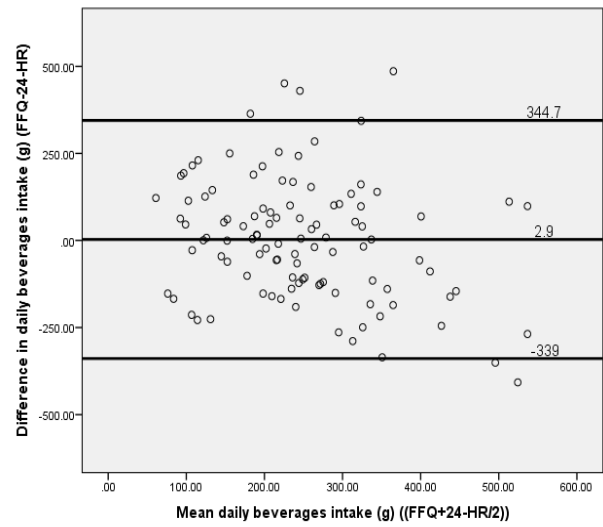
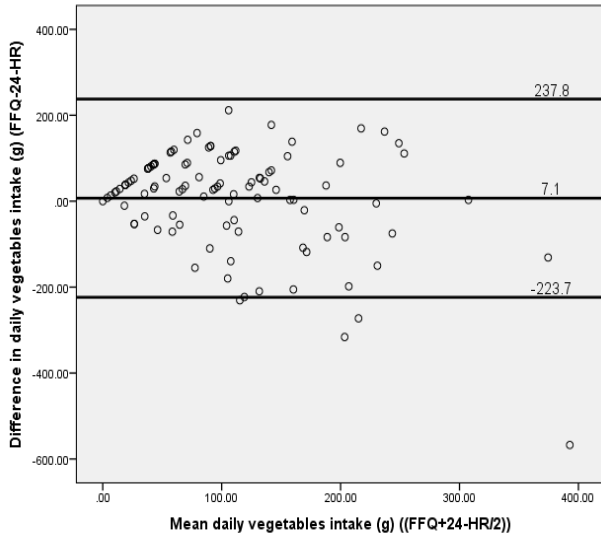
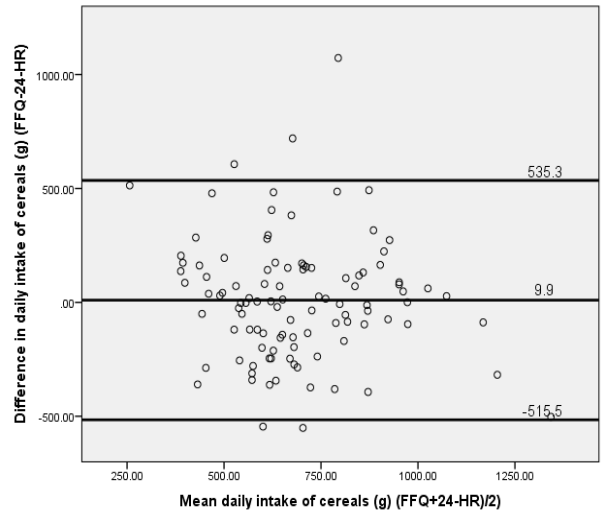
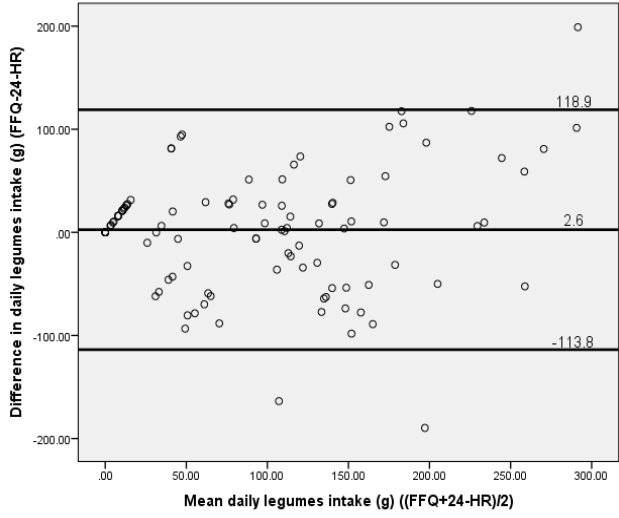


Figure 2: Bland Altman analysis plot for energy and selected nutrients (macronutrient intakes: carbohydrate, protein, fat and micronutrients: iron, calcium, vitamin A, vitamin B1, vitamin B2) as predicted by FFQ and average of two 24 Hour dietary recall in Butajira HDSS, SNNP region, 2019



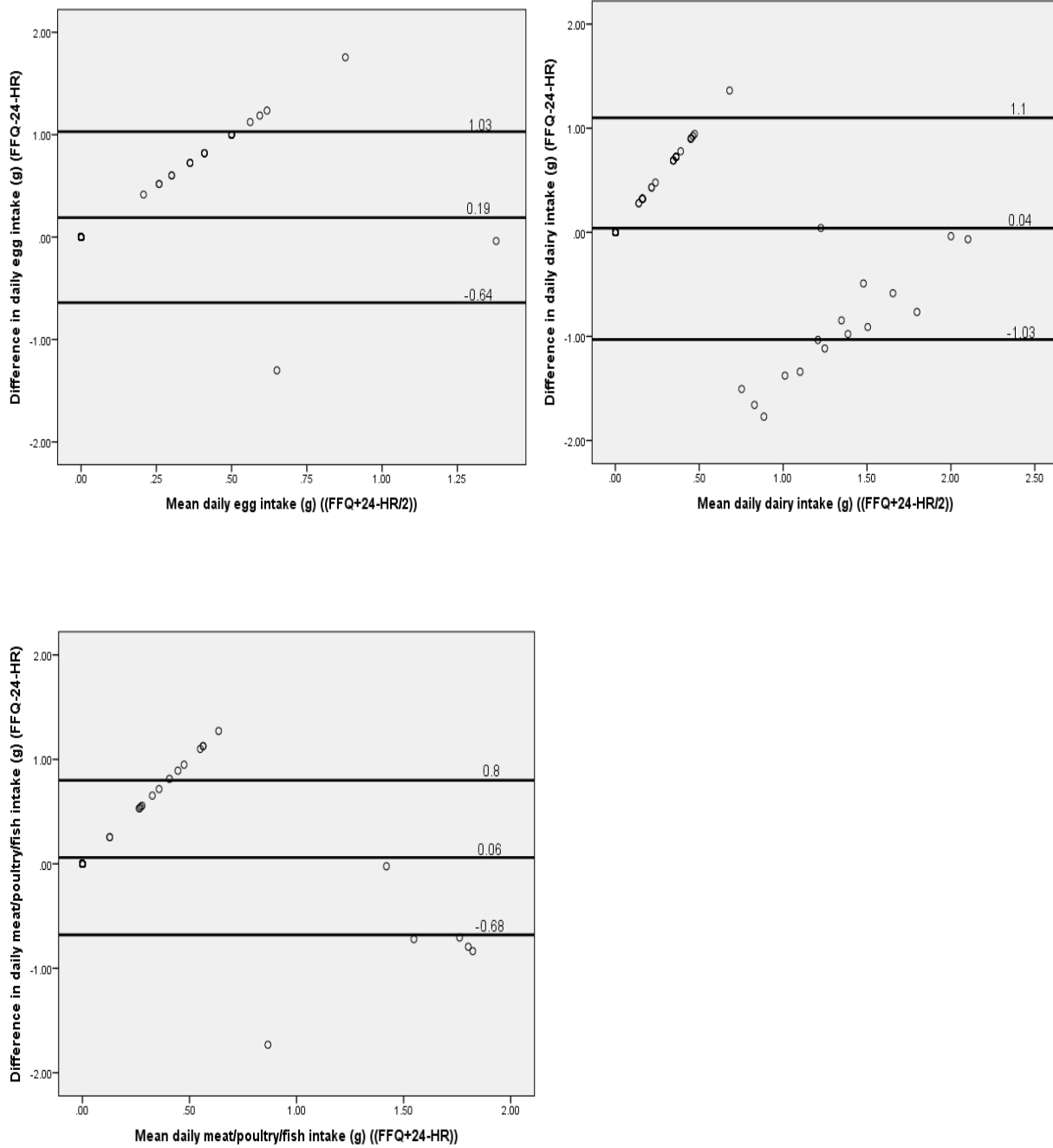


Figure 3: Bland Altman analysis plot for food groups (cereals, legumes, vegetables, beverages, roots and tubers, fruits, egg, meat/poultry/fish and dairy product) as predicted by FFQ and average of two 24 Hour dietary recall

6. Discussion

This study aimed to validate a food frequency questionnaire to assess food and nutrient intakes of adults in Butajira HDSS. For energy and nutrients, we observed higher intakes from the FFQ against the average of the two 24-HRs. Bland-Altman plots confirmed an overestimation of energy and macro-nutrients for various data points. We found a low to moderate level of agreement (correlation coefficients) for energy and nutrient intakes between the two methods. The FFQ did not adequately classify subjects with respect to energy, macro-nutrients and most of the micro-nutrients. For the majority of the food groups, median differences in the intake of foods and nutrients between 24-HRs and FFQ were, overall, small and statistically insignificant. For food groups, a moderate correlation was found between the average of the two 24-HRs and the FFQ. The FFQ showed a fair agreement for cereals, legumes, and roots and tubers.

We found that the FFQ overestimated energy and nutrient intakes relative to the average of the two 24h diet recalls. Overestimation is a common issue reported in various validation studies (10, 13-15). Overestimation in the present study was moderate for intakes of energy (367.9 kcal), protein (10.5 g) and carbohydrate (77.6 g) and slight for intakes total fat (4.4 g) compared to other validation studies conducted using 24-HRs as their reference method (10, 13-15, 18). Overestimation can be attributed to the subject's tendency to overestimate their actual intake when they are asked to recall the frequency of a large number of foods consumed in an FFQ. Besides, due to difficulty in conceptualizing the assigned portion sizes and difficulties in reporting the frequencies of usual intake (15). It may have also occurred as a result of purposeful overreporting of food consumption by subjects (17). The use of shorter questionnaires and advances in portion size estimation techniques are suggested to improve overestimation of intakes by FFQs.

