ADDIS ABABA UNIVERSITY
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ASSOCIATION BETWEEN PROBLEMATIC INTERNET USE AND OVERWEIGHT AND OBESITY AMONG IN SCHOOL ADOLESCENTS IN ADDIS ABABA, ETHIOPIA

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List of abbreviations

AACAEB	Addis Ababa City Administration Education Bureau
BMI	Body Mass Index
BAZ	BMI for age Z-score
EDHS	Ethiopian Demographic Health Survey
FAO	Food and Agricultural Organization
GPAQ	Global Physical Activity Questionnaire
KG	Kilogram
Km	Kilometer
PA	Physical Activity
PIU	problematic internet use
USA	United States of America
WHO	World Health Organization

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SUMMARY

Introduction: Overweight and obesity among adolescents is one of the most serious public health concerns worldwide in the 21st century. Several epidemiological studies have explored the association between problematic internet use and overweight/obesity and reported inconsistent findings. The majority of the studies in this regard were from developed nations and there are limited studies from developing countries including Ethiopia.

Objectives: The study is aimed to assess the association between problematic internet use and overweight and obesity among secondary school adolescents in Addis Ababa, Ethiopia

Methods: A school-based cross-sectional study was conducted among adolescents 13-19 years old. Three-stage random sampling technique was used to select the study participants. Self administered questionnaire were used to collect data .The height and weight of adolescents was measured by trained data collectors.Body Mass Index (BMI) for age Z-score was compared to WHO 2007 growth reference standards using WHO Anthro plus version 3.2.2 software. Data were entered and cleaned using epi data version 3.1 and all statistical tests were done using SPSS 20 software. Descriptive statistical tests, bivariate and multivariate logistic regression analysis was done to identify factors associated with overweight and obesity.

Results: Based on internet addiction test score respondents who have internet addiction test >50 was 31.5%.Adolescents who had Internet addiction test score 31-49,50-79 and 80-100 were 8.835,8.65 and 3.3968 times higher odds of overweight or obesity as compared to those who had internet addiction test of 0-31 score .(AOR=8.835,95% CI(2.99-26.103)), (AOR=8.65,95% CI (2.811-26.616)), (AOR=3.968,95%CI(1.36-11.574)) respectively

Conclusion and recommendation: Finding of this study revealed that strong association between problematic internet use and overweight and obesity among inschool adolescents in Addis Ababa. Parents should encourage their children for managing their children's internet use and promoting healthier lifestyles at home

Keywords: overweight, obesity, adolescents, internet, internet use, problematic internet use

1, INTRODUCTION

1.1 background

Being overweight refers to having an excessive amount of body fat and obesity is a chronic and complex condition characterized by an accumulation of excess body fat that can negatively impact health. The assessment of overweight and obesity is conducted by measuring an individual' weight and height to calculate the body mass index (BMI). Overweight is BMI for age greater than 1 standard deviation above the WHO growth reference median; and obesity is greater than 2 standard deviations above the WHO standard reference median.(1)A variety of risk factors have been studied and shown to have a significant correlation with overweight and obesity among adolescents. Key contributors include poor dietary habits, lack of physical activity, higher levels of maternal education; higher income brackets the type of school attended, eating frequency, and gender. (2)

Problematic internet use refers to the inability to control excessive internet usage, a perception that offline time lacks significance, excessive irritation and aggression when the access is restricted.(3) Internet use has become accessible to all, with the majority of the global population utilizing it. The phrases "problematic internet use," "internet addiction," "compulsive internet use," "and "pathological internet use" describe behaviors that indicate issues related to internet usage. Regardless Of specific terms used, there is a rapidly increasing concern about the possible negative effects of using the internet.(4)

One of the negative effects of problematic internet use is leading to physical inactivity manifested in the form of long hours sitting and reduced engagement in physical activities like walking. in addition it can also disrupted our sleep patterns interms of late-night internet use which can cause poor sleep quality leading to hormonal imbalances that could affect appetite and metabolism consequently results in mindless eating such as snacking while distracted by screens with increased caloric intake, especially junk foods.(5),this result in significant weight gain.(6)

1.2 statement of the problem

Overweight and obesity among adolescents is one of the most serious public health concerns worldwide in the 21st century (7). In 2024 more than one billion people in the world are living with obesity among them 159 million are children and adolescents aged between 5-19 years and this prevalence was raised from just 4% in 1975 to almost 20% in 2022. (8).

In Ethiopia being overweight and or obese is becoming an emerging nutrition-related problem.(9) The combined pooled prevalence of overweight and obesity among children and adolescents in Ethiopia was 11.30% with the highest prevalence in Addis Ababa which is 11.94 % followed by Oromia and Amhara region 10.94% and 10.66% respectively.(10)

More than 3 billion people use the internet daily and among these young people use it the most.(11)Compared with high-income countries, where internet access is high, low and middle-income countries are in dynamic growth in their number of internet users.(12) Over recent years, there has been a notable rise in people's dependence on the internet with research indicating that adolescents are the most adept at adopting and adapting to problematic internet use compared to other age groups. About 66% of the world population and 79% world aged between 15-24 years use internet globally.(13) Globally 6-15% of adolescents exhibits signs of internet addiction,with higher prevalence in Asian countries.(14)

Problematic internet use is linked to arrange of risk factors, which encompass socio demographic characteristics such as gender, age and family income. It involves variables related to internet usage including the amount of time spent online and engagement with social media and gaming applications. Furthermore, co-morbid conditions such as depression , anxiety, and general psychopathology are some other associated with PIU.(15)

Several epidemiological studies have explored the association between problematic internet use and overweight/obesity. Some of them concluded that there is an association between problematic internet use(16–18) and overweight and obesity whereas some of them showed that there is no association (19–21).Majority of studies on this topic were from developed nations and there are limited studies come from developing countries including Ethiopia.

1.3 Significance of the study

Findings of this study will inform public health strategies towards preventing obesity by addressing the role of risk factors like internet usage. In addition, the findings will serve as a benchmark for future studies addressing the problematic internet use and its association with overweight and obesity contextually.The study will contribute to the existing literature on problematic internet use and obesity/overweight.

2, LITERATURE REVIEW

2.1 magnitude of overweight and obesity

According to the World Health Organization over 340 million children and adolescents aged 5–19 years were overweight and obese. The global prevalence of obesity among children and adolescents increased from 0.7% in 1975 to 5.6% in 2016 in girls and 0.9% to 7.8% in boys.(22, 23). In 2018, nearly 19% of adolescents across EU countries were classified as overweight or obese, an increase from 16% in 2010. There is significant variation among different EU nations, ranging from 12% in the Netherlands to 36% in Malta.(24).In US From 2017 to 2020, 19.1% of children and adolescents are obese(25).

A systematic review and meta-analysis among adolescents in Asian countries showed that the pooled prevalence of adolescent obesity and overweight in Asian countries was reported to be 8.6% and 14.6%, respectively(26).Asystematic review from sub-Saharan Africa reported that the average prevalence of overweight and obesity among school aged children and adolescents (5-17 years) was 10.7% and 2.5% respectively. (27) In Sudan, the prevalence of overweight among adolescents aged 10 to 18 years was 10.8% and prevalence of obesity was 9.7%(28)

Meta-analysis done in Ethiopia among adolescents aged between 10-19 years concluded that the pooled prevalence of overweight and obesity among adolescents was 10% and factors like being female, attending private schools ,having a family size greater than or equal to 4, and being a middle economic status was associated with overweight and obesity(29) In the southern part of Ethiopia the prevalence of overweight and obesity was 11.2%. (30)In Addis Ababa different

studies have been done on overweight and obesity among adolescents and the pooled prevalence was between 13.9%-36.1% .(31)

2.2 risk factors of obesity

2.2.1 Socioeconomic status and demographic factors

Meta analyses have found an association between adolescents' sex, age, and school type with obesity among adolescents.(32)Cross-sectional study done in Germany among 3-17 years adolescents found that both girl and boy adolescents from low socioeconomic status have higher overweight and obesity than adolescents from high socioeconomic status (33) whereas other findings was not(34).Study done among adolescents in southwestern Saudi Arabia showed that being female was a risk for obesity (35) and others found no gender difference (36,37).boys are more vulnerable to obesity than girls.(38)

2.2.2 Physical activity

Physical activity has a direct relationship with the healthy weight status of children by promoting higher levels of energy expenditure. Additionally , physical activity level is also directly associated with health outcomes of children; low levels of physical activity are typically associated with an increased risk of cardiometabolic and vascular diseases(39) . Studies have found that the addition of exercise to dietary intervention improves levels of high-density lipoprotein cholesterol over 6 months.(40) Therefore, encouraging both normal-weight and overweight children to increase their levels of physical activity and exercise and reduce their sitting time will help to avoid excess weight gain and related health risks.(41) According to research done among 2906 adolescents in Saudi Arabia both obese males and females are less active especially in terms of vigorous activity.(42)A Study done among the Arada sub-city,Addis Ababa Ethiopia, reported only 29% of adolescents were engaged in works that involved moderate to vigorous intensity activity beside education(43).

2.2.3 Sedentary behavior

Sedentary behavior occurs in various domains of life, including television or video viewing, computer use, reading, or sitting at a desk, at a counter, or in a bus, car, or train. Prolonged time spent sedentary decreases energy expenditure and displaces light-intensity physical activities, potentially leading to weight gain over time.(44)

A review of 21 observational studies indicates that sedentary behavior is linked to increased body fat in young people, regardless of their dietary habits. Additionally, another review has found that time spent on screens correlates with a tendency to consume less nutritious food (45).

2.2.4 Diet

Diet plays an important role in the pathogenesis of obesity; fatty foods are energy-dense and give 9 calories per gram compared to carbohydrates and protein which give 4 calories per gram.Also, if physical activity is inadequate, excess consumption of fat can result in weight gain. It does not take as much energy (about 3%), to convert and store dietary fat as it does to convert and store glucose. Fats are easily stored by the body.(46)The intake of processed and sugar-sweetened foods and drinks among adolescents has risen in recent years.About one third (30.3%) of school adolescents do not eat fruits, vegetables, or legumes, while 43.7% regularly consume sugary soft drinks and highly processed foods.(47)

2.3 Magnitude of Problematic Internet Use

Magnitude of problematic internet use varied across regions. A Meta-Analysis of 31 nations across Seven World Regions concluded that the overall global magnitude of PIU is 6.0% [95% CI 5.1–6.9 with the highest prevalence in the Middle East with 10.9% [95% CI 5.4–16.3], and the lowest in Northern and Western Europe with 2.6% [95% CI 1.0–4.1]. This prevalence was higher for nations with greater traffic time consumption, pollution, and dissatisfaction with life in general.**(48)**

A systematic review of 8 studies among US adolescents and college students reports that, the range of prevalence of PIU in examined studies was between 0% and 26.3 %(49)In Europe, the prevalence of problematic internet use was 4.4% and it is higher among males than females, living in metropolitan, mean hour of online parental employment, low parental involvement and not living with biological parents were associated with problematic internet use(50). A study done among Spanish adolescents also reported that the of problematic internet use was 33.03% and being female gender, having higher parents' education,weekends,reporting being online after midnight and reporting using the mobile phone in class were associated with problematic internet use (51)Cross section study done among adolescents in Japan at 2 psychiatric outpatient clinics in Yokohama City reported 41.1% exhibited PIU with an internet addiction test of >50 score.(52)

In Africa a systematic and Meta-analysis of 22 studies (13,365 participants) revealed that the overall prevalence of PIU was 40.3% with the highest prevalence in northern Africa which is 44.6% (53)

2.4 association between Problematic Internet Use and overweight and obesity

Internet use can be associated with negative changes in body fat distribution and weight gain.(54)A study among10 287 European adolescents aged 14–17 years reported significant association between problematic internet use and obesity among adolescents. Obesity is also associated with being male, heavier social networking site use and heavier internetuse was positively associated whereas number of sibling, school grade and parental education level was inversely associated.(55)

Meta-analysis of 9 cross-sectional studies found a significant, positive association between the highest Internet users, compared to the lowest, and Internet users had 47% greater odds of being overweight or obese than nonusers.(56)One study done among 437 children and adolescents age ranging from 8 to 17 years reported that internet addiction scores and spending time more than 21 hours per weeks on the Internet were significantly associated with increased BMI in the obesity group ($p < 0.05$)(57)

A Longitudinal study was done among 621 adolescents in Switzerland also reported Overweight adolescents were significantly more likely to be male, to live in an urban area, to be on a diet and to report using the internet more than 2 h per day on weekends at starting time(spring 2012) and adolescent who was already overweight at start had a more than 20-fold risk (aOR 21.04) of being overweight 2 years later.(58)Another study in China also reported internet addiction is an independent risk factor for obesity as the possible occurrence of obesity in adolescents with internet addiction is 1.541 times higher than in those who have no internet addiction.(59)

A study done among secondary school adolescents on the Consequences of Internet Addiction on Dietary Behavior among Adolescents in Assiut City, Egypt reported Adolescent students who had significant problems from internet use had improper dietary behavior, a poorer diet quality than their counterparts who had control over internet use(60)

2.5 potential mechanism between problematic internet use and overweight and obesity

2.5.1Behavioral and psychological disruption

2.5.1.1 Internet use and energy intake

Internet related stress may lead to maladaptive coping mechanism, such as emotional eating.individuals may consume calorie dense foods contributing weight gain over time (58People who have difficulty managing their emotions are more prone to emotional eating, which is the practice of using food to deal with feelings of distress. In other words, negative emotions may trigger overeating or eating large quantities of food while feeling a lack of control, which are both associated with weight gain and obesity (61).Individuals with internet use may have difficulties with stress management, which can lead to overeating and weight gain. Additionally, excessive internet use is also associated with unhealthy dietary habits such as snacking, drinking, and consuming high-calorie foods while sitting online. such a lifestyle could be a significant risk factor for overweight and obesity(62).

