
# Addis Ababa University
# College of Health Science
# School of Public Health

## ASSESSMENT OF EATING BEHAVIOUR IN RELATION TO BODY MASS INDEX OF SENIOR REGULAR UNDERGRADUATE ADDIS ABABA UNIVERSITY STUDENTS

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## List of Abbreviations

| | |
|---|---|
| AAU | Addis Ababa University |
| BMI | Body Mass index |
| EB | Eating Behaviors |
| SD | Standard Deviation |
| SPSS | Statistical Package of Social Science. |
| SUGS | Senior Under Graduate Students |
| VCT | Voluntary Counsel Testing. |
| WHO | World Health Organization |

## Abstract

**Background:** University students generally tend to engage in problematic eating behaviors, including unhealthy dieting, skipping meals, and high intake of fast food that could contribute to negative consequences to their health and nutritional status.

**Objective:** The purpose of this study is to assess eating behavior and Body Mass Index status of Senior Regular Undergraduate students of Addis Ababa University.

**Methods:** Institutional-based cross-sectional study was conducted purposively among selected Campuses. The study population is all regular senior Undergraduate Addis Ababa University of Main Campus, Technology and Science faculty students. The total sample size for the study was estimated single proportion population formula. Data was collected from 774 participants using structured questionnaire, weight and height measurements. EPI-info version 3.5.3 was used to enter and clean the data and SPPS version 20.0 was employed for analysis. Logistic regression and odds ratio was calculated to ascertain association between dependent and independent variable. The result was present in tables, graphs and charts.

**Result:** A total of 757 study respondents participated, of which 550(72.7%) were males. This study showed that the majority of the students 465(61.4%) had normal weight of which 341(73.3%) were males and 124(26.7%) were females. The prevalence of underweight and overweight were 260(34.3%) and 28(3.7%) respectively. The odds of having overweight among none-cafeteria users was two point eight(2.8) times higher than University cafeteria users [AOR=2.844 CI(1.025,7.891)]. Intake of snack apart from regular meals, colored vegetables and fruits was not a common among respondents.

**Conclusion:** This study high lights the presence of unhealthy eating behaviors and a high prevalence of underweight among university students. Therefore, promoting healthy eating behavior among young adults is a crucial to achieve a healthy nutritional status.

# INTRODUCTION

## 1.1. Background

The transition of young people from high school to university has many health implications. It is a time of increased responsibility for food choices and practices. The nutritional knowledge of university students and their diets (food consumption patterns) have received global attention (1).During the transition from secondary school to university, students need to adapt to a new environment .When students fail to adapt adequately this could have negative consequences towards their health behaviors and subsequent weight status. Eating behavior (next to physical activity and sedentary behavior) is an important factor influencing students ,,weight (2).

On the other hand, University students tend to engage in problematic eating behaviors which including unhealthy dieting, high intake of fast food, skipping breakfast , insufficient physical activity, low intake of fruits and vegetables, and minimal consumption of dairy products, although they are generally aware of the negative consequences of those habits. Rapid changes in physical growth and psychosocial development have placed these young adults as nutritionally vulnerable groups with poor eating habits, that fails to meet dietary requirements. Environmental factors also contribute to adoption of unhealthy eating habits among university students (3-4).Body weight and its perception is an important aspect of health and constitute significant role in physical and mental well-being.

Generally speaking, evidence related to eating habits in relation to BMI status in our country especially in university students as well as in AAU setting is scare. In light of this, it is relevant to investigate and document the prevalence, dietary frequency and physical activity linked to eating habits in relation to BMI difference. And provide some helpful insight for addressing the issues by the relevant stake holders.

## 1.2. Statement of Problem

University student‟s life style may face difficulty in regulating eating behavior since it is the transition of staying away from their parents. Many University Students may be overweight, underweight or obese due to socio demographic and socio economic factors, dietary habits, nutritional knowledge and decrease physical activity. The selection of unhealthy food may have a negative impact on university student‟s eating behaviors which requires the attention of the university management (7).

It is thus important to deal with the university students‟ behavior and uncover the important relevant information in the universities. In line with this, this study investigated the eating behaviors of university students in relation to BMI difference and identify the determinant factors that are associated with body mass index status among the study participants.

## 1.3. Rational of the Study

There has been no adequate information about standard guideline of good eating practice of food among higher education in Ethiopia. There is a need to map out the magnitude of the problem and avail information within the higher education institute as well as to stake holders for appropriate intervention.

Moreover, the result of the study will also be also helpful for planning and implementing good service provision in higher education as the finding will indicate which poor nutritional eating habit is more predominant among university students. This research will also serve as a base line for researcher who wants to use as a reference and show areas where more research can be done in the future.

## 2. Literature Review

### 2.1. Body Mass Index among University Students

Globally, there is rising prevalence of overweight and obesity in both developing and developed countries(8).Rates of overweight and obesity have escalated dramatically among adolescents(9).The global nature of the obesity epidemic was formally recognized by a World Health Organization consultation in 1997(10). The prevalence of obesity is increasing worldwide at an alarming rate in both developing and developed countries. Obesity has become a serious epidemic health problem, estimated to be the fifth leading cause of mortality at global level. Moreover, it is a risk factor for many diseases such as certain cancers, hypertension and type II Diabetes Mellitus (11-12).

Adult malnutrition is more widespread than commonly recognized. Under nutrition is widely recognized as a major health problem in the developing countries (13). Adolescents faces a series of series in diet and activity patterns, leading to the development of a double burden of malnutrition. The changes in the nutritional intake combined with increasingly sedentary life styles resulting from food market, globalization and increasing urbanization has led to the emergence of chronic disease as a major new health threat (14-15).

Most university students did not meet the recommended intake for most of the micronutrient and macro nutrient. Faulty nutrition exacerbate a wide spectrum of disease condition, diminishing the quality of life, personal productivity and longevity(16).A study done on nutritional status of Undergraduate students in Pokhara University showed that 26% adults were underweight 6% of them were overweight. Around 33% of females were underweight and 4% of them were overweight (17).

A study conducted on nutritional status of adolescent girls from rural communities of Tigray, northern Ethiopia, showed that the prevalence of stunting and thinness were 26.5% and 58.3%, respectively (6,8,918). Another study conducted in Ambo town showed that underweight was prevalent in males than females (29.8%versus 24.6%) with

total prevalence of 27.5% where as overweight was more prevalent in females than in males(3.8% % versus 1.7%) with overall prevalence of 4.3% (19).

## 2.2. Dietary Habits in University Students.

Good eating habits are essential part of a healthy lifestyle (20). Consumption of energy-dense foods coupled with reduced energy expenditure facilitates weight gain in adults (10). Eating an excess of 32 kJ (7.7 kcal) corresponding to energy expenditure results in 1 g of gained body weight(21).Poor nutritional habits, such as the excessive or deficient consumption of macronutrients, represent a very important component in the etiology of chronic diseases, including cardiovascular disease, cancer, and obesity(22). Most university students are adolescent and their mere physiological status exposed them for the adoption of un health behaviors that may track into adulthood (23).

College students often established poor dietary practices playing an important role in unhealthy weight change (24 -25). Besides, a small increase in energy intake over the university years could lead to students being overweight by the time they complete university. Changes in living arrangements that some college students encounter may influence their life style.

A study done in Greece showed that students living away from their family made some positive changes (e.g. decrease in whole-fat dairy products, white bread and margarine), but they simultaneously decreased their consumption of fresh fruit, cooked and raw vegetables, oily fish, and increased their sugar and fast food intake(26-27).Another research done in the USA and in other countries suggest that young adults either living on post-secondary campuses or continuing to live with their parents may experience benefits in terms of both nutrition and weight status compared with those young adults who are living independently (28).

There are many factors that play a role in the food choices college students make. Study showed that both male and female college students are encouraged by their friends to eat healthfully, and another research shows that a major contributor to college students‟ diet choices are due to their regular eating of meals with friends. Aside from social

venues, other factors pertaining to college students‟ diet composition seem to be related to time, money and the ease of acquiring food (29-30).

Transition into a college lifestyle seems to play a major role in the un-healthiness of college students‟ diets as well. Students tend to have more healthful eating habits prior to beginning college due to family support and a more structured lifestyle (31). After the transition to college, students become responsible for planning their own schedules and getting enough to eat. Unfortunately, the food choices college students make are not usually the most beneficial to their health.

### 2.2.1. Skipping Breakfast

Regular breakfast consumption is of primary importance for sufficient nutrient intake. Skipping breakfast is associated with the prevalence of fatigue in university students . Additionally, young people who eat breakfast frequently have a lower Body Mass Index (BMI) compared to those who skip breakfast (35-39).

Breakfast is a regularly missed meal among university students (32). A comparative study of food habits done in Japan and Korea University students showed that Japanese students reported eating meals regularly and eating breakfast daily. In contrast, Korean students were significantly less likely to eat breakfast daily and ate meals less frequently(33). Regular breakfast consumption among medical students are important for sufficient energy intake to overcome fatigue due to busy (daily) learning schedule.

A study done in Shebedino, Sidamo Zone, Southern Ethiopia among(11-13)years showed that the prevalence of breakfast skipping was 42.3% . This is higher as compared to study done in India which is 33.8%  skipping breakfast two/three times per week(34).Another cross-sectional study done in Malaysian university revealed (43.9%) medical students had breakfast daily. Breakfast skipping is positively related with increasing age and education level.

## 2.2.2.Snacking

Snacking can be defined as „the consumption of foods and drinks between meals including milk drinks, regular soft drinks, sports drinks and energy drinks"(40).Despite frequent attempts to define „snacking", the difference between a meal and a snack still remains unclear. Snacks provide an intake of approximately 443.2 kcal/day and approximately 334 kcal/day in male and female students respectively (20).A study done in Japan and Korea food habits of university students showed that34.7% consumed snacks daily apart from regular meals and 24.2% only took a snack once or twice per week(41).

Another study showed that the majority of students (63%) of a US college reported snacking one to two times per day, mostly consuming chips, crackers or nuts. Male students consume fast foods more frequently as a snack than female students, who eat more ice cream, cookies and candy (42).The contribution to daily energy intake provided by snacking is increasing in most countries and associated with weight gain. However, scientific literature could not supply adequate evidence to support the impact of a higher frequency of eating (e.g. snacking) on obesity or weight gain (43-45). The composition of snack foods is a key factor to judge its health impact.

## 2.2.3. Fast Food Consumption

The United States Department of Agriculture (USDA) defines fast food as „food purchased in self-service or carry-out eating places without wait service"(46).Fast food consumption appears to be common among university students; in general, it is part of their lifestyle. Eighty-two percent of students of a US university reported eating dinner at fast food restaurants at least once a week and 29% of them weekly ate a snack at fast food restaurants (47). On the other hand, study done on fast food consumption among university students in four European countries showed that 33% of German students reported fast food consumption at least several times per week, among Danish, Polish and Bulgarian students it was 19.6%, 10.6% and even 77.1% , respectively(27).

### 2.2.4.Low Consumption of Vegetables and Fruits

The WHO recommends intake of a minimum of 400 g of fruits and vegetables per day **.** It is well documented that vegetables and fruits are usually low in fat content and energy density (kcal/g), and high in water and dietary fiber. Several studies suggest that sufficient water and fiber intake, as in vegetables and fruits, increases satiety and decreases feelings of hunger after a meal(48-50).

### 2.2.5. Excessive Alcohol Consumption

Excessive alcohol consumption among university students is a widely spread problem on many university campuses .Alcohol consumption increased in nearly50% of the students during freshman year. For male students, this increase in alcohol consumption was related with a weight gain of (1.90 kg) .However, study revealed that weight gains seen in female students were not associated with increased alcohol consumption during freshman year (51). Alcohol has a harmful impact on the burden of diseases and, additionally, it contributes to more than 60 types of diseases and injuries.

The use of alcohol is responsible for approximately 30% of deaths due to cancers and epilepsy and 50% due to liver cirrhosis. Worldwide, more men than women are affected by the consequences of alcohol abuse because of differences in drinking habits, as well as in quantity and pattern of drinking (52).

### 2.2.6 .Smoking

In terms of BMI and smoking, research done in eleven Egypt University indicates that smoking and body weight are interrelated, but the relationship is complex and not well understood. Generally, cigarette smoking exhibits an inverse association with body weight or BMI). Underweight students were about 1.8 times more likely to be current smokers when compared to normal BMI(52).

