



Wolkite University

College of Medicine and Health Sciences

Department of public health

**PREVALENCE AND ASSOCIATED FACTORS OF
OVERWEIGHT/OBESITY AMONG SCHOOL ADOLESCENTS IN
BUTAJIRA, SOUTHERN ETHIOPIA, 2023; CROSS-SECTIONAL
STUDY**

MPH THESIS

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**DECEMBER, 2023
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WOLKITE UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF PUBLIC HEALTH

**PREVALENCE AND ASSOCIATED FACTORS OF
OVERWEIGHT/OBESITY AMONG SCHOOL ADOLESCENTS IN
BUTAJIRA, SOUTHERN ETHIOPIA, 2023**

**A THESIS TO BE SUBMITTED TO WOLKITE UNIVERSITY,
COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF PUBLIC
HEALTH, FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN
NUTRITION**

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DECEMBER,2023
WOLKITE, ETHIOPIA

Approval Sheet

We hereby certify that we have read and evaluated this Thesis titled “ **Prevalence and associated factors of overweight among school adolescent, in Butajira city, southern Ethiopia, 2023**”.prepared under our guidance by **Shehicho Mahmud**.We recommend that the Thesis shall be Submitted as fulfilling the requirements for the award of a Masters of Public Health in Nutrition.

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ABBREVIATION AND ACRONOMY

AOR	Adejested Odds Ratio
BMI:	Body mass index
CDC:	Communicable disease control and prevention
CI:	.....	Confidence interval
COR	.....	Crude Odds Ratio
CVD:	.....	Cardiovascular disease
IOTF:	.....	International obesity task force
MET:	.....	Metabolic equivalent time
NGO:	.....	Non-Governmental Organization
NLW:	.....	Non low weight
NNP:	.....	National nutrition program
OR:	.....	Odds ratio
PA:	.....	Physical activity
SCM	.....	School Management Committee
SD	.....	Standard Deviation
SES:	.....	Socio- economic status
SI:	.....	Sampling interval
SPSS:	.....	Statistical Package for the Social Sciences
SRS	.....	Simple Random Sampling
TPA:	Total physical activity
TV:	Television
WHO:	World Health Organization

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ABSTRACT

Background: - Adolescence is a pivotal period of development which represents the age between 10- 19 years. Adolescent`s accounts about one fourth (25.1%) of the total world`s population, in which majority of them lives in developing countries.

Objective: -To assess the magnitude of overweight and associated factors among school adolescents in Butajira town.

Methods:-A school-based cross-sectional study design was conducted among 408 students, from May to June 2023. A multi-stage and simple random sampling technique with proportional allocation was applied. A Pretested structured questionnaire was used to collect data. Data were entered into Epi-Data 3.1 Software and analysis was done using SPSS version 25 software.

Result:-In this study the prevalence of overweight in the study participants was 8.8 % and the prevalence of obesity was 1% based on BMI- for -age classification.Students who watch TV for 4 or more hours per day were 4.5 times more likely to become overweight as compared to Students who watch TV for less than four hours per day [AOR = 4.5 (95% CI = 1.64–12.5), P = 0.004]. The odds of overweight 4.1 times higher among students who use sweat foods than who did not use sweat foods [AOR = 4.1 (95% CI = 1.64–10.30), P = 0.003].

Conclusion and recommendation:- Prevalence of overweight/obesity among Butajira town school adolescent was high. Waching TV for four or more hours per day, students who using sweet foods and soft drinks more than two times and poor knowledge about overweight were significantly associated with overweight/obesity. There needs to implement evidence-based school nutrition education and health programs to timely taking action to limit obesity-related health problems.

Keywords: overweight; BMI; Adolescent; dietary habit; physical activity; sedentary behavior;snacking ;Butajira.

CHAPTER ONE

1. Introduction

1.1. Background

Adolescence is a pivotal period of development which represents the age between 10- 19 years(1). Adolescent`s accounts about one fourth (25.1%) of the total world`s population, in which majority of them lives in developing countries. Greater than one third(38.6%) of Ethiopian population were found in this age group making Ethiopia third country in the world following Swaziland and Zimbabwe (2).

During this crucial period, dietary patterns have lively role on lifetime nutritional status and health. However, adolescents face a series of serious nutritional challenges which would affect this rapid growth spurt as well as their health as adults. The main nutritional problems affecting adolescent populations are under nutrition and overweight/obesity which is an emerging public health problem currently (3,4).

Overweight/obesity is achronic conditions that are the result of an energy imbalance over a period of time. An energy imbalance arises when the number of calories consumed is not equal to the number of calories used by the body. The cause of this energy imbalance can be due to combination of several different factors and varies from one person to another (5).

The food system across developing nations in most urban and an increasing proportion of rural areas has changed radically with the globalized distribution of technology processed food, transportation and marketing, mass media, and the flow of capital and services. These complex changes are reflected in the occurrence of obesity besides malnutrition even in the same households (6).

Globally there has been: an increased intake of energy-dense foods that are high in fat, salt and sugars but low in vitamins, minerals and other micronutrients and decrease in physical activity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization (4).

Overweight/Obesity is defined as a situation by which there is excess body fat leading to health impairment. Clinically, it's defined for adults as Body Mass Index (BMI) ≥ 30 (5). For many years, establishing an international definition of overweight and obesity among children and school adolescents based on pooled international data for BMI linked with adult obesity cut-off-point remained a big challenge.

In 2007, world health organization (WHO) established new growth references for children and adolescents 5-19 years depending on multicultural Growth Reference Study (MGRS) in 2007. Based on this criteria overweight and obesity is defined as the proportion of children with a sex- and age-specific BAZ value greater than +1 Z-score and +2 Z-scores of the 2007 WHO recommended Growth Reference respectively (6).

Therefore, the fundamental step in the prevention of overweight is the identification of factors contributing to the rapid increase of overweight among children, and working on it. World-wide, the trend of overweight and its impact have increased, Currently overweight and obesity are problems of not only high income but also low- middle income countries (11,12).

1.2. Statement of the problem

According to the 2017 world health organization fact sheets over 340 million children and adolescents aged 5–19 years were overweight. Overweight are linked to more deaths worldwide than underweight(4).Hence now ranks as the fifth leading global risk for mortality(17).overweight/obesity has become a colossal epidemic causing serious public health concern and contributes to 2.6 million deaths worldwide every year but underweight cause 2.2 million death of children every year in the world(18).

In Northern America particularly in USA over the past three decades, childhood overweight /obesity have tripled, and nowadays, the country partakes some of the highest obesity proportion in the world: about 60% of children is overweight whereas, 30% of children is obese(8). In Europe, overweight and obesity was worryingly high for adults and young people. The prevalence of adolescent overweight/obesity has more than tripled in many European countries since the 1980s and with this rise conveyed a concomitant increase in rates of associated non-communicable disease(9).

In Africa, despite of huge deep rooted under-nutrition a study conducted in seven countries (Burkina Faso, Ghana, Kenya, Malawi, Niger, Senegal and Tanzania) reported that 8.5% of children were overweight/obese in 2010 (10). In Ethiopia, studies from Addis Ababa, Gondar and Hawasa town revealed significant prevalence of overweight/obesity in adolescents 8.6%, 5.9% and 15.6 % respectively(11,13)).

According to NCD country reports of 2014, NCDs are estimated to account for 30% of all Ethiopian deaths which can be directly or in directly attributable to overweight/obesity(15). Bodyweight is regulated by numerous physiological mechanisms that maintain balance between energy intake and energy expenditure.

The factors for overweight/obesity are not fully understood but the results of different literatures have associated overweight/obesity with certain environmental factors, nutritional behaviours, sedentary life styles, genetic and psychosocial factors (3,14)Economic growth, modernization, urbanization and globalization of food markets are just some of the forces thought to underlie the epidemic of overweight and obesity (1,4,7).

Some of the health impacts of overweight are type two diabetic mellitus, heart disease, stroke, high blood pressure, gall bladder and fatty liver disease, arthritis and some cancer which are often referred as non-communicable diseases(9,10).

According to the findings of recent studies it's had 44% of the diabetes mellitus, 23% of the ischemic heart disease and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity (8).

Being overweight or obese between ages 14 to 19 was associated with increased adult mortality from a wide variety of systemic diseases (19). Once adults are obese; it is often difficult for them to lose weight through physical activity and healthy diet (20).

The nation program of Ethiopia, from 2016 to 2020 suggested timely interventions to prevent non-communicable diseases or reduce their severity and consequences(13).But did not consider childhood overweight. Information regarding nutritional status of children in Ethiopia is not well documented(14).

To avert this devastating problem non communicable disease (NCD) was incorporated in the National nutrition programme(NNP) and tobacco free & physically active initiative was launched(18,19). However, these efforts are not specifically targeted adolescents and based on limited systematic evidence into possible factors of overweight & obesity in early stages of life,Most of the previous were conducted using invalidated questionnaire for assessing dietary intake and physical activityand the result of previous literatures have certain controversies related to association of socioeconomic status and overweight/obesity.

In Butajira, it becomes common to see overweight people in all age group including school children. Butajira is one of the economically, industrially and culturally fast growing cities in Ethiopia. Recently, there was no well-documented information about overweight and its associated factors in Butajira city school adolescent students.

Therefore, this study aimed to assess the magnitude and associated factors of overweight and obesity among public and private primary and secondary school adolescents in Butajira city, SNNPRS region, Northern Ethiopia, 2023.

1.3 Significance of the study

The health and well-being of adolescents have a major impact on the overall social and economic health of nation as today's adolescents are tomorrow's workforce, parents and leaders. But for many years, their health has been neglected because they were considered to be the less vulnerable group.

Adolescent overweight/obesity has a strong tendency to track in to adult hood and become a foundation for substantial increase in the risk of premature development of chronic disease and certain cancers which will have far reaching impact on the overall welfare and disease burden of a nation. Yet, available evidences are suggesting that one of the most effective ways to prevent severe consequence of overweight/obesity in later life is prevention and management of overweight/obesity at early stages of life and identification of setting specific factors.