2.5.2 Social disruption

2.5.2.1 Internet use and physical activity and sedentary behavior

Research indicates a potential link between internet addiction and obesity, where excessive online time leads to reduced physical activity, fostering a more sedentary lifestyle and subsequent weight gain**.(63)**

2.5.2.2 Exposure to food marketing

Internets are saturated with unhealthy food advertisements. Increasing cravings for unhealthy foods.snacking while browsing leads to unconscious over consumption**.(64)**

2.5.3 Biological disruption

2.5.3.1Internet use and sleeping

Excessive internet use is associated with disruptions in sleep patterns and social isolation,which increases the risk of obesity(65,66)There is three possible mechanism between sleeping and weight gain:the first one is short sleep duration causes changes in the appetite-regulating hormones (ghrelin and leptin) to increase hunger and decrease satiety,second short sleep

duration can affect individuals choice to consume more calories and fewer nutritionally-dense foods, and third shorter sleep duration may lead to increased snacking and eating outside of normal mealtimes.(67)

2.5.3.2 Internet use and hormonal change

Excessive internet use especially at night,exposes users to blue light,which suppresses melaton secretion (a hormone critical for sleep regulation).(68) Sleep disruption from late-night internet use reduces leptin (which suppresses appetite) and increases ghrelin (which stimulates hunger)(69)

Conceptual framework

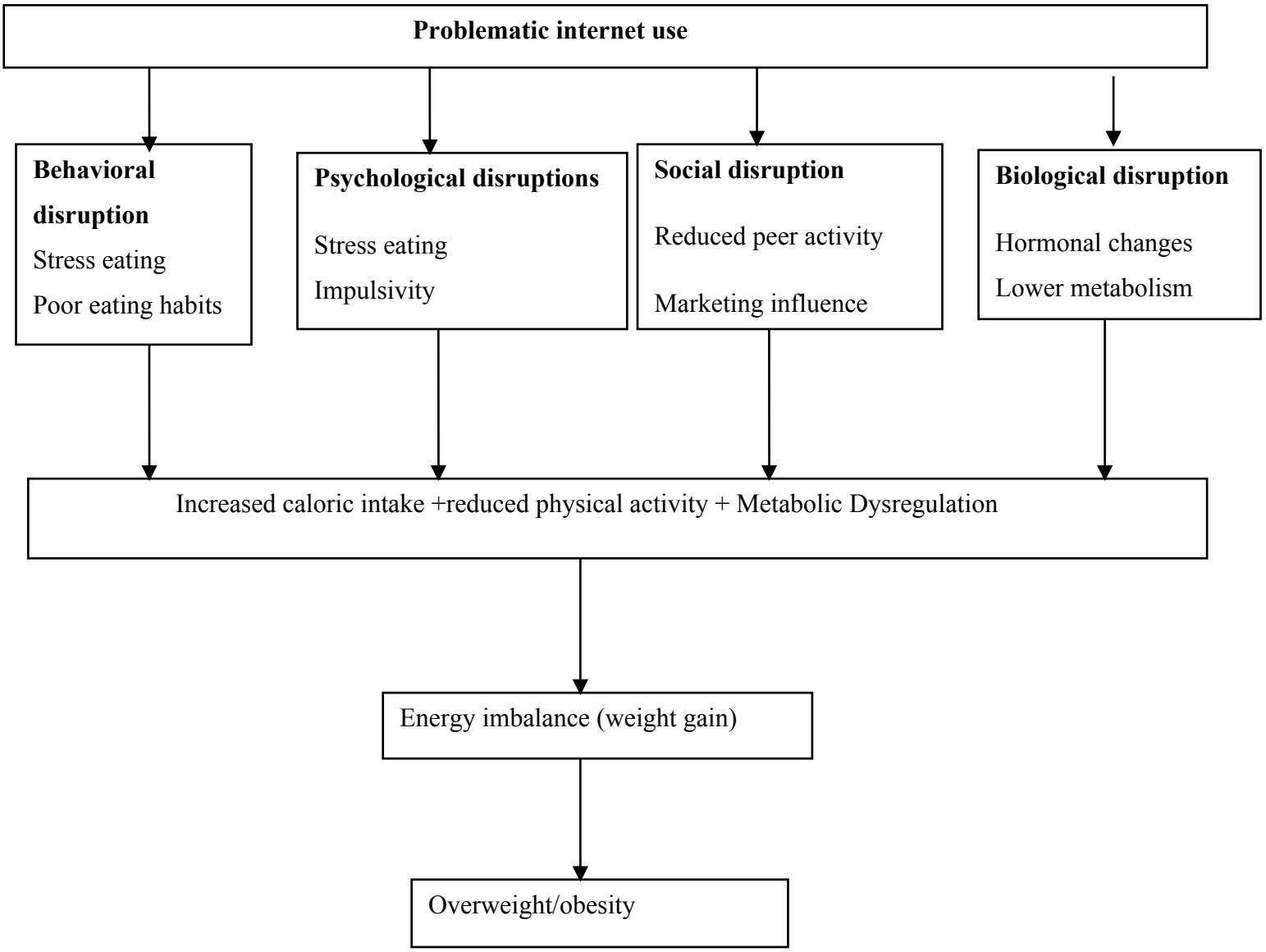

Figure 1: Conceptual framework for problematic internet use and overweight/obesity (adopted from different literature).(70–72)

3, OBJECTIVES

3.1 General objectives

- ✓ To assess the association between problematic internet use and overweight and obesity and their contributory factors among in school adolescent in Addis Ababa

3.2 specific objectives

- ✓ To measure the magnitude of problematic internet use among adolescents
- ✓ To assess the association between problematic internet use and overweight and obesity among adolescents

4 METHODS

4.1 study area:

The study was conducted in a private and a governmental school in Addis Ababa and it involves all sub-cities from march to June 2025 .Addis Ababa is the capital and largest city of Ethiopia and with total population of 3,945,000.Addis Ababa lies at an elevation of 2,355 meters (7,726 ft) and is located at 9°1′48″N 38°44′24″E and landed 527 km^2.

According to Ethiopian population census 2007, Addis city population was 2,739,551 and about 23.2% of them are adolescent aged between 10-19 years.(73)According to Addis Ababa City Administration Education Bureau (AACAEB), there are 2154 schools in the city. Out of which 150and 82 are private and public secondary school respectively.

4.2 study design:

School-based cross-sectional study design was conducted in selected schools.

4.3 populations

4.3.1 Source population

The source population was all private and public school adolescent students aged 13-19 years in Addis Ababa enrolled in 9^{th} -12^{th} grade in the year 2024/2025.

4.3.2 Study participants

All adolescents age 13 – 19 years in selected private and public schools during the study period

4.3.3 Inclusion criteria

All adolescents from 13-19 years of age who were attending class in the selected schools and who are volunteers to participate in the study during the study period.

4.3.4 Exclusion criteria

Visible physical deformity that makes it difficult to measure anthropometry

4.4 sample size determination

For the first objective

Using a single population proportion formula

Sample size determination was as follows

$$N=\frac{Z^2_{\alpha/2}\,P(1-P)}{D^2}$$

Where

Z=the standard score corresponding 95% confidence level =1.96

P=18.1% proportion of adolescents who have PIU (74)

D=margin of sampling error 0.05

10% non response rate

Design effect of 2

By using above formula sample size will be 228 and after adding non response rate of 10% and using design effect of 2 Sample size will be 228*2+10%=**506**

For the second objectivethe following assumptions were made:

Prevalence of PIU among obese adolescents of Turkey was 47.8%, prevalence of PIU among non-obese adolescents of Turkey was 21.8 %(75)

Using double population proportion formula

$$n=\frac{[z\,\alpha/2\,\sqrt{(1+1/r)} + z\beta\sqrt{p1\,(1-p1) + p2\,(1-p2)/r}]}{(P1-p2)^2}$$

Where

n= required minimum sample size for the two groups (n1+n2

n1 = number of obese adolescents

n2 = number of non-obese adolescents

p1= proportion of PIU among obese

p2=proportion of PIU among non-obese

r = 1, Proportion of group 1 to group 2 (obese to non-obese) was taken as equal 1:1

$z\alpha/2$ =critical value at 95% level of significance

$z1-\beta$ = standard normal distribution value corresponding to 80% power to detect the

Assumed difference =0.84

By using Epi info version 7.2.6.0 sample size become 106 and after using design effect of 2 and 10% non response rate the final sample will be 234.

Table1 sample size calculation

Specific objectives	Assumptions							
	P		Z			D	n	N
Objective 1	0.181		1.96			0.05	228	506
Objective 2	P1	P2	α	β	Ratio	D	n	N
	0.478	0.218	0.05	20%	1:1	0.05	106	234

By comparing with the first objective, the first sample size was larger (**506**) and taken as the final sample size of study.

4.5 sampling procedure

A three-stage stratified sampling procedure was applied to select the study subjects. First schools were stratified by ownership as private and public schools then grade levels and sections respectively. From 232 secondary schools in Addis Ababa 10 high schools 7 private and 3 from public high schools (grade 9_12) were selected. A sample of students was distributed proportionally between private and public schools by considering the size of students in each school then one section from each grade (grades 9-12) was selected by lottery method. 3rd from the selected section students were selected by systematic random sampling using a student list then the number of students was allocated proportionally to each section.

4.5.1 Schematic presentation of the sampling procedure

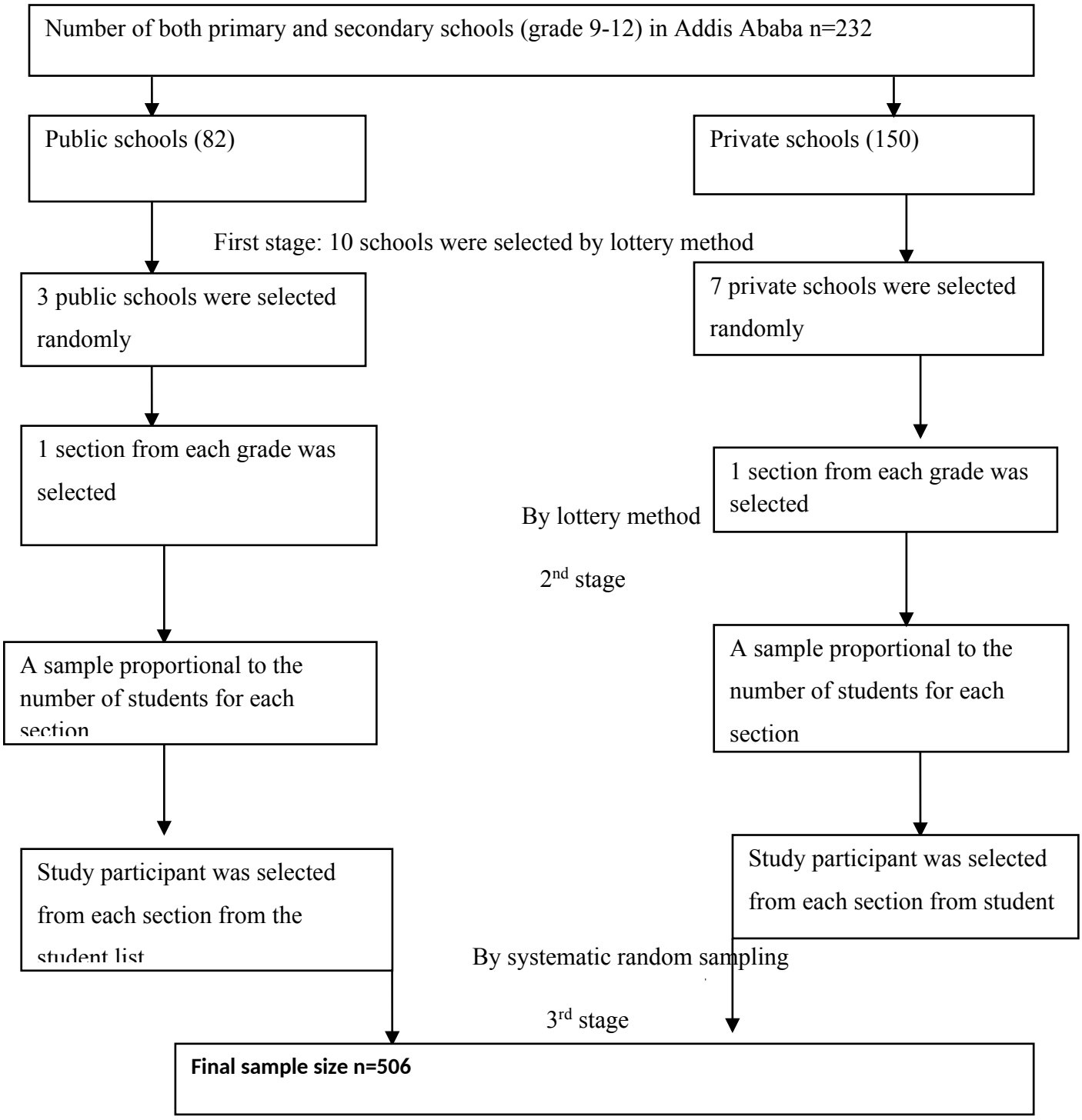

Figure 2; Diagrammatic representation of sampling procedures

4.6 data collection procedures

Self-administered questionnaire which contains sociodemographic characteristics, diet, physical activity, sedentary lifestyle, and anthropometry were used. The questionnaire first was prepared in English and translated to Amharic and back-translation to English to ensure consistency.