On the other hand, underweight and obesity were both positively associated with daily smoking. In agreement, to this women who had smoked > 10 cigarettes per day in

adolescence were more likely to be become overweight in young adulthood, even after adjusting for adolescent BMI. Likewise, studies of smoking initiation in female adolescents have reported a positive association between smoking initiation and dieting, weight concern and being overweight (53).

## 2.3. Determinants of Dietary Habits in University Students

The overweight and obesity problem among university students can only be treated and prevented by interventions on several levels of influence on dietary habits. The effect of individually based approaches is not radical enough to change a person‟s health behavior, because they do not focus on the environmental factors influencing health habits (54).Adolescent eating behavior could be seen as the result of both individual and environmental influences (55).Four levels of influence on eating behavior were described: individual (intrapersonal),social environmental (interpersonal),physical environmental (community setting) and macro system (societal) influences and depicted in (figure 1).

Food preferences, taste, self-efficacy, knowledge, hunger, time, convenience and cost as individual influences, whereas the social environmental influences included family, demographic characteristics, food availability and peers(54).Psychosocial and environmental factors affecting eating behavior(56).These psychosocial factors included personal motivation and self-control whereas lack of healthy options on campus, lack of time, cost and all-you-can-eat cafeterias were considered as environmental determinants.

Also lack of time, lack of access to healthy food and lack of money and additionally ready access to fast food restaurants as environmental factors. Besides, they differentiated intrapersonal and interpersonal determinants. Limited time, reliance on precooked meals, limited knowledge, stress, temptation and lack of discipline were considered as intrapersonal factors, whereas behavior of others, social situations (e.g. going out to dinner) and external social pressure were classified as interpersonal factors (57). During the transition from adolescence to (young) adulthood a variety of factors may play an important role in nutritional behavior (58).

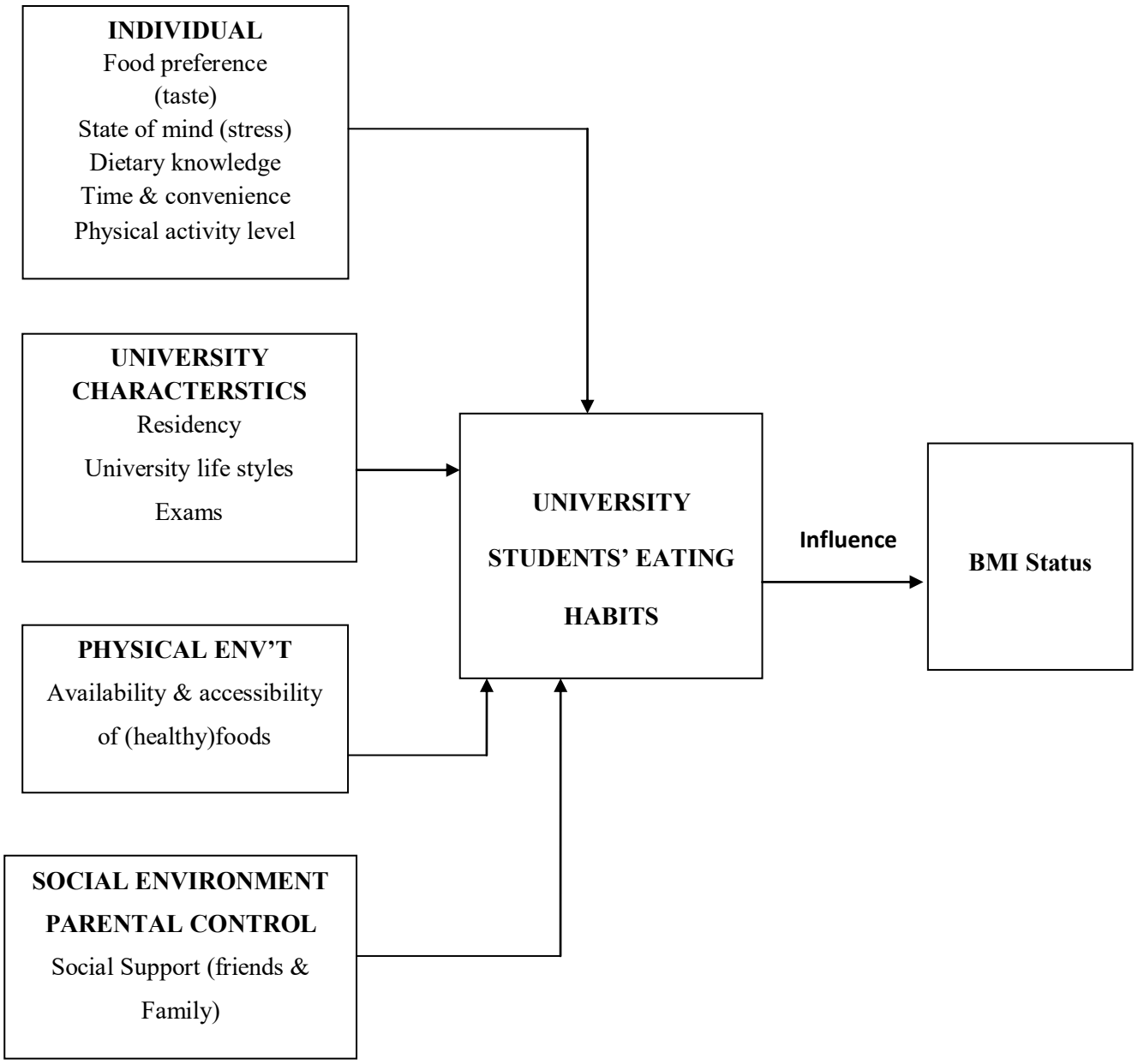


Fig. 1. Conceptual Frame work of university students eating habits

# 3. OBJECTIVE

## 3.1. General Objective

- To assess whether eating behaviors of undergraduate regular Addis Ababa University students affect their body mass index.

## 3.2. Specific Objects.

1. To assess the dietary intake habits
2. To asses BMI status.
3. To assess factors affecting BMI status.

# 4. Methodology

## 4.1. Study Design and Period.

Across-sectional study design was conducted from January2015 to Feburary2015.

## 4.2. Study Area

The study was conducted in Addis Ababa University undergraduate senior regular students. The university is located in Addis Ababa which is the capital city of Ethiopia. Currently, there are more than 30 university in the country in which Addis Ababa University is one and the oldest university in Ethiopia. The university encompasses 74 departments enrolled in year 2013/14 (72).

It has eight campuses; six in Addis Ababa and the remaining two, Bishofitu (South East) and Fiche(North) Campuses, which are about 45and 112 kilometers away from Addis Ababa respectively. This study was done in Main, Technology and faculty of Science. The study site was selected by considering high number of students enrolled, location, cost, time availability of anthropometric measurement apparatuses.

According to data obtained from AAU, student dean, 20120 number of students were registered in the academic calendar of 2014/15 in Undergraduate regular program and among those 7239, 2933 and 1432 students who were registered in regular undergraduate program in year two and above in the institute of Technology, Social Science and faculty of Science respectively(59).

## 4.3. Source Population

All senior regular students of Addis Ababa University who were registered in the year 2014/15 were source of population.

## 4.4. Study Population

Under graduate senior regular students who were registered to the Technology, Social Science and Science Faculty of Addis Ababa University in 2014/15was the study population.

## 4.5. Eligibility Criteria

**Inclusion criteria:** Both male and female second year and above students who were registered for the undergraduate regular program in the year 2014/2015 in Addis Ababa University.

**Exclusion Criteria**:-.

- Unhealthy students was excluded (suffer from chronic diseases).

## 4.6. Sample Size Determination

In this study, sample size was determined by single population proportion formula. Consider the fact that the prevalence of underweight among university students 9 times higher than overweight university students. Taking a prevalence rate of 35.6% could give us a logical estimate of the total number of the subjects to be selected for the study. Giving any particular outcome to be within 5% marginal error and 95% confidence interval of certainty (alpha 0.05).Based on this assumption, the actual sample size for the study was calculated.

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

Where

n= minimum sample size required for the study

z= Standard normal distribution(Z=1.96) with confidence interval of 95% and(alpha = 0.05)

p=The prevalence of overweight and obesity in the adolescent

d= Absolute precision or tolerable marginal error.

$$n = \frac{Z(\alpha/2)^2 P(1-P)}{d^2} = \frac{(1.96)2*0.356*0.644}{(0.05)^2} = 352$$

Taking the design effect of 2 and adding 10% for non response rate, the final sample size was774.

## 4.7. Sampling Procedures

Multistage sampling techniques with simple random sampling was used to select the study subject. Three campuses were selected from the total of eight Campuses, randomly and the required number of students were allocated using proportionate sampling across the three campuses. The expected total number of senior regular undergraduate students who were registered for the academic calendar 2014/2015 within a month prior to data collection in three Campuses was 11604. Of this total numbers 7239, 2933and 1432 students who were registered in regular undergraduate program in year two and above in the faculty of Technology, Social Science and faculty of Science respectively (59).

Dividing the total number of students in each campus by (N=11604) and multiply by the total sample size (n=774).Within this proportionate to size technique, the unit‟s student size was computed. Finally, every student who full fill the inclusion criteria was participated in the study.

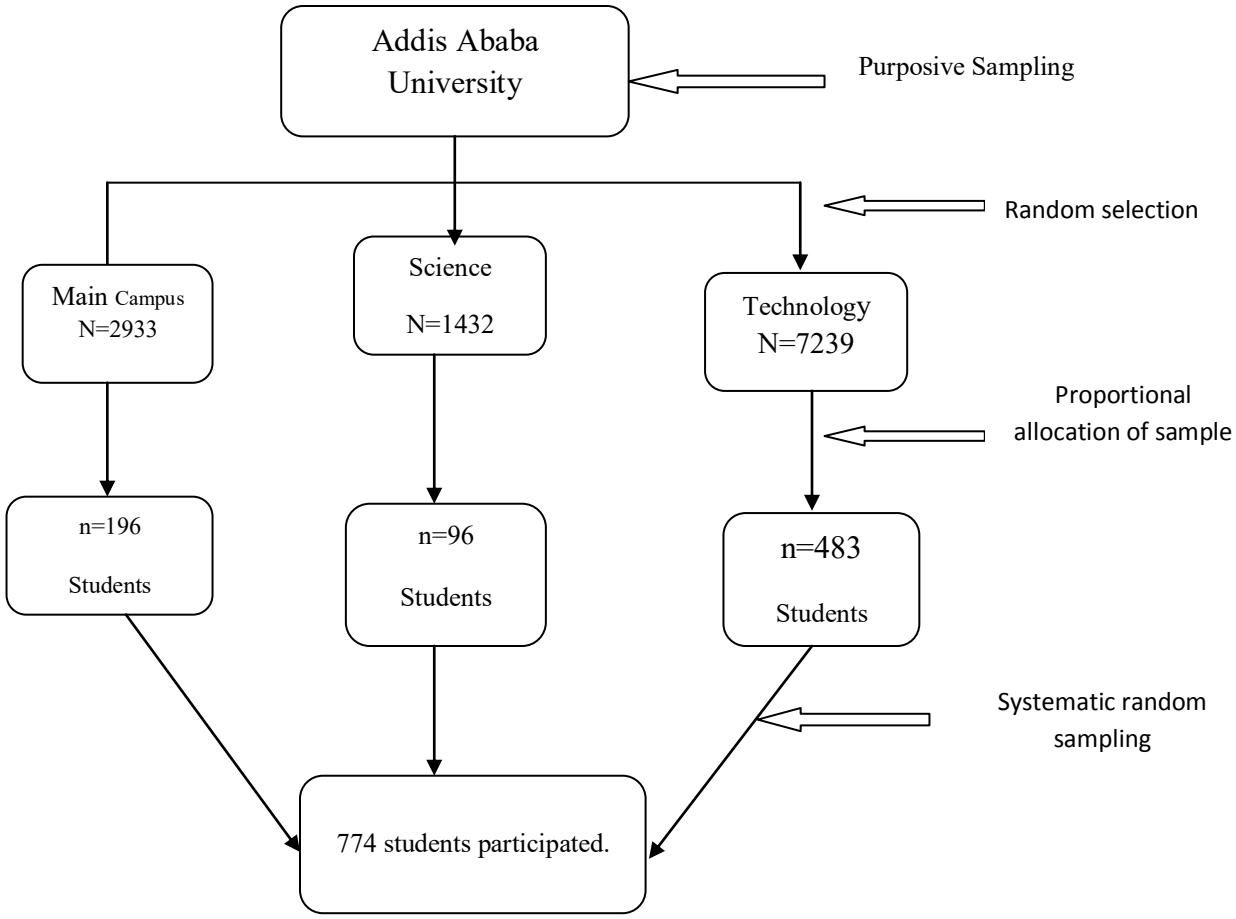


Fig. 2: Sample Technique and Procedure

## 4.8.Data collection Procedures

### 4.8.1Data collection instruments

Data was collected using structured questionnaire prepared in Amharic designed by reviewing pertinent research findings on the issue under caption. The Questionnaire constituted information on socio-demographic, eating attitude, psychological eating behavior and daily meal frequency. To check whether the translation is consistent with the English version the questionnaire was back translated to English by another language expert. The instrument was pretested in a University which was not selected for the study before the final administration of the questionnaire.