The findings of this study will contribute/provide important information about the prevalence and associated factors of adolescent over weight to the community,Butajira city administration health and educational office.Inadition to thse the result of this study can also used as a baselin resource for others interested boday in conducting further research in the study area.

CHAPTER TWO

2. Literature reviews

2.1. Magnitude of overweight

Globally overweight/obesity is rapidly becoming one of the most important medical and public health problems of our times with the worrisome raise in the magnitude of overweight and obesity among young population, and recently about 10% of children aged 5-17 years globally were overweight, among which 2-3.5% was obese(14).

The study conducted in eastern turkey among school children aged 6-18 years using the IOTF growth reference detected that prevalence of overweight and obesity were 11.2% and 2.2% respectively. The sex specific prevalence of overweight and obesity was 10.9% and 2.1 % in boys, and 11.4% and 2.3% in girls, respectively(20)

A cross sectional study conducted among 1260 8 to 16 years of age children and adolescents in the City of Al-Ain, UAE in 2008 revealed that prevalence of overweight and obesity were 12% boys; 12.7% girls and 14% boys ; 13.6% girls respectively((24)Different study conducted in 2009 on overweight/obesity and socioeconomic status in (6-16) children in Yemen, revealed that prevalence of overweight was 12.7% whereas obesity was 8.0% (25).

In Africa the same trend is also appreciated, despite a high prevalence of under nutrition; overweight and obesity is rising at an alarming rate. Study conducted in 2013 among public and private primary school children in Nairobi, Kenya reported that the 19.0% of the participants were either overweight or obese(7,26).

Cross sectional study conducted on primary school children in Tanzania showed that 9.8% and 5.2%, of adolescents were overweight and obese respectively. Prevalence of overweight and obesity was significantly higher among girls, 13.1% and 6.3% than their peer boys 6.3% and 3.8% respectively.similarly study from south Africa in 2012 reported that the prevalence of overweight was 5.5% for boys and 4.4% for girls(28).

A cross sectional study conducted in Addis Ababa among high school adolescents in Arada sub city in 2013 reported that prevalence of overweight and obesity were 8.6% and 0.8% respectively and the combined prevalence of overweight/ obesity was (9.4%)(11) .

2.2. Associated factors of overweight of adolescents.

2.2.1. Socio-economic factor

Study conducted in France showed higher prevalence of overweight (8.6%) to be among adolescents from families with higher affluence (29). and another study among Norwegian adolescents detected that adolescents with parents in the highest education category had a 46% reduced odds of being overweight compared to adolescents with parents in the lowest education category. Adolescents with parents with medium education had 42% lower odds of being overweight than adolescents with parents with the lowest education category(30).

The study conducted in the Nablus city among school-age children reported a steady rise in prevalence of overweight with the increase in parental education. The study also showed a significant association between children's obesity and mother's level of education (31).And Similarly the study conducted on 6-17 years aged children in southern India found that private school and Girls participants had greater odds of being overweight/obese than their counter peers (32).

A cross sectional studies conducted in several Eastern Mediterranean region countries like Qatar, Lebanon and Kuwaiti among children and adolescents showed that the prevalence of overweight were high among girls than male adolescents of the same age. Conversely, the finding from Beirut showed that boys had greater odds of obesity than girls of the same age (33,37).

The study conducted in Basra City in 2011 among school children reported that prevalence of overweight and obesity was consistently increased with the increase in child's age. The study also found that the prevalence of overweigh was directly related to socioeconomic status of participant's families. In addition, the prevalence of overweight was higher among children whose fathers were involved in professional job followed by children whose father were self -employed and also highest among children of working mothers (23).

One study in Burkina Faso revealed that students from private school were in 2.7 folds more likely to become overweight as compared to students from government school(40).And different study in Ghana reported 17.4% prevalence of overweight and

The results of a Kenyan study also found that overweight was significantly greater in private (29.0%) than in public (11.5%) schools more ever the prevalence of overweight/obesity among boys in private schools (27.1%) was three times higher than among boys in public schools (9.0%). Yet, there were no significant differences in overweight status between boys and girls within the schools(26). Conversely, study conducted among school age children in Tanzania found that the overall prevalence of adolescent obesity was 5.2%. Obesity was higher among girls compared to boys (42).

In Ethiopia, study conducted in Gondar in 2012 revealed that overweight was significantly associated with school type, sex and grade level and study in Hawasa town revealed that adolescent girls were more at risk of becoming overweight and obese than males and Adolescents from higher socio economic income category were also more at risk for overweight as compared to adolescents whose family socio economic index were in the lowest category(12,13).

The study conducted in 2013 in Addis Ababa showed that learning in private school was positively and significantly associated with overweight/obesity. The likelihood of overweight/obesity among adolescents who were in 15-17 age groups was lower as compared to 17-19 age groups. Adolescents from higher and middle income families had higher odds of overweight and/or obesity compared to those from lower income families(11,43).

2.2.2. Dietary related factors

Diets are changing wherever incomes are rising in the developing world, with a marked shift from fruit and vegetable to meat, fats and sugar(9). Higher frequency of eating fast food and snacks was associated with overweight and obesity but consumption of sugar-sweetened drinks, like soft drinks or commercially produced juices, was low, and not seen an association between these beverages and adiposity or weight status, with the exception of fruit-flavoured water because the beverage contain add sugar (33).

The study conducted among primary school children in Al-Hassa, Kingdom of Saudi Arabia on overweight and obesity and their Association with dietary habits, and sociodemographic characteristics reported frequent consumption of food out of home are positively associated with the development of obesity and overweight while consuming breakfast at home was inversely associated with the development of overweight(38).

Study conducted among Lebanese children and adolescents revealed that daily breakfast consumption, higher intakes of milk & dairies was associated with significantly lower odds of overweight and obesity. High consumption of fast foods and sugar sweetened beverages were associated with significantly higher odds of overweight and obesity in this age group and study conducted among children and adolescents aged between 8 to 16 years in UAE also showed a significant association between overweight/obese and breakfast consumption (39).

Study conducted on Snacking and its effect on nutritional status of adolescents in two national high schools in Nairobi Kenya in 2014 and study conducted in Tamale, 9 Northern Ghana showed that snacking has no effect on adolescents' nutritional status(41).The study conducted in Hawasa town among high school students showed that Adolescent who eat fruit twice per month or less are 4.67 times more likely to be overweight than adolescents who eat fruit for more than two times per day.

The odds of being overweight were 91% lower in adolescents who eat meat twice per month or less compared with adolescents who eat meat once or more than once per day. In contrary the study revealed that there is no association between snacking, meal frequency, skipping breakfast, eating outside and overweight/obesity(13).

2.2.3. Physical activity and sedentary lifestyle

Physical activity and sedentary behaviour are two components of energy expenditure that contribute to the development of childhood overweight even though it varies in sex(35).

The study conducted by European Youth Heart Study on adolescents Physical activity, overweight and central adiposity in Swedish children and adolescents reported that adolescents, who had a low level of vigorous physical activity, were more likely to be overweight including obesity than those with a high level of vigorous physical activity. Similarly, those subjects who had a low or middle level of total physical activity were more likely to be overweight than those who had a high level of total physical activity.

A longer screen time were also associated with higher odds of having a high BMI(overweight/obesity) and also another cross sectional study conducted among 11 -15 years adolescents in France reported that there is a significant positive association overweight/obesity and sedentarity(35). In opposition, the study conducted among 1260 children and adolescents in UAE in showed that there were no associations between BMI and exercise(24).

According to the study conducted in Gondar and Hawasa town among high school students physical activity was statistically associated with overweight and obesity(12, 13).The study in Hawasa town also reported that there was statistically significant association between times spent watching TV or using computer and overweight and those adolescents who used to watched TV or used computer three or more hours per day were 3.04 times more likely to be overweight than those who watched TV or used computer for less than three hours per day(13).

Engaging in sedentary activities including watching television and playing computer games for > 4 hours a day were potential risk factors for children and adolescents overweight or obesity (32,35,39).whereas regular physical activity at home for at least 30 minutes was a protective factor (24,32,39).But physical activity in the school was not associated with being overweight or obese (22,29).

Students who travelled actively to and from school by walking or on a bike were significantly less overweight and obese than those who were driven to and from school(29,32,34,35,41).

2.2.4. Nutritional knowledge

Knowledge is an important but not a sufficient factor for dietary behaviour change. Nutrition knowledge was consistently are concerned about their weight sought out information and advice and therefore become more educated in terms of nutrition knowledge (42).

Study done USA revealed that nutritional awareness had no relationship to overweight and obesity (43). Furthermore nutritional knowledge was not different between obese and non-obese adolescents. Therefore, interventions must go much further than simply promoting nutritional knowledge (44)

Knowledge is a predisposing factor for eating behaviour (45). Study suggests that increase prevalence of overweight among adolescent may be deficit in overweight and obesity knowledge in the adolescents(46).

Study conducted England showed that nutritionally less knowledgeable adolescents were 5.3 times more likely to be obese than knowledgeable adolescents. Children have little knowledge concerning nutrition and eating habits, indicating that the schools, parents and the media have disseminated insufficient and ineffective messages concerning healthier eating habits (47).