This study found moderate correlations (0.2-0.49) between the average of the two 24-HRs and FFQ for energy ($r=0.24$), protein ($r=0.22$), and carbohydrate ($r=0.32$) and low correlation (<0.2) for fat ($r=0.05$). The low to moderate correlation coefficients found between the two methods for energy and macro-nutrient intakes are comparable with other previous validation studies (10, 14, 18). However, our finding was lower than those reported by other studies using 24-HRs as their reference method (11, 15). The observed decrease in correlation coefficients could be interpreted as being the result of using only a two day 24-HRs as a reference method. It was found that nutrient correlations were lower when the reference method of the dietary questionnaire was conducted

fewer than eight times (16). We believe that the observed correlation estimates could be improved with additional days of recall as well as with multiple studies over different seasons.

The lower correlation coefficients for iron and vitamin intakes observed in our study is not uncommon in FFQ validation studies (10, 13, 15, 18). A meta-analysis of FFQ validation studies showed that pooled correlation coefficients of nutrient intakes (total fat, protein, carbohydrate, alcohol, calcium, and vitamins) were lower for FFQ validated against 24-HRs rather than food record (16). The possible reason for a low correlation for the vitamin is that vitamin intake tends to vary greatly from day to day (as many vitamins are found in only a small selection of foods). (18).

We observed a moderate to good correlation for almost all food groups. This is in good agreement with previous validation studies assessing food group intakes (10, 18, 20). The good correlation found for vegetable intakes in our study is higher than those reported by other validation studies (10, 14, 18). This may have occurred because of ease of quantifying vegetable intakes as they are often consumed independently in Butajira. The lower correlation of egg intake in our study, in contrast to other studies (10, 13) may have occurred because of not consuming egg on the 24-HR days.

Our study used a Bland-Altman plot to assess agreement at the individual level between the two methods. The plot showed a moderate agreement between the two methods for energy and macronutrients. Potential systematic bias was not observed across the intake level for energy and macronutrient intakes. Similarly, another study also showed a moderate level of agreement with no systematic bias using a Bland-Altman plot (14). However, ranges for limits of agreement were relatively wide as opposed to another study (15). The observed wide limits of agreements between FFQ and the reference method are common, hence highlighting the limitation of the FFQ in assessing absolute nutrient intake due to wide variability in how the FFQ measured energy and macronutrient intake relative to the average of the two 24-HRs (6).

A tendency towards a poorer agreement in Vitamin A and iron intake between methods was observed with lower levels of intake as shown by the Bland-Altman plot. This poor agreement in iron intake is also reported in another validation study (21). As indicated by a Bland-Altman plots, a systematic mean difference was not observed across the intake levels of Cereals, legumes, vegetables and beverages. Most of the data points are found between the 95% limits of agreement.

However, the plot indicated wide limits of agreement which occurs as a result of increased variability.

The present study showed that the FFQ did not adequately classify subjects with respect to energy, macro-nutrients and most of the micro-nutrients as indicated by cross-classification and weighted kappa results (percentage of individuals in same quartile < 50 , K values < 0.2) (4). However, the FFQ showed a fair quartile classification agreement for cereals, legumes, and roots and tubers (K values 0.21-0.4). This finding is consistent with previous studies which reported cross-classification and kappa by categorizing intakes into quartiles (10, 13, 21). We found lower values for energy and nutrients with respect to those reported by other studies using similar intake categories. (14, 15, 18, 20). The misclassification and low kappa reported in our study may have occurred due to the insensitivity of FFQ to classify individuals into intake categories. The use of a Food diary as a reference method may have also increased classification agreement in those studies. FFQ showed a fair quartile classification agreement for cereals, legumes, and roots and tubers (K values 0.21-0.4). Similarly, other studies reported a fair classification agreement for this particular food group (15, 20). For beverage intake, our study indicated a misclassification (30.5%) into opposite quartile supported by low kappa value (k value <0.21) showing the poor outcome. Other study reported a similar finding for beverage intake(20).

In contrast to other validation studies (10, 13, 21), this locally developed FFQ performed better in estimating and ranking food groups than energy and nutrients. This result provides additional support for validation of the FFQ at group level.

In summary, the present findings indicate that the FFQ is capable of classifying an individual's food group intake into quartiles, which is useful in examining the relationships between diet and chronic disease. Food group intake agreement analysis also indicated the usefulness of the tool to assess dietary intakes in large epidemiological studies. However, the use of the tool to assess absolute nutrient intakes at the group level should be exercised with caution.

7. Limitations and strengths of the study

7.1 Limitations of the study

We are aware that our study may have some limitations that must be acknowledged. First, given that we used a 24-HR dietary assessment method as our reference method, the sources of error between 24-HR and FFQ may tend to be correlated due to conceptualization of portion sizes. However, to lessen these effect we have used a salted replica of actual foods, pictures and calibrated equipment to estimate portion size. Second, we conducted two 24 hr diet recalls per participant. This might have influenced the result obtained, particularly for estimating usual intakes of foods not consumed on a daily or regular bases such as meat/poultry/fish and the intake of other specific food groups. However, we attempted to reduce this effect by collecting the 24-HR over the same period to that of the FFQ. The 24-HRs were also obtained to represent both weekend and weekday intakes. Third, participants may have purposefully overreported their intake due to social desirability. However, we gave a detailed explanation for the interviewers on how to explain the purpose of the FFQ to the participants using role-playing, small group exercises, and discussions. Fourth, we did not administer FFQ at the onset of the study; therefore we cannot assess the reproducibility of the instrument.

7. 2 Strength of the study

As far as we know, this is the first time the validity of a food frequency questionnaire has been evaluated in Ethiopia. Additionnally, our study has the following strengths. First, we developed FFQ based on the latest local dietary survey, focal group discussions, pre-test, and expert reviews. Second, we used a comprehensive statistical analysis, using a range of statistical methods; paired t-tests, correlations coefficients, cross-classification, weighted kappa and Bland-Altman statistics. Third, we used an interactive, multiple-pass 24-hour dietary recall questionnaire adapted and validated for use in developing countries as our reference method.

8. Conclusion and Recommendations

8.1 Conclusions

In summary, the supporting individual level validity was acceptable for energy and macro-nutrients as indicated by correlation coefficients and Bland-Altman plots. However, estimates of minerals and vitamins should be interpreted with caution.

The study showed that FFQ had good validity to capture intakes of cereals, legumes, vegetables, and beverages both at individual and group levels. Still, intakes of root and tuber and beverages are associated with potential systematic bias. Therefore, caution must be exercised for this particular food groups. The FFQ can be used to rank individuals based on cereals, legumes, roots and tubers and vegetable intakes. However, for energy and nutrient intakes the FFQ did not adequately classify subjects. The FFQ appeared to be a better measure of food groups than of energy and nutrients both at the individual and group levels.

8.2. Recommendations

The supporting individual and group level validity was acceptable for the majority of the food groups. Therefore the FFQ can be used for assisting the analyses and interpretation of data collected particularly with a focus on diet-disease associations. However, the use of the FFQ at the group level for estimating energy and nutrients intakes should be interpreted with caution. Research centers, higher education institutions, and other stakeholders may consider using this tool for conducting future studies in this area.

We recommend that further research be undertaken in the following areas: reproducibility of the FFQ, FFQ validation using more than two 24 hr diet recalls spaced over a longer period as the reference method and assessment of whether this instrument performs well in different study settings and study populations.

9. References

1. Gibson RS. Principles of nutritional assessment: Oxford university press, USA; 2005.
2. Willet W. Nutritional Epidemiology. Third ed. New york: Oxford university press; 2013.
3. Thompson FE, Subar AF. Dietary assessment methodology. Nutrition in the Prevention and Treatment of Disease (Third Edition): Elsevier; 2013. p. 5-46.
4. Lombard MJ, Steyn NP, Charlton KE, Senekal M. Application and interpretation of multiple statistical tests to evaluate validity of dietary intake assessment methods. Nutrition journal. 2015;14(1):40.
5. Steinemann N, Grize L, Ziesemer K, Kauf P, Probst-Hensch N, Brombach C. Relative validation of a food frequency questionnaire to estimate food intake in an adult population. Food & nutrition research. 2017;61(1):1305193.
6. Cade J, Thompson R, Burley V, Warm D. Development, validation and utilisation of food-frequency questionnaires—a review. Public health nutrition. 2002;5(4):567-87.
7. Riley L, Cowan M. Noncommunicable diseases progress monitor. Geneva: WHO Press; 2015.
8. Melaku YA, Temesgen AM, Deribew A, Tessema GA, Deribe K, Sahle BW, et al. The impact of dietary risk factors on the burden of non-communicable diseases in Ethiopia: findings from the Global Burden of Disease study 2013. International Journal of Behavioral Nutrition and Physical Activity. 2016;13(1):122.
9. Jackson MD, Walker SP, Younger NM, Bennett FI. Use of a food frequency questionnaire to assess diets of Jamaican adults: validation and correlation with biomarkers. Nutrition journal. 2011;10(1):28.
10. Rodríguez MM, Méndez H, Torún B, Schroeder D, Stein AD. Validation of a semi-quantitative food-frequency questionnaire for use among adults in Guatemala. Public health nutrition. 2002;5(5):691-8.
11. Boucher B, Cotterchio M, Kreiger N, Nadalin V, Block T, Block G. Validity and reliability of the Block98 food-frequency questionnaire in a sample of Canadian women. Public health nutrition. 2006;9(1):84-93.
12. Takachi R, Ishihara J, Iwasaki M, Hosoi S, Ishii Y, Sasazuki S, et al. Validity of a self-administered food frequency questionnaire for middle-aged urban cancer screenees: comparison with 4-day weighed dietary records. Journal of epidemiology. 2011;21(6):447-58.