Anthropometry measurement

Weight

Weight was measured using Seca digital weight scale with precision of 0.1 kg. To measure weight, the weight scale was placed on a smooth flat surface shoes and heavy clothing were removed.It was calibrated against known weight regularly and error of the weighing scale was checked before taking the weight and corrected when required before each session. The surface of the scale was pressed gently to switch on the display until it shows zero. The study participants were asked to step onto the scale; feet slightly apart and in the middle of the platform of the scale. Measurement of weight was recorded to the nearest 0.1 kg.

Height

Height was measured using stadiometer to the nearest 0.1 cm. To measure height stadiometer was placed on a flat surface, with the back supported by a wall.The study participant were asked to stand straight on leveled surface with shoes off, heels together, eyes looking straight ahead (Frankfurt plane), hands freely by the side, head, shoulder blades and buttocks are against the board/wall. The movable headboard was lowered until it touches the upper part of the subject head firmly.

Nutritional determinants were assessed by FAO Food frequency questionnaire and WHO Global Physical Activity Questionnaire (GPAQ) to assess physical activity and sedentary behavior of adolescents were used.

Problematic internet use was measured using a validated Amharic version of the internet addiction test (IAT-20) which contains 20 questions and each item is rated on a 5-point scale ranging from 0 to 5.(76)

Adaptation of Internet addiction test

We used Amharic version of internet addiction test which was previously translated and used for research.We rephrased item 3 which states'' *how often do you prefer the excitements of the internet to intimacy with your partner?*" to how often do you prefer the excitements of the internet to intimacy with your friends? And also item 7 was rephrased to "how often do you check internet like facebook, tiktok, youtube etc before something else that you need to do?.To avoid adult or romantic connotation we rephrased item 8 the word 'relationship' to friendships since it is not relevant to adolescent.we rephrased item 8 to assess general productivity including school performance since adolscents have no formal jobs.

Four data collectors who have at least a diploma in health and two supervisors including the principal investigator were recruited. Two-day training were given to the supervisor and data collectors about the main purpose of the study, weight and height measurements, data collection techniques and procedures based on the questionnaires by principal investigator. The data collector measure anthropometry i.e. height and weight of the participant after the participants finished filling out the questionnaires and the supervisor and principal investigator were responsible for controlling and supervising the data collection process.

4.7 operational definitions

Overweight: BMI for age greater than 1 standard deviation above the WHO growth reference median

Obesity: obesity is greater than 2 standard deviations above the WHO standard reference median

Problematic internet use: greater than 31 internet addiction test score(77)

Moderate intensive physical activity: Low-impact aerobic exercise classes, brisk walking or hiking, recreational team sports (volleyball, soccer, etc.)

Vigorous intensive physical activity: Running or jogging, high-intensity aerobic classes, competitive full field sports (soccer) or basketball

4.8 Data Quality Management

Data quality assurance measures were applied during the course of the study.

Before data collection, Training of data collectors and supervisors and pre-testing of questionnaires were made to ensure the quality of data. Any doubt in the questionnaire was clarified and standardization of data collectors on measurement errors was done during the training to improve the quality of the anthropometric data.Based on the standardization exercise, we calculated Technical error of measurement (TEM).The Intra observer TEM was between 0.04-0.06 for weight and was between 0.06-0.1 for height measurements. On the other hand the inter observer TEM for weight and height was 0.088 and 0.138 respectively. In all cases the calculated TEM was within the acceptable range(78)

During data collection, the weight was measured with a light cloth and barefoot to the nearest 0.1 kg. Measurement scales were calibrated and checked for 0.00 before each data collection. Height was measured with shoes off using a height board to the nearest 0.1 cm.The Principal investigator and supervisors check the completeness and consistency of the data collected.

After data collection, data was coded using non-overlapping codes and entered using Epidata 3.1. Data cleaning and completeness was checked using SPSS version 20.

4.9 data analysis procedure

Data was coded, cleaned, and entered into Epidata 3.1 and was exported to SPSS version 20 for analysis.The WHO 2007 growth reference was used as a standard reference for classifying adolescents based on BMI for age using Anthro plus software version 3.2.2.

The Global Physical Activity Questionnaire (GPAQ) Analysis Guide was used to assess the physical activity level of study participants. Subjects were asked about days per week and hours per day they spend on different activities that were grouped under comprehensive domains of school, home or public physical activity facilities regular activity, transport and leisure time (recreational) moderate and vigorous intensity activities. Then minutes spend on each domain of physical activity was calculated and multiplied by number days of physical activity to get a week's physical activity in minutes. Finally physical activity minutes in each domain were summed up together and classified by 7 to get the total physical activity (TPA) level per day. The TPA was then categorized based on WHO recommendation of physical activity for adolescents.

The internet addiction test score was used to assess problematic internet use. First response values on internet addiction test was added and total score was recorded which ranges from 0-100 score. Then based on their score was classified as;

- **0-30 score as normal internet usage;**
- **31-49 score as mild level of Internet addiction;**
- **50-79 score as moderate level and**
- **80-100 score as severe problematic internet use.**

Descriptive statistics using frequencies, proportions and tables were used to present the study results. Binary logistic regression analysis was employed to see association problematic internet use and overweight/obesity. Variables with P-value < 0.2 on the bivariate regression analysis will enter to the multivariate model. Multivariate logistic regression was run and the differences between variables were explored. Statistical significant was considered for variables with p-value of less than 0.05

4.10 Ethical consideration

Ethical clearance was obtained from both the research ethics committee of Addis Ababa University, School of Public Health and city government of Addis Ababa health bureau. Permission was obtained from the Education Departments of Sub-cities and Directors of Schools to be studied.After getting permission from school, both written and verbal informed consent was obtained from adolescents greater than 18 years old and from parents/guardians of those under 18 years by sending them information sheet and consent form through their corresponding study adolescent.

The purpose of the study was explained to the study participants and they was informed that the procedures used in the study do not cause any harm to them and their right to withdraw the consent and stop participation at any time without any form of prejudice and they were informed that Information was recorded without their name being mentioned. Only codes were used to keep it anonymous and maintain confidentiality and privacy of respondent

4.11 Dissemination of result

Final report of this study will be disseminated to Addis Ababa University, school of public health, ministry of health, Addis Ababa city health bureau and Addis Ababa city education bureau. Also attempt will be made to publish on peer reviewed journal.

5, RESULT

5.1 sociodemographic characteristics

Out of the sampled 506 adolescent students, a total of 501 participated in this study with a response rate of 99.01%. The mean (SD) of age of the respondents was16.15± 1.382 years and overhalf of respondents 287(57.3%) were between the age of 13-16 years and 214(42.3%) of them from 17-19 years. There were more females 332 (66.3 %) than male 169(33.7%) respondents. Out of 501 respondents 291(57.9%) of them are from public schools and 210(42.1) of them are from private school.Regarding parental education 351(70.1%) respondent's father attended atleast secondary school and 315(62.8%) of respondent's mother attended atleast secondary school.nearly half of respondent's mother 251(49.8%) are housewife and and majority of respondent's father 163(32.2%) are businessman.

Table1: Socio demographic characteristics of respondents Addis Ababa, 2025 (n=501)

variable	Level	Frequency	Percentage
age	13-16	287	57.3
	17-19	214	42.7
sex	Male	169	33.7
	Female	332	66.3
Type of school	Public	291	58.1
	Private	210	41.9
Fathers educational status	Illiterate	32	6.3
	Read and write	36	7.1
	1-4 grade	23	4.5
	5-8 grade	62	12.3

	9-10 grade	66	13
	11-12 grade	89	17.6
	College/TVT completed	58	11.5
	University and above completed	140	27.7
Mothers educational status	Illiterate	56	11.1
	Read and write	44	8.7
	1-4 grade	33	6.5
	5-8 grade	55	10.9
	9-10 grade	64	12.6
	11-12 grade	84	16.6
	College/TVT completed	54	10.7
	University and above completed	116	22.9
Fathers occupation	Daily laborer	44	8.7
	Work in private organization	121	23.9

	Business man	163	32.2
	Civil servant	70	13.8
	He doesn't work	18	3.6
	He is not alive	23	4.5
	I don't know	30	5.9
	Other (specify)	37	7.3
Mothers occupation	Daily laborer	12	2.4
	Work in private organization	59	11.7
	Business women	89	17.6
	Civil servant	58	11.5
	House wife	252	49.8
	She is not alive	6	1.2
	I don't know	14	2.8
	Other (specify)	16	2.8

5.2 Food consumption frequency

Based on food frequency questionnaire, more than half of respondents 272(54.3%) consumed cereal products 2 and more times daily and about 1/5 of the respondents 104(20.8 %) of respondents consumed fruits once a week. More than one third 176(35.1) of respondents never consumed oil and fat (**Table 2**)

Table2 Different food item consumped by respondents'from selected schools of Addis Ababa, 2025

Food group	category	Frequency	Percentage
Fruit	never	16	3.2
	Less than once a month	49	9.8
	Once a month	34	6.8
	2-3 times a month	77	15.4
	Once aweek	104	20.8
	2-4 times a week	95	19
	6-5 times a week	35	7
	Once a day	55	11
	2&more time a day	36	7.2
vegetables	never	9	1.8
	Less than once a month	28	5.2
	Once a month	22	4.4
	2-3 times a month	61	12.2
	Once aweek	81	16.2
	2-4 times a week	107	21.4
	6-5 times a week	48	9.6
	Once a day	78	15.6
	2&more time a day	69	13.8
Bread and cereals	never	2	0.4
	Less than once a month	13	2.6
	Once a month	5	1
	2-3 times a month	17	3.4
	Once aweek	28	5.6

	2-4 times a week	41	8.2
	6-5 times a week	40	8
	Once a day	83	16.6
	2&more time a day	272	54.3
meat	never	40	8
	Less than once a month	74	14.8
	Once a month	71	14.2
	2-3 times a month	85	17
	Once aweek	76	15.2
	2-4 times a week	61	12.2
	6-5 times a week	42	8.4
	Once a day	23	4.6
	2&more time a day	29	5.8
egg	never	30	6
	Less than once a month	50	10
	Once a month	45	9
	2-3 times a month	80	16
	Once aweek	109	21.8
	2-4 times a week	66	13.2
	6-5 times a week	52	10.4
	Once a day	39	7.8
	2&more time a day	30	6
legumes	never	18	3.6
	Less than once a month	58	11.6
	Once a month	52	10.4

	2-3 times a month	73	14.6
	Once aweek	88	17.6
	2-4 times a week	67	13.4
	6-5 times a week	46	9.2
	Once a day	42	8.4
	2&more time a day	57	11.4
milk	never	54	10.8
	Less than once a month	73	14.6
	Once a month	60	12
	2-3 times a month	60	12
	Once aweek	82	16.4
	2-4 times a week	51	10.2
	6-5 times a week	44	8.8
	Once a day	38	7.6
	2&more time a day	39	7.8
Sugar and sweet	never	36	7.2
	Less than once a month	66	13.2
	Once a month	58	11.6
	2-3 times a month	70	14
	Once aweek	60	12
	2-4 times a week	40	8
	6-5 times a week	37	7.4
	Once a day	54	10.8
	2&more time a day	80	16
Sweetened	never	43	8.6

beverages	Less than once a month	92	18.4
	Once a month	67	13.4
	2-3 times a month	72	14.4
	Once aweek	90	18
	2-4 times a week	46	9.2
	6-5 times a week	27	5.4
	Once a day	24	4.8
	2&more time a day	40	8
Fast foods	never	100	20
	Less than once a month	94	18.8
	Once a month	57	11.4
	2-3 times a month	59	11.8
	Once aweek	60	12
	2-4 times a week	42	8.4
	6-5 times a week	32	6.4
	Once a day	34	6.8
	2&more time a day	23	4.6
Oil&fat	never	176	35.1
	Less than once a month	99	19.8
	Once a month	61	12.2
	2-3 times a month	60	12
	Once aweek	44	8.8
	2-4 times a week	26	5.2
	6-5 times a week	10	2