2.5. Conceptual framework

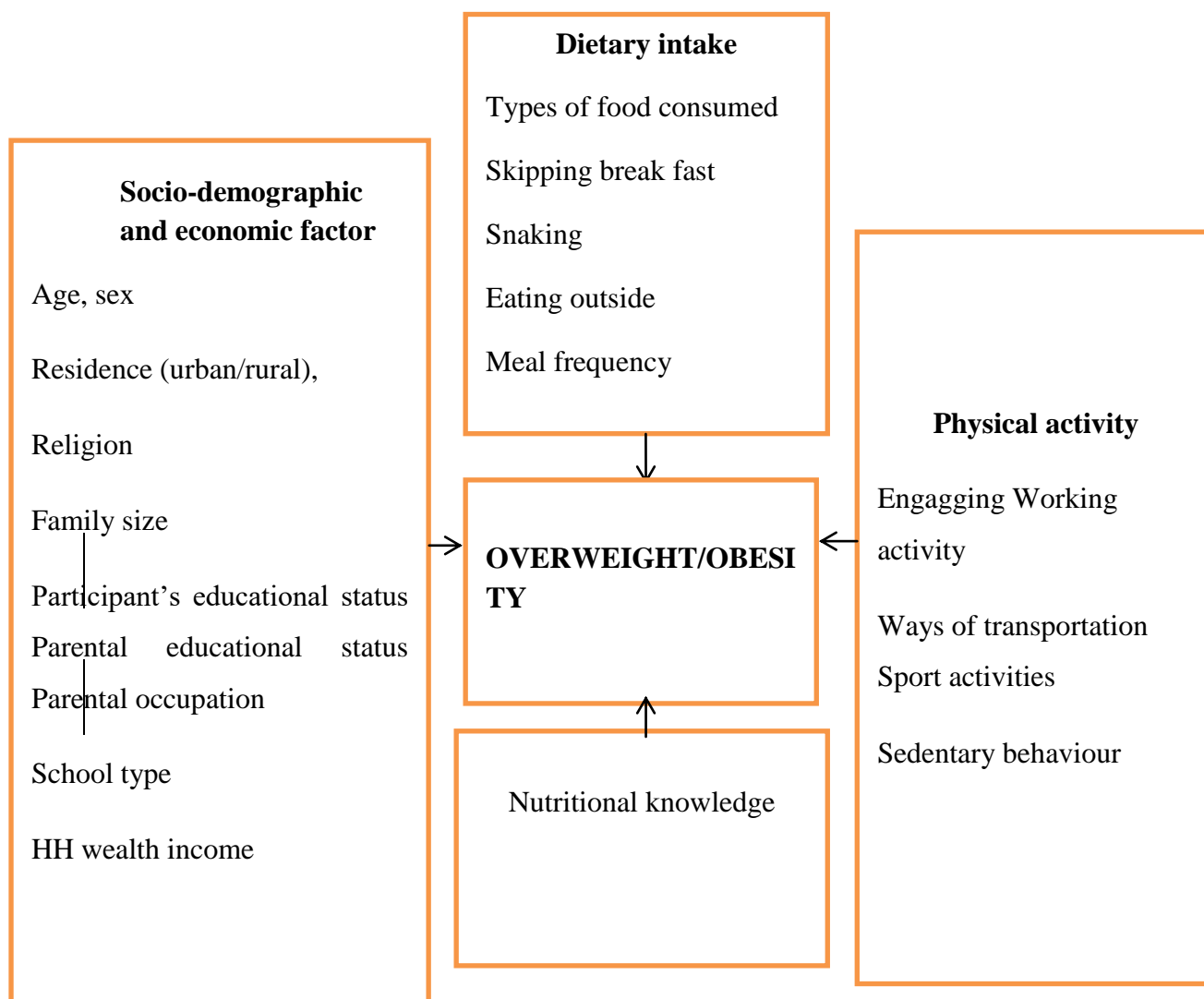


Figure 1 Conceptual framework on factors influencing overweight.

Source: This Conceptual framework developed by author after reviewing different literatures.

CHAPTER THREE

3. Objective of the study

3.1. General objective

- To assess the magnitude of overweight and associated factors among school adolescents in Butajira Town, 2023.

3.2. Specific objectives

- To assess the magnitude of overweight among school adolescents in Butajira Town.
- To determine factors associated with overweight among school adolescents in Butajira.

CHAPTER FOUR

4. Methods and Material

4.1. Study area and period.

This study was conducted in Butajira city, Gurage Zone, Southern Ethiopia; March 2023. Butajira is one of 7 city administrations in Gurage Zone located 135 km from Addis Ababa to the Southern part of Ethiopia with an estimated population of about 52,228. The altitude of the district is between the ranges of 1500 add 500m. According to the 2022/2023 town's education office statistics Butajira city have a total of 11 fully primary and 3 governmental high schools. Out of 11 primary schools 5 are governmental and 6 are private schools. Out of " 8184" students 7165 are governmental and 1019 private school students are found in the town. Total of 8184 adolescent of which 4235 students are male in both categories of schools (49).

4.1.1. Study period:-

The total duration of the study is one months (May to June) 2022/2023

4.2. Study design

Institutional based cross-sectional study design was conducted among school adolescent students, from (May to June) 2022/2023

4.3. Population

4.3.1. Source population

All adolescent students aged 10–19 in Butajira city enrolled from grades 6th to 12th for 2022/2023 academic years was the source populations.

4.3.2. Study population

Students aged 10–19 enrolling in the selected schools during the data collection period was considered as the study population.

4.3.3 Inclusion and exclusion criteria

All students from grades 6 to 12 with the age ranges of 10–19 years attending during the data collection period were included in the study and students who were severely ill and not attending school during the data collection period were excluded from the study.

4.4. Sample size determination

For first objective

The sample size was calculated using the single proportion formula:

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

d= Acceptable margin of error = 5%

z= Standard variant (1.96) which correspond to 95% confidence level

P= (20.2%) prevalence of overweight among private school adolescents in Hawasa town(13).

$Z_{\alpha/2}$ - The standard normal value at $(100\%-\alpha)$ confidence level $n= (1.96)^2$

$0.2(1-0.2) / (0.05)^2 = 247$ Considering a design effect of 1.5 and 10% non-respondent rate the final sample size was 408 school adolescents were included in to the study.

For the second objective the sample size was determined using double population proportion formula based on the following assumptions; 95% confidence level, Power of 80%, ratio of unexposed to exposed = 1 and considering contribution of different factors which were associated with overweight from studies conducted in Gonder, Addis abeba, Hawassa. Accordingly factors such as female sex was significantly associated with overweight in one

study conducted in Hawassa(13).Have nutritional knowledge and number of meal per day were significantly associated with overweight by study conducted in Gonder (66). Use sweat foods and sedentary lifewere significantly associated with overwieght in one study conducted in Addis Ababa(70). Sample size calculation for different factors associated with over weight among school adolescent

Independent variable		% of outcomes in unexposed group	Adjusted Odds Ratio	Sample Size required	Sample Size with non-response rate (10%)	Refer ence
Sweat foods	No	16	1	58	64	(70)
	Yes		6.26			
Sedantary behavior	<3	19.2	1	132	145	
	>3		3.2			
Meal per day	<3	16.4	1	86	95	(66)
	>3		4.4			
Nutritional knowledge	No	22.5	1	184	203	
	Yes		2.58			
Sex	Male	12.7	1	308	342	(13)
	Female		4.47	144	159	

4.5. Sampling procedure

Multistage stage random sampling technique were employed to select the study subjects. The schools were divided in to two governmental and private schools according to their ownerships. At stage one, lottery method were used to select four primary schools (two government and two private) from the total of 11(5 government and 6 private) and 1 high school from government by SRS. The calculated sample size was allocated to the selected schools based on proportion to the size of the students from each school. Finally, using the school registration rosters/list as a sampling frame, students was selected by the simple random sampling technique.

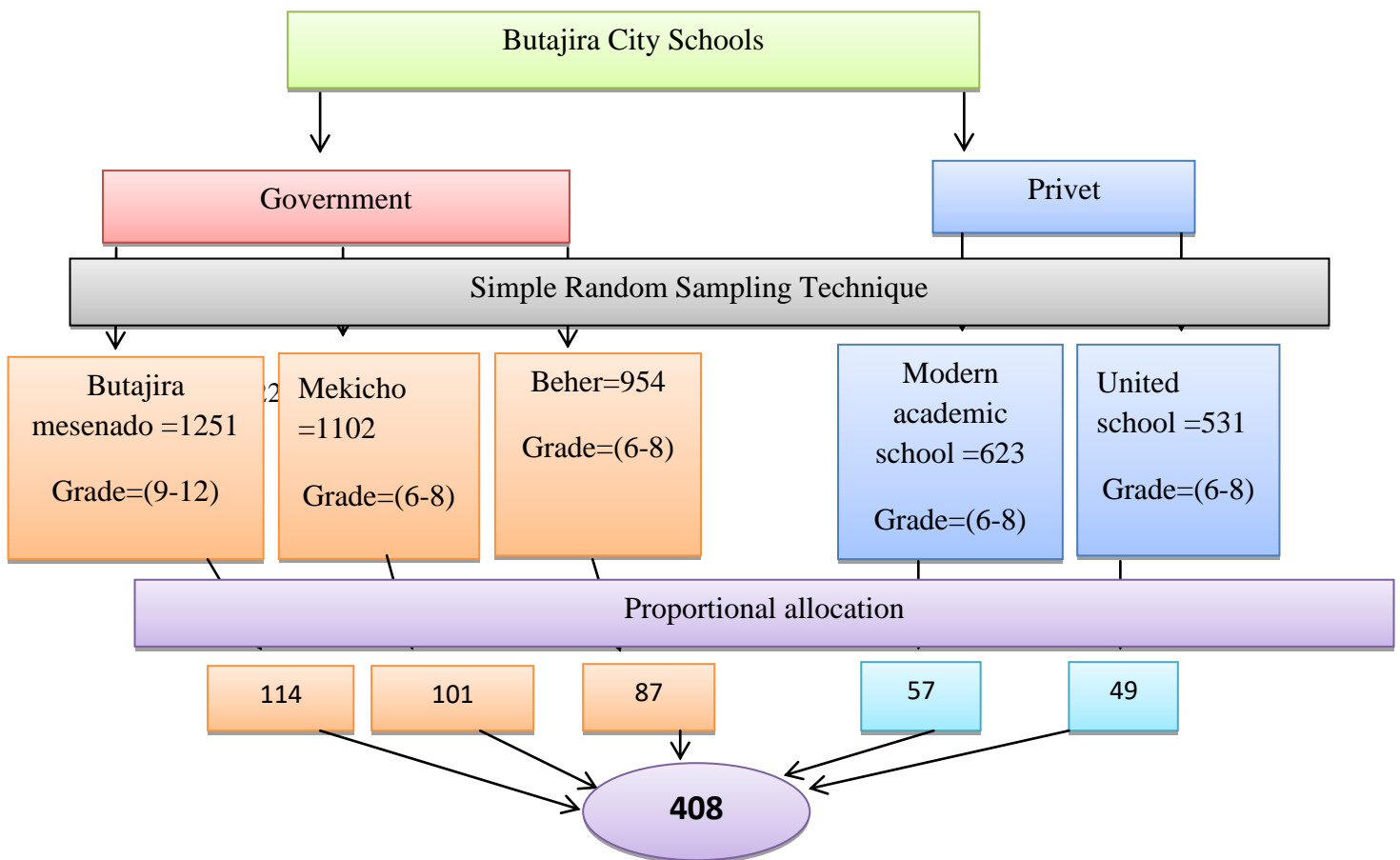


Figure 2.Schematic presentation of sampling procedure.