### 4.8.2.Data Collection Process

Two supervisors of BSC level (one Health Officer and one Nurse) were recruited from Addis Ababa University student clinic. Training was given for one day in the main campus student clinic (AAU) by the principal investigator. Mean while any doubts in the questionnaire was clarified. The three faculties were communicated and pre-test was done in the week before data collection. Actual data collection was conducted from February to Mar.1,2015.

### 4.8.3. Anthropometric measures

**Weight:** weight was measured without shoes and with minimum clothes, to the nearest100gm. The scale was zeroed before each session and calibrated with a known weight. Each participant stood on the scale and the researcher recorded the weight reading.

**Height:** Height was measured by using a stadiometer, which was mounted to the wall by resting the body meter on the ground, and placing it against the wall with the visual display facing the researcher and was measured to the nearest 0.1 cm. The participant stood straight with heels where weight was distributed evenly on both feet, buttocks and back touching the wall.

The head was positioned so that the line of vision was at right angles to the body and the arms hang freely by the sides. All measurements was recorded in the questionnaire.

## 4.9. Study Variable

### 4.9.1. Dependent Variable

- Body Mass Index.

### 4.9.2. Independent Variable

- Age
- Sex
- Income
- Educational background
- Place of residency
- Dietary behavior
- Snacking
- Skipping breakfast
- Alcohol consumption

## 4.10.Operational Definition of Terms.

**Underweight:** BMI of male and female students< 18.5 $Kg/m^{2.}$

**Normal weight:** BMI($Kg/m^2$) of students between18.5and 24.9 $Kg/m^2$ .

**Overweight: BMI** of the students > 25.0 $Kg/m^2$ during the period of study.

**Food Frequency:** Food frequency refers to how often a given food and fluid was usually consumed per day, per week, per month or never.

**number of pattern:** Meal pattern refers to the number of meals eaten in a day expressed as once a day, twice a day, three times a day, or four times per day (62).

## 4.11. Data Quality Management

There are points at which the quality of data may be affected unless measures are taken at these points. These points were questionnaire designing, data collection, data entry. As this was one of the points to control the quality of data, due emphasis was given to questionnaire designing. Objective based, logically sequenced, free of scientific terms and non-leading structured questionnaire was prepared. Pre-test was undertaken on the questionnaire before the actual data collection starts and amendment was made on the questionnaire if necessary.

Data collection and supervision was another area of focus to keep the quality of the data. The data collectors and supervisors were provided training on the objective of the study, contents of the questionnaires and how to maintain confidentiality and privacy of the study subjects. The collected data was checked by investigator on daily basis for any incompleteness and/or consistency and timely correction was made.

## 4.12.Data entry, Cleaning and Analysis Techniques

The collected data from each respondent were entered and analyzed using Epi-info version3.5.3 and it transported to SPSS version20 computer software packages for analysis. Data cleaning was carried out, and frequency distribution and cross tabulation were made for each of the variables. Odds ratios were computed to assess the strength of the associations. Binary logistic regression was used to see the effect of each independent variable on the dependent variable.

## 4.13. Ethical Considerations

Ethical clearance and permission was obtained from research Ethics Review Committee School of public health, College of Health Science, Addis Ababa University. Before the actual data collection, permission was also obtained from Addis Ababa University Students Service Director. During the distribution of questionnaires and weight and height measurement taken, students were informed about the purpose and the benefit of the study along with their full right to refuse or completely reject in participation.

Anonymity and confidentiality of the information was assured and privacy of each respondent was maintained through the data collection process.

## 4.14. Dissemination of Results

The result of this study will be defended to the School of Public Health, Addis Ababa University, and College of Health Sciences as partial fulfillment of a master‟s degree in public health. Furthermore, the result of this study will be shared with Addis Ababa University Students Service Director and University Student Cafeteria Head. Attempts will be made to publish the information in reputable journals.

# 5. Result

## 5.1. Socio-demographic characteristics

A total of 774 respondents were participated with a response rate of 97.8% .Out of the 757 students, 614 (81.1%) had dormitory,550(72.7%) were males and 207(27.3%) females, aged 18 to 32 years. The mean( ±SD) of the study respondents was (21.6±1.7) years. Of this 69.9% of age groups lies in the range of 18-22years. Academic year, II and III comprised 436(57.6%) of the respondents. About two-third were from Faculty of Technology, 192(25.4%) from Social Science and 94(12.4%) from Faculty of Science.

Among the total respondents, 323(29.5%) had no income, 36(4.8%) were earning monthly income of less than 100Birr,167(22.1%) were earning monthly 100 to 499 Birr and 331(43.7%) were getting 500 Birr and above. Most of them used cafeteria service. Of these (57.1%) respondents were used from Technology Campus followed by Main and Science Campuses 145(28.2%) and 76(14.7%), respectively. Regarding eating place of none cafeteria users, 145(59.7%) 78 (32.1%) eat their daily meals from outside cafeteria and home /prepared by self respectively.

**Table1: socio demographic and other related variables Addis Ababa University students ,2015(N=757)**

| Variable | Frequency | Percentage |
|---|---|---|
| **Resident area** | | |
| In campus | 614 | 81.1 |
| Outside campus | 143 | 18.9 |
| **Sex** | | |
| Male | 550 | 72.7 |
| Female | 207 | 27.3 |
| **Age** | | |
| 18-22 | 529 | 69.9 |
| 23-27 | 225 | 29.7 |
| 28-32 | 3 | 0.4 |
| **Year of Training** | | |
| II- Year | 208 | 27.5 |
| III- Year | 228 | 30.1 |
| IV- Year | 162 | 21.4 |
| V- Year | 159 | 21.0 |
| **Field of study** | | |
| Technology | 471 | 62.2 |
| Social Science | 192 | 25.4 |
| Science | 94 | 12.4 |
| **Maternal educational status** | | |
| Non-formal | 148 | 19.5 |
| High school or less | 220 | 29.1 |
| Tertiary Educates | 212 | 28.0 |
| Not educated | 177 | 23.4 |
| **Paternal educational status** | | |
| Non-formal | 138 | 18.2 |
| High school or less | 214 | 28.3 |
| Tertiary Educates | 271 | 35.8 |
| Not educated | 124 | 17.7 |
| **Monthly income(inBirr)** | | |
| No income | 323 | 29.5 |
| Less than 100 | 36 | 4.8 |
| From 100 to 299 | 71 | 9.4 |
| From 300 to 499 | 96 | 12.7 |

| | | |
|---|---|---|
| 500 and above | 246 | 32.5 |
| I don‘t now | 85 | 11.1 |
| **Cafeteria usage in (campus)** | | |
| Yes | 514 | 67.9 |
| No | 243 | 32.1 |
| **Distribution by cafeteria(n=515)** | | |
| Technology | 294 | 57.1 |
| Main campus | 145 | 28.2 |
| Science campus | 76 | 14.7 |
| **Eating place of none-café users(n=243)** | | |
| Home/ prepared by self | 78 | 32.1 |
| Outside cafeteria | 145 | 59.7 |
| Other | 20 | 8.2 |

## 5.2.The characteristic of participants Distribution by Body Mass Index

The characteristics of participated students are presented in (Table2). The average BMI and year of study at the University were (19.8±2.7) and (2.4±1.1) years respectively. Sex wise, males showed significantly higher weight and height than females. The BMI for female students (20.1) was slightly higher than males‟(19.7); however there was no significant difference. The mean age and year of study was lower for female than males.

The data shows that (61.4%) students were normal weight,62.0% of male students compared to 59.9% of female students. Based on BMI classification the prevalence of underweight ,overweight and obesity are 34.4%,3.7% and 0.5% respectively(Fig 4).The underweight (severe thinness) among female students(4.4%) higher than male students 1.4%.In contrast, 4.8% of female students were overweight as compared to 3.3% of male students. Overall, there was no significant difference in the BMI status in relation to sex**.** Severe thinness BMI < (16.0) were seen in females. This shows that females are poor eating habits as compared to males.

**Table 2. Characteristics of the participant (Mean ± SD) in relation to sex and Body Mass Index distribution ,2015( N=757)**

| Variable | Total (N=757) | Male(N=550) | Female(N=207) |
|---|---|---|---|
| Mean years of study | 2.4 ± 1.1 | 2.5 ± 1.1 | 2.0 ± 1.0 |
| Weight (kg) | 56.3 ± 8.9 | 58.1 ± 8.5 | 51.6 ± 8.4 |
| Height (cm) | 1.8 ± 3.1 | 1.86 ± 3.7 | 1.6 ± 0.06 |
| Body Mass Index (BMI) | 19.8 ± 2.7 | 19.7 ± 2.6 | 20.1 ± 3.1 |
| **Under weight (BMI < 18.5)** | | | |
| Sever thinness (BMI < 16.0) | 17(2.2) | 8(1.4) | 9(4.4) |
| Moderate thinness (BMI 16.0 -16.99) | 53(7.0) | 37(6.7) | 16(7.7) |
| Mild thinness (BMI 17.00 - 18.49) | 190(25.1) | 144(26.2) | 46(22.2) |
| **Normal range (BMI 18.5 - 24.9**) | 465(61.4) | 341(62.0) | 124(59.9) |
| **Over weight (BMI 25.0 - 29.9)** | 28(3.7) | 18(3.3) | 10(4.8) |
| **Obese** | | | |
| Obese class I (BMI 30.0 - 34.99) | 4(0.5) | 2(0.4) | 2(1.0) |

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## 5.3. Eating habits of university students.

Eating habits of the students were compared by gender (Table3). (61.2%) reported taking meals regularly. The proportion of males higher than female students in terms of breakfast intake daily. The percentage of students who reported eating lunch always was 88.7%and 81.2% for male and female students respectively. The frequency of dinner intake daily was significantly higher in males than females.

Over halt 392(51.8%) had three meals with the exception of snacks. Intake of snacks regular was not common among male and female students..Five hundred seven (67.0%) of the students reported skip breakfast of those 376(68.4%) were males. Intake of colored vegetables and fruits was not common among respondents.

The total of 46.9% of the students reported to rarely take of color vegetables with gender difference (49.6%males Vs39.6%).61.6% of the students reported to rarely take of fruits. Male students tend to eat rarely fruits as compared to females (65.1% vs. 52.1%). 367(48.5%) of the students reported eating fried food rarely per week. There was a significant gender difference in the frequency of fried intake($p=0.02$).The majority 691(91.3%) of the participants consumed alcohol rarely in both sexes.

Eating daily with friends and family was common among students 223(29.5%) with difference in gender. The majority of students 308(40.7%) was aware of the type of food they should eat in order to have a balanced diet nutrition. The percentage of students who reported nutritional information obtained from media was 42.5% in male and 41.1% in females.