13. Zack RM, Irema K, Kazonda P, Leyna GH, Liu E, Gilbert S, et al. Validity of an FFQ to measure nutrient and food intakes in Tanzania. *Public health nutrition*. 2018;1-10.
14. Liu L, Wang PP, Roebathan B, Ryan A, Tucker CS, Colbourne J, et al. Assessing the validity of a self-administered food-frequency questionnaire (FFQ) in the adult population of Newfoundland and Labrador, Canada. *Nutrition journal*. 2013;12(1):49.
15. Dehghan M, Martinez S, Zhang X, Seron P, Lanas F, Islam S, et al. Relative validity of an FFQ to estimate daily food and nutrient intakes for Chilean adults. *Public health nutrition*. 2013;16(10):1782-8.
16. Molag ML, de Vries JH, Ocké MC, Dagnelie PC, van den Brandt PA, Jansen MC, et al. Design characteristics of food frequency questionnaires in relation to their validity. *American journal of epidemiology*. 2007;166(12):1468-78.
17. Gibson RS, Ferguson EL. An interactive 24-hour recall for assessing the adequacy of iron and zinc intakes in developing countries. Washington, DC: IFPRI and CIAT. 2008.
18. Jackson MD, Motswagole BS, Kwape LD, Kobue-Lekalake RI, Raggantswana TB, Mongwaketse T, et al. Validation and reproducibility of an FFQ for use among adults in Botswana. *Public health nutrition*. 2013;16(11):1995-2004.
19. Cade JE, Burley V, Warm D, Thompson R, Margetts B. Food-frequency questionnaires: a review of their design, validation and utilisation. *Nutrition research reviews*. 2004;17(1):5-22.
20. Lin P-I, Bromage S, Mostofa MG, Allen J, Oken E, Kile ML, et al. Validation of a dish-based semiquantitative food questionnaire in rural Bangladesh. *Nutrients*. 2017;9(1):49.
21. Tollosa DN, Van Camp J, Huybrechts I, Huybregts L, Van Loco J, De Smet S, et al. Validity and reproducibility of a food frequency questionnaire for dietary factors related to colorectal cancer. *Nutrients*. 2017;9(11):1257.
22. Goulet J, Nadeau G, Lapointe A, Lamarche B, Lemieux S. Validity and reproducibility of an interviewer-administered food frequency questionnaire for healthy French-Canadian men and women. *Nutrition journal*. 2004;3(1):13.
23. Park M-K, Noh H-Y, Song N-Y, Paik H-Y, Park S-H, Joung H-J, et al. Validity and reliability of a dish-based, semi-quantitative food frequency questionnaire for Korean diet and cancer research. *Asian Pacific Journal of Cancer Prevention*. 2012;13(2):545-52.

7. Apendices

Annex 1: subject information sheet

Addis Ababa University

School of public health

Information sheet

Hello, My name isI am here on behalf of Ilili Feyesa. She is a student of Addis Ababa University School of public health conducting a research on “Validation of a food frequency questionnaire for use in the adult population of Ethiopia”She has received permission from Addis Ababa university school of public health to conduct this study.

You are randomly selected to take part in this study because you are an adult woman in the age range of 20-65. Your participation in this study is based on your will. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment.

If you agree to take part in the study, you will be asked to answer some questions about yourself, your dietary intake and knowledge of diet. The interview with you will take about 30-40 minutes. Food Frequency Questionnaire is a tool for measuring dietary intake. Dietary intake are important factors in the development of chronic illnesses such as cardiovascular disease, diabetes, and certain cancer. Currently, there is no validated tool for measuring dietary intake in Ethiopia. Thus, this study will help in having a tool for measuring dietary intake accurately.

The information that you provide will be kept confidential by using only code numbers and locking the data. Only the members of the study team will have the access to the non-coded data and the data will not be used for purposes other than the study. Your willingness and active participation is very important for the success of this study.

If you have any questions about the study or any concern after taking part you can have this address to contact.

Name – Ilili Feyesa

Tel no – 0919324253

E-mail – liafeyisa2@gmail.com

Do you have any questions?

Based on the information provided are you willing to participate in the study?

Yes _____

No _____

If Yes- read the consent form to the participant, sign it and continue the interview.

If No- Thank and skip to the next participant.

Annex 2: Informed consent

Informed consent Certified by:

Respondent's signature -----Date-----

Interviewer: Name----- Signature-----

Questionnaire number-----

Date of interview-----Time started-----Time completed-----

Result of interview:

1. Completed

2. Respondent not available

3. Refused

4. Partially completed

Checked by: Supervisor: Name _____ Signature _____

Annex 3: Questionnaire

Part 1: Identification

No/code _____ district _____ kebele name _____

Name of the respondent _____

Name of the interviewer _____ Date of the interview _____

Time started _____ Time finished _____

Part2: socio-demographic characteristics

No	Question	Categories	Special instructions
201	Date of birth of the respondent (when were you born)		
202	Age of the respondent (in years)		
203	Marital status (circle the answer)	1. Married 2. Not married/Single 3. Divorced 4. Widowed	
204	Religion	Orthodox Muslim Protestant Catholic Other	
205	Have you attend any school?	Yes No	If no skip to question number 207
206	What is the highest level of education you attend?	Read and write Primary(1-8 grade) Secondary(9-10) Technical	

		Higher(specify)_____	
207	Occupational status	Government employee Private employee Merchant Daily laborer Farmer House wife Other	

Part 3: 24-hour Dietary Intake Questionnaire

I would like to ask you about some liquids, solid or semi-solid food that you may have had yesterday during the day or at night. All food that you ate including drinks, snacks, sauces, spices, and others will need to be recalled and listed. There is no right or wrong answer in this interview; you only need to tell me what you actually ate. Do you have any questions? If not, let's start.

1. Form for Recording the Interactive 24-hour Recall

Code_____		sex_____					
House no_____		age_____					
Interviewer signature_____		day of food eaten_____					
Supervisor signature_____		day of interview_____					
Time	place eaten	Food or drink	Description and cooking method	Amount eaten	Weight equivalent(g)	Food code	

2. Description of food and ingredients (Recipe form)

Food or drink	Description and cooking method	Amount prepared (using equipment)	Amount you ate (using equipment)	Weighed equivalent(in gram)
	Ingredient and cooking method List of ingredient and their amount			
	- Ingredient and cooking method List of ingredient and their amount			
	- Ingredient and cooking method List of ingredient and their amount			
	- Ingredient and cooking method List of ingredient and their amount			
	- Ingredient and cooking method List of ingredient and their amount			
	- Ingredient and cooking method List of ingredient and their amount		-	

<p>Probe for alcohol: 1. Yes 2. No</p>	<p>Probe for sickness: 1. Yes 2. No If yes, did sickness affect appetite? 1. Yes 2. No If yes, how? 1. Increase 2. Decrease</p>
<p>Was food intake unusual? 1. Yes 2. No If yes, how was it unusual?</p>	<p>Probe for tablets: 1. Yes 2. No If yes Iron 2. Vitamins 3. Other supplements 4. Anti-malaria</p>
<p>Was it a feast day? 1. Yes 2. No Was it a market day? 1. Yes 2. No Was it a fasting day? 1. Yes 2. No</p>	

Part 4: Food Frequency Questionnaire

Personal data

Name of interviewer: _____ Name of kebele _____
Day the food eaten: _____ House number _____
Place _____ Subject name _____
Interview date _____ Subject ID: _____
Sex: _____ Interviewer's signature _____

Semi quantitative food frequency questionnaire


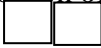

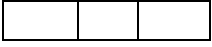
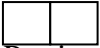
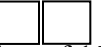
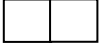


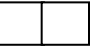

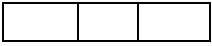
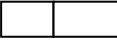
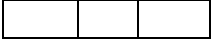
Instruction –Dear respondent please take few moment to memorize the food and drinks you ate within the last month. These relate to your daily use of food items and also food consumed out of home, e.g. in a restaurant, bar, at work etc. I will say the food items if you consumed the food type you will tell me how often and how much you ate over the last month. When I ask you about your usual portion size you will tell me the average quantity or portion of the food item on the day of consumption, expressed as common household measures such as a ladle, small cup or spoon. We will use pictures to improve your response on the food items consumed.

If you eat for instance ‘nech teff enjera’ during four days per week (Monday, Tuesday, Wednesday, and Thursday) you will choose the option that says 4-6 times per week. If you usually consume two (2) full medium sized (eight kurtih) nech teff enjera on these days your answer will be 2 full medium sized enjera or eight kurtih (if you use kurtis for serving). You will tell me the total enjeras you consumed be it alone or in combination with others. (Examples, bado enjera + enjera be wot + enjera be avocado)

Remember: these two full enjeras are the totals of all meals (breakfast, lunch, snacks, and dinner)

Cereals products, bread and potatoes

Cereals Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
Enjera 1. Nech teff enjera <input type="checkbox"/> 2. key teff enjera <input type="checkbox"/> 3. teff enjera mixed with rice <input type="checkbox"/> 4. tef enjera mixed with maize <input type="checkbox"/> 5. maize enjera <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	number of full enjera consumed (mulu enjera) 1 full enjera = 293g <input type="text"/> <input type="text"/> Number of half enjera consumed 1 half enjera= 153g <input type="text"/> <input type="text"/> number of enjera consumed in kurtih (chopped) 1 kurtih = 97 g <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
6. Enjera firfir	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of portions Small portion (91g) <input type="text"/> <input type="text"/> Medium portion (_113g) <input type="text"/> <input type="text"/> Large portion (166g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
7. Pasta	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 545 g (full plate) <input type="text"/> <input type="text"/> Medium : Portion of 267g (half plate) <input type="text"/> <input type="text"/> Small: Portion of 186g (1/4 of the plate) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Food item	Average consumption over the last month	Average consumption : show photos	Usual portion size (gram)
8. Macaroni	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 587g (full plate)  Medium : Portion of 343 g (half plate)  Small: Portion of 211 g (1/4 of the plate) 	
9. Rice	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 420 g (full plate)  Medium : Portion of 261 g (half plate)  Small: Portion of 153 g (1/4 of the plate) 	
10. Ye aja kinche	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 545 g (full plate)  Medium : Portion of 267g (half plate)  Small: Portion of 186g (1/4 of the plate) 	
11. Nifro (ye sinde)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in hand/ palm size (efignih) = 41 g (medium portion) 	