4.6. Study variables

4.6.1 Dependent variable

- Overweight

4.6.2. Independent variables

- Socio-demographic and family level characteristics (school type, sex, age, grade level, religion, family size, father education level, mother education level, father occupation, mother occupation, HH income)
- **Dietary pattern:** Types of food consumed, Skipping break fast, Snaking, Eating outside, Meal frequency
- **Physical activity:** Engigging Working activity, Ways of transportation Sport activities, Sedentary behaviour
- **Nutritional knowledge**

4.7. Operational definition

Underweight: BMI-for -age Z scores \leq -2SD

Normal weight: BMI-for -age Z scores -2SD < BAZ \leq +1SD

Overweight: BAZ (+1SD < BAZ \leq +2SD)(55).

Obese: BAZ > +2SD(55).

Overweight/obesity: BAZ >1SD(55).

Snacking –Eating between breakfast and lunch and between lunch and supper meal

Physical activity (total physical activity cumulated using work, transport and leisure time related physical activity)= If the total physical activity at least 600minute/wk(met) is physical active and <600minute/wk (not met) is physicaly inactive. The WHO global physical activity questionnaire (GPAQ) for physical activity surveillance (54).

Sedentary behaviour (time spent by sitting, watching TV and or playing computer game) atypical day for more than181minutes (50).

Typical week means:- aweek when a personis doing vigorous or moderate intensity activities and not an average over aperiod;valid responses how many days/week(51).

Vigorous-intensity activities:- are activities that require hard physical effort and cause large increases in breathing or heart rate. Doing such activities or sports for at least 10 minutes continuously, for example, carrying or lifting a heavy load, digging or construction work, running or jogging and football playing (52).

Moderate-intensity activities :- are activities that require moderate physical effort and cause small increases in breathing or heart rate, for example, undertaking volleyball, brisk walking or hiking, carrying or lifting light loads, swimming, and cycling, for at least 10 minutes continuously (51).

Intensity is:- how hard a person works to do the activity. The intensities most often examined are moderate-intensity and vigorous-intensity (53).

4.8. Data collection tools and procedure

A structured interviewer administered questionnaire was used to collect data from participants or mothers of a child. It was constructed by adapting from NNP and different literatures WHO Steps instrument for chronic disease risk surveillance (55). First, the English version of the questionnaire is prepared. Then it was translated to Amharic (local language) and translated back to English to keep its consistency. The questionnaire consists of four parts. The first and second part contains about socio-demographic and economic characteristics of school adolescents. The third and fourth part of the questionnaire is about physical activities /sedentary life style and knowledge.

Anthropometric measurements

The weight and height of the students were measured using Seca Germany weighing Scale and stadiometer, respectively. During weight measurement, weighing scales were calibrated each day prior to the actual data collection using a known weight material. Weight was measured to the nearest 0.1kg using a digital scale. The scale was adjusted before weighing every student by setting it to zero. The students were lightly dressed during having the weight taken.

Height was measured to the nearest 0.1 cm. During taking height, each student stood keeping normal anatomical position without shoes and heels, buttock, shoulder, and back of the head touched measuring board. Then, the headpiece of the measuring board touched the top of the head. Body mass index for age (BAZ) were calculated using WHO AnthroPlus software and BMI for the age of Z scores +2 to +3 was classified as overweight, whereas BMI for age ≥ 3 Z score was considered as obese (30,37).

4.9. Data analysis

WHO AnthroPuls anthropometric calculator were employed to calculate anthropometric indices. Data was entered in Epi-Data version 3.1 and export in to Statistical product and Service Solutions (SPSS) version 25 software for statistical analysis. The BMI of the students were calculated. Bivariate and multivariable logistic regressions were done to identify factors associated with overweight.

The crude Odds ratio was done and p-value ≤ 0.25 was taken as a cut-off point to select variables for the final model. During the multivariable logistic regression analysis, the adjusted Odds ratio was computed to determine the strength of association and control confounders. The p-value of less than 0.05 was considered statistically significant.

4.10. Data quality control

Questionnaire was pre-tested on 5% of sampled non-selected primary and high schools.

Training were provided for data collectors and supervisors. Weight scales was calibrated on every morning at zero with no object on it and placed in level surface before measurements were carried out.

Continuous check-up of scales were performed for reliability. Body positioning, reading measurements and recording was carefully carried out. In order to minimize errors,

measurements have taken based on standardized procedure. During the data collection time close supervision and monitoring were carried to insure the quality of the data. The principal investigator reviewed every questionnaire for completeness, and cleaned and entered data.

4.11. Ethical clearance

In order to the conduct study, ethical clearance letter and then written permission letter was obtained from Wolkite university to Butajira town educational office and accordingly informed to respective school and concerned bodies.

Selected participants were given passive written consent form to take home to their parents one day before data collection and verbal assent was obtained from the participants. Privacy and confidentiality was maintained throughout the study period by excluding personal identifiers from the data collection tools.

4.12. Dissemination plan of results

The results of this study were submitted to the department of public health, College of medicine and Health Sciences, Wolkite University as part of graduate program. It will be disseminated to Butajira town educational office and to studied schools. The findings also will be presented at different seminars and conferences and will be published on international journals.

CHAPTER FIVE

Result

5.1 Sociodemographic Characteristics of Participants.

A total of 396 students from both government (261(65.9%)) and private 135(34.1%) were involved in this study with a response rate of 97.1%. From study participants, 195 (49.2%) were males and 201 (50.8%) were females. About half of the study participants 209(52.8%) were 15-19 years old, whereas the rest 187(47.2 %) adolescents were in age category 10-14 old and median age of the respondents was 16 years. Parental educational status revealed that majority of student fathers 336(84.8%) had formal education.

Regarding the education level of the respondent's mother, about 314(79.3%) were attended formal education. As to the family of the respondents, more than half (251 (63.4%)) of the respondents were from large family members (>5 members).

Majority (214 (54%)) of the respondents' fathers were government employees. Greater than two third (76%) of the respondents residence were live in Urban and only 24% of participants were live in rural. Majority (74%) of study participants family were Tv owner family and Greater than one third (31.6%) of study participants were car owner family (Table 1

Table 1: Socio-demographic characteristics of (n=396) school adolescents in Butajira, 2022/2023

Variable	Category	Frequency	Percent
Sex	Male	195	49.2
	Female	201	50.8
Age	10-14	187	47.2
	15-19	209	52.8
School type	Government	261	65.9
	Privet	135	34.1
Family size	≤5	145	36.6
	>5	251	63.4
Residence	Urban	301	76
	Rural	95	24
Fathers' Education	Have no formal education	60	15.2
	Have formal education	336	84.8
Mothers' Education	Have no formal education	82	20.7
	Have formal education	314	79.3

5.2. Dietary Habits and Food Frequency of the Students

The dietary habits of adolescent students were assessed by food frequency measures. Based on that most (312(78.8%)) of the respondents consumed cereal food per week. More than half (227(57.3%)) of the respondents consumed fruit in a week of which 82 (20.7%) consumed fruit three and more days a week. Likewise, 270(68.2%) of the respondents were consuming vegetables per week and 101 (25.5%) had a practice of eating three and more days a week.

Regarding milk and milk products 212(53.5%) and 129(32.6%) adolescent students consumed milk and milk products for 1 -2 and >3 days in a week respectively, whereas 55(13.9%) students did not consume milk and milk products. Subjects by their meat consumption pattern more than half 208(52.5%) of adolescents were consuming meat 1-2 days per week and 103(26%) consumed 3 and more days per week respectively whereas 103(26%) of students were did not consume in a week.

On the other side, 212(53.5%) of the respondents confirmed that they consumed foods containing eggs, peas and beans. Almost two-thirds of adolescents 308(77.8%) consume soft drinks one to two times per week and 203(51.3%) of the respondents have a habit of consuming sweet foods at least once per week, respectively.

More than half, 247 (62.4%), of respondents consume ≥ 3 meals per day and 260(65.7%) of participants had the habit of snack consumption pattern per day. About 184(46.5%) of participants had the habit of skipping meals.

Regarding to dinner and breakfast consumption, pattern about 276(69.7%) and 177(44.7%) of participants adolescents had skipping this meal period respectively or not consumed daily. On the other side, 188(47.5%) of respondents had the habit of eating food during study and likewise about 120(30.3%) of participants were a habit of eating outside of their home. (Table 2).