**Table3.Eating habits of respondents by sex, 2015(N=757)in percentage**

| Variable | Male | Female | Total | P. Value |
|---|---|---|---|---|
| **Do you take your meals regularly?** | | | | |
| Always regular | 364 (66.2) | 99(47.8.) | 463(61.2) | 0.384 |
| Irregular | 186(33.8) | 108(52.2) | 294(38.8) | |
| **Do you always take breakfast daily?** | | | | |
| Daily | 277(50.4) | 74(35.7) | 351(46.4) | |
| Three or four times per week | 167(30.4) | 63(30.4) | 230(30.4) | 0.179 |
| Or twice per week | 29(5.2) | 19(9.3) | 48(6.3) | |
| Rarely | 77(14.01) | 51(24.6) | 128(16.9) | |
| **Do you always take lunch daily.?** | | | | |
| Daily | 488(88.7) | 168(81.2) | 656(86.7) | |
| Three or four times per week | 43(7.8) | 21(10.1) | 64(8.5) | 0.846 |
| Or twice per week | 4(0.7) | 4(1.9) | 8(1.1) | |
| Rarely | 15(2.8) | 14(6.8) | 29(3.7) | |
| **Do you always take dinner daily.?** | | | | |
| Daily | 484 (88.0) | 127(61.4) | 611(80.7) | |
| Three or four times per week | 48(8.7) | 47(22.7) | 95(12.5) | 0.001* |
| Or twice per week | 6(1.1) | 8(3.9) | 14(1.8) | |
| Rarely | 12(2.2) | 25(12.1) | 37(4.9) | |
| **How many times do you eat meals except snacks one time .?** | | | | |
| Once time. | 124(22.5) | 40(19.3) | 164(21.7) | |
| Two times | 105(19.1) | 54(28.5) | 164(21.7) | 0.092 |
| Three times | 293(53.3) | 99(47.8) | 392(51.8) | |
| Four times | 28(5.1) | 9(4.4) | 37(4.8) | |
| **How often do you take snacks apart from regular meals daily three or four times per week .?** | | | | |
| Daily | 69(12.5) | 29(14.50 | 98(12.9) | |
| Three or four times per week | 122(22.2) | 54(26.1) | 176(23.3) | |
| Once or twice per week | 111(20.2) | 47(22.7) | 158(20.9) | 0.469 |
| Rarely | 248(45.1) | 77(37.2) | 325(42.9) | |
| **How many meals do you usually eat each day.?** | | | | |
| One | 42(7.6) | 10(4.8) | 52(6.9) | |
| Two | 117(21.3) | 70(33.8) | 187(24.7) | |
| Three | 352(64.0) | 114(55.1) | 466(61.6) | 0.415 |
| Four | 39(7.1) | 13(6.3) | 52(6.8) | |
| **If you skip a meal, which meal is it usually.?** | | | | |
| Breakfast | 376(68.4) | 131(63.3) | 507(67.0) | |
| Lunch | 87(15.8) | 29(14.0) | 116(15.3) | 0.548 |
| Dinner | 87(15.8) | 47(22.7) | 134(17.7) | |
| **How often do you eat green, red or yellow colored vegetables daily .?** | | | | |
| Daily | 11(2.0) | 7(3.4) | 18(2.4) | |
| Three or four times per week | 39(7.1) | 36(17.4) | 75(9.9) | 0.840 |
| Once or twice per week | 227(41.3) | 82(39.6) | 309(40.8) | |

| | | | | |
|---|---|---|---|---|
| rarely | 273(496) | 82(39.6) | 355(46.9) | |
| **How often do you eat fruits daily.?**<br>Daily | 10(1.8) | 6(2.9) | 16(2.1) | |
| Three or four times per week | 26(4.7) | 21(10.0) | 47(6.2) | |
| Once or twice per week | 156(28.4) | 72(34.0) | 228(30.1) | 0.771 |
| Rarely | 358(65.1) | 108(52.2) | 466(61.6) | |
| **How often do you eat fried food.?** | | | | |
| Daily | 44(8.0) | 23(11.2) | 67(8.9) | |
| Three or four times per week. | 87(15.8) | 45(21.7) | 132(17.4) | 0.002* |
| Once or twice per week. | 132(24.0) | 59(28.5) | 191(25.2) | |
| Rarely | 287(52.2) | 80(38.6) | 367(48.5) | |
| **How often do you take alcohol .?** | | | | |
| Daily. | 10(1.8) | 6(2.9) | 16(2.1) | |
| Two or three times per week. | 43(7.8) | 7(3.4) | 50(6.6) | 0.853 |
| Rarely | 497(90.4) | 194(93.7) | 691(91.3) | |
| **How often do you eat with friends and family daily.?** | | | | |
| Daily. | 136(24.7) | 87(42.0) | 223(29.5) | |
| Three or four times per week. | 114(20.7) | 34(16.4) | 148(19.6) | 0.139 |
| Once or twice per week. | 149(27.1) | 55(26.6) | 204(26.9) | |
| Always alone . | 151(27.5) | 31(15.0) | 182(24.0) | |
| **What type of food do you think you should eat to have a balanced nutrition.?** | | | | |
| Mainly meat | 34(6.2) | 8(3.9) | 42(5.5) | |
| Mainly vegetable | 66(12.0) | 44(21.3) | 110(14.5) | 0.349 |
| Meat, vegetable and other | 226(41.1) | 82(39.6) | 308(40.7) | |
| Variety of food | 224(40.7) | 73(35.2) | 297(39.3) | |
| **Where do you mostly obtain nutrition information?** | | | | |
| Friends | 80(14.5) | 31(15.0) | 111(14.7) | |
| Media | 234(42.5) | 85(41.1) | 319(42.1) | |
| My parents | 87(15.8) | 54(26.1) | 141(18.6) | 0.446 |
| School | 106(19.3) | 28(13.5) | 134(17.7) | |
| Other: specify | 43(7.9) | 9(4.3) | 52(6.9) | |

## 5.4. The life style of the students categorized based on BMI status of the students.

Information on the sleeping condition showed that about 25.2% of normal weight students usually sleep well compared to25% of overweight and 20.8% of underweight students respectively. There was no significant difference in the sleeping conditions with respect normal and overweight students. Response to the question on present health condition showed that 14.3% of overweight students have a very good health condition. This percentage is lower than that of the normal weight students.

Though, there was no statistical difference in the health status of the students. There were no significance difference between BMI status of respondents with respect to smoking cigarettes per day; for example ,about 95.4% of underweight and 89.3% of overweight respondents were none smokers. Of all 73.5% of underweight and 78.6% of overweight respondents were not on diet. On the other hand, two third of obesity respondents were on diet (Table4).

**Table 4.Life style of participants presented in number and percent in relation to BMI.**

| Variable | Under Weight (N=260) | Normal Weight (N=465) | Over Weight (N=28) | Obesity (N=4) |
|---|---|---|---|---|
| **How well do you sleep?** | | | | |
| I hardly ever sleep well | 8(3.1) | 23(4.9) | 1(3.6) | 0(0.0) |
| I usually do not sleep well | 47(18.1) | 59(12.7) | 1(3.6) | 1(25.0) |
| Average | 101(38.8) | 191(41.1) | 16(57.1) | 3(75.0) |
| I usually sleep well | 54(20.8) | 117(25.2) | 7(25.0) | 0(0.0) |
| I always sleep well | 50(19.2) | 75(16.1) | 3(10.7) | 0(0.0) |
| **How is your present health condition?** | | | | |
| Bad | 36(13.8) | 58(12.5) | 3(10.7) | 1(25.0) |
| Normal | 118(45.4) | 192(41.3) | 13(46.4) | 2(50.0) |
| Good | 73(28.1) | 138(29.7) | 8(28.6) | 1(25.0) |
| Very good | 33(12.7) | 77(16.5) | 4(14.3) | 0(0.0) |
| **Do you feel stressed lately?** | | | | |
| Not at all | 59(22.7) | 109(23.5) | 4(14.3) | 0(0.0) |
| Not real | 43(16.5) | 100(21.5) | 6(21.4) | 0(0.0) |
| Normal | 107(41.2) | 158(34.0) | 10(35.7) | 1(25.0) |
| Rather | 28(10.8) | 49(10.5) | 6(21.4) | 2(50.0) |
| Very | 23(8.8) | 49(10.5) | 2(7.2) | 1(25.0) |
| **How many cigarettes do you smoke per day?** | | | | |
| None | 248(95.4) | 442(95.0) | 25(89.3) | 4(100.0) |
| one up to five | 7(2.7) | 19(4.1) | 2(7.1) | 0(0.0) |
| six up to ten | 5(1.9) | 4(0.9) | 1(3.6) | 0(0.0) |
| **Are you on diet?** | | | | |
| Yes | 69(26.5) | 113(24.3) | 6(21.4) | 3(75.0) |
| No | 191(73.5) | 352(75.7) | 22(78.6) | 1(25.0) |

## 5.5.Psychological factor affecting eating behavior.

The psychological factors affecting eating behavior of the respondents is depicted in (Table 5). Majority of the respondents 616(81.4%) had no eaten because of feeling lonely. The study participants were also asked if they feel completely out of control when it comes to food, 124(16.4%) the study subjects responded yes, whereas 633(83.6%) answered no. The study participants also asked if they eat so much until stomach hurts,87.7% underweight and 78.6% overweight were responded to no. Nearly 12.2% ate till stomach hurts in underweight respondents.14.9% ate because of feeling upset or nervousness and 12.2% also ate because of feeling bored.

**Table 5. Psychological factor affecting eating behavior of respondents among Addis Ababa University, 2015 (N=757)**

| Variables | Under Weight(N=260) | Normal-Weight(N=465) | Over-Weight(N=28) | Obesity (N=4) | P. value |
|---|---|---|---|---|---|
| **Eating cause of feeling lonely** | | | | | |
| Yes | 381(14.6) | 95(20.4) | 8(28.6) | 0(0.0) | 0.090 |
| No | 222(85.4) | 370(79.6) | 20(71.4) | 4(100.0) | |
| **Feel completely out of control when it comes to food** | | | | | |
| Yes | 43(16.5) | 75(16.1) | 5(17.9) | 1(25.0) | |
| No | 217(83.5) | 390(83.9) | 23(82.1) | 3(75.0) | 0.962 |
| **Eat so much until stomach hurts** | | | | | |
| Yes | 32(12.3) | 66(14.2) | 6(21.4) | 1(25.0) | 0.508 |
| No | 228(87.7) | 399(85.8) | 22(78.6) | 3(75.0) | |
| **Eat because of feeling upset or nervousness** | | | | | |
| Yes | 30(11.5) | 73(15.7) | 7(25.0) | 1(25.0) | 0.160 |
| No | 230(88.5) | 392(84.3) | 21(75.0) | 3(75.0) | |
| **Eat because of feeling bored** | | | | | |
| Yes | 50(19.2) | 91(19.6) | 10(35.7) | 1(25.0) | 0.211 |
| No | 210(80.8) | 374(80.4) | 18(64.3) | 3(75.0) | |

## 5.6. Association between socio demographic variables and underweight.

A crude analysis was done using binary logistic regression to asses association between the socio demography variables and Body Mass Index of underweight students. Distribution by cafeteria usage showed significantly association with underweight ($P<0.05$).However, age, sex, year of study, maternal education, Paternal education, monthly income and resident area were not significantly associated with underweight .

A significant association was observed between university cafeteria users and underweight respondents. It was found that those who use university cafeteria were more likely, about0.7 times to underweight than those who did not use university cafeteria [COR:0.675,95% CI :(0.481,0.941)].

Study participants who use Cafeteria from Technology Campus were 0.6 times more likely underweight than those who use from Science Campus [COR0.593,95% CI: (0.409,0.860)].

Another result showed that respondents none cafeteria users who eating place from home prepared by self were 1.8 times more likely underweight than who eat from outside university cafeteria.