Food item	Average consumption over the last month	Average consumption : show photos	Usual portion size (gram)
12. ye bula genfo	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 684g (full curved plate) <input type="text"/> <input type="text"/> Medium : Portion of 407 g (half curved plate) <input type="text"/> <input type="text"/> Small: Portion of 290 g (1/4 of the plate) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
13. ye gebsi genfo (barley porridge)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Medium portion/ half plate (267 g) <input type="text"/> <input type="text"/> Large portion/ full plate (426 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
kolo 14. ye gebsih kolo <input type="checkbox"/> 15. ye gebsih ena ye shinbira <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in palm size (efignih) Medium portion = 30 gm <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
16. Gruel (atmit)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in number of cups/glasses of gruel show photos Size 1 (ml) <input type="text"/> <input type="text"/> Size 2 (ml) <input type="text"/> <input type="text"/> Size 3 (ml) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Bread Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
17. Bread : maize Ye bokolokita (ambasha)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of large slices (1=390g) <input type="text"/> <input type="text"/> Number of medium slices (1=246 g) <input type="text"/> <input type="text"/> Number of small slices (1=199 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
18. Bread: wheat and maize ye sindenayebokolokita (ambasha)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of large slices (341 g) <input type="text"/> <input type="text"/> Number of medium slices (280 g) <input type="text"/> <input type="text"/> Number of small slices (258 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
19. Bread white (nech ye sukih/ye furno duket dabo)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Ask in monetary value Number of large slice (3birr = 285 g) <input type="text"/> <input type="text"/> Number of medium slice (2birr =114 g) <input type="text"/> <input type="text"/> Number of small slice (1/2 the medium = 57 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
20. Sanbusa	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month	Ask in monetary value Number of large slice (3birr = g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

	<input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of medium slice (2birr = g) <input type="text"/> <input type="text"/>	
Potatoes Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
21. Potato boiled <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces of average portion boiled potato (1= g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
22. Potato fried <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of 168g (full plate) <input type="text"/> <input type="text"/> Medium : Portion of 109 g (half plate) <input type="text"/> <input type="text"/>	
23. Potato stew	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (90 g) <input type="text"/> <input type="text"/> Medium ladle (120 g) <input type="text"/> <input type="text"/> Large ladle (308 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Legumes and pulses

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
Pea stew/Shiro wet 24. mitin shiro <input type="checkbox"/> 25. shiro ye aterena bakela <input type="checkbox"/> 26. shiro ye beke laen ashimbra <input type="checkbox"/> 27. ye bakela shiro <input type="checkbox"/> 28. ye aterena ye guaya shiro <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (96 g) <input type="text"/> <input type="text"/> Medium ladle (126g) <input type="text"/> <input type="text"/> Large ladle (167g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
29. Misirkik wet/ split lentil stew	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (62 g) <input type="text"/> <input type="text"/> Medium ladle (89g) <input type="text"/> <input type="text"/> Large ladle (157g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
30. Aterkik wet	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (63 g) <input type="text"/> <input type="text"/> Medium ladle (80g) <input type="text"/> <input type="text"/> Large ladle (134g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

31. Ful (ye bakela)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large: Portion of g (full plate) <input type="text"/> <input type="text"/> Medium : Portion of g (half plate) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
----------------------	---	--	--

Roots and tubers

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
32. Kocho	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of large slices (g) <input type="text"/> <input type="text"/> Number of medium slices (= 169 g) <input type="text"/> <input type="text"/> Number of small slices (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
33. Beet root stew	<input type="checkbox"/> Never or < 1 x per mm <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (55 g) <input type="text"/> <input type="text"/> Large spoon (49 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

34. Sweet potato	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1= g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>
35. Carrot with potato stew/Carrot be dinich wot	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Medium ladle (126 g) <input type="text"/> <input type="text"/> Small ladle (91g) <input type="text"/> <input type="text"/> Large spoon (67g) <input type="text"/> <input type="text"/>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>

Vegetables

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
36. Cabbage (tikilgomen)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (90g) <input type="text"/> <input type="text"/> Medium ladle (135 g) <input type="text"/> <input type="text"/> Large spoon (47 g) <input type="text"/> <input type="text"/>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>
37. Kale (tikurgomen)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (53 g) <input type="text"/> <input type="text"/> Medium ladle (103 g) <input type="text"/> <input type="text"/> Large ladle (151 g) <input type="text"/> <input type="text"/>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>

38. Kosta	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (___g) <input type="text"/> <input type="text"/> Large spoon (___g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
39. Tomato sauce/Timatimsilsih	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (94 g) <input type="text"/> <input type="text"/> Medium ladle (112 g) <input type="text"/> <input type="text"/> Large spoon (70 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
40. Tomato chopped/Timatim kurtih	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (56 g) <input type="text"/> <input type="text"/> Medium ladle (70g) <input type="text"/> <input type="text"/> Large spoon (37 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
41. Pumpkin stew/duba wot	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (102 g) <input type="text"/> <input type="text"/> Medium ladle (201 g) <input type="text"/> <input type="text"/> Large ladle (307 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

42. Fosoliya	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (66 g) <input type="text"/> <input type="text"/> Large spoon (47g) <input type="text"/> <input type="text"/> Soup spoon (33 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
43. Vegetable soup / ye atikiltihshorba	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (___g) <input type="text"/> <input type="text"/> Medium ladle (___g) <input type="text"/> <input type="text"/> Large ladle (___g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Fruits

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
44. Banana	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1=94 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
45. Orange	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1= 146 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

46. Mango	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1= 212 g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>
47. Avocado	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1= 185 g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div> Small sized ladle (g) <input type="text"/> <input type="text"/> Spoon (large sized) (= g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>
48. Papaya	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Large portion (=475 g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div> Medium portion (=237g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div> Small portion (=129 g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div>	

Egg

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
49. Chicken eggs	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of pieces (1= 50 g) <div style="text-align: center;"> <input type="text"/> <input type="text"/> </div>	<div style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> </div>

Milk and dairy

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
50. Milk: cow's	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Show pictures Number of large glasses (350 ml) <div style="text-align: center;">□ □</div> Number of medium glasses (275 ml) <div style="text-align: center;">□ □</div> Number of medium cups (ml) <div style="text-align: center;">□ □</div> Number of small cups(131 ml) <div style="text-align: center;">□ □</div>	<div style="text-align: center;">□ □ □</div>
51. Cheese	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	large spoon (32 g) □ □ Small ladle (59 g) □ □ Medium ladle (106 g) □ □	

52. Yoghurt	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Show pictures Number of large yoghurt glasses (475ml) <input type="text"/> <input type="text"/> Number of medium yoghurt glasses (350 ml) <input type="text"/> <input type="text"/> Number of small yoghurt glasses (295 ml) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
-------------	---	---	--

Fish and products based on fish

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
Fish 53. Fried fish (asatibs) 54. Asa stew (Asa wot) 55. Asa stew (Asa wot) 56. Asa gulash <input type="checkbox"/> 57. Tuna <input type="checkbox"/> 58. Asa lebleb <input type="checkbox"/> 59. Asa kotelet <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Piece fish of g (=100 g : fillet) (feleto) Fried fish = 406 g <input type="text"/> <input type="text"/> Tuna = 75 g <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Meat and poultry

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
Meat 60. Sigawotih	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (54 g) <input type="text"/> <input type="text"/> Medium ladle (103 g) <input type="text"/> <input type="text"/> Large ladle (158 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
61. Kitfo	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (60 g) <input type="text"/> <input type="text"/> Medium ladle (80 g) <input type="text"/> <input type="text"/> Large ladle (118 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
62. Gored gored	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (g) <input type="text"/> <input type="text"/> Medium ladle (g) <input type="text"/> <input type="text"/> Large ladle (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
63. Ye berehtibsih	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (32 g) <input type="text"/> <input type="text"/> Medium ladle (51 g) <input type="text"/> <input type="text"/> Large ladle (78 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

64. Minchet <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (g) <input type="text"/> <input type="text"/> Medium ladle (g) <input type="text"/> <input type="text"/> Large ladle (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
65. Kikil <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (g) <input type="text"/> <input type="text"/> Medium ladle (g) <input type="text"/> <input type="text"/> Large spoon (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
66. Ye begih tibs <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (32 g) <input type="text"/> <input type="text"/> Medium ladle (51 g) <input type="text"/> <input type="text"/> Large spoon (78 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
Poultry (ye dorosiga) 67. Chicken stew/doro wet <input type="checkbox"/> 68. Doro alicha <input type="checkbox"/> 69. Doro tibs wot <input type="checkbox"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small ladle (g) <input type="text"/> <input type="text"/> Medium ladle (g) <input type="text"/> <input type="text"/> Large spoon (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>





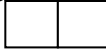
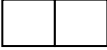


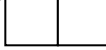

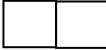
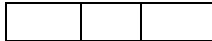
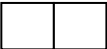


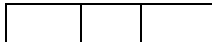
Fat and oil

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
70. Butter	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small spoon (g) <input type="text"/> <input type="text"/> Medium spoon (g) <input type="text"/> <input type="text"/> Large spoon (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
71. Oil (type of oil) Plant/palm/ saturated/ yerega	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Small spoon (g) <input type="text"/> <input type="text"/> Medium spoon (g) <input type="text"/> <input type="text"/> Large spoon (g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Sweets

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
72. Honey <input type="text"/> 73. Jam <input type="text"/>	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small spoon (8 g) <input type="text"/> <input type="text"/> Medium spoon (12 g) <input type="text"/> <input type="text"/> Large spoon (23 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
74. Sugar	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Written in Number of ladles Small spoon (4g) <input type="text"/> <input type="text"/> Medium spoon (7g) <input type="text"/> <input type="text"/> Large spoon (16 g) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Drinks

Non-Alcoholic drinks Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
75. Coffee	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of coffee cups/ show images Small cup (___g)  Medium cup (___g)  Large cup (___g) 	
76. Tea	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of tea cups/ show images Small cup(___g)  Medium cup (___g)  Large cup (___g) 	
77. Mekiyato/ buna be wetet	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of cups/ show images Small cup(___g)  Medium cup (___g)  Large cup (___g) 	
Soft drinks 78. Mirinda 79. Fanta 80. Pepsi 81. Coca-cola	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of glasses/ Small glasses (400ml)  Medium glasses (275ml)  Large glasses (250 ml) 	