Table 2: dietary habit of (n=396) school adolescents in Butajira, 2022/2023

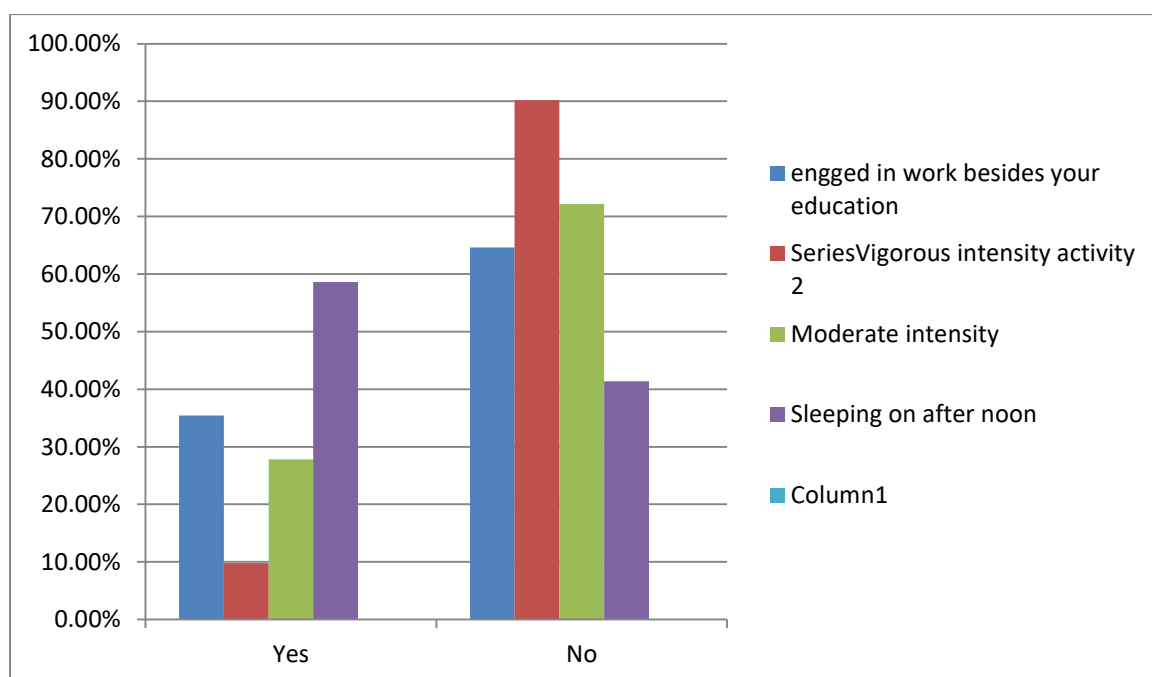
Variable	Category	Frequency	Percent
Fruit consumption	Did not consum	87	22
	1-2days per week	227	57.3
	3 and more days	82	20.7
Vegetabl consumption	Did not consum	25	6.3
	1-2days per week	270	68.2
	3 and more days	101	25.5
Meat consumption	Did not consum	103	26
	3 and more days	208	52.5
	1-2days per week	85	21.5
Serving of softdrink	Yes	323	81.6
	No	73	18.4
Serving of soft drink	2 and more	308	77.8
	1times	88	22.2
Have sank	Yes	260	65.7
	No	136	34.3
Snak per day	1times	189	47.7
	2and more times	71	17.7
Serving of sweet food	Yes	203	51.3
	No	193	48.7
When you study do you eat food	Yes	188	47.5
	No	208	52.5

5.3. Physical activity characteristics of respondents

The majority 256(64.6%), of adolescents were not involved in any work activities along with their education. A significant number of students, 357(90.2%) and 286(72.2%) of adolescents were not involved in vigorous-to-moderate sports activities.

Concerning transport related activities majority 203 (51.3%) adolescents walked or used bicycle at least 10 minutes per week, whereas rest 193 (48.7%) adolescents did not walk or use bicycle from home to school, while took other transportation. More than three-fourths, or 80%, of students reported being involved in low or moderate physical activity.

Concerning sedentary activity majority of adolescents 236(59.6%) spent their free time >4hours in a day by watching TV or computer, whereas the remaining 141(35.6 %) and 19(4.8%) adolescents spent their free time on using video or computer game and reading respectively. In addition, 58.3% of students had a sedentary stay time of more than three hours per day (figure 3).



Figur 3:- Physical and sedentary activity of (n=396) school adolescents in Butajira, 2022/2023

5.4. Knowledge of the respondent about overweight

Majority 264(64.1%) the respondent have good knowledge toward overweight, whereas 150(37.9) of the respondent have poor knowledge.

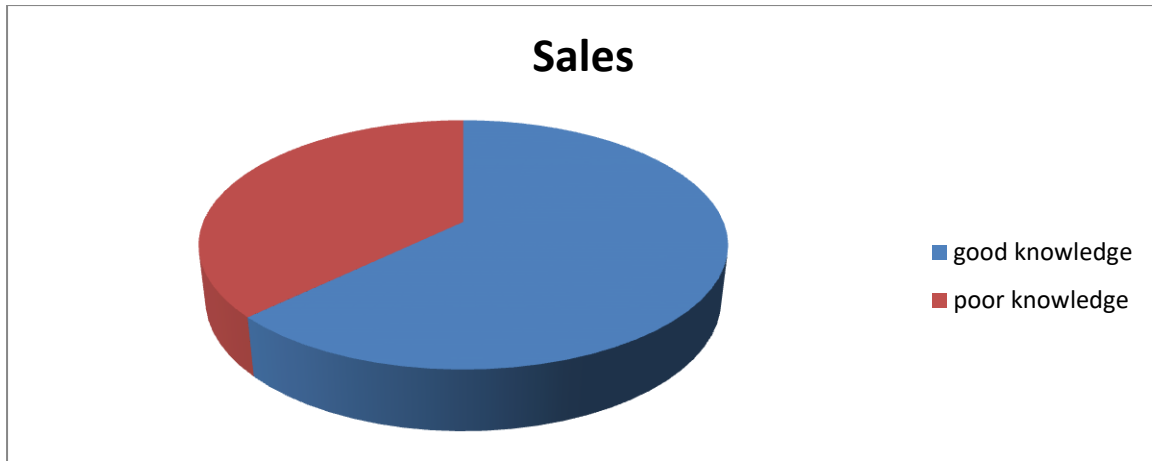


Figure 4:- Knowledge of the school adolescents about overweight in Butajira, 2022/2023

5.5. Prevalence of overweight of the study

The prevalence of overweight and obesity in the study participants was 8.8 % and 1% respectively. The combined prevalence of overweight and obesity was 9.8%.

5.6. Factors associated with overweight/obesity

In the bivariate logistic regression analysis Watching TV for 4 or more hours per day, don't using computer, daily consuming of breakfast, skipping meal, who did not know food item which can cause overweight, who use sweet foods, soft drinks more than two times, milk and fruit, did not use car for transportation, consuming meal more than three times per day, consuming meat more than three days per week, poor knowledge about overweight and being 10-14 age were statistically associated ($P < 0.25$) with overweight.

In the multivariable logistic regression analysis Watching TV for 4 or more hours per day, students who use sweet foods and soft drinks more than two times, consuming meal more than three times per day, about overweight were statistically significant association with overweight ($P < 0.05$).

Students who watch TV for 4 or more hours per day were 4.5 times more likely to become overweight as compared to Students who watch TV for less than four hours per day [AOR = 4.5 (95% CI = 1.64–12.5), $P = 0.004$]. The odds of overweight 4.1 times higher among

students who use sweat foods than who did not use sweat foods [AOR = 4.1 (95% CI = 1.64–10.30), P = 0.003].

Students who consume meal more than three times per day were 4.2 times more likely to become overweight as compared to Students who consume meal less than three times per day [AOR = 4.2 (95% CI = 1.48–12.05), P = 0.007]. The odds of overweight 6.4 times higher among students who consume soft drink more than two times per day, as compare to students who did consume soft drink one time per day [AOR = 6.4 (95% CI = 1.60–26.35), P = 0.009]. Students who consume meat more than two days per week were 3.1 times more likely to become overweight as compared to Students who consume meat less than two days per week [AOR = 3.1 (95% CI = 1.01–9.49), P = 0.048]. The odds of overweight 3.3 times higher among students who had poor knowledge about overweight than who had good knowledge [AOR = 3.3 (95% CI = 1.21–9.19), P = 0.019].

Table 3:- Determinants of overweight (n=396) school adolescents in Butajira, 2022/2023

Variables	Overweight		COR (95%CI)	AOR (95%CI)	P - value
	Yes = 39	No = 357			
Watching TV (%) for 4 or more hours per day Less than 4 hours per day	32(82.1) 7 (17.9)	208 (58.3) 149 (41.7)	3.2 (1.4,7.6) 1.00	4.5(1.64,12.5) 1.00	0.004
Using computer(%) no yes	26(66.7) 13 (33.3)	201 (56.3) 156 (43.7)	1.55(0.77,3.12) 1.00	1.55(0.77,3.12) 1.00	0.17
Frequency of consuming soft drink per day(%) More than 2 times One times	36 (92.3) 3 (7.7)	272 (76.2) 85 (23.8)	3.75(1.13,12.4) 1.00	6.49 (1.6,26.3) 1.00	0.009
Skipping meal(%) Yes No	22 (56.4) 17 (43.6)	159 (44.5) 198 (55.5)	1.6(0.83,3.14) 1.00	1.94(0.78,4.81) 1.00	4.8
Sweet food(%) Yes No	29 (74.4) 10(25.6)	174(48.7) 183(51.3)	3.05(1.44,6.45) 1.00	4.1 (1.63,10.3) 1.00	0.003
Number of Meal pear day(%) >3 </=3	28 (71.8) 11 (28.2)	219 (61.3) 138(38.7)	1.6(0.77,3.33) 1.00	4.22(1.48,12.08) 1.00	0.007
Knowledge about food item that cause overweight(%) No Yes	29(74.4) 10(25.6)	221(61.9) 136(38.1)	1.78(0.84,3.77) 1.00	1.18(.45,3.07) 1.00	0.73

CHAPTER SIX

6. Discussion

In this study the prevalence of overweight in the study participants was 8.8 % and the prevalence of obesity was 1% based on BMI- for -age classification. The combined overall prevalence of overweight/obesity, as per WHO 2007 definition, was 9.8% (95% CI: 8.71, 13.88%) among school adolescents in the city, which is comparable with the finding from Kenya(7,26). where 13.2% of adolescents were obese/overweight while being lower than those reported from Basra(23), Yemen(25), Ghan(41) and Hawasa town(12). This prevalence is substantially high even comparable with the results reported for some developed countries (8.7%) and higher than the global prevalence (7%)(76,77).

This finding was also consistent with study done in Ghana overweight prevalence was 10.7 % and obesity prevalence was 4.5% (71) and Hawassa Ethiopia prevalence of overweight and obesity was 12.9% and 2.7% respectively. In addition, this finding was found to be consistent with prevalence study done using the same cut of point which was 10% in both Uganda and South Africa respectively(72,73).

However, this finding was slightly higher than study conducted six years back in Addis Ababa which was 8.5% (12). This could be explained by the change in the life style factors of the society. Moreover, the finding was lower than study conducted in Sudan which was 14%. Moreover, the prevalence of overweight and obesity in this finding was lower than that of developed countries such as Italy (69), and Island (67).