**Table6. Association of socio-demography variables and underweight among Addis Ababa University students,2015**

| Variable | Underweight | Normal | COR(95%CI) | P.value |
|---|---|---|---|---|
| **Sex** | | | | |
| Male | 189(72.7) | 341(73.3) | 1.0 | |
| Female | 71(27.3) | 124(26.7) | 0.968(0.688,1.362) | 0.852 |
| **Age** | | | | |
| 18-22 | 181(69.6) | 324(69.7) | 1.0 | |
| 23-27 | 79(30.4) | 139(29.9) | 0.983(0.706,1.368) | 0.568 |
| 28-32 | 0(0) | 2(0.4) | - | |
| **Year of Training** | | | | |
| II- year | 71(27.3) | 126(27.2) | 1.0 | |
| III- Year | 69(26.6) | 147(31.6) | 1.200(0.798,1.805) | 0.485 |
| IV- Year | 62(23.8) | 96(20.6) | 0.873(0.566,1.344) | |
| V- Year | 58(22.3) | 96(20.6) | 0.933(0.603,1.444) | |
| **Field of study** | | | | |
| Technology | 172(66.2) | 281(60.4) | 1.0 | |
| Social Science | 59(22.7) | 123(26.5) | 1.276(0.887,1.836) | 0.312 |
| Science | 29(11.1) | 61(13.1) | 1.288(0.796,2.083) | |
| **Maternal educational status** | | | | |
| Non- formal | 44(16.9) | 99(21.3) | 1.0 | |
| High school or less | 82(31.5) | 125(26.9) | 0.678(0.431) | 0.283 |
| Tertiary educates | 67(25.8) | 133(28.6) | 0.882(0.557,1.399) | |
| Not educated | 67(25.8) | 108(23.2) | 0.716(0.449,1.144) | |
| **Paternal educational status** | | | | |
| Non formal | 49(18.8) | 87(18.7) | 1.0 | |
| High school, or less | 78(30.1) | 123(26.5) | 0.888(0.566,1.394) | 0.757 |
| Tertiary educates | 88(33.8) | 168(36.1) | 1.075(0.696,1.661) | |
| Not Educates | 45(17.3) | 87(18.7) | 1.089(0.449,1.144) | |
| **Monthly income (in Birr)** | | | | |
| No income | 75(28.8) | 143(30.8) | 1.0 | |
| Less than 100 | 15(5.8) | 18(3.9) | 0.629(0.300,1.319) | |
| From 100 to 299 | 32(12.3) | 39(8.4) | 0.639(0.371,1.102) | 0.200 |
| From 300 to 499 | 35(13.5) | 57(12.2) | 0.854(0.515,1.416) | |
| 500 and above | 7(27.3) | 159(34.2) | 1.175(0.791,1.744) | |
| I don't now | 32(12.3) | 49(10.5) | 0.803(0.475,1.359) | |

| | | | | |
|---|---|---|---|---|
| **Cafeteria usage in (Campus)** | | | | |
| Yes | 193(74.2) | 307(66.0) | 1.0 | |
| No | 67(25.8) | 158(34.0) | 1.483(1.058,2.078) | 0.022* |
| **Distribution by cafeteria** | | | | |
| Technology | 119(45.8) | 169(36.3) | 1.0 | |
| Main campus | 51(19.6) | 89(19.2) | 1.229(0.810,1.864) | 0.046* |
| Science campus | 24(9.2) | 49(10.5) | 1.438(0.836,2.471) | |
| **Eating place of non- café users** | | | | |
| Home/ Prepared byself | 18(6.9) | 52(11.2) | 1.0 | 0.080 |
| Outside cafeteria | 45(17.3) | 92(19.8) | 1.299(0.810,1.864) | |
| Other | 4(1.5) | 14(3.0) | 1.438(0.836,2.471) | |
| **Resident area** | | | | |
| In campus | 222(85.4) | 371(79.8) | 1.0 | 0.061 |
| Out side campus | 38(14.6) | 94(20.2) | 1.480(0.981,2.235) | |

## 5.7. Multivariate logistic regression association between socio-demographic -variables among overweight /obesity.

Multivariate logistic regression analysis showed that there was statistically association between paternal education high school, monthly income, distribution of cafeteria, none cafe users and eating places of none- cafe users. The odds of having overweight among individuals who had paternal education of high school was 4.6 times higher than those who had no formal education [AOR=4.598 CI(1.012,20.891)].

Living standards of respondents were important predictors of overweight. Respondents whose monthly income(300 to 499 Birr) per month were almost three times likely to overweight than those with no income. Respondents who use university cafeteria from Science Campus were more likely to overweight than those who use cafeteria service from Technology Campus.The odds of having overweight among individuals who had paternal education of high school was four times higher than those who had non formal education [ AOR=4.18 CI(1.763,22.933)].

Having overweigh among none cafe users or students use meal outside of university cafeteria was 2.8 times than those who had eaten from university cafeteria [AOR=2.844 CI(1.025,7.891)]. And also the tendency of getting overweight among eating place from outside none- cafe users nearly 0.3 times than those who use from home/ prepared by self( Table7).

**Table 7: Socio demographic characteristics associated with overweight among Addis Ababa university students, Addis Ababa 2015.**

| Variables | Under-Weight | Over-Weight | COR | AOR | P.value |
|---|---|---|---|---|---|
| **Sex** | | | | | |
| Male | 341(73.3) | 20(62.5) | 1.0 | 1.0 | |
| Female | 124(26.7) | 12(37.5) | 1.650(0.784,3.474) | 0.962(0.325,2.844) | 0.184 |
| **Age** | | | | | |
| 18-22 | 324(69.7) | 24(75.0) | 1.0 | 1.0 | |
| 23-27 | 139(29.9) | 7(29.9) | 0.680(0.286,16.150) | 6.750(0.591,77.134) | |
| 28-32 | 2(0.4) | 1(3.1) | 6.750(0.591,77.134) | ----- | 0.112 |
| **Year of study** | | | | | |
| II-year | 126(27.2) | 11(34.4) | 1.0 | 1.0 | |
| III-year | 147(31.1) | 12(37.5) | 0.935(0.399,2.192) | 1.179(0.416,3.345) | |
| IV-year | 96(20.6) | 4(12.5) | 0.477(0.147,1.545) | 0.611(0.129,2.891) | 0.521 |
| V-year | 96(20.6) | 5(15.6) | 0.597(0.201,0.774) | 0.719(0.145,3.558) | |
| **Field of study** | | | | | |
| Technology | 281(60.4) | 18(56.3) | 1.0 | 1.0 | |
| Social Science | 123(26.5) | 10(31.2) | 1.269(0.569,2.829) | 1.310(0.311,5.528) | 0.838 |
| Science | 61(13.1) | 4(12.5) | 1.024(0.335,3.132) | 0.911(0.074,11.260) | |
| **Maternal education** | | | | | |
| Non-formal | 99(16.9) | 5(15.6) | 1.0 | 1.0 | |
| High-school or less | 125(26.9) | 13(40.6) | 2.059(0.710,5.971) | 0.952(0.263,3.440) | |
| Tertiary education | 133(28.6) | 12(37.5) | 1.786(0.610,5.235) | 0.922(0.226,3.759) | 0.666 |
| Not-educated | 108(23.2) | 2(6.3) | 0.367(0.070,1.933) | 0.270(0.038,1.926) | |
| **Father education** | | | | | |
| Non-formal | 87(18.7) | 2(6.2) | 1.0 | 1.0 | |
| High-school or less | 123(26.5) | 13(40.7) | 4.598(1.012,20.891) | 4.182(1.763,22.933) | |
| Tertiary education | 168(36.1) | 15(46.9) | 3.884(0.868,17.371) | 3.813(0.625,23.272) | 0.040* |
| Not-educated | 87(18.7) | 2(6.2) | 1.000(0.138,7.260) | 2.504(0.256,24.497) | |
| **Monthly income in (Birr)** | | | | | |
| No income | 143(30.8) | 5(15.6) | 1.0 | 1.0 | |
| Less than 100 | 18(3.9) | 3(9.4) | 4.767(1.050,21.641) | 4.011(0.602,26.709) | |
| From 100to 299 | 39(8.4) | 0(0.0) | 2.007(0.520,7.743) | 1.609(0.355,7.292) | 0.095 |
| From 300to 499 | 57(12.2) | 4(12.5) | 2.878(1.028,8.056) | 1.772(0.552,5.689) | |
| I do not know | 159(34.2) | 16(50.0) | 2.335(0.603,9.044) | 2.474(0.566,10.806) | |
| **Cafeteria usage in campus** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Yes | 307(66.0) | 14(43.8) | 1.0 | 1.0 | |
| No | 158(34.0) | 18(56.2) | 2.498(1.211,5.155) | 4.128(0.601,28.565) | 0.11* |
| **Distribution by cafeteria** | | | | | |
| | | | | | |
| Technology | 169(36.3) | 6(18.8) | 1.0 | 1.0 | |
| Main campus | 89(19.2) | 5(15.6) | 1.724(0.416,7.148) | ---------- | 0.070 |
| Science campus | 49(10.5) | 3(9.4) | 3.209(1.242,8.289) | ---------- | |
| **Eating place of none cafeteria users** | | | | | |
| Home prepared by self | 52(11.2) | 8(25.0) | 1.0 | 1.0 | |
| Outside cafeteria | 92(19.8) | 8(25.0) | 0.929(0.177,4.874) | 0.958(0.128,7.142) | |
| Other | 14(3.0) | 2(6.2) | 0.296(0.118,0.742) | 0.336(0.077,1.463) | 0.038* |
| **Resident area** | | | | | |
| **In campus** | 371(79.8) | 21(65.6) | 1.0 | 1.0 | 0.058 |
| **Outside campus** | 94(20.2) | 11(34.4) | 2.067(0.963,4.437) | 0.576(0.122,2.731) | |

## 5.8.Eating attitude of respondents

A four-items scale was constructed to assess the extent of the variation of BMI status of the respondents in relation to eating habits (71). Generally as shown in table 8,low mean score for contradictor statement and high score for positive statement indicated that the study participants tended to agree that they have good eating attitude.

Although, the mean scores showed some variation with BMI, significant difference b/n underweight and obesity in item30.The highest mean scores for underweight students were found on item7 and 33. Respondents who were underweight scored minimum mean on items 1,5,9,16.

For normal weight students, item 29 and 33.ranked highest while for overweight item 2 and 33 had the highest mean scores. On the other hand, the highest mean score for obesity were found on items 2,6.7,11,13,14,29 and 30.Mean of overweight and obesity respondents want to lose their weight just by eating a well-balanced diet 2.5 and 2.75 respectively. This show high mean as compared to the mean scored by underweight respondents.

On the other hand, I seriously would like to learn cooking, I try to eat at the same times every day, I want to lose weight just by eating a well-balanced diet has an association with the BMI status of respondents. All respondents with variation with BMI status responded well on item 33.