Alcoholic drinks 82. Beer	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of cans or bottles of 330ml <input type="text"/> <input type="text"/> Number of cans or bottles of (500ml) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
83. Tella 84. Tej 85. Arake 86. borde	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of glasses/ Small glasses (400ml) <input type="text"/> <input type="text"/> Med glasses (275ml) <input type="text"/> <input type="text"/> Large glasses (250 ml) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Fast foods and pastry

Food item	Average consumption over the last month	Average consumption	Usual portion size (gram)
87. Burger	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of 1 (1)pieces = 376 g <input type="text"/> <input type="text"/> Number of ½ or half pieces <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
88. Pizza	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Small slice (1/4 full : 110g) <input type="text"/> <input type="text"/> Medium slice (1/2 full : 184g) <input type="text"/> <input type="text"/> Full/ one pizza = 308 g <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

89. Cake (types of cake)	<input type="checkbox"/> Never or < 1 x per month <input type="checkbox"/> 1 x per month <input type="checkbox"/> 2- 3 x per month <input type="checkbox"/> 1 x per week <input type="checkbox"/> 2-3 x per week <input type="checkbox"/> 4-6 x per week <input type="checkbox"/> Every day	Number of large slice = g	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>			

AMHARIC QUESTIONNAIRE

አዲስ አበባ ዩኒቨርሲቲ

ህብረተሰብ ጤና ሳይንስ ኮሌጅ

የመጠየቂያ/መረጃ ቅፅ

ጤና ይስጥልኝ ፤ስሜ _____ ይባላል።የመጣሁት በአዲስ አበባ ዩኒቨርሲቲ ህብረተሰብ ጤና ሳይንስ ተማሪ የሆነችውን ኢሊሊ ፈይሳ ወክዬ ነው።የሁለተኛ ድግሪ መመረቂያ ጥናቷን የምትሰራው የዘወትር የአመጋገብ ሁኔታ እና የምግብ መጠንን የሚያሳይ መጠይቅ መሰረት ያደረገ እና ልምዱን ለማጥናት የተዘጋጁት መጠይቆች ምን ያህል ትክክለኛ መረጃ ይሰጣሉ የሚለውን በተመለከተ ነው።ጥናቱን ለማድረግ ከአዲስ አበባ ዩኒቨርሲቲ ፈቃድ አግኝታለች።እርስዎ የተመረጡት በዚህ አካባቢ ነዋሪና እድሜው ከ20-65 መት የሆኑ ጎልማሳ ስለሆኑ ነው።በጥናቱ ላይ መሳተፍ ሙሉ በሙሉ በርሶዎ ፈቃድ ላይ የተመሰረተ ይሆናል።በጥናቱ የመሳተፍ ወይም አለመሳተፍ ሙሉ መብት አለዎት አንዲሁም ለመሳተፍ ፈቃደኛ ከሆኑ በኋላ በፈለጉት ጊዜ ማቋረጥ ወይም ማቆም ይችላሉ። ይህም በጥናቱ አለመሳተፍ የሚደርስበት ጉዳት የለም። በዚህ ጥናት ለመሳተፍ ፈቃደኛ ከሆኑ ስለራስዎ-መሃበረሰባዊ ጥያቄዎች፣ ስለአመጋገብ ሁኔታዎና ስለምግብ መጠኖችን በሚመለከት ጥያቄዎችን ይጠየቃሉ። ቃለ-መጠይቁም ከ30-40 ደቂቃ ሊወስድ ይችላል። የዘወትር አመጋገብ ሁኔታ እና የምግብ መጠንን ማጥናት ያስፈልገበት ዋና ምክንያት ስርሰደድ/ልማደኛ በሽታ ከሚባሉት ጋር ተያያዥነት ስላለው ነው።

በጥናቱ በመሳተፍዎ ለእርሶ አጅጉን አስፈላጊና ጠቃሚ ስለሆነው ተገቢ የአመጋገብ ስረአቶች ልምድ ይማራሉ። በተጨማሪም ጥናቱ የዘወትር የአመጋገብ ልምድ ተገቢ የሆነ ትኩረት እንዲሰጠውና ይህንን መጠይቅ በተሻለ/በአዲስ ሁኔታ በማዘጋጀት ለወደፊት ለሚደረግዉ ጥናት መሰረት ለመጣል ታስቦ ነው።።የእርስዎ ፈቃደኝነት ና የነቃ ተሳትፎ ለዚህ ጥናት ስኬታማነት አስፈላጊ ነው። ከዚህ ጥናት የተሰበሰበው መረጃ ሙሉ ሚስጥራዊነቱ የተጠበቀ ይደረጋል። ከጥናት ቡድኑ ውጪ ማንም የተሰበሰበውን መረጃ ማግኘት አይችልም። እንዲሁም መረጃው ከጥናቱ አላማ ውጪ ለምንም አንጠቀምበትም።

ስለ ጥናቱ ጥያቄ ወይም ተጨማሪ መረጃ ከፈለጉ በዚህ አደራሻ መጠየቅ ይችላሉ።

ስም:- ኢሊሊ ፈይሳ

ስልክ ቁጥር:-0919324253

ኢሜል:-liafeyisa2@gmail.com

Annex 4: Amharic version of informed consent

የስምምነት መጠየቂያ/ማረጋገጫ ቅጽ

ከላይ በተሰጡት መረጃ መሰረት በዚህ ጥናት ለመሳተፍ ፈቃደኛ ኖት?

- 1 አዎ(ቃለ መጠይቁ ይቀጥል)
- 2 አይደለሁም (አመስግነህ ወደ ሚቀጥለው ተሳታፊ እለፍ)

የተሳታፊው ፊርማ _____ ቀን _____

ቃለ መጠይቅ አድራጊው ስም _____ ፊርማ _____

ቁጥር _____

የቃለ መጠይቅ የተካሄደበት ቀን _____ የተጀመረበት ሰዓት _____ ያለቀበት ሰዓት _____

መጠይቁ ታይቷል/ ተፈትሻል _____

የቃለ መጠይቁ ውጤት: 1.ሙሉ በሙሉ የተሟላ

2. ያልተገኘ

3.ፍቃደኛ ያልሆኑ

4. በከፊል የተሟላ

በተቆጣጣሪዎች ተረጋግጧል፤ ስም _____ ፊርማ _____

Annex 5: Amharic version of questionnaire

ክፍል አንድ፡ መለያ

ቁጥር _____ ቀጠና _____ ቀበሌ _____

የተሳታፊው/ የመላሹ ስም _____

የጠያቂው ስም _____ የመጠይቁ ቀን _____

የተጀመረበት ሰአት _____ ያለቀበት ሰአት _____

ክፍል ሁለት፡ አጠቃላይ የተሳታፊ የኑሮ ሁኔታ

ቁጥር	ጥያቄ		
201	መቼ ነው የተወለድሽው (ቀን/ወር/ዓ.ም)	___/___/___	
202	እድሜሽ ስንት ነው (በአመት)		
203	የጋብቻ ሁኔታ	ያገባች ያላገባች የተፋታች የሞተባች	
204	ሀይማኖት	አርቶዶክስ ሙስሊም ፕሮቴስታንት ካቶሊክ ሌላ	
205	ትምህርት ተምረሽ ታውቂያለሽ	አዎ አይ	
206	የትምህርት ደረጃሽ ከሚከተሉት የቱነው	ማንበብ እና መጻፍ የመጀመሪያ ደረጃ	

		ሁለተኛ ደረጃ ሠርተፍኬት ከፍትሻ ደረጃ	
207	የስራ ዘርፍ	የ መንግስት ሰራተኛ የግል ነጋዴ የቀን ሰራተኛ ገበሬ የቤት እመቤት ሌላ	

ክፍል 2:ባለፈው 24 ሰዓት ውስጥ የተመገቡትን ምግቦች አስመልክቶ ለመጠየቅ የቀረቡ ጥቁዎች

ከዚህ በመቀጠል በትናንትናው እለት ቀንም ሆነ ማታ የተመገቡትን ጠንካራ፣ ለስላሳ ወይም ፈሳሽ ምግቦችን ልጠይቆት እፈልጋለሁ። ቤትም ሆነ ከቤት ውጭ የበሉትን ማንኛውም ምግብ፣ መጠጥ፣ ማጣፈጫ፣ ቅመሞች፣ መክሰስም ሳይቀር አንድታስታውሱ ና እንድትነግሩኝ እፈልጋለሁ። በዚህ ቃለ መጠይቅ ውስጥ ትክክል ወይም ስህተት መልስ የለም። ጥያቄ አልት? ከሌሎች እንጀምር

የአመጋገብ መጠየቂያ ቅጽ

የ 24 ሰዓት የምግብ ዝርዝር መጻፊያ

ከዚህ በመቀጠል በትናንትናው እለት ቀንም ሆነ ማታ የተመገቡትን/ የጠጡትን ደረቅ፣ ፈሳሽ እና ለስላሳ ሳምግቦችን በዝርዝር አጠይቆታለሁ።

የቃለ መጠይቁ አድራጊ ስም _____ የቀበሌ ስም _____ ምግቡ የተበላበት ቀን _____						
የቤት ቁጥር: _____ የቃለ መጠይቁ አድራጊ ፊርማ: _____ ቦታ _____ ቃለ መጠይቁ የተሰራበት ቀን: _____						
የተጠያቂ ስም _____ የተጠያቂ መለያ ቁጥር _____ ጾታ: _____						
ምግብ የተበላበት ሰዓት	ምግብ የተበላበት ቦታ	ምግብ ወይም መጠጥ	የምግብ ዝርዝርና አሰራር	የተበላው መጠን በመለኪያ	የተበላው መጠን ግራም	የምግብ ግሩፕ

የምግቦችና ውህዶች ገለፃ ፎርም፣ አሁን ደግሞ ከላይ የዘረዘሩልኝ ምግቦች የአበሳሰል ዘዴያቸው፣ ውህዶችና የውህዶችን መጠን፣ አይነትና ምን ያህል አንደተመገቡ በዝርዝር ይነግሩኛል።