In addition, India (68) and Mediterranean region country Kuwait having the prevalence of overweight was 32% and obesity 9.45% respectively(66). One of the possible reasons for the differences in prevalence of overweight and obesity could be due to cultural difference in dietary intakes and difference in socio-economic status.

Despite methodological differences, nutritional patterns and the availability of recreational facilities may be attributed for the variation in the results, the findings of this study clearly indicate that there is a nutrition transition, and overweight/obesity is becoming a growing problem and a double burden in the country.

According to American Dietetic Association numbers of daily meals were positively associated with body fat(31).In these findings regular meals had positive association with overweight. Adolescent students who ate more than three regular meals were 4.22 times more likely to be overweight than adolescents who ate less than three regular meals in a day. This finding was consistent with IslandPuerto (67)and Gonder (66). This result might be related to positive energy balance due to higher intake of food (65).

The consumption of sweet as a key contributor to the epidemic of overweight and obesity in children and adolescents had been strongly debated; however large portions of energy-dense foods were found to be positively associated with obesity in children and adolescents (63,65).In addition to this, respondents who consumed sweet food (chocolate, biscuits, and other type of sweet food) more than two times a week were four times more likely to be overweight or obese(70).

Adolescents who consumed sweetened foods were more likely to be overweight/obese compared to those who didn't consumed. This was congruent with WHO report of different studies done in Europe , Egypt(79), Kenya (7,26). This could be reasoned out that sweet food products are calorie rich and have a greater acceptance by children and adolescents resulting in a positive energy balance to them. Moreover, the results of three studies showed that infrequent consumption of fruits and vegetables was a risk factor for the development of overweight/obesity among children and adolescents.

The result was consistent with study conducted in Ethiopia and Bangladesh (63,66).This finding is also comparable to the study done in the Arada sub-city of Addis Ababa and among adolescents in Gondar town, NorthWestEthiopia(70).Similarly, those who prefer sweet foods have a higher risk of being overweight or obesity (AOR = 2.78;; 95% CI: 1.97–3.93)(58).

It is because of the excess calories and their ability to cause hunger immediately after consumption and trigger excessive food consumption that they are predisposed to overnutrition(61,65).In the current globalized world, where access to processed foods, along with adolescents' preference for such foods, and the increased price of nutritious, healthy, and organic foods greatly contribute to the change in the dietary patterns of individuals(1,2).

However,from Hawassa inconsistent finding found concerning the effect of sweet consumption on the prevalence of overweight/obesity (70). The discrepancy of result might be related to in Hawassa overweight or obese adolescent in the study area deliberately

restricted consumption of sweet food in order to control additional weight gain (70), while in the present study overweight adolescents' prone to sweet food.

The odds of overweight increased about 3.1 times more comparing adolescent students whose meat consumption per week was greater than 2 days with those who consume meat less than or equal to 2 days per week [AOR: 3.09, 95% CI: (1.00,9.49)].

This result was supported by other reports, which indicated that consumption of fat, and sugar-rich foods contribute to childhood overweight (4,9). The reason for this might be that meat is high in calories, and a fat-rich food resulting in a positive energy balance for children.

Evidence shows that a high intake of soft drinks positively correlates with overweight obesity (57). It is believed that intake of soft drinks contributed greatly to weight gain by high added sugar content, low satiety, and incomplete compensation for total energy (56).

This study revealed that soft drink intake two times per week and above was significantly associated with overweight and/or obesity compared to less than two times per week. This finding was in line with findings from Ethiopia and Bangladesh (56,57). This could be explained as soft drinks and sweet food items are calorie-dense food which results in positive energy balance to their consumers.

There was positive significant association between times spent watching television or using computer and overweight. In this study Students who watch TV for four or more hours per day were 4.5 times more likely to become overweight as compared to Students who watch TV for less than four hours per day. This finding was consistent with finding from Bangladesh and America ((62,63) and (60)). In Mediterranean region Iraq and Kuwait, it was found that children and adolescents who watched TV more than four hours, were more prone to be obese than those who watched less than four hours/day (68). This finding might be related to the lack of physical activity cause low energy expenditure (61).

This study documented significant association between physical activity and overweight/obesity which is similar to the result of study conducted in Gondar (12) and Hawasa (13). But in contrast to the study in UAE (24), this difference will be attributed to lack of objective definition for physical activity and methodological difference in measurement of physical activity. This study also found significant positive associations between sedentary behaviour of ≥ 3 hr/day and overweight/obesity which are in agreement with the study conducted in Addis Ababa (46).

Similarly, a study in Morocco found that adolescents who watched TV more than four hours a day, were more prone to obesity than those who watched less than four hours a day(32, 39). This increased risk and higher burden of over nutrition can be partially explained by the lack of regular activities resulting in low energy expenditure(52).

Overweight/Obese adolescents are more likely to skip breakfast or to eat smaller breakfasts than leaner adolescents. The evidence seems to suggest that breakfast skipping may be a risk factor for increased adiposity, particularly among older children or adolescents. However, the strength of the evidence is limited. The present study found out no association regarding the effect of breakfast skipping and prevalence of overweight and obesity. Several studies supported this finding In (74).

contrast a positive association between breakfast skipping and a measure of adiposity indicating that breakfast skippers were more likely to have a weight higher than normal were reported(74,75). Present finding may be explained by the smallest value given to breakfast in Ethiopia, where most segment of the community eat smaller breakfasts as it is traditionally accepted less ,so that there might be minimal difference in between groups who consume breakfast or not.

6.1.limitation

Even though this study addressed important issues it should be highlighted with the following limitations. Other factors like genetic factor, parental BMI and health condition of participants were not addressed. There might be social desirability and recall bias and possibility to wrongly level individual as overweight/obese while their body is built with muscle. Another limitation of concern is that since the dietary intake and physical activity were self-reported there might be over or under reporting.

CHAPTER SEVEN

7. Conclusion

The prevalence of overweight/obesity among school adolescents in the study area is high, and has become an emerging nutrition linked problem. Unless successful preventive measures are taken, the problem may continue on upsurge in the future. among school adolescent in butajira.

Adolescence provides a window of opportunity for the long-term positive impact that nutrition should be a programmatic priority in adolescents. Accordingly, frequently consumption of sweet food, soft drink intake, being physically inactive, sedentary behavior, and poor knowledge in nutrition were significantly associated with overweight/obesity. Public health interventions should consider that overnutrition among adolescents is a major public health issue and be incorporated into the main health agenda to be addressed in the area.

CHAPTER EIGHT

8. RECOMMENDATION

Based on my findings, I have recommended that an integrated nutrition education program be successfully implemented in schools as well as in communities with existing health extension programs. Parents should set aside time for healthy meals, physical activity and limit television viewing for their children's and adolescents also, decrease television viewing time and use active transport to schools.

Finally, healthcare providers and other stakeholders should also give more emphasis on the design and implementation of preventive policies to control the rising prevalence of childhood overweight/obesity in .

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APPENDIX

WOLKITE UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

1.1. Study Participant Information Sheet and verbal consent

Questionnaire designed to study the prevalence of overweight and associated factors of overweight/obesity among school adolescents in Butajira, Southern Ethiopia.

Greeting:

My name is _____. I am working as the data collector of the study being conducted in this primary/secondary school. I kindly request you to lend me your attention to explain you about the study in general. Aim of this study is to assess, the prevalence of overweight and associated factors among school adolescents in Butajira, Southern Ethiopia. The main purpose of the research is to gain better understand the magnitude of adolescent overweight and factors affecting of overweight. The data collectors will collect the necessary information from study subjects and their other recognized body, and from respective instrument, using interviewer administered structured questionnaire, which takes about 15 minutes. Participating in this study does not have any risk or harm, direct benefit and incentives. The information acquired from participant will be confidential. Participating in this study is fully voluntary. Contact address: the Investigator: Shehicho Mahmud email; Shehicho0916@gmail.com Mobile No: +25916394236.

Consent Form

I have understood the verbal explanation of the information concerning this study and I understood what will be required of me and what will happen to me if I take part in it. I also understand that any time I may withdraw from this study without giving a reason and that the service utilization of my family and my self will not be affected for my refusal to be included in the study. Are you voluntary to participate in this study?

1. Yes: Continue to the next page

2. No: Skip to the next participant

Questionnaire Code _____

Part I. Demographic and socioeconomic characteristics of adolescent and their parents

S.No	Questions	Response	Skip
101	Age in years	.....
102	Sex	1)Male 2) Female	
103	School type	1) Government 2) Private	
104	What is your grad level?	.....
104	What is the occupation of the mother?	1) House wife 2) government employee 3) Daily laborer 4) merchant 5) others (specify)____	
105	What is the occupation of your father?	1) farmer 2) government employee 3) Daily laborer 4) merchant 5) others (specify)	
106	What is the level of education of the mother?	1) Have no formal education 2) Have formal education	
107	What is the level of education of the father?	1) Have no formal education 2) Have formal education	
108	Place of residence	1) urban 2) rural	
109	Family size	1.Less than or equal to 5 2.Greater than 5	
110	Average family monthly income	1.<1000 2.1000-4000 3.4000 and above	
111	Do you have a computer in your house?	1) Yes 2) No	
112	Do you have a television in your house?	1.yes 2.no	
113	Do you have a care/motorcycle in your house?	1) Yes 2) No	