**Table 8. Item mean for eating attitudes in relation to BMI status**

| | Item | Under - weight (N= 260) | Normal weight (N=465) | Over - weight (N=28) | Obesity (N=4) | P-Value |
|---|---|---|---|---|---|---|
| 1 | I try to eat a well -balanced diet. | 2.14 | 2.31 | 2.4 | 2 | 0.097 |
| 2 | I seriously would like to learn cooking. | 2.3 | 2.4 | 3 | 3.5 | 0.016* |
| 3 | I check for food additive, food coloring ,etc in my food. | 1.96 | 1.93 | 2.17 | 2.75 | 0.499 |
| 4 | I eat precooked food, instant and frozen products, and delivery foods (e.g,pizza). | 1.78 | 2.02 | 2.14 | 2.25 | 0.006 |
| 5 | I take nutritional supplements like vitamin tablets or similar products. | 1.75 | 1.76 | 1.46 | 2 | 0.686 |
| 6 | The amount of my food intake varies depending on my mood. | 2.7 | 2.6 | 2.46 | 3.5 | 0.366 |
| 7 | Practicing healthy eating behavior is important to me. | 3.04 | 2.92 | 2.92 | 3.5 | 0.616 |
| 8 | I would like people to commend my cooking. | 2.21 | 2.18 | 2 | 3 | 0.639 |
| 9 | I buy natural foods and organic vegetables even if they cost more. | 1.9 | 1.99 | 2 | 3 | 0.639 |
| 10 | I try not to eat too much. | 2.7 | 2.68 | 2.46 | 2.75 | 0.131 |
| 11 | Fast food is delicious and convenient. | 2.78 | 2.72 | 2.6 | 3.5 | 0.663 |
| 12 | I highly value precooked dishes in the supermarket. | 1.84 | 1.87 | 1.78 | 1.5 | 0.804 |
| 13 | I try to eat slowly and chew well. | 2.76 | 2.72 | 2.71 | 3.5 | 0.651 |
| 14 | I like to change the dishes I use depending on my mood. | 2.22 | 2.29 | 2.1 | 3.5 | 0.135 |
| 15 | I feel uneasy about trusting important foods. | 2.14 | 2.26 | 2.32 | 2.5 | 0.208 |
| 16 | I want to save money on food and spend it on other things. | 1.97 | 2.08 | 2.07 | 2 | 0.197 |
| 17 | I try to eat a variety of foods. | 2.42 | 2.56 | 2.57 | 2.75 | 0.552 |
| 18 | I try to eat at the same time every day. | 2.38 | 2.53 | 2.57 | 2.75 | 0.03* |
| 19 | I try to enjoy eating my meals. | 2.75 | 2.9 | 2.85 | 3 | 0.173 |
| 20 | I think there are many tasty instant noodle soups. | 2.07 | 2.2 | 2.32 | 2.5 | 0.778 |
| 21 | I would like to know more about food nutrients and what functions they have. | 2.86 | 2.85 | 2.96 | 3.25 | 0.6 |
| 22 | I do not care what I eat as long as it fills my stomach. | 1.8 | 2.03 | 1.85 | 2.25 | 0.166 |
| 23 | I want to buy and try out new food products as soon as they are released. | 1.79 | 1.95 | 1.64 | 2 | 0.278 |
| 24 | I want to lose weight just by eating a well- balanced diet. | 1.74 | 2.03 | 2.5 | 2.75 | 0.001* |
| 25 | I always drink vitamins drinks. | 1.69 | 1.76 | 1.42 | 3 | 0.069 |
| 26 | I don’t mind eating the same things every day. | 2.26 | 2.13 | 2.32 | 3.25 | 0.225 |
| 27 | I only want to eat my favorite dishes. | 2.6 | 2.48 | 2.35 | 2.25 | 0.248 |
| 28 | I dislike cooking and cleaning up afterwards. | 1.91 | 1.96 | 1.78 | 2.25 | 0.853 |
| 29 | When food taste good, I eat more than usual. | 2.96 | 3 | 2.67 | 3.5 | 0.282 |
| 30 | I worry about calories when eating. | 2 | 2.03 | 2.03 | 3.5 | 0.234 |
| 31 | My eating habits are normal. | 2.64 | 2.8 | 2.53 | 3 | 0.664 |
| 32 | It’s OK not to eat. | 1.8 | 1.73 | 1.78 | 2.5 | 0.099 |
| 33 | I like to eat. | 3.2 | 3.19 | 3.14 | 3.25 | 0.908 |
| 34 | I feel like eating when I am in a bad mood. | 1.72 | 1.97 | 1.78 | 1.75 | 0.248 |
| 35 | When I see a person eating, I want to eat as well. | 2.25 | 2.35 | 2.14 | 2 | 0.282 |
| 36 | I like to strengthen relationships with other by eating together. | 2.76 | 2.76 | 2.53 | 1.25 | 0.033* |

## 6. Discussion

In this study, the distribution of the sample on weight classes was described with reference to absolute BMI. Weight was categorized into underweight, normal, overweight/obesity respectively.

Based on this assumption, the present study aimed to investigate the eating attitude and behavior in university students in relation to their weight status (underweight, normal, overweight) and to examine the relationship of BMI and eating behavior. Based on BMI classification of weight status, finding of this study indicate that the majority of students were of normal weight .Underweight was more prevalent among males (72.7%) than females 27.3%.

In this study, the overall prevalence of underweight, overweight and obesity were 34.3%,3.7% and 0.5% respectively. This was slightly lower than the prevalence study conducted in Gondar which showed 35.6% underweight, 3.9% overweight and 0.7% obesity(61).However; it was lower than the prevalence reported from Sudan (14.8%) overweight,10.5% obese (63). The result of this difference with study conducted in Gondar could be the change in life style. And the observed difference has attributed to the food consumed in Sudan which were highly energy dense foods and frequently eating habits.

In this study, breakfast was the most frequently skipped meal among both male and female students and appeared to be high when compared with prevalence of skipped breakfast in Sidamo Zone, Southern Ethiopia among 11-(13years) which was 42.3%(34).

In another study ,the percentage of skipping meals was found to be 82.5% among students of Ankra University students in Turkey( 64) which is higher than the present study. The variation observed in students in Ankra university prefer to lose weight by skipping breakfast since being overweight or obese is the major problem of the Ankra university students. This variation may be not the case in the university students of Ethiopia as most of them skip meals for time constraints and various reasons.

Eating from outside of university cafeteria was positively associated with the prevalence of overweight. This might be those adolescents from high income were exposed for sedentary way of life style. In Ethiopia weight gain were still considered a sign of healthiness, other shows that overweight as a disease of high economic class .In contrast to this low socio economic status children are at higher risk of becoming obese as compared to those from high socio economic status based on the study conducted in Germany (65).

Inthis study ,attending a university or college students can be stressful experience for many college students . As aresult they tend to eat more as away of getting relief (66). The association between eating habits and psychological factors among university students ; eating habits score in this study was significantly lower among those who answered 'yes' on the following statments : "eat because of feeling lonely","eat because of feeling bored".

The percentage of students consuming fruit and vegetables one three or four times per week were 4.7%,10.0% for male and female university students, respectively. This result is very less as compared to a study conducted in Turkey University students where fruit and vegetable consumption was better reported (66.5%) and63.1% for male and female students, respectively (67).

It was determined that unhealthy nutritional behaviors such as irregular consumption of meals ,low frequency of vegetable and fruit consumption of meals were characteristic of students in general so there is a need to create programs for health education at university students( 68).

Concerning the life style, this study showed that the sleeping and health condition of the respondents were normal. In addition to coping with the normal stressors of everyday life, university students must deal with stressors specific to their academics. Although dieting is becoming a popular phenomenon among university students to achieve or maintain a healthy weight .Data from this study shows that dieting is not a common practice among the studied population.

Likewise, Smoking of Cigarettes was not common among the students. The prevalence of smoking is low compared to the prevalence of many European countries universities (69).

Alcohol intake was not a common among respondents. Nearly half of the students believe that eating meat, vegetables and other food will provide them with balanced diet.40.7% male students and 35.2% female students in this study agreed that it is important to eat a variety of food for good health. Daily intake of snack was not reported by the majority of the students. An interesting finding was the strong negative relationship between anxiety and eating of breakfast observed for only the underweight students. This implies that higher frequency of eating breakfast associated with anxiety. Previous study had reported that underweight individuals also reported eating more during negative emotional states and situations (70).

On the other hand, the result of the correlation analysis shown the same eating attitude can have opposite effects in subjects whose weight is normal and those who are abnormal. For example, among underweight students and normal weight students, anxiety showed no significance association with sleeping condition. However, anxiety, in the overweight category, anxiety showed significant positive associated with sleeping condition. This finding agrees with previous which studies reported anxiety to have a strong association with range of sleeping problem ( 71).

The present study revealed that the mean eating attitude factors in the underweight, normal weight and overweight students appear not similar with respect to the weight status. In the mean attitude of participants who were underweight has no access to eat a variety of food as compared to overweight /obesity students.

## 7. Strength and Limitation of the study

## Strength

- It generates valid information for the institution to establish or strength the eating behaviors in relation to BMI status of students in university campus.
- The reliability of the data was maintained by prior training for data collectors and regular supervision by principal investigator and using pretest questionnaire.
- This study is an original study in this particular study area that paves away and expected to generate valid base line information for the one who needs to conduct another assessment.
- The reliability of data was maintained by use of standardized questionnaire.

## Limitation

- The use of cross-sectional data might make it difficult to establish causality.
- Voluntary participation in a study that involves anthropometric assessment could have caused bias toward students who do not have weight issue.
- Shortage of literature particularly studies on similar topic could be mentioned as some of the limitations.

## 8.Conclusion and Recommendation

According to the finding of this study, the following conclusions are forwarded.

# Conclusion

- The study showed that the majority of students had normal BMI value and highlighted the presence of unhealthy eating behavior, inadequate nutrient intake of vegetables, snack and high prevalence of underweight among university students.
- Most of the university students skipped breakfast because of fatigue and various reasons for instance fatigue ,lack of time and not feeling hungry.
- Eating behaviors are influenced by variety of factors ,including life style factors.
- This study showed that eating attitude has an impact on BMI of respondents.

## Recommendation

- Nutritional education among university students should be encouraged to promote healthier eating habits and life style.
- There is a need for strategies and coordinated effort at all level (family, university, community) and government to improve the tendency of underweight among university students.
- Increase the daily fruit (vegetable),snack consumption apart from regular meal would be beneficial for the students.
- Research should be conducted to understanding present eating behavior and body mass concerns, health risk, associated factors among university students.
- A simple health eating guideline would be a useful mechanism for promoting such change, especially within the period of their studies in university.
- Health education on good eating attitude practice has a significant role toward normal body weight.

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## Annex: I. Informed Consent Form

English version information sheet and consent form for the questionnaire developed for "Assessment of eating behaviors in relation to Body Mass Index of Senior Regular Undergraduate Addis Ababa University Students." Addis Ababa, Ethiopia

A. Information Sheet
B. **IDENTIFICATION**

Name of the Institute_____

Address of the Institute _____

Greeting:

Hello, how are you?

My name is _____. I am data collector on behalf of a Masters Student in AAU, college of health sciences, school of public health, who want to conduct this survey.

The objective of the study- to assess the eating behaviors of undergraduate Addis Ababa University students in relation to body mass index differences.Your cooperation and willingness for the interview is very helpful in identifying the problems related to the issue. Your name will not be written in the form and I assure you that all information that you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you are not still comfortable with interview, please be free to stop me any time you like there is no harm if you not answer the questions and no special benefit you get if you answer the question the interview will take 30- 45 minutes. I would like to interview you few questions about the eating habits, meal frequency and skipping of meals among University students. We would be thankful if you spend some time with us answering questions related to the issues described above.

1. If yes, Name of interviewer_____ Signature_____
2. If not, skip to the other participant

For more information and question if there is here is the contact address of investigator.

Tefera Tezera

Tele 0932 097460

e-mail tefera_tezera@yahoo.com

**B. Consent form**

I_____ am informed on study to be conducted by Masters Student in AAU, college of health sciences school of public health on eating behaviours in relation to body mass index status among under graduate university students of Addis Ababa University. The objective of the study and participation to this study is voluntary no obligation to answer any questioner there is no harm by not answering the questions and no special benefit by answering the question and also the interview will take 30- 45 minutes .I heard all the information mentioned above and willing to participate in the interview.

1. Name of interviewer_____ Signature_____

(Signature of interviewer certifying that respondent has given informed consent verbally)

**በጥናትና ምርምር ላይ ለመሳተፍ ፈቃደኝነትን መጠየቃያ የስምምነት ፎርም**

**እንደምን ነህ እኔ ነርስ/ጤና መኮንን---------- እባላለሁ**

**ተፈራ ተዘራ በአዲስ አበባ ዩንቨርሲቲ የጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ትምህርት ውስጥ ለሚያደርገው የማስተርስ ዲግሪ ማሟያ የጥናትና የምርመር ስራው ላይ አብሬው እየሰራው ነው፡፡ የተማሪዎች የምግብ አመጋገብ ባህሪ ከሰውነት ክብደት መጠን መለኪያ ጋር ያለውን ግንኙነት አንተም/ቺም እውቀት አመለካከትና ትግበራ እንዲሁም በዩንቨርስቲው ውስጥ ስለምትጠቀሚቸው አገልግሎቶች የተነሱትን ጥያቄዎች በግልጽና ታማኝነት እንድትመልስ/ሺ በአክብሮት እጠይቃለሁ:: ያንተ/ቺ በጥናት ምርምር ስራው ከላይ በተገለጸው መልኩ መሳተፍ ዩኒቨርሲቲው ለተማሪዎች የሚሰጠውን የጤና አገልግሎት ለማሻሻል ከፍተኛ እገዛ አለው፡፡ በዚህቅ ጽላይም ሆነ መጠይቁ ላይ ስምህን/ሽን መጻፍ አያስፈልግም፡፡ የምትሰጠው/ጪው ምላሽ ከጥናትና ምርምር ስራው ውጪ አገለግሎት አየውልም፡፡ በመጠይቁ ላይ ከተመለከቱት ጥያቄዎች መካከል መመለስ የማትፈልገው/ጊው ጥያቄ ካለ አለመመለስ ትችላለህ/ቺያለሽ፡፡**