	Once a day	10	2
	2&more time a day	15	3

5.3 Meal pattern

Out of 501 respondents majority 427(85.23%) of them consumed meal atleast 3 times perday. Slightly above two third (68.7%) of the respondents have habit of skipping meal and most of them 123(24.6%) skipped lunch followed by breakfast 120(24%) and dinner 107(21.4%). 345(68.9%) of respondents didn't consume snack daily followed by breakfast 252(50.3%), dinner 225 (44.9%) and lunch193 (38.5%). (**Table3)**

Table3: meal pattern of adolescent in school in Addis Ababa, 2025

		Frequency	Percentage
Meals perday	At least 3 times perday	427	85.23
	Less than 3 times a day	74	14.77
Skipping meals	Yes	344	68.7
	No	157	31.3
Type of meal skipped	Breakfast	120	24
	Lunch	123	24.6
	Dinner	107	21.4
Breakfast consumption	Daily	249	49.7
	Not daily	252	50.3
Lunch consumption	Daily	308	61.5

	Not daily	193	38.5
Snack consumption	Daily	156	31.1
	Not daily	345	68.9
Dinner consumption	Daily	276	55.1
	Not daily	225	44.9

5.4 Physical activity and sedentary behavior

Among children who participate in work, 204 (40.7%) did Vigorous intensity work for at least 10 minutes. While 302 (60.3%) of them participated in moderately intense work for at least 10 minute per day.Out of total participants, 316(63.1%) had habits of walking or ride bicycle. Majority, 313(62.5%) of the students did not do vigorous-intensity sports. On the other hand only 160(31.9%) of them did moderate-intensity sports.Based on WHO recommendation of physical activity in adolescents only 161(32.1%) of respondent have done recommended physical activity perday.

Regarding Sedentary behavior of the respondent 79(15.8%) of the respondent spent their day by reclining and sitting at least 8 hour perday. (**Table 4)**

Table4: Physical activity and sedentary behavior of in school adolescent from selected schools in Addis Ababa, 2025

variables	Category	frequency	Percentage
Vigorous physical activity at work for at least 10 minutes	Yes	204	40.7%
	No	297	59.3%
Moderate physical activity at work for at least 10 minutes	Yes	302	60.3%
	No	199	39.7%

Walk or use bicycle for at least 10 minutes	Yes	316	63.1%
	No	185	36.9%
Vigorous-intensity sports for at least 10 minutes	Yes	188	37.5
	No	313	62.5
Moderate-intensity sports for at least 10 minutes	Yes	160	31.9
	No	341	68.1
Physical activity	<60 minutes per day	340	67.9%
	≥60 minutes perday	161	32.1%
Sedentary behavior	<8 hour perday	422	84.2%
	≥8hour perday	79	15.8%

5.5 reliability of Internet Addiction Test

The internal consistency reliability (cronbach's alpha) of IAT-20 was 0.942. Internal consistency reliability was not increased when calculating by removing each item from the list.Test-retest reliability of each item using intra class correlation coefficient (ICC) ranging from 0.511-0.733. The highest ICC was item14 (ICC=0.733) and the lowest was item 4(0.511). (**Table 5**)

Table 5: reliablity of internet addiction test among in-school adolescents in Addis Ababa, Ethiopia, 2025

Variables	Mean if item deleted	Corrected ITC	Cronbach's alpha if item deleted

How often do you find that you stay online longer than you intended?	33.85	0.619	0.939
How often do you neglect household chores to spend more time online?	34.3	0.634	0.939
How often do you prefer the excitement of the Internet to intimacy with your friends?	34.01	0.709	0.938
How often do you form new friendships with fellow online users?	34.52	0.511	0.941
How often do others in your life complain to you about the amount of time you spend online?	34.43	0.645	0.939
How often do your grades or school work suffers because of the amount of time you spend online?	34.58	0.611	0.939
How often do you check your messaging apps, games, social media like: facebook, tiktok, youtube, instagram, etc before something else that you need to do?	34.38	0.679	0.938
How often does your school performance or productivity suffer because of the Internet?	34.54	0.65	0.939
How often do you become defensive or secretive when anyone asks you what you do online?	34.52	0.626	0.939
How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?	34.29	0.638	0.939
How often do you find yourself anticipating when you will go online again?	34.32	0.628	0.939
How often do you fear that life without the Internet would be boring, empty, and joyless?	34.72	0.620	0.939
How often do you snap, yell, or act annoyed if someone bothers you while you are online?	34.26	0.647	0939
How often do you lose sleep due to being online?	34.22	0.733	0.937
How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?	34.53	0.699	0.938

How often do you find yourself saying "just a few more minutes" when online?	34.04	0.703	0.938
How often do you try to cut down the amount of time you spend online and fail?	34.29	0.600	0.940
How often do you try to hide how long you've been online?	34.51	0.665	0.938
How often do you choose to spend more time online over going out with others?	34.54	0.700	0.938
How often do you feel depressed, moody or nervous when you are off-line, which goes away once you are back online?	34.62	0.641	0.939
Mean			36.17
Standard deviation			23.83
Cronbach's alpha			0.942

5.6 Magnitude of problematic internet use

The overall magnitude of problematic internet use among in school adolescents in Addis Ababa was 56.3%. Distributed as mild (31-49 IAT score), moderate (50-79 IAT score) and severe (80-100 IAT score) in 24.8 %, 27.5% and 4% of them, respectively.

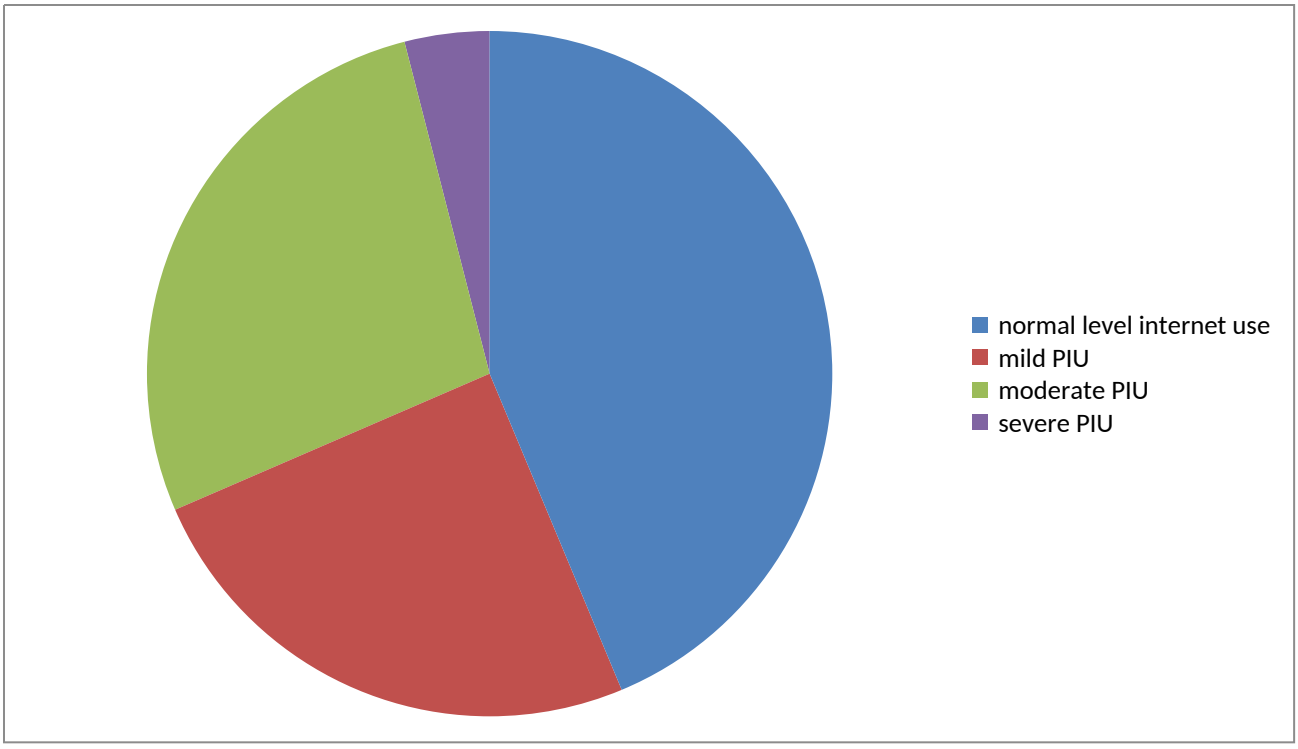

Figure 1 Magnitude of problematic internet use among highschool adolescents in Addis Ababa, 2025

Table 5 shows the magnitude of PIU of respondents by sex. As shown in Table5, 36.4% and 19.6% of female and male have problematic internet use, respectively.Higher problematic internet use was seen among age 13-16 than age group between 17and 19 years

Table6: magnitude of problematic internet use among highschool adolescents by sex and age in Addis Ababa, Ethiopia, 2025

		IAT score			
		Normal(0-30)	Mild(31-49)	Moderate(50-79)	Severe(80-100)
Sex	Female	152(30%)	75(15%)	94(18.7%)	14(2.7%)
	Male	67(13.37%)	49(9.7%)	44(8.7%)	6(1.2%)
Age	13-16	117(23.3%)	75(15%)	83(16.6%)	12(2.4%)

	17-19	102(20.3%)	49(10%)	55(10.97%)	9(1.8%)

The above table shows 36.4% and 19.6% of female and male have problematic internet use respectively.age 13-16 have higher problematic internet use than age group between 17-19.

5.6 Nutritional status of in school Adolescents in Addis Ababa

Magnitude of overweight and obesity among in school adolescent in Addis Ababa was 16.6% and 4.2% respectively. Combined prevalence of overweight and obesity was 20.8%

Table 7: Nutritional status of in-school adolescents of selected schools in Addis Ababa, 2025

Body mass index classification	Frequency	percentage
underweight	18	3.6
Normal	379	75.6
overweight	83	16.6
Obesity	21	4.2

5.7 Logistic regression result

5.7.1 Bivariate Analysis

Adolescents from government school were 0.443 lower odds of being overweight/obesity as compared with adolescents who learn in private school. (COR=0.557, 95%CI (0.361-0.859)).Younger adolescents (13-16 years old) were 1.65 times higher odds of overweight or obesity than younger adolescent (17-19 years old). (COR=1.65,95% CI(1.05-2.591)).Adolescents who consume breakfast daily were 0.449 times lower odds of overweight and obesity as compared to those didn't take breakfast daily.(COR= 0.55195% CI(0.354-0.855)).

Odds being overweight and obesity were 66 % higher among adolescent who sits or recline <8 hours per day as compared with those who sits or recline >=8 hours perday. (COR=0.307,95%CI(0.184-0.514). adolescents who had Internet addiction test score 31-49,50-

79 and 80-100 were 9.45,7.8 and 3.314 times higher odds of overweight or obesity as compared to those who had internet addiction test of 0-31 score.(COR=9.45,95%CI(3.568-25.029)), (COR=7.8,95%CI (2.828-21.513)), (COR=3.314,95%(1.263-8.613)) respectively.

Adolescents from private school were 2.696 times higher odds of having problematic internet use as compared with adolescents who learn in public school.(COR=2.696,95%(1.854-3.921).Adolescents whose fathers have attended atleast secondary school were 1.84 times higher odds of having problematic internet use as compared with whose fathers attended less than secondary school (COR=1.848, 95%(1.257-2.717)).Odds having problematic internet use problematic internet use were 1,756 times higher among adolescents whose mother have attended at least secondary school than those whose mother attended less than secondary school.(COR=1.756,95%(1.28-233))

5.7.2 Multivariate analysis

To control for the potential confounding variables, Multivariable regression models was applied. As indicated in **table 8**, only variables like breakfast consumption, physical activity, sedentary behavior and Internet addiction test score were independent risk factor of overweight and obesity.