Part II:-Questions on Dieting Characteristics:-

S.no	Questions		Code
101	Fruits consumption per week(mango, avocado, orange, ...)	1.Did not consume 2.1-2 days per week 3.3 and more days per week	H1
102	Vegetables consumption per week(potato, carrot, ...)	1.Did not consume 2.1-2 days per week 3.3 and more days per week	H2
103	Cereal consumption per week (maize, barely, wheat, ...)	1.≤ 2 days 2.>2 days	H3
104	Meat consumption per week?	1.Did not consume 2.≤ 2 days 3.>2 days	H4
105	Egg, pea, bean, ... consumption per week?	1.Did not consume 2.≤ 2 days 3.>2 days	H5
106	Milk and milk product consumption per week?	1.Did not consume 2.≤ 2 days 3.>2 days	H6
107	Way of getting lunch?	1.Home 2.School cafeteria 3.Nearby food Service	H7
108	Have you serving of soft drink (like coca cola, Pepsi, Fanta etc.)?	1.yes 2.no	H8
109	If, yes How many servings of soft drink do you drink per days?	1.1 2.2 and mor	H9
110	Do you ever have asnack?	1. Yes 2. No	H10
111	If,yesHow many servings of snack per day?	1.1times 2. 2times 3. 3times and more	H11
112	How many meal do you have a day ?	1. ≤3per day 2. > 3 per day	H12
113	Have you Skipping meals?	1.yes 2.no	H13
114	Have you serving of sweet food item (like,Cake,Biscuit,Ice cream Chocolate...etc) ?	1.yes 2.no	H14

115	When you study do you eat food?	1. Yes 2. No	H15
116	Breakfast consumption pattern ?	1.Daily 2.Not daily	H16
117	Dinner consumption pattern?	1. Daily 2.Not daily	H17
118	Eating out side home?	1. Yes 2. No	H18
119	When watching TV/movies do you eat food?	1. Yes 2. No	H19

Part III :-Physical andSedentary activity questions

No	Questions	Response	Code
101	Do you engaged in Work besides your education?	1. yes 2. no	P1
	If yes time of work activity per day	1. ≤ 60 minutes 2. > 60 minutes	
102	Time of walking or riding bicycle per day	1. ≤ 30 minutes 2. 31–60 minutes 3. > 60 minutes	P2
103	Vigorous intensity sports?	1.yes 2.no	P3
104	Moderate intensity sports	1.yes 2.no	P4
105	Get to and from school	1.On foot 2.By taxi(service) 3.Other spacifay	P5

Sedentary activity questions

S.N	Questions	Choose	Cod
101	How of Spend your free time	1. Reading 2.Watch TV, 3.video/Computer Play	S1
102	On an average day, how many hours do watch TV/movies, computer game ?	1.Less than 4 hour per day 2.4 or more hours per day	S2
103	Time spend on sitting per day	1. ≤ 3 hours 2. > 3 hours	S3
104	Sleeping in afternoon	1.yes 2.no	S4

Part IV: - knowledge questions related to overweight

s.n		Response	Yes	No
101	Do you know the cause of overweight?			
	If yes, can you mention some cause of overweight?			
102	Do you know disease caused by overweight/obesity?			
	If yes, can you mention some disease type?			
103	Can overweight/obesity affect our health?			
104	How do you feel about your current weight?	Very thin		
		Some what thin		
		Normal weight		
		Overweight		
105	Do you know food items that may lead to overweight?			
	If yes, can you mention some of the food items?			
106	Do you think skipping of breakfast and dinner have any effect on overweight?			
	If yes, can you list some health effect of overweight....?			

Part V: - Anthropometric measurement

Sr. no	Measurement	Response	Code
1	Height	. Centimeters	M1
2	Weight measurements(kg)	Kilogram	M2

Annex II: Amharic Version Questionnaire

የ መጠይቁ ቁጥር

ወልቂጤዩ ኒ ቨርሲቲ

ሕክምናና ጤና ሳይንስ ኮሌጅ

የሕብረተሰብ ጤና አጠባበቅ ት/ትክፍል

ይህ መጠይቅ በደቡብኢትዮጵያ በቡታጅራከተማ አስተዳደር በሚገኙ ት/ትቤቶች የሚሰጡ ወጣቶችና አፍላ ወጣት ተማሪዎች የሚገኝ የውፍረት መጠንን መለካት እና ውፍረትን ከሰዎች አመጋገብና ውፍረት ሊያሰከትላቸውክ ሚችል የጤና ሁኔታ አንፃር ጥናት ማካሄድ ነው።

ክፍል 1: ለጥናቱ ተሳታፊዎች ስለጥናቱ የተዘጋጀ መግለጫ

ስሜን ----- ይባላል : : እኔ -----

የመጀመሪያ ደረጃ ት/ትእና የሁለተኛ ደረጃ ወሰን ጥበብ ተማሪዎች መካከል መረጃ ከሚሰበሰቡት አንዱ ነኝ :

ጥናቱን የሚያጠናው ወልቂጤዩ ኒ ቨርሲቲ ሕክምናና ጤና ሳይንስ ኮሌጅ የሕብረተሰብ ጤና አጠባበቅ ት/ትክፍል የሰነ -

ምግብ ማስተር ተማሪ የሆነው አቶ ሸሂሾ ማህሙድ በቡታጅራከተማ አስተዳደር የሚሰጡ ወጣቶችና አፍላ ወጣት ተማሪዎች የሚገኝ የውፍረት መጠንን መለካት እና ውፍረትን ከሰዎች አመጋገብና ውፍረት ሊያሰከትላቸውክ ሚችል የጤና ሁኔታ አንፃር ጥናት ማካሄድ ነው :

የጥናቱ ዓላማ፣ በቡታጅራከተማ አስተዳደር በሚገኙ ት/ትቤቶች፤

የሚሰጡ ወጣቶችና አፍላ ወጣት ተማሪዎች የሚገኝ የውፍረት መጠንን መለካት እና ውፍረትን ከሰዎች አመጋገብና ውፍረት ሊያሰከትላቸውክ ሚችል የጤና ሁኔታ አንፃር ጥናት ለማካሄድ እና ለመገምገም ሲሆን፤

የሚጠየቁትን ጥያቄት ከሌሎች ውብለው የሚያምኑትን መልስ እንድሰጡኝ በትህትና እጠይቃለሁ :

እርስዎ በዚህ ጥናት ተሳታፊ በመሆን ስለከመጠን በላይ ውፍረት እንድታውቁ ይረዳል : : መጠይቁ ቢበዛ

15

ደቂቃ የሚፈጅሲሆን በዚህ ጥናት የእርስዎ ስም አይጻፍም፤

ሪፖርት ምላሽ ይደረግም :

ጥናቱ ላይ ስለ ተሳታፊ ተብሎ በገንዘብ መልክ ምሆኑ ለማበረታቻ የሚደረግ ግን ገር አይኖርም፡፡ ከእርስዎ የሚገኝ መረጃ ሁሉ በሚስጥር ይያዛል፡፡ የእርስዎ ተሳትፎ ፍጹም በፊት ያደገውን ትላይ የተመሰረተ ሲሆን ማንኛውም ጥያቄ ያለ ፍላጎት ያልሆነውን ዲመልሱ አይገደዱም፡፡ ያልተመቻቸውን ጥያቄ ካልፈለጉ መዘለልና ከጅምሩ ምጣቆም ይቻላል፡፡ የጥናቱ ላይ ማከም ላይ ደልገል ጨለታ ወብዬ አምናለሁ፡፡ ከጥናቱ ጋር በተያያዘ ጥያቄ ካልዎት አሁን መጠየቅ ይቻላል፡፡ በተጨማሪም የጥናቱ ባለቤት የሆነውን በዚህ አድራሻ መጠየቅ ይቻላል፡፡

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በጥናቱ ተሳታፊ መሆን ፈቃደኛ ናችሁ?

1. አዎ ----- ወደ የሚቀጥለው ሰንጠረዥ ይሰጡ
2. አይ ----- ወደ የሚቀጥለው ተሳታፊ ይሰጡ

ክፍል 1: ሥነ-ህዝብ፣ ማህበራዊና ኢኮኖሚያዊ ጉዳዮች በተመለከተ የተዘጋጁ ጥያቄዎች

ተ. ቁ.	ጥያቄዎች	አማራጭ መልሶች	ይለፉ
101	የወጣቱ/ታእድሜ	.....
102	የወጣቱ/ታጾታ	1) ወንድ 2) ሴት	
103	የምትማሩ በትት/ቤት	1. የመንግስት 2. የግል	
104	ስንተኛ ክፍል ተማሪ ነህ/ነሽ	.....
104	የእናትህ/ትሽስራ ምን ድነው?	1) የቤት እመቤት 2) የመንግስት ሰራተኛ 3) ገበሬ 4) ነጋዴ 5) ሌላ ከሆነ ይግለጹ	
105	የአባትህ/ትሽስራ ምን ድነው?	1) ገበሬ 2) የመንግስት ሰራተኛ	

		3)አርብቶአደር 4)ነጋዴ 5)ሌላከሆነይግለፁ	
106	የእናትየትምህርትሁኔታ?	1) መደበኛት/ትየተማረች 2) መደበኛት/ትየልተማረች	
107	የአባትየትምህርትሁኔታ?	1) መደበኛት/ትየተማረ 2) መደበኛት/ትየልተማረ	
108	የመኖሪያቦታ	1)ከተማ 2)ገጠር	
110	የቤተሰብወርሃዊገቢምንያህልነው?	1.1000ብርበታች 2.1000-4000ብር 3.ከ4000ብርበላይ	
111	አሁንያለየቤተሰብአባላትቁጥር	1.ከአራትሰዊበታች 2.ከአራትሰዊበላይ	
112	እቤትውስጥኮንፒተርአለ;	1)አዎ 2)የለም	
113	እቤትውስጥቴሌቪዥንአለ?	1)አዎ 2)የለም	
114	እቤትውስጥመኪና/ሞተርአለ	1.አዎ 2.የለም	

ክፍል 2፤ የአመጋገብሁኔታየሚጠይቁመጠይቆች

ተ. ቁ	ጥያቄዎች	መልስ	መ. ቁ
10 1	ፍራፍሬዎችለምሳሌማንጎ፣ አቮካዶ፣ ብርትኳን፣ ፓፓያናሌሎችምበሳምንትስንት ቀንይመገባሉ	1.ምንምአልመገብም 2.ቢያንስእስከሁለትቀን 3.ከሁለትቀንበላይ	H1
10 2	አትክልቶችለምሳሌ፤ ጎመንካሮት፤ ቲማቲምእናሌሎችምበሳምንትስ	1.ምንምአልመገብም 2.ቢያንስእስከሁለትቀን 3.ከሁለትቀንበላይ	H2