**ከላይ የተገለጸውን ቅጽ መሞላቱን ያረጋገጡት ፊርማ----------**

**መረጃው የተሰጠበት ቀን----------**

**የአጥኚው ፊርማ----------**

## AnnexII: Questionnaire (English Version)

Campus/faculty----------

Weight----------kg

Height----------meter

### I .Socio-demography

| Sr.No | Question | Responses | Code | Skip to |
|---|---|---|---|---|
| 101 | Age | ____ year | | |
| 102 | Sex | 1.Male<br>2.Female | | |
| 103 | What is the level of your study year? | 1. II year<br>2. III year<br>3. IV year<br>4. V year | | |
| 104 | From which faculty you are? | 1.FacultyofTechnology<br>2.FacultyofSocialScience<br>3.Facultyof Science | | |
| 105 | What is your mother‟s educational level? | 1.Non-formaleducation<br>2. High school or less<br>3.Teritiary education<br>4. Not educated | | |
| 106 | What is your father‟s educational level? | 1.Non-formaleducation<br>2.High school or less<br>3.Teritiary education<br>4. Not educated | | |
| 107 | What is your monthly personal income in Birr? | 1.No income<br>2.Less than 100 | | |

| | | | | |
|---|---|---|---|---|
| | | 3.From 100 to 299<br>4.From 300 to 499<br>5.500 and above<br>6.I don‟t know | | |
| 108 | Do you use cafeteria service? | 1.Yes<br>2.No | | |
| 109 | Ifyesforquestion11,whichcafeteria are you using? | 1.Technology Campus<br>2. Main Campus<br>3.Science Campus | | |
| 110 | If not for question11, where do you eat? | 1.Homeorprepared by your self<br>2. Outside cafeteria.<br>3. Other | | |
| 111 | Where do you live? | 1.In Campus<br>2. Outside Campus | | |

**Part II. The life style practices of students in Addis Ababa University. The questions will relate to dietary practices with special reference to eating habits.**

| Sr.No | Question | Responses | Code | Skip to |
|---|---|---|---|---|
| 201 | Do you take your meals regularly? | 1.Always regular<br>2.Irregular | | |
| 202 | Do you always take breakfast daily? | 1.Daily<br>2.Three or four times per week<br>3.Ortwiceperweek<br>4.Rarely | | |
| 203 | Doyou always take lunch daily.? | 1.Daily<br>2.Three or four times per week<br>3.Ortwiceperweek<br>4.Rarely | | |
| 204 | Do you always take dinner daily.? | 1.Daily<br>2.Threeor four times per week<br>3.Ortwiceperweek<br>4.Rarely | | |
| 205 | How many times do you eat meals except snacks one time .? | 1. Once time.<br>2.Two times<br>3.Three times<br>4.Four times | | |
| 206 | How often do you take snacks apart from regular meals daily three or four times per week .? | 1.Daily<br>2.Threeor four times per week<br>3.Once or twice per week<br>4.Rarely | | |
| 207 | How many meals do you usually eat each day? | 1.One<br>2.Two<br>3.Three<br>4.Four | | |
| 208 | If you skip a meal, which meal is it usually? | 1.Breakfast<br>2.Lunch<br>3.Dinner | | |
| 209 | How often do you eat green, red | 1.Daily | | |

| | | | | |
|---|---|---|---|---|
| | or yellow colored vegetables daily? | 2.Three or four times per week<br>3.Once or twice per week<br>4.Rarely | | |
| 210 | How often do you eat fruits daily? | 1.Daily<br>2.Three or four times per week.<br>3.Onceortwiceper week.<br>4. Rarely | | |
| 211 | How often do you eat fried food? | 1. Daily<br>2.Three or four times per week.<br>3.Once or twice per week.<br>4.Rarely. | | |
| 212 | How often do you take alcohol? | 1.Daily.<br>2. Two or three times per week.<br>3.Rarely. | | |
| 213 | How often do you eat with friends and family daily? | 1.Daily.<br>2.Three or four times per week.<br>3.Once or twice per week.<br>4. Always alone. | | |
| 214 | What type of food do you think you should eat to have a balanced nutrition? | 1.Mainly meat<br>2.Mainly vegetable<br>3.Meat,vegetableand other<br>4.Variet of food | | |
| 215 | Where do you mostly obtain nutrition information? | 1. Friends<br>2. Media<br>3. My parents<br>4. School<br>5. Other: specify | | |

## Part III. Lifestyle of students in relation to Body Mass Index status.

| Sr.No | Question | Responses | Code | Skip to |
|---|---|---|---|---|
| 301 | How well do you sleep? | 1.I hardly ever sleep well<br>2.Iusuallydo not sleep well<br>3. Average<br>4.Iusually sleep well<br>5.Ialways sleep well | | |
| 302 | How is your present health condition? | 1.Bad<br>2.Normal<br>3.Good<br>4.Very good | | |
| 303 | Do you feel stressed lately? | 1.Not at all<br>2.Not really<br>3.Normal<br>4.Rather<br>5.Very | | |
| 304 | How many cigarettes do you smoke per day? | 1.None<br>2. 1-5<br>3.6-10 | | |
| 305 | Are you on a diet? | 1.Yes<br>2.No | | |

## Part IV. Psychological factors affecting students eating habits

| Sr.No | Question | Responses | Code | Skip to |
|---|---|---|---|---|
| 401 | Do you eat because of feeling lonely? | 1.Yes<br>2.No | | |
| 402 | Do you feel completely out of control when it comes to food? | 1.Yes<br>2.No | | |
| 403 | Do you eat so much until stomach hurts? | 1. Yes<br>2. No | | |
| 404 | Do you eat because of feeling upset or nervous? | 1. Yes<br>2. No | | |
| 405 | Do you eat because of feeling bored? | 1. Yes<br>2. No | | |

## Part V. *Eating Attitudes of University students*

| **Eating attitude in relation to Body mass index.** | **1.mostly does not apply** | **2.rarely applies** | **3.sometimes applies** | **4.Fully applies** |
|---|---|---|---|---|
| 1.I try to eat a well -balanced diet. | | | | |
| 2.I seriously would like to learn cooking. | | | | |
| 3. I check for food additive, food coloring,etc in my food. | | | | |
| 4. I eat precooked food, instant and frozen products, and delivery foods (e.g,pizza). | | | | |
| 5.I take nutritional supplements like vitamin tablets or similar products. | | | | |
| 6.The amount of my food intake varies depending on my mood. | | | | |
| 7. Practicing healthy eating behaviour is important to me. | | | | |
| 8.I would like people to commend my cooking. | | | | |
| 9. I buy natural foods and organic vegetables even if they cost more. | | | | |
| 10. I try not to eat too much. | | | | |
| 11. Fast food is delicious and convenient. | | | | |
| 12. I highly value precooked dishes in the supermarket. | | | | |
| 13.I try to eat slowly and chew well. | | | | |
| 14. I like to change the dishes I use depending on my mood. | | | | |
| 15. I feel uneasy about trusting important foods. | | | | |
| 16. I want to save money on food and spend it on other things. | | | | |

| | | | | |
|---|---|---|---|---|
| 17.I try to eat a variety of foods. | | | | |
| 18. I try to eat at the same time every day. | | | | |
| 19.I try to enjoy eating my meals. | | | | |
| 20.I think there are many tasty instant noodle soups. | | | | |
| 21. I would like to know more about food nutrients and what functions they have. | | | | |
| 22. I do not care what I eat as long as it fills my stomach. | | | | |
| 23. I want to buy and try out new food products as soon as they are released. | | | | |
| 24.I want to lose weight just by eating a well-balanced diet. | | | | |
| 25. I always drink vitamins drinks. | | | | |
| 26. I don‟t mind eating the same things every day. | | | | |
| 27.I only want to eat my favourite dishes. | | | | |
| 28. I dislike cooking and cleaning up afterwards. | | | | |
| 29. When food taste good, I eat more than usual. | | | | |
| 30. I worry about calories when eating. | | | | |
| 31. My eating habits are normal. | | | | |
| 32. It‟s OK not to eat. | | | | |
| 33.I like to eat. | | | | |
| 34. I feel like eating when I am in a bad mood. | | | | |
| 35. When I see a person eating, I want to eat as well. | | | | |
| 36. I like to strengthen relationships with other by eating together. | | | | |

# መጠይቅ (Amharic version)

ካምፓስ/ ፋኩሊቲ_____

ክብደት_____ኪሎ

ቁመት_____ሜትር

## I. ተማሪው በግቢው ውስጥ ያለው ነባራዊ ሁኔታ

| ተ.ቁ | ጥያቄ | መልስ | ኮድ | ወደ |
|---|---|---|---|---|
| 101. | እድሜ | ------አመት | | |
| 102. | ፆታ | 1 ወንድ<br>2.ሴት | | |
| 103. | የትምህርት አመት | 1. 2ኛ<br>2. 3ኛ<br>3. 4ኛ<br>4. 5ኛ | | |
| 104. | የትኛው ፋኩሊቲ ትማራለህ.? | | | |
| 105. | የእናትህ የትምህርት ደረጃ ስንት ነው.? | 1.ከመደበኛ ትምህርት ውጪ ነው<br>2.የተማረችው 2ኛ ደረጃ ወይም ያነሰ<br>3. የ3ኛ ደረጃ ትምህርት<br>4.አልተማረችም | | |
| 106. | የአባት የትምህርት ደረጃ ስንት ነው.? | 1.ከመደበኛ ትምህርት ውጪ ነው የተማረው<br>2. 2ኛ ደረጃ ወይም ያነሰ<br>3. የ3ኛ ደረጃ ትምህርት<br>4.አልተማረም | | |

| | | | | |
|---|---|---|---|---|
| 107 | የአንተየራስህ የገቢ መጠን በብር ምን ያህል ነው.? | 1. ገቢ የለኝም<br>2. ከመቶ ብር በታች ነው<br>3. ከ100-299 ብር<br>4. ከ300 — 499 ብር<br>5. 500 ብር እና ከዚያ በላይ<br>6. አላውቅም | | |
| 108 | የምግብ አገልግሎት ትጠቀማለህ.? | 1. እጠቀማለሁ<br>2. አልጠቀምም | | |
| 109 | ለ10ኛ ጥያቄ መልሱ እጠቀማለሁ ከሆነ የትኛው ግቢ..? | 1. ቴክኖሎጂ<br>2. ዋናው ግቢ<br>3. የተፈጥሮ ሳይንስ | | |
| 110 | ለ10ኛ ጥያቄ መልሱ አልጠቀምም ከሆነ የት ትጠቀማለህ/ሚያለሽ.? | 1.እቤቴ/ እራሴ አዘጋጅቼ<br>2. ከግቢ ውጭ ባሉ ካፍቴሪያዎች<br>3. ሌላ ካለ ይገለጽ | | |
| 111 | የመኖሪያ አድራሻ | 1. ግቢ ውስጥ<br>2. ከግቢ ውጭ | | |