የምግብ/መጠጥ ዝርዝርና አይነቱ	የምግብ/መጠጥ ገለፃና የአበሳሰል ዘዴ (ይህን መረጃ ለመሰብሰብ ውህዶች፣ የውህዶችን አይነትና መጠን እና የአበሳሰል ዘዴውን በጥልቁ ይጠይቁ)	የተዘጋጀው ምግብ መጠን (በመለክያ)	የተበላው ምግብ መጠን (በመለክያ)	ምግብ መጠን (በግራም)
	ውህዶችና የአበሳሰል ዘዴ፡ መጠናቸው (በመለክያ/ግራም)			
	ውህዶችና የአበሳሰል ዘዴ፡ መጠናቸው (በመለክያ/ግራም)			
	ውህዶችና የአበሳሰል ዘዴ፡ ፍ መጠናቸው (በመለክያ/ግራም)			

	<p>ዉህዶቹና የአበሳሰል ዘዴ፡ ና መጠናቸዉ (በመለክያ/ግራም)</p>			
<p>አልኮል ጠጥተው ነበር? አዎ.....1 አይደለም.....2</p> <p>የገብቻ ቀን ነበረ? አዎ.....1 አይደለም.....2</p> <p>የጾም ቀን ነበረ? አዎ.....1 አይደለም.....2</p> <p>የበአል ቀን ነበረ? አዎ.....1 አይደለም.....2</p> <p>የእረፍት ቀን ነበረ (ቅዳሜ/እዉድ)? አዎ.....1 አይደለም.....2</p>		<p>ታመው ነበር? አዎ.....1 አይደለም.....2</p> <p>ህመሙ የአመጋገብ ሁኔታ ቀይሮ ነበር? አዎ.....1 አይደለም.....2</p> <p>አዎ ከሆነ እነዴት ነዉ የቀየረ? ጨመረ.....1 ቀነሰ.....2</p>		
<p>የነዚህ ምግቦች አመኃኅብ ያልተለመደ ነዉ? (የግብዣ/ድግስ ቀን፣የገበያ ቀን፣የጾም ቀን) አዎ.....1 አይደለም.....2</p>		<p>መዳኒት ወስደው ነበር? አዎ.....1 አይደለም.....2</p> <p>አዎከሆነ ምን አይነት መዳኒት ነዉ የወሰዱት?</p>		

የግል መረጃ

የቃለ-መጠይቁ አድራጊ ስም _____ የቀበሌ ስም _____ ምግብ የተበላበት ቀን: _____

የቤት ቁጥር: _____ የቃለ-መጠይቁ አድራጊ ፊርማ: _____ ቦታ _____ ቃለ-መጠይቁ የተሰራበት ቀን: _____ ዓ

24 ሰዓት የምግብ ዝርዝር 1

የተጠያቂ ስም _____ የተጠያቂ መለያ ቁጥር _____ ጾታ: _____

የምግብ እና መጠጥ ድግግሞሽ እና መጠን መጠይቅ

መመሪያ -በወር ውስጥ የጠጡትን እና የተመገቡትን የምግብ ዐይነት ለትንሽ ደቂቃ ያስታውሱ። ይህም በየእለቱ የሚምገቡትን የምግብ አይነት በቤት ውስጥም ይሁን በስራ ቦታ በሆቴልም የበሉትን ሁሉ ያጠቃልላል።እኔ ይምግብ አይነቶችን ስጠቅስሎት እርሶ ደግሞ ያን የጠቀስኩትን የምግብ አይነት በወር ውስጥ ተመግበው ከሆነ ስንት ጊዜ እንደተመገቡ እና መጠኖን ይነግሩል።ስለ መጠኖ ስጠይቆ በነዛ በተመገቡባቸው ቀናቶች የአብዛኛውን ጊዜ መጠኖን ነው የሚነግሩኝ። የመጠን ጥያቄዎቹ በቤት ውስጥ በሚትጠቀሙባቸው እቃዎች ይህሆናል። በተጨማሪም እናንተን እንዲያግዝ የፎቶ ማሳያዎችን እጠቀማለሁ።

ለምሳሌ ነጭ ጤፍ እንጀራ 'በሰምንት አራት ቀናት ውስጥ (ሰኞ, ማክሰኞ, ረቡዕ እና ሐሙስ የሚወስድ በሰምንት 4 - 6 ጊዜ የሚለወጥ አማራጭ ይመርጣሉ።በእነዚህ ቀናት ሁለት (2) ሙሉ መካከለኛ መጠን (ስምንት ቁርጥ) ኔጭ ጤፍ እንጀራ በብዛት የሚጠቀሙ ከሆነ መልሶት 2 ሙሉ መካከለኛ መጠን (ስምንት ቁርጥ) ኔጭ ጤፍ እንጀራ ይሆናል። ጠቅላላውን የተመገቡትን እንጀራ ይነግሩኛል። ብቻውንም ይሁን ከሌሎች ምግቦች ጋር የተመገቡትን ይነግሩኛልህ። . (ምሳሌ, እንጀራ በባይ፣ እንጀራ በወጥ፣ እንጀራ በ አሸካይ)

ያስታውሱ: እነዚህ ሁለቱ ሙሉ እንጀራዎች የሁሉም ምግቦች ጠቅላላ ናቸው (ቁርስ, ምሳ, መክሰስ, እራት)

የእህል ዘሮች፣ ዳቦ ና ድንች

<p>የእህል ዘሮች የምግብ አይነት</p>	<p>የምህግብ ድግግሞሽ ባለፈው ወር</p>	<p>አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን</p>
<p>እንጀራ ነጭ ጤፍ <input type="checkbox"/> እንጀራ ቀይህ ጤፍ <input type="checkbox"/> እንጀራ ሩዝ <input type="checkbox"/> የተቀላቀለበት እንጀራ <input type="checkbox"/> በቆሎ የተቀላቀለበት እንጀራ <input type="checkbox"/> የበቆሎ እንጀራ <input type="checkbox"/></p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ</p>	<p>የሙሉ እንጀራ ቁጥር (1 ሙሉ እንጀራ = 293g <input type="text"/> <input type="text"/>)</p> <p>የግማሽ እንጀራ ቁጥር (1 ግማሽ እንጀራ = 153g <input type="text"/> <input type="text"/>)</p> <p>የቁርጥ እንጀራ ቁጥር (1 kurtih = 97g <input type="text"/> <input type="text"/>)</p>
<p>እንጀራ ፍርፍር</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ</p>	<p>በተበላው የክፍልሀ መጠን ትንሽ መጠን (91g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ መጠን (_113g) <input type="text"/> <input type="text"/></p> <p>ትልቅ መጠን (166g) <input type="text"/> <input type="text"/></p>
		<p><input type="text"/> <input type="text"/> <input type="text"/></p>

<p>ፓስታ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቅ: ሙሉ ሳህን (= 545 g)</p> <p style="text-align: right;"> <input type="text"/> <input type="text"/> =267) <input type="text"/> </p> <p>መካከለኛ : የሳህን ግማሽ ያህል</p> <p>ትንሽ: የሳህን ፋብ ያህል (=186)</p>
------------	---	--




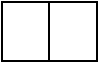
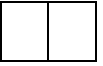



የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ሞከሮኒ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቅ: ሙሉ ሳህንን (= 587g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ : የሳህን ግማሽ ያህል (= of 343) <input type="text"/> <input type="text"/></p> <p>ትንሽ: የሳህን ፋብ ያህል (= 211 g) <input type="text"/> <input type="text"/></p>

<p>ፍዝ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቅ: ሙሉ ሳህንን (= 420 <input type="text"/> <input type="text"/> g)</p> <p>መካከለኛ: የሳህኑን ግማሽ ያህል (=261 <input type="text"/> <input type="text"/> g)</p> <p>ትንሽ: የሳህኑን ፍብ ያህል (=153 g) <input type="text"/> <input type="text"/></p>
<p>የእጃቸውን ቁንጭ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቅ: ሙሉ ሳህን (=545 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> g)</p> <p>(=267g)</p> <p>መካከለኛ: የሳህኑን ግማሽ ያህል</p> <p>ትንሽ: የሳህኑን ፍብ ያህል (=186 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> g)</p>
<p>ንፍሮ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በእፍኝ/ በእጅ (= 41 g)</p> <p><input type="text"/> <input type="text"/></p>

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
የቡላ ገንፎ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>ትልቅ: ሙሉ ሳህን (=684g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ: የሳህን ግማሽ ያህል (=407g) <input type="text"/> <input type="text"/></p> <p>ትንሽ: የሳህን 290 g ሩብ ያህል (= <input type="text"/> <input type="text"/>)</p>
የገብስ ገንፎ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>መካከለኛ: የሳህን ግማሽ ያህል (=267g) <input type="text"/> <input type="text"/></p> <p>ትልቅ: ሙሉ ሳህን (=426g) <input type="text"/> <input type="text"/></p>
<p>ቆሎ <input type="checkbox"/></p> <p>የገብስ <input type="checkbox"/></p> <p>ቆሎ <input type="checkbox"/></p> <p>የገብስ ና ስንዴ <input type="checkbox"/></p> <p>ቆሎ <input type="checkbox"/></p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>ብእፍኝ/ በእጅ (= 30 gm) <input type="text"/> <input type="text"/></p>

አጥሚት	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	በብርጭቆዎች ወይም በኩባያዎች (ፎቶ አሳይ) መጠን 1 (ml) <input type="text"/> <input type="text"/> መጠን 2 (ml) <input type="text"/> <input type="text"/> መጠን 3 (ml) <input type="text"/> <input type="text"/>
------	---	---

ዳቦ/ቂጣ የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
የቦቆሎ ቂጣ (አምባሽ)	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	በትልቁ የተቆረሰ (1 =390g) <input type="text"/> <input type="text"/> በመካከለኛው የተቆረሰ (1=246 g) <input type="text"/> <input type="text"/> በትንሹ የተቆረሰ (1=199 g) <input type="text"/> <input type="text"/> <input type="text"/>