53% lower odds of overweight and obesity among Adolescents who consume breakfast daily as compared to those didn't take breakfast daily. (AOR=0.479,95CI(0.291-0.789)).Adolescents who engage in physical activity for less than 60 minutes per day were 1.717 times odds of overweight or obesity as compared with those who engage in physical activity for atleast 60 minutes per day. AOR=1.717, 95%CI (1.001-2.944)

Adolescent who sits or recline <8 hours per day were 0.593 times lower odds of overweight or obesity as compared with those who sits or recline >=8 hours perday.(AOR= 0.407,95% CI(0.226-0.732)). Adolescents who had Internet addiction test score 31-49,50-79 and 80-100 were 8.835,8.65 and 3.3968 times odds of overweight or obesity as compared to those who had internet addiction test of 0-31 score .(AOR=8.835,95% CI(2.99-26.103)), (AOR=8.65,95% CI (2.811-26.616)), (AOR=3.968,95%CI(1.36-11.574)) respectively. Adolescents from private school were 2.408 times higher odds of having problematic internet use as compared with adolescents who learn in public school(AOR=2.408,95%(1.590-3.649))

Table 8, binary logistic regression analysis of associated factor of overweight/obesity among high school adolescents in Addis Ababa (2025), (n=501)

Variables		Overweight/obesity		COR(95% CI)	AOR(95%CI)	P value
		No n (%)	Yes n (%)			
Sex	Male	133(78.7)	36(21.3)	1	1	
	Female	263(79.2)	69(20.8)	0.958(0.605-1.516)	.892(0.531-1.497)	0.665
Age	13-16	217(75.6)	70(24.4)	1	1	
	17-19	179(83.7)	35(16.3)	1.65(1.05-2.591)	1.503(0.909-2.485)	0.112
Type of school	public	242(83.1)	49(16.9)	1	1	
	private	154(73.3)	56(26.7)	**0.557(0.361-0.859)**	0.931(0.531-1.497)	0.792
Fruits	At least once daily	75(70.8)	31(29.2)	1	1	
	Not daily	321(81.3)	74(18.7)	0.769(0.427-1.386)	0.772(0.397-1.502)	0.446
vegetables	At least once daily	118(80.3)	29(19.3)	1	1	
	Not daily	278(78.5)	76(21.5)	0.899(0.557-1.451)	0.607(0.332-1.111)	0.105
Cereals	At least once daily	277(78)	78(22)	1	1	
	Not daily	119(81.5)	27(18.5)	1.241(0.762-	1.293(0.739	0.368

				2.021)	-2.262)	
Meat	At least once daily	36(69.2)	16(30.8)	1	1	
	Not daily	360(81.5)	89(19.8)	1.798(0.955-3.385)	1.762(0.772-4.023)	0.179
Egg	At least once daily	51(73.9)	18(26.1)	1	1	
	Not daily	345(79.9)	87(20.1)	1.4(0.779-2.516)	1(0.466-2.145)	0.999
Legumes	At least once daily	77(77.8)	22(22.2)	1	1	
	Not daily	319(79.4)	83(20.6)	1.098(0.645-1.869)	0.851(0.457-1.585)	0.611
Milk and milk products	At keast once daily	61(79.2)	16(20.8)	1	1	
	Not daily	335(79)	89(21)	0.987(0.543-1.796)	0.64(0.292-1.401)	0.264
Sugar and sweetened	At least once daily	107(79.9)	27(20.1)	1	1	
	Not daily	289(78.8)	78(21.2)	0.935(0.572-1.527)	0.891(0.456-1.744)	0.737
Sugar sweetend beverages	At least once daily	48(75)	16(25)	1	1	
	Not daily	348(79.6)	89(20.4)	1.303(0.707-2.403)	1.277(0.548-2.974)	0.57
Fast food	At least once daily	44(77.2)	13(22.8)	1	1	
	Not daily	352(79.3)	92(20.7)	1.13(0.584-2.187)	0.869(0.388-1.947)	0.732
Fat	At least once daily	18(72)	7(28)	1	1	

	Not daily	378(79.4)	98(20.6)	1.5(0.609-3.693)	1.951(0.673-5.659)	0.219
Meals per day	At least 3 times a day	330(77.3)	97(22.7)	1	1	
	Less than 3 times a day	66(89.2)	8(10.8)	2.425(1.125-5.226)	2.259(0.99-5.659)	0.053
Breakfast consumption	Daily	209(83.9)	40(16.1)	1	1	
	Not daily	187(74.2)	65(25.8)	0.551(0.354-0.855)	0.479(0.291-0.789)	0.004
Lunch consumption	Daily	243(78.9)	65(21.1)	1	1	
	Not daily	153(79.3)	40(20.7)	1.023(0.657-1.593)	1.202(0.721-2.006)	0.48
Snack consumption	Daily	125(80.1)	31(19.9)	1	1	
	Not daily	271(78.5)	74(21.5)	0.908(0.568-1.453)	0.89(0.513-1.544)	0.679
dinner consumption	Daily	224(81.2)	52(18.8)	1	1	
	Not daily	172(76.4)	53(23.6)	0.753(0.490-1.159)	0.984(0.59-1.642)	0.952
Vigorous /moderate physical activity	>=60 minutes perday	133(82.6)	28(17.4)	1	1	
	<60 minutes perday	263(77.4)	77(22.6)	**1.391(0.86-2.248)**	**1.717(1.001-2.944)**	**0.049**
Sedentary behavior	<8 hours per day	349(82.7)	73(17.3)	1	1	

	>+8 hours per day	47(59.5)	32(40.5)	0.307(0.184-0.514)	0.407(0.226-0.732	0.003
IAT score	0-30	189(86.3)	30(13.7)	1	1	
	31-49	104(83.9)	20(16.1)	9.45(3.568-25.029)	8.835(2.99-26.103)	<0.0001
	50-79	95(68.8)	43(31.2)	7.8(2.828-21.513)	8.65(2.811-26.616)	<0.0001
	80-100	8(40)	12(60)	3.314(1.263-8.613)	3.968(1.36-11.574)	0.012

Table 9 binary logistic regression analysis of associated factor of problematic internet use among high school adolescents in Addis Ababa (2025), (n=501)

Variables		Problematic internet use		COR(95% CI)	AOR(95%CI)	P value
		No n (%)	Yes n (%)			
Age	13-16	117(40.8%)	170(59.2%)	1	1	
	17-19	102(47.7%)	112(52.3%)	0.756(.529-1.080)	0.909(0.625-1.322)	0.617
Type of school	Public	156(53.6%)	135(46.4%)	1	1	
	private	63(30%)	147(70%)	2.696(1.854-3.921)	2.408(1.590-3.649)	<0.0001
Father educational	Less than secondary	82(54.3%)	69(45.7%)	1	1	

status	school					
	Atleast secondary school	137(39.1%)	213(60.9)	1.848(1.257-2.717)	1.28(0.735-2.228)	0.383
Mother educational status	Less than secondary school	98(52.4%)	89(47.6%)	1	1	
	At least secondary school	121(38.5%)	193(61.5%)	1.756(1.28-233)	1.022(0.595-1.755)	0.936

5.8 Mediation Analysis

A mediation analysis was conducted using PROCESS macro (Model 4) to examine whether **sedentary time and physical activity** mediates the relationship between **problematic internet use** and **BMI-for age** among the participants.The results indicated that internet addiction was

significantly associated with sedentary time (B = 1.242, p = .005), but not with physical activity (B = -0.523, p = .968). In turn, sedentary time was not a significant predictor of BMI for age (B = 0.035, p = .160), while physical activity significantly predicted BMI for age (B = 0.001, p = .045). The indirect effect of internet addiction on BMI for age through sedentary time was significant, as the bootstrap 95% confidence interval did not include zero (BootLLCI = 0.001, BootULCI = 0.052), indicating partial mediation. However, the indirect effect through physical activity was not significant (BootLLCI = -0.0303, BootULCI = 0.0375). These findings suggest that sedentary time partially mediates the relationship between internet addiction and BMI-for-age among adolescents, while physical activity does not serve as a mediator in this pathway.

Table 10: mediation analysis of physical activity and sedentary time among in school Adolescents in Addis Ababa, Ethiopia, 2025

Pathway	B	SE	t	p	Bootstrap (95%)
IAT-sedentary time	1.242	0.440	2.82	.005	0.492-2.112
Sedentary time-BMI for age	0.035	0.025	1.41	.160	-0.022- 0.082
Indirect effect(IAT-SED-BMI for age)					0.001- 0.052
IAT-physical activity	-0.523	12.912	-0.04	.968	-29.296-23.672
Physical activity-BMI for age	0.001	0.005	2.0135	0.045	0.000-0.00021
Indirect effect(IAT-Physical activity-BMI for age					-0.0303-0.0375

6 DISCUSSION

The present study was aimed to assess the relationship between problematic internet use and overweight and obesity among in-school adolescents. Based on the study,over half (56.3%) had PIU and the major independent risk factor associated with overweight and obesity wereskipping breakfast, physically inactive, sedentary behavior and internet addiction test score.

Several studies worldwide have reported a positive association between excessive screen time, including internet use, and increased risk of overweight and obesity among adolescents.The finding of this study indicate that problematic internet use (PIU) is an independent risk factor for overweight and obesity among adolescents.This result aligns with previous research conducted among adolescents in china(59) which similary identified a strong association between PIU and overweight and obesity. Another cross sectional study among adolescents,found that adolescents with higher PIU scores had significantly higher BMI percentiles,mediated by reduced physical and increased consumption of high-calorie snacks (79).

Similarly,cross-sectional study among seven European country reported that prolonged internet use was linked to sedentary behavior and poor dietary habits,contributing to weight gain in European adolescents(80).our findings aligns with these results,suggesting that Ethiopian adolescents with PIU are more likely to engage in behaviors that promote weight gain,such as prolonged sitting.

Another study among Turkesh adolescents also indicated that higher level of internet addiction is correlated with overweight and obesity.(19,57,81)This is may due to excessive internet use often leads to reduced physical activity,sedentary behavior and disrupt sleep patterns which contribute weight gain.Additionally adolescents with PIU may expose to digital food advertisement,particulary for unhealthy foods.

However, some studies have reported inconsistent or null associations. For instance,Study among adolescent in Iran founds no significant association between problematic internet use and overweight and obesity.This discrepancy may be due to different tool used to assess problematic internet use, the use problematic internet usage scale while we use validated internet addiction test.(82) Nevertheless, urbanization and increasing availability of digital devices in Addis Ababa may be shifting adolescents toward more sedentary lifestyles, as seen our study,

Another Study in USA done by Michigan university founds no association between adolescents level of internet use and body weight.This defference may due to the way we assess problematic internet use ,they use ‘’Children were asked how often they used the Internet, how often they played videogames, and how often they used a cell phone using the following scale for each measure: 1 = I do not use (play) at all, 2 = about once a month, 3 = a few times a month, 4 = a few times a week, 5 = everyday, for less than 1 h, 6 = everyday, for 1– 3 h, 7 = everyday, for more than 3 h” to assess children’s level of internet use while we internet addiction test.(83) The overall magnitude of problematic internet use of 56.3% was comparable with study done among Spanish adolescents(51).But lower than study done in japan and meta analysis of 22 studies in Africa(52,53). This difference may be attributed to the source of population used - the first study was done on inpatients from hospital while our study was done on healthy adolescents.

In this study 32.1% of respondent have done recommended physical activity perday.This result was lower than study done in USA among children and adolescents aged 12–17 years in which 61.1% of children and adolescents reported 60 minutes of physical activity every day(84).This may be due to difference lifestyle.but higher than study done in debre birhan,Arba Minch and Jinka town.(85,86) this is may due to methodological difference and use of different tools. We use global physical activity questionnaire to assess physical activity level they use Physical Activity Questionnaire (PAQ-A)

In this study, Adolescents from private school were 2.408 more likely having problematic internet use as compared with adolescents who learn in public school. This finding is consistent with Similar study inTurkey ,which reported that students in private school exhibited more PIU than those in public schools.(87) This may be due to private school adolescents usually comes from parents with higher socioeconomic status often have greater access to digital devices and unrestricted internet connectivity.Competitive environment in private schools may drive students toward excessive internet use for study.

In this study there was no association between the age of adolescent and overweight and obesity.this finding was consistent with study done among high school adolescents in bahirdar city(88).however,contrasting evidence emrged from cross sectional study done among

highschool students in arada subcity, Addis Ababa found that odds being overweight/obese was lower among adolescent 15-17 age group when compared with adolescent 17-19 age group. (AOR=0.44 95% CI: 0.25-0.75)(89)

This study revealed Adolescents who consume breakfast daily were 0.479 times less likely to have overweight and obesity as compared to those didn't take breakfast daily. (AOR=0.479,95CI(0.291-0.789)).similar study in Addis Ababa among selected government and private school students found similar result in which lacking daily breakfast increases odds being overweight and obesity.AOR=2.4(95% CI; 1.4, 3.8),(90).meta analysis of 45 observational studies also found that skipping breakfast increases the risk of overweight and obesity. (91) This may be Skipping meals may lead to prolonged fasting periods,slowing metabolism and promoting fat storage.secondly,breakfast skippers often consume larger,energy-dense meals later in the day,exceeding dailt caloric needs.Third,irregular meal timing can impair insulin sensitivity,increasing susceptibility to weight gain.

Odds of being overweight and obese was higher for those who engage in physical activity for less than 60 minutes per day when compared with who engage in physical activity for at least 60 minutes perday.this finding was comparable with similar study Addis Ababa,jimma,hawassa and butajira. (92–95). This is because being physcically inactive decreases energy expenditure consequently results in being overweight and obese. Insufficient activity reduces caloric burn, creating a positive energy balance.regular physical activity also enhances metabolic rate, while inactivity contributes to muscle atrophy and fat accumulation.