II. **የተማሪዎችን የአመጋገብ ስርዓት፣የምግብ ሁኔታ፣ ፍራፍና አትክልት መመገብን የተጠበሰ ምግብ መውሰድ አልኮሆል መጠጣት ናሲጋራ የማጨስ ልምድ በተመለከተ ከዚህ ቀጥሎ ከእነሱ የአኗኗር ሁኔታ ጋር በተያያዘ ተማሪዎች ለጥያቄዎቹ የሚሰጡት መልስ.**

| ተ.ቁ | ጥያቄ | መልስ | ኮድ | ወደ |
|---|---|---|---|---|
| 201. | የምግብ ሰዓትህን ጠብቀህ ትመገባለህ.? | 1.ሁልጊዜ ሰዓቴን ጠብቄ እመገባለሁ<br>2. ሰዓቴን አልጠብቅም | | |
| 202 | ሁልጊዜ ቁርስ ትበላለህ.? | 1. በየቀኑ<br>2. በሳምንት 3 ወይም 4 ጊዜ<br>3. በሳምንት አንድ /ሁለት<br>4. አንድ አንድ ጊዜ | | |
| 203. | ሁልጊዜ ምሳ ትበላለህ.? | 1. በየቀኑ<br>2. በሳምንት 3 ወይም 4 ጊዜ<br>3. በሳምንት አንድ /ሁለት ጊዜ<br>4. አንድ አንድ ጊዜ | | |
| 204. | ሁልጊዜ እራት ትበላለህ.? | 1. በየቀኑ<br>2. በሳምንት 3 ወይም 4 ጊዜ<br>3. በሳምንት አንድ /ሁለት ጊዜ<br>4. አንድ አንድ ጊዜ | | |
| 205. | ከመክሰስ በስተቀር መደበኛ የምትመገበው ስንት ጊዜ ነው .? | 1. አንድ ጊዜ<br>2. ሁለት ጊዜ<br>3. ሶስት ጊዜ<br>4. አራት ጊዜ | | |
| 206. | ከመደበኛ የምግብ ፕሮግራምህ ውጪ ምን ያህል ጊዜ መክሰስህን ትመገባለህ.? | 1. በየቀኑ<br>2.ሶስት/አራት ጊዜ በሳምንት<br>3.አንድ/ሁለት ጊዜ በሳምንት<br>4.አንዳንድ ጊዜ | | |
| 207. | በየቀኑ ምን ያህል ጊዜ ትመገባለህ.? | 1. አንድ ጊዜ<br>2. ሁለት ጊዜ<br>3. ሶስት ጊዜ<br>4. አራት ጊዜ | | |

| | | | | |
|---|---|---|---|---|
| 208. | ሌላ የምትዘልለው ምግብ ካለ የትኛው ነው.? | 1. ቁርስ<br>2. ምሳ<br>3. እራት | | |
| 209 | አረንጓዴ ቀይ ወይም ቢጫ የአትክልት አይነቶችን ምን ያህል ጊዜ ትወስዳለህ.? | 1. በየቀኑ<br>2.ሶስት/አራት ጊዜ በሳምንት<br>3.አንድ/ሁለት ጊዜ በሳምንት<br>4. አንዳንድ ጊዜ | | |
| 2010 | ፍራፍሬዎችን ምን ያህል ጊዜ ትመገባለህ.? | 1. በየቀኑ<br>2.ሶስት/አራት ጊዜ በሳምንት<br>3.አንድ/ሁለት ጊዜ በሳምንት<br>4. አንዳንድ ጊዜ | | |
| 211. | የተጠበሰ ምግብ ምን ያህልጊዜ ትመገባለህ.? | 1. በየቀኑ<br>2.ሶስት/አራት ጊዜ በሳም<br>3.አንድ/ሁለት ጊዜ በሳምንት<br>4. አንዳንድ ጊዜ | | |
| 2012. | የአልኮል መጠጥ በየስንት ጊዜ ትወስዳለህ.? | 1. በየቀኑ<br>2. በሳምንት ሁለት /ሶስት<br>3. አንዳንድ ጊዜ | | |
| 213. | ከቤተሰብህና ከጓደኞችህ ጋር አብረህ ምን ያህል ጊዜ ትመገባለህ.? | 1. በየቀኑ<br>2.ሶስት/አራት ጊዜ በሳምንት<br>3.አንድ/ሁለት ጊዜ በሳምንት<br>4. አንዳንድ ጊዜ | | |
| 214. | የተመጣጠነ ምግብ ለማግኘት ምን አይነት ምግብ መመገብ አለብኝ ብለህ ታስባለህ.? | 1. በዋነኝነት ስጋ<br>2. በዋነኝነት አትክልት<br>3.ሥጋ አትክልት እና ሌሎች የተለያዩ ምግቦች | | |
| 215. | የምግብ አመጋገብ ሥርዓት መረጃ በይበልጥ ከየት ነው የምታገኘው.? | 1.ከጓደኛ<br>2.ከሚዲያ<br>3.ከቤተሰቦቼ<br>4.ከትምህርት ቤት | | |

## III. ከሰውነት መጠን መለኪያ ጋር በተያያዘ የተማሪዎች የኑሮ ሁኔታ

| ተ.ቁ | ጥያቄ | መልስ | ኮድ | ወደ |
|---|---|---|---|---|
| 301. | በደንብ እንቅልፍ ይወስድሃል.? | 1. በደንብ እንቅልፍ አይወስደኝም<br>2.ብዙ ጊዜ በደንብ እንቅልፍ አይዘኝም<br>3.በመካከለኛ ደረጃ<br>4.ብዙ ጊዜ በደንብ እንቅልፍ ይወስደኛል<br>5.ሁልጊዜ በደንብ እንቅልፍ ይወስደኛል | | |
| 302. | አሁን ያለህበት የጤንነት ሁኔታ እንዴት ነው? | 1. መጥፎ<br>2. ደህና<br>3. ጥሩ<br>4. በጣም ጥሩ | | |
| 303. | በቅርብ ጊዜ ጭንቀት አጋጥሞህ ያውቃል? | 1. በፍጹም<br>2.በእርግጥ አላጋጠመኝም<br>3.መጠነኛ የሆነ ጭንቀት አጋጥሞኛል<br>4. እንደ ነገሩ<br>5. በጣም | | |
| 304. | ስንት ሲጋራ በየቀኑ ታጨሳለህ.? | 1.ምንም<br>2.ከ1- 5<br>3.ከ 6 — 10 | | |
| 305. | ዳይት ላይ ነህ/ ምግብ አመጣጥነህ ትመገባለህ/.? | 1. አዎን<br>2. የለም | | |

## IV. በተማሪዎች የመመገብ ልምድ ላይ ተፅኖ የሚያሳድሩ ስነ አእምሮአዊ ጉዳዮች

| ተ.ቁ | ጥያቄ | መልስ | ኮድ | ወደ |
|---|---|---|---|---|
| 401. | የብቸኝነት ስሜት ስለሚሰማህ ነው የምትበላው.? | 1. አዎን<br>2. የለም | | |
| 402. | የምግብ ነገር ሲነሳ ከቁጥጥር ውጪ ትሆናለህ.? | 1. አዎን<br>2. የለም | | |
| 403. | በጣም እስከምትጠግብ ድረስ ነው የምትበላው.? | 1. አዎን<br>2. የለም | | |
| 404. | የምትበላው ስትናደድ ወይስ ስትበሳጭ ነው.? | 1. አዎን<br>2. የለም | | |
| 405. | ሲደብርህ ነው የምትበላው.? | 1. አዎን<br>2. የለም | | |
| 406. | ደስ ሲልህነው የምትበላው.? | 1. አዎን<br>2. የለም | | |

## V. የአመጋገብ ሁኔታ ከሰውነት ክፍል መለኪያ ጋር ያለው ዝምድና

| የአመጋገብ ሁኔታ ከሰውነት መጠን መለኪያ ጋር ያለው ዝምድና | 1.ብዙ ጊዜ ተግባራዊ አላደርግም | 2.አልፎ አልፎ ተግባራዊ አደርጋለሁ | 3.አንዳንዴ ተግባራዊ አደርጋለሁ | 4.ሙሉ በሙሉ ተግባራዊ አደርጋለሁ |
|---|---|---|---|---|
| 1. በተቻለ መጠን የተመጣጠነ ምግብ ለመመገብ እሞክራለዉ | | | | |
| 2. ምግብ ማብሰል ለመማር በጣም እፈልጋለሁ | | | | |
| 3. ምግብ ላይ የሚጨመር፣የምግብን ከለር የሚቀይር ወዘተ ነገሮችን በምግቤ ውስጥ እጠቀማለሁ | | | | |
| 4. በፊት የተጠበሱ ምግቦችንወዲያው የተመረቱ እና የቀዘቀዙ ምግቦችን እና የሚላኩ ምግቦችን (ለምሳሌ ፒዛ) እበላለሁ | | | | |
| 5. እንደ ቫይታሚን ኪኒኖች ወይም ተመሳሳይ ምርቶችንበተጨማሪነት እንደ ምግብ እወስዳቸዋለሁ | | | | |
| 6. የአመጋገቤ መጠን እንደ ስሜቴ ይለያያል | | | | |
| 7. ጤናማ የሆነ አመጋገብንመጠቀም ጠቃሚ ነው | | | | |
| 8. የእኔን የምግብ አበሳሰል ሰዎች አስተያየት እንዲሰጡኝ እፈልጋለሁ | | | | |

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| 9. ዋጋቸው እንኳን ውድ ቢሆንም የተፈጥሮ ምግቦችን እና ኦርጋኒክ የሆኑ አትክልቶችን እገዛለሁ | | | | |
| 10. በጣም ብዙ ምግብ ላለመመገብ እሞክራለሁ | | | | |
| 11. ፋስት ፉድ ጣፋጭ እናየሚመች ነው | | | | |
| 12. ሱፐርማርኬትውስጥ ያሉ በፊት የበሰሉምግቦችንበጣም እወዳለዉ | | | | |
| 13. በቀስታለመብላትናበደንብ ለማኘክ እሞክራለሁ | | | | |
| 14. እንደ ስሜቴ የምጠቀማቸውን የምግብ አይነቶች እቀያይራቸዋለሁ | | | | |
| 15. በጣም ጠቃሚ ምግቦች ምኞት አይሰጡኝም | | | | |
| 16. ለምግብ የማወጣውን ገንዘብ በመቆጠብ ለሌሎች ነገር ገንዘቡን ማጥፋት እፈልጋለሁ | | | | |
| 17. በተቻለ መጠን የተለያዩ የምግብአይነቶች ለመመገብ እሞክራለ | | | | |
| 18. በተቻለ መጠን በየቀኑ በተመሳሳይሰዓት ለመብላት እሞክራለሁ | | | | |
| 19. የምመገባቸውን ምግቦች | | | | |

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| እደሰትባቸዋለሁ | | | | |
| 20.እንደሚመስለኝ ብዙ ጣፋጭሾርባዎች አሉ | | | | |
| 21.ስለተመጣጠነ ምግብ እና ጥቅሙን ማወቅ እፈልጋለሁ | | | | |
| 22.ሆዴንእስከሞላድረስማንኛውንም ምግብ እወስዳሁ | | | | |
| 23.አዳዲስ የምግብ አይነቶች በመጡ ቁጥር መግዛትና መጠቀምእፈልጋለሁ | | | | |
| 24.በጣም የተመጣጠነ ምግብ በመመገብ ክብደቴን መቀነስ እፈልጋለሁ | | | | |
| 25.የቫይታሚን መጠጦችን ሁሌእጠቀማለሁ | | | | |
| 26.ተመሳሳይ ነገሮችን በየቀኑ መጠቀም ግድ የለኝም | | | | |
| 27.እኔ የምወዳችውን ምግቦች ብቻመመገብ እፈልጋለሁ | | | | |
| 28.ከዚያም በኋላ ምግብ ማብሰልና ማጽዳት አልፈልግም | | | | |
| 29. ምግቡ ጣፋጭ ከሆነ ብዙ እበላለ | | | | |
| 30.ምግብ ስበላ ስለ ካሎሪ እጨነቃ | | | | |
| 31. አመጋገቤ ጤናማ ነው | | | | |
| 32. ባልበላ ምንም አይደለም | | | | |

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| 33. ምግብ እወዳለሁ | | | | |
| 34. ሲከፋኝ መብላት እፈልጋለሁ | | | | |
| 35.አንድ ሰው ሲበላ ካየሁኝ እኔም መብላት ያሰኘኛል | | | | |
| 36.ከሌሎች ጋር አብሮ በመብላት ያለኝን ግንኙነት ማጠንከር እፈልጋለሁ | | | | |

## AnnexIII:Declaration

I ,the under signed, declared that this is my original work and has not presented in this or any other university and all sources of materials used for this thesis have been duly acknowledged.

Name:Tefera Tezera(B.Pharm)

Signature:----------

Date:----------

Place: Addis Ababa University, School of Public Health

This thesis work has been submitted for examination with my approval as university advisor.

Name:Dr.Jemal Haidar (Associate Professor)

Signature:----------

Date:----------

Place: Addis Ababa University , School of Public Health

## Annex IV: Assurance of principal investigator

I undersigned here agrees to accept responsibility for scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and the condition of the research I will communicate to my advisor and other stakeholders involved in this research publications office in effect at the time of grant is forwarded as the result of this application

Name of the student: TeferaTezera

Signature----------date----------

Approval of primary advisor

Name of the primary advisor: Dr Jemal Haidar (Associate professor)

Signature----------date----------