<p>ነጭ ደስንዴ ዳቦ የቦቆሎ ቂጣ (አምባሽ)</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትልቁ የተቆረሰ (341 g)</p> <p></p> <p>በመካከለኛው የተቆረሰ (280 g)</p> <p> </p> <p>በትንሹ የተቆረሰ (258 g)</p>
<p>የሱቅ ዳቦ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቁ (ባለ 3 ብር = 285 g) </p> <p>መካከለኛው (ባለ 2 ብር = 114 g) </p> <p>ትንሹ (የመካከለኛው ግማሽ = 57 g) </p>
<p>ሳንቡሳ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቁ (ባለ 3 ብር = g) </p> <p>መካከለኛው (ባለ 2 ብር = g) </p>

ድንች የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይህ የሚበሉት የምግብ መጠን
የተቀቀለ ድንች	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	የተመገቡት የተቀቀለ ድንች ብዛት (1= g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div>
ድንች ጥብስ (ችጥስ)	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	ትልቅ: ሙሉ ሳህን (=168g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div> መካከለኛ: የሳህኑን ግማሽ ያህል (109g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div>
ድንች ወጥ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	በትንሹ ጭልፋ (90 g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div> በመካከለኛው ጭልፋ (120 g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div> በትልቁ ጭልፋ (308 g) <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto; display: flex; justify-content: space-between;"></div>

የእተር ዘሮች

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ሽሮ ወጥ ምጥን <input type="checkbox"/></p> <p>ሽሮ የእተር እና <input type="checkbox"/></p> <p>የባቄላ የባቀላ ና <input type="checkbox"/></p> <p>ሽምብራ የባቄላ <input type="checkbox"/></p> <p>የእተርና የጓዶ <input type="checkbox"/></p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጫልፋ (96 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጫልፋ (126g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ጫልፋ (167g) <input type="text"/> <input type="text"/></p>
<p>ምስር ክክ ወጥ</p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጫልፋ (62 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጫልፋ (89g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ጫልፋ (157g) <input type="text"/> <input type="text"/></p>
<p>እተር ክክ ወጥ</p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጫልፋ (63 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጫልፋ (80g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ጫልፋ (134g) <input type="text"/> <input type="text"/></p>

<p>ፍል</p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቅ: ሙሉ ሳህን (= g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ: የሳህን ግማሽ ያህል (=g) <input type="text"/> <input type="text"/></p>
-----------	---	--

ስራስሮች

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ቆጮ</p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትልቁ የተቆረሰ (g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው የተቆረሰ (169 g)</p> <p>በትንሹ የተቆረሰ (g) <input type="text"/> <input type="text"/></p>
<p>ቀይ ስር ወጥ</p>	<p><input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጫልፋ (55 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (49 g) <input type="text"/> <input type="text"/></p>

<p>ድንች ስኳር</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>የተመገቡት የድንች ስኳር ብዛት (1= g)</p> <div style="border: 1px solid black; width: 60px; height: 30px; margin: 10px auto;"></div>
<p>ድንች ብካሮት ወጥ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጭልፋ (91 g) <div style="border: 1px solid black; width: 60px; height: 30px; display: inline-block; margin-left: 10px;"></div></p> <p>በመካከለኛው ጭልፋ (126g) <div style="border: 1px solid black; width: 60px; height: 30px; display: inline-block; margin-left: 10px;"></div></p> <p>በትህልቁ ማንኪያ (67g) <div style="border: 1px solid black; width: 40px; height: 30px; display: inline-block; margin-left: 10px;"></div></p>

እታክልቶች

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
ጥቅልህ ጎመን	<input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ ጫልፋ (90g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጫልፋ (135 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (47 g) <input type="text"/> <input type="text"/></p>
ጎመን (የእበሻ)	<input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ ጫልፋ (53 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጫልፋ (103 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ጫልፋ (151 g) <input type="text"/> <input type="text"/></p>
ቆስጦ	<input type="checkbox"/> በጫራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ ጫልፋ (___g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (___g) <input type="text"/> <input type="text"/></p>

<p>ቲማቲም ስልስ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጭልፋ (94 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጭልፋ (112 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (70 g) <input type="text"/> <input type="text"/></p>
<p>ቲማቲም ቁርጥ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጭልፋ (56 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጭልፋ (70g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (37 g) <input type="text"/> <input type="text"/></p>
<p>የዱባ ወጥ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሰምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትንሹ ጭልፋ (102 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጭልፋ (201 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ጭልፋ (307 g) <input type="text"/> <input type="text"/></p>

<p>ፎሳሊዎ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ ጭልፋ (66 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ (47g) <input type="text"/> <input type="text"/>)</p> <p>በሾርባ ማንኪያ (33 g) <input type="text"/> <input type="text"/></p>
<p>የእትክልት ሾርባ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ ጭልፋ (___g) <input type="text"/> <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጭልፋ (___g <input type="text"/> <input type="text"/></p> <p>በትልቁ ጭልፋ (___g) <input type="text"/> <input type="text"/></p>

ፍራፍሬ

የምግብ አይነት	የምህግብ ደግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ሙዝ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>የተመገቡትን የሙዝ ቁጥር (1=94 g)</p> <p><input type="text"/> <input type="text"/></p>

<p>ብርትኳን</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>የተመገቡትን ቁጥር/ ብዛት (1= 146 g)</p> <p><input type="text"/> <input type="text"/></p>
<p>ማንሳ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>የተመገቡትን ቁጥር/ ብዛት (1= 212 g)</p> <p><input type="text"/> <input type="text"/></p>
<p>እሽካዶ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>የተመገቡትን ቁጥር/ ብዛት (1= 185 g) <input type="text"/> <input type="text"/></p> <p>በትልቁ ማንኪያ ን (= g) <input type="text"/></p>

<p>ፓፓያ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>ትልቅ መጠን (=475 g)</p> <div style="text-align: right;"> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> </div> <p>መካከለኛ መጠን (=237g)</p> <div style="text-align: center;"> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> </div> <p>ትንሽ መጠን (=129 g)</p> <div style="text-align: center;"> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> </div>
------------	---	--

እንቁላል

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>አንቁላል</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>የተመገቡትን ቁጥር/ ብዛት (1= 50 g)</p> <div style="text-align: center;"> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> </div>

ወተት እና የወተት ዘሮች

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>የላም ወተት</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በትልቁ ብርጫቆ ብዛት (350 ml) <input type="text"/> <input type="text"/> <input type="text"/></p> <p>በትንሹ ብርጫቆ ብዛት (275 ml) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ኩባያ ብዛት (ml) <input type="text"/> <input type="text"/></p> <p>በትንሹ ኩባያ ብዛት (131 ml) <input type="text"/> <input type="text"/></p>
<p>እይብ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትልቁ ማንኪያ (32 g) <input type="text"/> <input type="text"/> <input type="text"/></p> <p>በትንሹ ጭልፋ (59 g) <input type="text"/> <input type="text"/></p> <p>በመካከለኛው ጭልፋ (106 g) <input type="text"/> <input type="text"/></p>

<p>አርጎ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>በአርጎ መጠጫ ትልቁ ብርጭቆ (475ml)</p> <p><input type="text"/> <input type="text"/></p> <p>በአርጎ መጠጫ መካከለኛ ብርጭቆ (350 ml)</p> <p><input type="text"/> <input type="text"/></p> <p>በአርጎ መጠጫ ትንሹ ብርጭቆ (295 ml)</p> <p><input type="text"/> <input type="text"/></p>
------------	---	--

አሳ እና የአሳ ዘሮች

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>አሳ</p> <p>አሳ ጥብስ <input type="checkbox"/></p> <p>አሳ ወጥ <input type="checkbox"/></p> <p>አሳ ጉላሽ <input type="checkbox"/></p> <p>ቱና <input type="checkbox"/></p> <p>አሳ ለብ ልብ <input type="checkbox"/></p> <p>አሳ ኮተላት <input type="checkbox"/></p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>1 ፊሌቶ = 100ግ <input type="text"/> <input type="text"/></p> <p>የተጠበሰ አሳ = 406 g</p> <p>ቱና = 75 g <input type="text"/> <input type="text"/></p>

ስጋ

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ስጋ ወጥ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (54 g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (103 g) <input type="text"/> g <input type="text"/></p> <p>ትልቁ ጭልፋ (158 g) <input type="text"/> <input type="text"/></p>

<p>ክትፎ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (60 g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (80 g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ጭልፋ (118 g) <input type="text"/> <input type="text"/></p>
-------------------	---	---

<p>ጎረድ ጎረድ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ጭልፋ (g) <input type="text"/> <input type="text"/></p>
<p>የበሬ ጥብስ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (32 g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (51 g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ጭልፋ (78 g) <input type="text"/> <input type="text"/></p>
<p>ምንቸት</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ጭልፋ (g) <input type="text"/> <input type="text"/></p>

<p>ቅቅል</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ማንኪያ (g) <input type="text"/> <input type="text"/></p>
<p>የበግ ጥብስ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (32 g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ <input type="text"/> g <input type="text"/> (51)</p> <p>ትልቁ ጭልፋ (78 g) <input type="text"/> <input type="text"/></p>
<p>የዶሮ ስጋ ዶሮ ወጥ ዶሮ እልጭ ዶሮ ጥብስ ወጥ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛው ጭልፋ (g) <input type="text"/> <input type="text"/></p> <p>ትልቁ ጭልፋ <input type="text"/> <input type="text"/></p>

ቅባት እና ዘይት

የምግብ አይነት	የምህግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ቅባ</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ማንኪያ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ ማንኪያ (g) <input type="text"/> <input type="text"/></p> <p>ሸርባ ማንኪያ (g) <input type="text"/> <input type="text"/></p>
<p>ዘይት (እይነቱንህ)</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ማንኪያ (g) <input type="text"/> <input type="text"/></p> <p>መካከለኛ ማንኪያ (g) <input type="text"/> <input type="text"/></p> <p>ሸርባ ማንኪያ (g) <input type="text"/> <input type="text"/></p>