Sedentary behavior is another independent risk factor of overweight and obesity. Adolescent who sits or recline <8 hours per day were 0.407 times less likely to had overweight or obesity as compared with those who sits or recline >=8 hours perday.(AOR= 0.407,95% CI(0.226-0.732)) This result is consistent with other studies.(96–99)Prolonged sitting reduces lipoprotein lipase activity, impairing fat metabolism.

6.6 strength and limitation of the study

6.6.1 Strength of the study

This among the first studies in Ethiopia to examine the asscotion between problematic internet use and obesity among in-school adolescents, addressing a growing public health problem in

low-resource setting. The Anthropometry data used were directly measured by trained data collectors and standardized to ensure quality of data throughout the study**.**PIU was assessed using the Internet Addiction Test (IAT), a widely recognized and psychometrically validated tool, enhancing the reliability of exposure classification.

6.6.2 Limitation of the study

Limitation of the study is first, the study didn't include all age group of adolescents**.**Cross sectional nature of the study precludes the establishment of causal relationship between problematic internet use and overweight/obesity. Eventhough internet addiction test was validated it relies on self reporting which may introduce recall or social desirability bias.Another limitation of the study is finding may not apply out of school adolescents, rural population since they are not included in the study and this may affect generilizability of the study.Though IAT was validate in Ethiopia, it was not validate among this age group.

7 CONCLUSION

Finding of this study revealed that high internet addiction test score are independent risk factor of overweight and obesity among inschool adolescents in Addis Ababa.

RECOMMENDATION

For Addis Ababa health bureau

- The health bureau should create awareness about problematic internet use and its correlation with obesity
- Establish monitoring system to regulary assess the prevalence of overweight and obesity among adolescents, alongside their internet usage patterns
- Addis Ababa Health Bureau should incorporate PIU screening into routine adolescent health assessments in school.

For schools

- Schools must prioritize physical activity by providing more opportunities for students to engage in sports or recreational activites during school hours.

For researchers

- Researchers should conduct longitudinal studies to explore the long term effects of problematic internet use on progression of overweight and obesity and related metabolic disorders.
- Future study should include adolescent of all age group and should include adolescents out of school.

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8, ANNEXES

Annex 1: Informed Consent and/or Ascent Form (English version)

Addis Ababa University, School of public health

Subject Information Sheet

Hello,

My name is ———————————————— I am here on behalf of Melkamu Abera, student of Addis Ababa University School of public health. He is conducting a research on "Assessment of association between problematic internet use and overweight and obesity among adolescents". He received permission from Addis Ababa university school of public health and the respected sub city education bureau to conduct this study.

You are selected by three stage random sampling technique to participate in this study because you are currently attending in one of the selected school for the study purpose. Your participation is purely based on your willingness .You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time.
If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment.

If you agree to participate in the study, your weight and height will be measured using standard measuring instruments. Only light closes will be wearing during weight measurement and height will be measured with bare foot. You will also be filling the questionnaire about your socio demographic status, dietary habit, physical activity and sedentary behavior and Internet use. The measurement and questionnaire will take about 30 minutes.

This study will have a great contribution in the control and prevention of adolescents' overweight/obesity and related chronic diseases in Addis Ababa. The information that you provide will be kept confidential by using only code numbers and locking the data. Your name will not be written on the questionnaire. No one will have access to the non-coded data except the principal investigator and the data will not be used for purposes other than the study. Your willingness and active participation is very important for the success of this study.

Informed Consent and/or Ascent Form

Based on the understanding of the above information, are you willing to participate in this study?

A) Yes

B) No

If yes, I will continue and

If no I will skip to next participant after writing the reasons of refusal ——————————

_____

Respondent (For both under and above 18 years old)

Signature _____Date_____

Respondents Parent (for those under 18 years old)

Signature _____Date_____

Name of the person obtaining parental permission

_____

Interviewer

Name_____ Signature_____

Questionnaires ID number_____

Date of interview_____ Starting time_____ Completed_____

Result of interview

A) Completed

B) Not completed

C) Partially completed

D) Refused

Checked by Supervisor: Name _____Signature_____

For further explanation use the Principal Investigator's Address;

Name: Melkamu Abera Bultuma

Email: bultumamelkamu@gmail.com

Cell phone: +251 935079872

Annex 2: questionnaire

Section 1: socio-demographic characteristics

Number	question	Response
101	What is Your age in completed years?	
102	What is your sex?	1, male 2, female
103	Type of school	1,private 2,public
104	What is your father's educational status?	1. Illiterate 2. Read and write 3. 1-4 grade 4. 5-8 grade 5. 9-10 grade 6. 11-12 grade 7. College/TVT completed 8. University and above completed
105	What is your mother's educational status?	1. Illiterate 2. Read and write 3. 1-4 grade 4. 5-8 grade 5. 9-10 grade 6. 11-12 grade 7. College/TVT completed 8. University and above completed
106	What is your father's occupation?	1. Daily laborer 2. Work in private organization

		3. Business man 4. Civil servant 5. He doesn't work 6. He is not alive 7. I don't know 8. Other (specify)
107	What is your mother's occupation?	1. Daily laborer 2. Work in private organization 383. Business women 4. Civil servant 5. House wife 6. She is not alive 7. I don't know 8. Other (specify)

Section two: Food frequency

The next questions ask about diet that you usually eat. As you answer these questions, please think of the foods u consumed last month

No.	Question	Response								
	Food type	(0) Never	(1) Less than once a month	(2) Once a month	(3) 2-3 times a month	(4) Once a week	(5) 2 - 4 times per week	(6) 5-6 times per week	(7) Once a day	(8) 2 & more times a day
201	Fruits									
20	Vegetables									

2										
203	Bread and cereals									
204	Meat									
205	Eggs									
206	Legumes such as beans,peas,lentils and nuts									
207	Milk,cheese,yogurt?									
208	Sugar and sweets such as honey,chocolates, candies,cookies, and cakes									
209	Sweetened beverages (juice and soft drink)									
210	Fast foods such as chips,sandwich,doughnuts,pasty,burger,pizza,fried foods,or ice cream									
211	Butter of fat									

Section three

Meal pattern

On this section of the questionnaire you will fill few questions about your dietary practices with special reference to eating habits.

No	question	response	Skip
301	How many times in a day do you eat?	1 times……..…1 2 times……...…..2 3times ……...…..3 Greater than 3 times…….4	
302	Do you have a habit of Skipping meals?	Yes……1 No…….2	**If no go to 304**
303	Which meal do you Usually skip?	Breakfast…….1 Lunch……..2 Dinner……..…….…….3	
304	In a typical week how often do you eat Breakfast?	1. Daily 2. Usually 3. Sometimes 4. Never	
305	In a typical week how often do you eat Lunch?	1. Daily 2. Usually 3. Sometimes 4. Never	
306	In a typical week how often do you eat dinner?	1. Daily 2. Usually 3. Sometimes 4. Never	
307	In a typical week how often	1. Daily 2. Usually	

	do you take snacks?	3. Sometimes 4. Never	

Section 4

Physical activity

Physical Activity		
Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. Consider all activities, those you do at school, as part of your house and yard work, to get from place to place and in your spare time for recreation, exercise or sport In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.		
Questions	**Response**	**Skip**
1. Regular exercise at school Physical education class/home/public PA facilities and home works *1.1* **Vigorous-intensity physical activities**		
401	Does your regular exercise or home works involve vigorous-intensity activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, aerobics, push-up/pull-up and jumping rope for at least 10 minutes continuously?	1 yes 2 no	*If No, go to P 404*
402	In a typical week, on how many days do you do vigorous-intensity activities as part of your regular exercise/home works?	Number of days ⌊__⌋	

403	How much time do you spend doing vigorous-intensity activities on a typical day?	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	
	1.2 Moderate-intensity physical activities		
404	Does your regular exercise/home works involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously?	Yes 1 No 2 *If No, go to P 7*	
405	In a typical week, on how many days do you do moderate-intensity activities as part of your regular exercise/home works?	Number of days └─┘	
406	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	

Travel to and from places

The next questions exclude the regular exercises at school/home/public PA facilities and home works that you have already mentioned

Now I would like to ask you about the usual way you travel to and from places. For example from home to school, to place of worship

407	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2	*If No, go to 410*

408	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌊__⌋	
409	How much time do you spend walking or bicycling for travel on a typical day?	⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ Hours : minutes hrs mins	

Recreational activities

The next questions exclude the regular exercise, home works and transport activities that you have already mentioned.

Now I would like to ask you about recreational (leisure time) activities, during school breaks or at home)

410	Do you do any vigorous-intensity sports, fitness or recreational (*leisure*) activities that cause large increases in breathing or heart rate like [*running or football,]* for at least 10 minutes continuously?	Yes 1 No 2	*If No, go to P 413*
411	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (*leisure*) activities?	Number of days ⌊__⌋	
412	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ Hours : minutes hrs mins	

Moderate intensive physical activities

413	Do you do any moderate-intensity sports, fitness or recreational *(leisure*)	Yes 1	*If No,*

	activities that causes a small increase in breathing or heart rate such as brisk walking,(*cycling, swimming, volleyball*)for at least 10 minutes continuously?	No 2	*go to 416*
414	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (*leisure*) activities?	Number of days ⌊__⌋	
515	How much time do you spend doing moderate-intensity sports, fitness or recreational (*leisure*) activities on a typical day?	Hours : minutes ⌊__⌋ : ⌊__⌋ hrs mins	

Sedentary behavior

The following question is about sitting or reclining at home, in class,getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping.

416	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊__⌋ : ⌊__⌋ hrs min s

Section 5: internet addiction test

This questionnaire consists of 20 statements. After reading each statement carefully, based upon the 5-point Likert scale, please select the response (0, 1, 2, 3, 4 or 5) which best describes you. If two choices seem to apply equally well, circle the choice that best represents how you are most of the time during the past month. Be sure to read all the statements carefully before making your choice. The statements refer to offline situations or actions unless otherwise specified.

No.	Question	response					
		0 = Not Applicable	**1** = Rarely	**2** = Occasionally	**3** = Frequently	**4** = Often	**5** = Always
1	How often do you find that you stay online longer than you intended?						
2	How often do you neglect household chores to spend more time online?						
3	How often do you prefer the excitement of the Internet to intimacy with your friends?						
4	How often do you form new friendships with fellow online users?						
5	How often do others in your life complain to you about the amount of time you spend						

	online?						
6	How often do your grades or school work suffers because of the amount of time you spend online?						
7	How often do you check your messaging apps, games, social media like: facebook, tiktok, youtube, instagram, etc before something else that you need to do?						
8	How often does your school performance or productivity suffer because of the Internet?						
9	How often do you become defensive or secretive when anyone asks you what you do online?						
10	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?						
11	How often do you find yourself anticipating						

	when you will go online again?						
12	How often do you fear that life without the Internet would be boring, empty, and joyless?						
13	How often do you snap, yell, or act annoyed if someone bothers you while you are online?						
14	How often do you lose sleep due to being online?						
15	How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?						
16	How often do you find yourself saying "just a few more minutes" when online?						
17	How often do you try to cut down the amount of time you spend online and fail?						
18	How often do you try to hide how long you've been online?						

19	How often do you choose to spend more time online over going out with others?						
20	How often do you feel depressed, moody or nervous when you are off-line, which goes away once you are back online?						

Section 6: Anthropometry

Weight: _____kg

Height: _____cm

Thank you!