	ን ት ቀ ን ይ መገ ባ ሉ		
10 3	የ አ ዝ ር እ ት ዝ ር ያ ዎ ች ን (የ ጤፍ ፣ እ ን ጀ ሬ ፣ በ ቆ ሎ ፣ ገ ብ ስ ፣ ስ ን ዴ ፣ ፍ ዝ ወ ዘ ተ) በ ሳ ም ን ት ስ ን ት ቀ ን ይ መገ ባ ሉ ?	1.ቢ ያ ን ስ እ ስ ከ ሁ ለ ት ቀ ን 2.ከ ሁ ለ ት ቀ ን በ ላ ይ	H3
10 4	ስ ጋ ፣ እ ን ቁ ላ ል ፣ አ ተ ር ፍ ባ ቁ ላ በ ሳ ም ን ት ስ ን ት ቀ ን ይ መገ ባ ሉ ?	1.ም ን ም አ ል መገ ብ ም 2.ቢ ያ ን ስ እ ስ ከ ሁ ለ ት ቀ ን 3.ከ ሁ ለ ት ቀ ን በ ላ ይ	H4
10 5	ወ ተ ት ፍ የ ወ ተ ት ዉ ጤቶ ች በ ሳ ም ን ት ስ ን ት ቀ ን ይ መገ ባ ሉ ?	1.ም ን ም አ ል መገ ብ ም 2.ቢ ያ ን ስ እ ስ ከ ሁ ለ ት ቀ ን 3.ከ ሁ ለ ት ቀ ን በ ላ ይ	H5
10 6	ለ ስ ላ ሳ መጠጦች ማለ ት ም ኮ ካ ፣ ፔ ፕ ሲ እ ፍ የ መሳ ስ ሉ ት ት ጠቀ ማለ ህ /ሸ ፣	1.አ ዎ 2.አ ይ አ ል ጠቀ ም ም	H6
10 7	መል ሶ አ ዎ ከ ሆ ነ በ ቀ ን ስ ን ት ይ ጠ ቀ ማሉ	1.አ ን ድ 2.ሁ ለ ት ፍ ከ ዚ ያ በ ላ ይ	H7
10 8	የ ሚመገ ቡ ት ምግ ብ የ ሚያ ገ ኙ ት ከ የ ት ነ ዉ (የ ምግ ብ ምን ጫች ሁ የ ት ነ ዉ)	1.ከ ቤ ት በ ማምጣት 2.ከ ት ምህ ር ት ቤ ት ካ ፍ ቴ ሪ ያ በ መግ ዛ ት 3.በ ት ምህ ር ት ቤ ት ዙ ሪ ያ ባ ሉ ም ግ ብ ቤ ቶ ች በ መግ ዛ ት	H8
10 9	በ ቀ ን ስ ን ት ጊ ዜ ት መገ ባ ለ ህ /ሸ	1.እ ስ ከ ሶ ስ ት ጊ ዜ 2.ከ ሶ ስ ት ጊ ዜ በ ላ ይ	H9
11 0	መደ በ ኛ የ ምግ ብ ስ ዓ ት ታ ሳ ል ፋ ለ ህ /ሸ	1.አ ይ 2.አ ዎ	H1 0
11 1	ጥ ፍ ት እ ያ ጠ ፍ ህ /ሸ ምግ ብ ት መገ ባ ለ ህ /ሸ	1.አ ይ	H1 1

		2.አ ዎ	
11 2	የ ቁር ስ አ መጋ ገ ብሁኔ ታ	1.በ የ ቀ ኑ እ መገ ባ ለ ሁ 2. .በ የ ቀ ኑ አ ል መገ ብ ም	H1 2
11 3	የ እ ራ ት አ መጋ ገ ብሁኔ ታ	1.በ የ ቀ ኑ እ መገ ባ ለ ሁ 2. .በ የ ቀ ኑ አ ል መገ ብ ም	H1 3
11 4	ከ ቤ ት ዉ.ጨምግ ብ ት መገ ባ ለ ህ	1.አ ዎ እ መገ ባ ለ ሁ 2.አ ይ አ ል መገ ብ ም	H1 4
11 5	ቴ ሌ ቭ ኸን እ ያ የ ህ /ሸ ምግ ብ ት መገ ባ ለ ህ /ሸ	1.አ ዎ እ መገ ባ ለ ሁ 2.አ ይ አ ል መገ ብ ም	H1 5
11 6	በ ቁር ስ ና በ ምሳ መካ ከ ል ወ ይ ም በ ምሳ ና በ እ ራ ት መካ ከ ል ወ ይ ም ከ መደ በ ኛ ዉ.አ መጋ ገ ብ በ ተ ጨማሪ ምግ ብ ይ ጠቀ ማሉ?	1. አ ዎ 2. አ ይ ደ ለ ም	H1 6
11 7	ከ ላ ይ ለ ተ ጠቀ ሰ ዉ.ጥ ያ ቁ መል ስ ዎ አ ዎ ከ ሆነ በ ቀ ኑ ስ ኑ ት ጊ ዜ ይ መገ ባ ሉ?	1.አ ን ድ ጊ ዜ 2.ሁ ለ ት ጊ ዜ ና ከ ዚ ያ በ ላ ይ	H1 7
11 8	ጣ ፋ ጭምግ ቦ ኾ (ኬ ክ ፣ ብ ስ ኩ ት ፣ ሳ ቡ ሳ ፣ ቸ ኮ ሌ ት ፣ አ ይ ስ ከ ሬ ም እ ና ቆ ቆ ር) ት መገ ባ ለ ህ /ሸ	1.አ ዎ እ መገ ባ ለ ሁ 2.አ ይ አ ል መገ ብ ም	H1 8

ክ ፍ ል 3፤ የ ሰ ዉነ ት እ ን ቅ ስ ቃ ሴ ሁኔ ታ የ ተ መለ ከ ቱ ጥ ያ ቁ ዎ ኾ

ተ . ቁ	ጥ ያ ቁ ዎ ኾ	መ ል ስ	መ . ቁ

101	ከትምህትቦተጨማሪስራትሰራለህ/ሽ	1. አዎ 2. አይአልሰራም	P 1
102	መልስህ/ሽአዎከሆነበቀንእስከስንትደቂቃ ያህልትሰራለህ/ሽ?	1. ቢያንስእስከ 60ደቂቃ 2. ከ60 ደቂቃበላይ	P 2
103	በቀንለስንትሰዓትበእግር/በሳይክልትሄዳ ለህ	1.እስከ30ደቂቃ 2.ከ31-60ደቂቃ 3.60ደቂቃበላይ	P 3
104	ከባድየአካልብቃትእንቅስቃሴታደርጋለህ/ ሽ	1. አዎ 2. አይአላደርግም	P 4
105	መካከለያየአካልብቃትእንቅስቃሴታደርጋለ ህ/ሽ	1. አዎ 2. አይአላደርግም	P 6
106	ወደት/ቤትስትሄድ/ጂኦግራፊስትመጣ/ጪ	1.በእግር 2. በመኪና(በትራንስ ስቦርት)	P 8

በእረፍትላይስለሚያሳልፉትጊዜ

ተ. ቁ	ጥያቄዎች	መልስ	መ. ቁ
101	ትርፍሰዓትህ/ሽበምንታሳልፋለህ/ ሽ	1.መጽሀፍበማንበብ 2.ቴሌቪዥንበማየት	S1

		3.የ ኮምፒውተር /በስልጥጊ ምዘ መጫወት	
102	በቀንበአማካይለስንትሰዓትቴሌቭ ኸንታያለህ/ሽ	1.አስከአራትሰዓት 2.ከአራትሰዓትበላይ	S2
103	በቀንለስንትሰዓትትቀመጣለህ (ታርፋለህ/ሽ)	1.አስከሶስትሰዓት 2.ከሶስትሰዓትበላይ	S3
104	ቀንከሰዓትበሐላየመተያትልምድአ ለህ/ሽ	1.አዎ 2.አይአልተያም	S4

ክፍል 4፤ የሚቀጥሉት ጥያቄዎች ስለምግብ እዉቀት ይጠይቃሉ (ይዳስሳሉ)

ተ. ቁ	ጥያቄዎች	አዎ	አይ
101	ከመጠን ያለፈ ዉፍረት ምክንያት ምን እደሆነ ታዉቃለህ/ሽ		
102	ከመጠን ያለፈ ዉፍረት የሰዉጤናላይችግርሊፈጥርይችላል		
103	ከመጠን ባለፈ ዉፍረት ምክንያት የሚመጡበሽ ታዎች ታዉቃለህ/ሽ		
	መልስህ/ሽ አዎ ከሆነ የሚያቁትን ይጥቀሱ		
104	ማን ያዉምቀጭን የሆነ ሰዉ (የመታመም፣ የመጨነቅ፣ እራስን ያለመንከባከብችግርነዉብለህ/ሽ ታስባለህ/ሽ		
105	ስለራስህ/ሽ የሰዉነትሁኔታ ምን ይሰማህ ል/ሻ ል	1.በጣምቀጭንነኝ	
		2.መካከለኛቀጭን	
		3. ትክክለኛክብደትላይነኝ	
		4.ከመጠን ያለፈ ዉፍራምነኝ	

106	ከ መጠን ያለ ፈ ወፍ ረት እንዲመጣም ከን ያት ሊሆኑ የሚችሉም ግብ ጥቅን ታወቃለህ /ሸ		
	መልስህ /ሸ አዎ ከሆነ የሚያቁትን ይጥቀሱ		
107	ቁርስ ናምሳ ማሳለፍ (ያለ መብላት) ወፍ ረት ላይ ተጽኖ ያመጣልብለህ /ሸ ታስባለህ /ሸ		
	መልስህ /ሸ አዎ ከሆነ ከብደት ላይም ከይነት ተጽኖ የሚያቁትን ይጥቀሱ		

አሁን የሰውነትዎን መጠን መለካት ስለሚያስፈልግ እንዲተባበሩኝ ጠይቆታለሁ

Sr. no	መለካት	. መለኪያ	መለያ .ቁ
1	ቁመት	. Centimeters	M1
2	ክብደት	Kilogram	M2