ጠፋጭ

የምግብ አይነት	የምግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
<p>ማር <input type="text"/></p> <p>ማርማላታ <input type="text"/></p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ማንኪያ (8 g) <input type="text"/> <input type="text"/></p> <p>ትንሹ ማንኪያ (12 g) <input type="text"/> <input type="text"/></p> <p>ሸርባ ማንኪያ (23 g)</p>
<p>ስኳር</p>	<p><input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ</p> <p><input type="checkbox"/> በወር 1 ጊዜ</p> <p><input type="checkbox"/> በወር 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 1 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 2-3 ጊዜ</p> <p><input type="checkbox"/> በሳምንት 4-6 ጊዜ</p> <p><input type="checkbox"/> በየቀኑ</p>	<p>ትንሹ ማንኪያ (4g) <input type="text"/> <input type="text"/></p> <p>ትንሹ ማንኪያ (7g) <input type="text"/> <input type="text"/></p> <p>ሸርባ ማንኪያ (16 g)</p>

መጠራቾች እልክል ያልሆኑ ማጠራቾች

የምግብ አይነት	የምግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
ቡና	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ የቡና ሲኒ (57g)</p> <div style="text-align: center;"> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 30px; height: 20px; border: 1px solid black;" type="text"/> </div> <p>በመካከለኛ የቡና ሲኒ (61g)</p> <div style="text-align: center;"> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> </div>
ሻይ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p>በትንሹ የሻይ ብርጭቆ (131g)</p> <div style="text-align: center;"> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> </div> <p>በመካከለኛ የሻይ ብርጭቆ (91g)</p> <div style="text-align: center;"> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 20px; border: 1px solid black;" type="text"/> </div>

<p>ቡና በወተት/ መኪያቶ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሰምንት 1 ጊዜ <input type="checkbox"/> በሰምንት 2-3 ጊዜ <input type="checkbox"/> በሰምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p> <input type="text"/> <input type="text"/> በትንሹ የሻይህ ብርጭቆ (131g) በመካከለኛ የሻይህ <input type="text"/> <input type="text"/> ብርጭቆ (91g) </p>
----------------------	---	---

<p>ለስላሳ ማጠቦች ሚሪንዳ ፋንታ ፔፕሲ ኮካ ኮላ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሰምንት 1 ጊዜ <input type="checkbox"/> በሰምንት 2-3 ጊዜ <input type="checkbox"/> በሰምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p> በትንሹ <input type="text"/> <input type="text"/> የውሃ ብርጭቆ (400ml) በመካከለኛ የውሃ <input type="text"/> <input type="text"/> ብርጭቆ (275ml) ትልቁ የውሃ ብርጭቆ (250 ml) <input type="text"/> <input type="text"/> </p>
---	---	---

<p>የእልካል መጠቦች ቢራ</p>	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሰምንት 1 ጊዜ <input type="checkbox"/> በሰምንት 2-3 ጊዜ <input type="checkbox"/> በሰምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	<p> የቢራ ጠርሞዝ ብዛት (= 330ml) <input type="text"/> <input type="text"/> የቢራ ጠርሞዝ ብዛት <input type="text"/> <input type="text"/> (500ml) </p>
--------------------------	---	---

ጠላ ጠጅ እረቄ ቦርዶ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	በትንሹ የውሃ ብርጫቆ (400ml) <input type="text"/> <input type="text"/> በመካከለኛ የውሃ ብርጫቆ (275ml) <input type="text"/> <input type="text"/> ትልቁ የውሃ ብርጫቆ (250 ml) <input type="text"/> <input type="text"/>
---------------------	---	---

የቶሎ ቶሎ ምግቦች እና ከክ

የምግብ አይነት	የምግብ ድግግሞሽ ባለፈው ወር	አማካይ የምህግብ ፍጆታ/በአማካይ የሚበሉት የምግብ መጠን
ቦርገር	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	ሙሉ የተመገቡት ብዛት = 376 g <input type="text"/> <input type="text"/> ግማሽ የተመገቡት ብዛት <input type="text"/> <input type="text"/>
ፕዛ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	ፋብዋን (: <input type="text"/> <input type="text"/> 110g) መካከለኛዋን (1:184g) <input type="text"/> <input type="text"/> ሙሉውን = 308 g <input type="text"/> <input type="text"/>

ኬክ	<input type="checkbox"/> በጭራሽ ወይም <1 ጊዜ <input type="checkbox"/> በወር 1 ጊዜ <input type="checkbox"/> በወር 2-3 ጊዜ <input type="checkbox"/> በሳምንት 1 ጊዜ <input type="checkbox"/> በሳምንት 2-3 ጊዜ <input type="checkbox"/> በሳምንት 4-6 ጊዜ <input type="checkbox"/> በየቀኑ	የየኬኩ ብዛት = g <div style="border: 1px solid black; width: 50px; height: 20px; margin: 0 auto; display: flex; justify-content: space-between;"> </div>
----	---	--

Annex 6: Recipe for adults in Butajira

List of food	Ingredients
Stew made from kale and unleavened bread	Unleavened bread from maize, onion, kale, green pepper, oil, salt, water, garlic, tomato, spice.
Stew made from flour of roasted legumes	chick pea, vetch, water, butter ,turmeric onion, oil, tomato, salt, garlic, ginger, spice, pepper (chili),flour of broad bean, field pea, vetch
Stew made from field pea split	water, butter, field pea split, turmeric onion, oil, tomato, salt, garlic, ginger, spice, pepper (chili),(flour of broad bean, field pea, chick pea, vetch),
Stew made from lentils split	water, butter, field pea split whole field pea, , onion, oil, tomato, salt, garlic, ginger, spice, pepper (chili),(flour of broad bean, field pea, chick pea, vetch)
Stew made from potato	Onion, tomato, potato, carrot, oil, garlic, ginger, spice, butter,
Stew made from cabbage	
Oats (Kinche) soup	Flour of Oats, water salt, oil, ginger, onion, flour (furno duket)
Barley(kinche) soup	Barley, water oil, onion, ginger, salt.
Porridge	Grey, oats, teff (white, black), maize, false banana, sorghum (white, red), barley (white, black),chick pea, field pea, soya bean (flour), water, salt, butter, oil, milk, spice, grey
Gruel	barley (white, black),chick pea, field pea, soya bean (flour), water, salt, butter, oil, milk, linseed, sugar, honey, milk, linseed, oats, teff (white, black), maize, sorghum (white, red).

Kidney beans (ful)	-
Injera	teff (white, red, mixed) maize, sorghum, wheat, barley(white, black) ,spice, rice (flour)
Bread	false banana, refined wheat flour, wheat, maize, spice, baking powder, sorghum,
Unleavened bread	wheat, maze, teff (white, black, mixed), barley(black,white), sorghum (back, white),
Egg fried	Onion, garlic, oil, salt, butter, tomato,
Cheese	-
Cow milk	cow milk
Spaghetti	-
Fosoliya	- Fosoliya, oil, salt,
Tomato sauce	Onion, garlic, tomato, salt, ginger
Stew made from beet root	Beetroot, onion, salt oil,
Stew made from pumpkin	flour of broad bean, field pea, chick pea, water, butter, field pea split onion, oil, tomato, salt, garlic, ginger, spice, pepper (chili), whole field pea, pumpkin
Pie (Sanbusa)	Flour of maize, wheat, field lentils,

Annex 7: curriculum vitae

1. PERSONAL INFORMATION

Name Ilili FeyesaRegassa
Sex Female
Date of birth JAN 27, 1994
Nationality Ethiopian
Marital status Single
Phone number 0919324253
E-mail liafeyisa2@gmail.com

2. LEVEL OF EDUCATION

2007-2011 Bethel MekaneYesus preparatory school

2011-2016 Wollega University, Bachelor of Science in Public health

3. PROFESSIONAL, PRACTICAL EXPERIENCE AND SKILL

- One year of experience as a Graduate assistant lecturer in Wollega University
- I have a good experience in identification and solving of community health problem, diagnosing and case management during my community based education and team training program
- I have developed competence in data collection, analysis, report writing and presentations during community and clinical attachment during undergraduate studies
- Computer skill in Microsoft word, Microsoft excel, power point

4. RESEARCH

- I conducted research on “knowledge attitude and practice of mothers towards acute respiratory tract infection in children” as a partial fulfillment of degree in public health.

5. AWARD

- Ethiopian General Secondary Education Certificate with 4.00 GPA

- Certificate on academic performance award in recognition of academic excellence in which I stood first from all section (grade 9-12)

6. LANGUAGE SKILLS

- English: Fluent, written and spoken
- Oromifa: Fluent, written and spoken
- Amharic: Fluent, written and spoken

6. TRAINING

Has completed training on clinical teaching skills

Personal Information primary advisor

First name: Bilal Middle name: Shikur Last name: Endris

Age: 29year Sex: Male

Marital status: Married and father of a son

Place of Birth: Addis Ababa, Ethiopia

Date of Birth: 1 October, 1986

Nationality: Ethiopian,

Language: Amharic, English and Arabic: Speak, Read and Write

Email: lebiluka@yahoo.com,

Phone number (mobile): +251911-47-53-75, P.O.Box: - 5657

Academic Qualification

1. Masters of Public Health in Epidemiology (MPH): September 2012- July 2014

2. Degree of Doctor of Medicine (MD): January 2006-September 2011

Work Experience

Assistant Professor of Public Health: Since July, 2014

Institution: Addis Ababa University, School of Public Health

Lecturer: September, 2011 – June, 2014

Institution: Addis Ababa University, School of Public Health

Co-PI of Addis Ababa Mortality Surveillance Program: June, 2014 -July, 2015

PI of Addis Ababa Mortality Surveillance Program-Since July, 2015

Research experience

Assessment of the relationship between malnutrition and malaria among under-five children in Adami Tulu district: A case-control study (***Shikur B***, Deressa W, Lindtjorn B, BMC Public Health. © *Shikur et al. 2016(16:174)*)

Assessment of the magnitude and factors associated with exclusive breast feeding among employed and unemployed mothers: a comparative cross sectional study (under review, PLOSE ONE)

Advised more than 10 masters students

Some Merits received

AMREF young African research scholarship award winner

PI in a research award by Addis Ababa University-Medical Education Partnership Initiative (MEPI)

Masters in Public Health with **CGPA-3.97 and MPH Research-Excellent grade**