Informed Consent and/or Ascent Form (Amharic version)

አዲስ አበባ ዩኒቨርስቲ ጤና ሣይን ስፋኩልቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የተጠያቂው / መላሾችየመረጃቅፅ

ጤና ይስጥልን እንደምንነዎት

ስሜ----------ይባላል፡ ፡

እዚህ የመጣሁት በአዲስ አበባ ዩኒቨርሲቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል ተማሪ መልካሙ አበራን ወክዬ ነው።የህዝብጤና ላይ ጥናት እያካሄደ ነው።

Association between problematic internet addiction and overfweight and obesity among in-school adolescents"**ይህንን ጥናት ለማካሄድ ከአዲስ አበባ ዩኒቨርሲቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል እና ከተከበረው ክፍለ ከተማት ምህርት ቢሮ ፈቃድ አግኝቷል።**

በዚህ ጥናት ላይ ለመሳተፍ በሶስት ደረጃ የዘፈቀደ ናሙና ቴክኒክተ መርጠዋል ምክንያቱም በአሁኑ ጊዜ ለጥናት ዓላማ ከተመረጠው ትምህርት ቤት በአንዱ እየተማሩ ነው።የእርስዎ ተሳትፎ በፍላጎትዎ ላይ ብቻ የተመሰረተ ነው. በዚህ ጥናት ውስጥ ላለመሳተፍ የመምረጥ መብት አለዎት. ለመሳተፍ ከመረጡ በማንኛውም ጊዜ ለማቆም መብት አልዎት።ለመሳተፍ ፈቃደኛ ከሆኑ ወይም እምቢካሉ ወይም በኋላ ለመውጣት ከወሰኑ ምንም አይነት በደልአ ይደርስብዎትም።

በጥናቱ ለመሳተፍ ከተስማሙ ክብደትዎ እና ቁመትዎ የሚለካው መደበኛ የመለኪያ መሳሪያዎችን በመጠቀምነው።በክብደት መለኪያ ጊዜ ቀለል ያሉ ልብሶች ብቻ ይለበሳሉ እናቁመት በባዶ እግር ይለካሉ. እንዲሁም ስለ ማህበራዊ ስነ-ሕዝብ ሁኔታዎ፣ የአመጋገብ ልማድዎ፣ የአካል ብቃት እንቅስቃሴዎ እና ተቀምጦ ባህሪ እና የበይነመረብ አጠቃቀም መጠይቁን ይሞላሉ። መለኪያው እና መጠይቁ 30 **ደቂቃ ያህል ይወስዳል**

ይህ ጥናት በአዲስ አበባ በጉርምስና ዕድሜ ላይየሚገኙ ወጣቶችን ከመጠን ያለፈ ውፍረት/ውፍረት እና ተዛማጅ ሥር የሰደዱ በሽታዎችን በመቆጣጠር እና በመከላከል ረገድ ትልቅ አስተዋፅኦ ይኖረዋል።ያቀረቡት መረጃ ኮድ ቁጥሮችን ብቻ በመጠቀም እና ውሂቡን በመቆለፍ በሚስጥር ይጠበቃል።ስምህ በመጠይቁ ላይ አይጻፍም።ከዋናው መርማሪ በስተቀር ማንም ሰው ኮድ ያልሆነውን መረጃ ማግኘት አይችልም እና ውሂቡ

ከጥናቱ ውጭ ለሌላ ዓላማዎች ጥቅም ላይ አይውልም። ለዚህ ጥናት ስኬት የእርስዎ ፍላጎት እና ንቁ ተሳትፎ በጣም አስፈላጊ ነው።

.የስምምነት መጠየቂያ/ማረጋገጫቅፅ

ከላይ በሰጠዎት መረጃ መሰረት በጥናቱ ላይ ለመሳተፍ ፍቃደኛነዎት?

1. **አዎ**
2. **አይደለሁም**

ፍቃደኛ ካልሆኑ ምክኒያቱን ፅፈው ወደ ሚቀጥለው ተሳታፊእለፍ_____

_____

የተሳታፊ ፊርማ (ከ 18 አመት በታችም በላይም ላሉልጆች)

ፊርማ_____**ቀን**_____

የተሳታፊ ቤተሰብ ፊርማ (ከ 18 አመት በታች ለሆኑ ልጆች)

ፊርማ_____ **ቀን**_____

የቤተሰብ ፍቃድ ያገኘው ልጅ ስም_____

የመረጃ ሰብሳቢ

ስም_____**ፊርማ**_____

የመጠይቁ ቁጥር_____

መጠይቁ የተካሄደበት ቀን_____**የተጀመረበት ሰአት**_____**ያለቀበት ሰአት**____

የቃለ መጠይቁ ውጤት

1. **ሙሉ በሙሉ የተሞላ**
2. **በከፊል የተሞላ**
3. **ምንም ያልተሞላ**

በተቆጣጣሪዎች ተረጋግጧል፡ስም_____**ፊርማ**_____

ለተጨማሪ ማብራሪያ የዋና አጥኚውን አድራሻ ይጠቀሙ

ስም፡ መልካሙአበራ

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ስልክ +251 935079872

Annex 3: Amharic version questionnaire

ክፍልአንድ: መስረታዊ መረጃዎችን የተመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ
101	ዕድሜ	
102	ፆታ	1. ወንድ 2. ሴት
103	የትምህርትቤትዓይነት	1. የመንግስት 2. የግል
104	የአባትህ/ሽየትህምርት ሁኔታ?	1. ያልተማረ 2. ማንበብ እናመጻፍ 3. 1-4 ክፍል 4. 5-8 ክፍል 5. 9-10 ክፍል 6. 11-12 ክፍል 7. ኮሌጅ/ቴክኒክናሙያያጠናቀቀ 8. ዩኒቨርሲቲእናከዛበላይያጠናቀቀ
105	የእናትህ/ሽየትህምርት ሁኔታ?	1. ያልተማረች 2. ማንበብእናመጻፍ 3. 1-4 ክፍል 4. 5-8 ክፍል 5. 9-10 ክፍል 6. 11-12 ክፍል 7. ኮሌጅ/ቴክኒክናሙያያጠናቀቀች 8. ዩኒቨርሲቲእናከዛበላይያጠናቀቀች

106	**የአባትህ/ሽየሥራሁኔታ**?	1. **የቀንሰራተኛ** 2. **የግልድሪጅትሰራተኛ** 3. **ነጋዴ** 4. **የመንግስትሰራተኛ** 5. **ሥራአይሰራም** 6. **በህይወትየለም** 7. **አላውቅም** 8. **ሌላ** ————
107	**የእናትህ/ሽየሥራሁኔታ**?	1. **የቀንሰራተኛ** 2. **የግልድሪጅትሰራተኛ** 3. **ነጋዴ** 4. **የመንግስትሰራተኛ** 5. **የቤትእመቤት** 6. **በህይወትየለችም** 7. **አላውቅም** 8. **ሌላ** ————

ክፍል 2. የአመጋገብ ሁኔታን የተመለከቱ ጥያቄዎች

ከዚህቀጥሎ ያሉት ጥያቄዎች በተለምዶ አዘውትረው ሰለሚመገቡአቸው ምግቦች የተመለከቱናቸው፡ ፡

እባክዎ ጥያቄዎቹን ሲመልሱ ባለፈው አንድወር ውስጥ አዘውትረው የተመገቡአቸውንምግቦችያስቡ፡ ፡

ተ. ቁ	**ጥያቄ**	**መልስ**								
	የምግብአይነቶች	(0) **በልቼ አላውቅም**	(1) **በወርከ 1 ጊዜ በታች**	(2) **በወር 1 ጊዜ**	(3)**በወር ከ 2- 3 ጊዜ**	(4) **በሳምንት 1 ጊዜ**	(5) **በሳምንትከ 2-4**	(6) 5-6**በሳምን**	(7)**በቀን1 ጊዜ**	(8)**በቀን ከ 2 ጊዜ**

							ጊዜ	ትከ 2-4 ጊዜ		በላይ
201	ፍራፍሬበምንያህል ጊዜ ይበላሉ?									
202	አትክልትበምንያህል ጊዜ ይበላሉ?									
203	ዳቦ፣ እንጀራ፣ ሩዝ፣ ፓስታ ወይምሌሎችየእህል / ጥራጥሬውጤቶችንበ ምን97 ያህልጊዜይበላሉ?									
204	ስጋበምንያህልጊዜይ በላሉ?									
205	እንቁላልበምንያህል ጊዜ ይበላሉ?									
206	ባቄላ፣ አተር፣ ምስር ወይም ለውዝበምንያህልጊዜ ይበላሉ?									
207	ወተት፣ አይብወይም									

	እርጎበምን ያህልጊዜይበላሉ?									
208	ስኳርአዘልእናጣፋጭምግቦች እንደኬክ፣ አይስክሬም ቸኮሌት፣ ከረሜላ፣ ኩኪስበምን ያህልጊዜይበላሉ?									
209	ስኳርአዘልእናጣፋጭ መጠጦችንለምሳሌ ስላሳ መጠጦችንእንደኮካኮላና የታሸጉየፍራፍሬጭማቂዎችን በምንያህልጊዜይጠጣሉ?									
210	ፈጣንምግቦች (እንደበርገር፣ ቺፕስ፣ ፒዛ፣ ሳንድዊች፣ ፓስቲ፣ ዶናት፣ አይስክሬም ወይምየተጠበሱምግ									

	ቦች) በምን ያህልጊዜይበላሉ?									
211	ጮማወይምቅባትየበዛበት ምግብበምንያህልጊዜይበላሉ?									

ክፍሌ3:የሚቀጥሇውጥያቄየአመጋገብስርዓት፣የምግብሁኔታእናሌምዴንይመሇከታሌ.

ሇቀረቡትጥያቄዎችመሌስዎየሆነውንበመሌስሳጥንውስጥያሇትንቁጥሮችበማክበብይግሇፁ

No.	ጥያቄ	መልስ	ወደሚቀጥለው ጥያቄይሂዱ
301	በተለምዶበቀንውስጥምንያህልጊዜምግብይበላሉ?	1. አንዴጊዜ 2. ሁለትጊዜ 3. ሶስትጊዜ 4. አራትጊዜ	
302	ምግብንየመዝለልልማድአለህ/ሽ?	1. አዎ 2. አይ	መልሱ አይደለምከሆነ ወደጥያቄ ቁጥር 304 ይሂዱ
303	ብዙጊዜ የሚሆነዉየትኛውነው?	1.ቁርስ 2. ምሳ 3. እራት	
304	በተለምዶቁርስበምንያህልጊዜይበላሉ?	1. በየቀኑ (ሁልጊዜ)	

		2. **አብዛኛውንጊዜ** 3. **አንዳንድጊዜ** 4. **በልቼአላውቅም**	
305	**በተለምዶምሳበምንያህልጊዜይበላሉ**?	1. **በየቀኑ** (**ሁልጊዜ**) 2. **አብዛኛውንጊዜ** 3. **አንዳንድጊዜ** 4. **በልቼአላውቅም**	
306	**በተለምዶመክሰስበምንያህልጊዜይበላሉ**?	1. **በየቀኑ** (**ሁልጊዜ**) 2. **አብዛኛውንጊዜ** 3. **አንዳንድጊዜ** 4. **በልቼአላውቅም**	
307	**በተለምዶእራትበምንያህልጊዜይበላሉ**?	1. **በየቀኑ** (**ሁልጊዜ**) 2. **አብዛኛውንጊዜ** 3. **አንዳንድጊዜ** 4. **በልቼአላውቅም**	

ክፍል 4. የአካላዊእንቅስቃሴመጠይቅ

የአካላዊእንቅስቃሴ		
በ መቀጠልባለፈውአንድሳምንትውስጥስላደረጉአቸውየተለያዩአካላዊእንቅስቃሴዎችእጠይቆታለሁ፡፡ **እ ባክዎንራስዎንአካላዊእንቅስቃሴየሚያደርግሰውአድርገውባይቆጥሩምሁሉንምተግባራት** **በ መመልከትጥያቄዎቹንይመልሱ፡፡እነዚህምበት/ቤት፣በቤትውስጥስራዎችወይምከቦታወደቦታ** **ለ መሄድየሚያደርጉአቸውንመደበኛእንቅስቃሴዎቸእናበዕረፍትጊዜዎውስጥለመዝናኛወይም** **ለ ስፖርትየሚሰሯቸውንእንቅስቃሴዎችያጠቃልላሉ፡** **ጥያቄዎቹንበሚመልሱበትወቅትጠንካራየአካላዊእንቅስቃሴዎችማለትከባድጥረትየሚጠይቁ** **ትንፋሽዎናየልብምትዎላይከፍተኛጭማሪየሚያመጡማለትምቶሎቶሎመተንፈስወይምፈጣን** **የልብምትሊያስከትሉየሚችሉእንቅስቃሴዎችናቸው፡፡መካከለኛየአካላዊእንቅስቃሴዎችደግሞመካከለኛ** **ጥረትየሚጠይቁትንፋሽናየልብምትላይመጠነኛጥማሪሊያመጡየሚችሉአካላዊእንቅስቃሴዎች** **ናቸው፡፡**		
ተ.ቁ.	**ጥያቄ**	**ወደሚቀጥለው ጥያቄይሂዱ**
በትምህርትቤትየስፖርትሰአት /በቤት /በህዝብየስፖርትማዘውተሪያስፍራዎችየሚደረጉመደበኛእንቅስቃሴዎችእናየቤትውስጥስራዎች		
ጠንካራአካላዊእንቅስቃሴዎች		
401	**መደበኛአካላዊእንቅስቃሴህ/ሽወይምየቤት ስራዎችህ/ሽከፍተኛየትንፋሽወይምየልብምትመ ጨመርየሚያመጡጠንካራአካላዊተግባራትንያካ ተተነበር? ለምሳሌ፡ከባድእቃማንሳትወይምለ 10 ደቂቃኤሮቢክስ፣ፑሽአፕ/ፑልአፕ፣ገመድመዝለ**	1. **አዎ** 2. **አይደለም**	**መልሱ አይደለምከሆነ ወደጥያቄ ቁጥር** 404

	ል		ይሂዱ
402	በሳምንትውስጥእነዚህንጠንካራ አካላዊእንቅስቃሴዎችለምንያህልጊዜሰርተውነበ ር?	በሳምንት ——— ቀናት	
403	ከእነዛቀናትበአንዱበእነዚህጠንካራአካላዊ እንቅስቃሴዎችምንያህልጊዜበጠቅላላው አጥፍተውነበር?	ሰአት——— ደቂቃ———	
	1.2 መካከለኛአካላዊእንቅስቃሴዎች		
404	በቤትወይምበት/ቤትየሚያደርጉትመደበኛ እንቅስቃሴወይምየቤትውስጥስራዎችመጠነኛየት ንፋሽናየልብምትመጨመርየሚያስከትሉመካከለ ኛአካላዊተግባራትንይጨምራል? ለምሳሌቢያንስለ 10 ደቂቃፈጠንያለእርምጃወይምቀለልያሉእቃዎችን መሸከም	1. አዎ 2. አይደለም	መልሱ አይደለምከሆነ ወደጥያቄ ቁጥር 407 ይሂዱ
405	በሳምንትውስጥእነዚህንመካከለኛአካላዊ እንቅስቃሴዎችለምንያህልጊዜሰርተውነበር?	———ቀናት በሳምንት	
406	ከእነዛቀናትበአንዱበእነዚህመካከለኛአካላዊ እንቅስቃሴዎችላይበጠቅላላውምንያህልጊዜ አጥፍተውነበር?		

ከቦታቦታመጓጓዝ

ቀጥሎያሉትጥያቄዎችከላይየጠቀሷቸውንበቤት/በት/ቤትወይምበህዝብየስፖርትስፍራዎች ያደረጉትንመደበኛእንቅስቃሴዎችአያካትትም፡፡አሁንደግሞበተለምዶከቦታቦታየሚጓጓዙባቸውንመንገዶችእጠይቆታለሁ፡

፡ለምሳሌከቤትወደት/ቤት፣ከት/ቤትወደቤት፣ወደአምልኮቦታ…..			
407	ከቦታቦታለመጓጓዝበእግርወይምሳይክል በተከታታይለ 10 ደቂቃያህልተጠቅመዋል?	1. አዎ 2.አልተጠቀምኩም	መልሱ አልተጠቀምኩ ምከሆወደጥያቄ ቁጥር 410 ይሂዱ
408	በሳምንትውስጥከቦታቦታለመጓጓዝስንትቀንበእግርወይምበሳይክልለተከታታይ 10 ደቂቃተጉዘዋል?	በሳምንት ——ቀን	
409	ከነዚህቀናትበአንዱበእግርወይምበሳይክል በመጓጓዝምንያህልሰአትአጥፍተዋል?	ሰአት_____ ደቂቃ———	
የመዝናኛእንቅስቃሴዎች			
ቀጥሎያሉትጥያቄዎችከላይየጠቀሷቸውንበቤት/ በት/ቤትወይምበህዝብየስፖርትስፍራዎች ያደረጉትንመደበኛእንቅስቃሴዎችእናየመጓጓዣሁኔታአያካትትም፡ ፡ አሁንደግሞየመዝናኛተግባራትንለምሳሌበትርፍጊዜዎ ፣በት/ትቤትየእረፍትሰአትወይምበቤትውስጥስለሚያደርጓቸውየመዝናኛእንቅስቃሴዎችእጠይቆታለሁ፡ ፡			
410	እንደመዝናኛ/ የትርፍጊዜእንቅስቃሴዎችከፍተኛየትንፋሽወይም የልብምትመጨመርየሚያመጡጠንካራአካላዊተ ግባራትንቢያንስለለተከታታይ10 ደቂቃያደርጋሉ? ለምሳሌ፡ኤሮቢክዳንስ፣የቅርጫትኳስ፣የእግርኳስ ጨዋታወይምሩጫ	1. አዎ 2. አይደለም	መልሱ አይደለ ምከሆነ ወደጥያ ቄቁጥር 413 ይሂዱ

411	በሳምንቱለምንያህልቀናትጠንካራአካላዊ እንቅስቃሴዎችንወይምየመዝናኛ/ የትርፍጊዜእንቅስቃሴዎችንአድርገዋል?	በሳምንት ———— ቀናት_____ _	
412	ከነዚህቀናትበአንዱጠንካራአካላዊ እንቅስቃሴዎችንወይምየመዝናኛ/ የትርፍጊዜ እንቅስቃሴዎችንለምንያህልሰአትአድርገዋል?	ሰአት———— ደቂቃ————	
መካከለኛአካላዊእንቅስቃሴዎች			
413	እንደመዝናኛእንቅስቃሴዎችአካልመጠነኛየ ትንፋሽወይምየልብምትመጨመርየሚያመ ጡመካከለኛአካላዊተግባራትንቢያንስለለተከ ታታይ10 ደቂቃአድርገዋል? ለምሳሌ፡ ዋና፣የእጅኳስጨዋታ	1. አዎ 2. አላደርግም	መልሱ አላደር ም ከሆነወ ደጥያቄ ቁጥር 416 ይሂዱ
414	በሳምንቱለምንያህልቀናትመካከለኛአካላዊተ ግባራትንወይምየመዝናኛ/የትርፍጊዜእንቅስ ቃሴዎችንአድርገዋል?	በሳምንት —— ቀናት	
515	ከነዚህቀናትበአንዱመከከለኛአካላዊተግባራ ትንወይምየመዝናኛ/ የትርፍጊዜእንቅስቃሴዎችንለምንያህልሰአት አድርገዋል?	ሰአት ———— ደቂቃ ————	
ከእንቅስቃሴውጪየሚያሳልፉትጊዜ			

የሚቀጥለውጥያቄበቤት፣በት/ቤትወይምበትርፍጊዜዎበመቀመጥወይምጋደምብለው ያሳለፉትንጊዜይመለከታል፡፡ (በዴስክላይ፣በመኪናውስጥ፣ከጓደኞችዎጋርወይምቴሌቭዥንለመመልከትተቀምጠውወይምጋደምብለውያሳለፉትንጊዜይ ጨምራል፡፡ነገርግንበእንቅልፍያሳለፉትንጊዜአያካትትም፡፡

416	**ከሳምንቱአንዱንቀንበጠቅላላውምንያህልጊ ዜተቀምጠውወይምጋደምብለውአሳልፈዋል ?**	**ሰአት _____ ደቂቃ_____ —**

ክፍል 5 internet addiction test

<u>የበይነመረብ (ኢንተርኔት)አጠቃቀምልማድመጠየቂያቅፅ</u>

መጠይቁ 20 **አረፍተነገሮችንይዟል፤በጥሞናካነበብህ/ሽበኋላበተሰጠውልኬትመሰረት** (0, 1, 2, 3, 4 or 5) **በትክክልየሚገልጥህ/ሽላይየ** “√” **ምልክትአድርግ/ጊ።ምናልባትመጠይቁዉስጥሁለትልኬቶችእኩልመስለውከተሰማህ/ሽ፤ባለፈውአንድወርበደም ብየሚገልጥህን/ሽንምረጥ/ጭ።ከመምረጥህ/ሽበፊትሁሉንምጥያቄውችበጥሞናአንብብ/ቢ።**

0 = በፍጹምአልጠቀምም 1 = በጣምአልፎአልፎ 2 =አልፎአልፎ 3=በተደጋጋሚ 4 = ብዙጊዜ 5 = ሁሌም

ተ.ቁ	ጥያቄዎች	የመልስአማራጮች

		0	1	2	3	4	5
1	ምንያህልጊዜኢንተርኔትላይካቀድኸው/ሽውበላይትቆያለህ/ሽ?						
2	ኢንተርኔትላይበምታሳልፈው/ፊውሰዓትምክንያትምንያህልጊዜየቀንተቀንተግባርህንችላትላልህ/ትያለሽ?						
3	ከሰዎችጋር ከሚኖርክግንኙነትይልቅኢንተርኔትመጠቀምንምንያህልጊዜትመርጣለህ?						
4	ምንያህልጊዜአዳዲስየኢንተርኔትተጠቃሚጓደኞችታፈራለህ/ሽ?						
5	በኢንተርኔትአጠቃቀምህ/ሽላይሰዎችምንያህልጊዜቅሬታአቀርበውብሃል/ሻል?						
6	በኢንተርኔትአጠቃቀምህምክንያትምንያህልጊዜበትምህርትዉጤትህላይጉዳትእ የደረሰነው?						
7	መስራትየሚገባህን/ሽንስራሳትሰራ/ሪቀድመህምንያህልጊዜኢንተርኔት (ምሳሌማህበራዊድህረገፅ) ማየትህ/ሽያስደስትሃል/ሻል?						
8	ከኢንተርኔትአጠቃቀምህጋርተያይዞአጠቃላይዉጤታማነትህምንያህልጊዜእየተ ጎዳነው?						
9	ኢንተርኔትላይምንእንደምትሰራስትጠየቅ/ቂምንያህልጊዜትበሳጫለህ/ሽወይም ሚስጥራዊትሆናልህ/ኛለሽ?						
10	ስለኢንተርኔትበማሰብከሚረብሹህ/ሽሀሳቦችምንያህልጊዜትረጋጋለህ/ጊያለሽ?						
11	እራስህንመልሰክመላልሰክስለኢንተርኔትመጠቀምስታስብምንያህልጊዜታገኘዋ ለህ?						
12	ህይወቴከኢንተርኔትውጭአሰልች፣ባዶእናደስታየሌለውነውብለህ/ሽምንያህልጊ ዜትፈራለህ/ሪያለሽ?						
13	ኢንተርኔትበምትጠቀምበት/ሚበትሰዓትሰውቢያስቸግርህ/ሽምንያህልጊዜትበሳ ጫለህ/ሽወይምትናደዳለህ/ጃለሽ?						
14	በኢንተርኔትምክንያትምንያህልጊዜእንቅልፍህን/ሽንታጣለህ/ታጫለሽ?						
15	ኢንተርኔትበማትጠቀምበትሰዓትስለኢንተርኔትበማሰብአዕምሮህ/ሽምንያህልጊ ዜበሀሳብይጠመዳል/ይወጠራል?						

16	**ኢንተርኔትበምትጠቀምበት/ሚበትጊዜምንያህልጊዜከዕቅድዉጭ "ትንሽትንሽ" እያልክ/ሽታራዝማለህ/ሚያለሽ**?						
17	**ኢንተርኔትላይየምታሳልፈውን/ፈውንጊዜለመቀነስምንያህልጊዜሞክረህ/ሽሳይሳካልህ/ሽቀርቷል**?						
18	**ኢንተርኔትላይያሳላፍከውንሰዓትብዛትምንያህልጊዜትደብቃለህ/ቂያለሽ**?						
19	**ጊዜህንከሌሎችሰዎችጋርከማሳለፍይልቅኢንተርኔትላይማሳለፍንምንያህልጊዜት መርጣለህ**?						
20	**ወደኢንተርኔትበመመለስህየሚሻሻልድብርት፣ ብስጭትወይምውጥረትምንያህል ጊዜኢንተርኔትበማትጠቀምበትጊዜያጋጥሞሃል/ሻል**?						

ክፍል 6 የሰውነትመጠንልኬት

ቁመት (በሴንቲሜትር)_____

ክብደት (በኪሎግራም)_____

ስለትብብርዎበጣምእናመሰግናለን

Principal investigator's curriculum vitae

1, Personal information

- NAME: MELKAMU ABERA BULTUMA
- *date of birth*: December 21,1997
- *place of birth: Welega ,Oromia,Ethiopia*
- Nationality: *Ethiopian*
- sex: male
- Marital status: *single*
- E-Mail:gariabera@gmail.com
- Telephone*:+251935079872*

2, educational background

- ✓ *Grade 1-8*: Birbirsa Gajul primary school from 2005-2012
- ✓ Grade 9-12: Gudaya Bila secondary and preparatory school from 2013-2016
- ✓ Higher institution: Wollega University from 2016-2021

3, Qualification:

- Bachelor of Science degree in public health from Wollega University with CGPA of 3.61.
- 2 year and 8 month experience out of this 1 year and 8 month as ***health officer*** at health center and about 1 year on ***data collector*** (FNS,MasRep and prevalence of anemia in under 5 children and it's implication) at Ethiopian Public Health Institute
- Have experience on SPSS,Epi info,**ODK** and etc
- Have participated in many nutrition projects
- Have experience on Managing CMAM,EPI and etc
- Trained and certified on
- ✓ monkey pox :Epidemiology ,preparedness and response for African outbreak contexts

- ✓ introducing Mental Health and Psychosocial Support(MHPSS) in Emergencies by openwho.org

4, language skill

Language	Listening	Speaking	Reading	Writing
Afaan oromoo	Excellent	Excellent	excellent	Excellent
Amharic	Excellent	Excellent	excellent	Excellent
English	Excellent	Excellent	excellent	Excellent

5, computer skills

- ➢ Computer skills(MS-word, power point, excel and etc)
- ➢ SPSS and Epi info
- ➢ Excellent basic computer skill

6, Social skill:

- ✓ strong team working habit, communication skill and smooth relationship

7, Hobbies

- ➢ Always reading bible, books and different magazines
- ➢ Watching films
- ➢ Listening music
- ➢ Playing football

8, references

1, Firehiwot Fantahun (MPH): *phone*; 0945537330, *Email*; firehiwotfantahun2112@gmail.com

2, Sidise Debelo (MPH), *phone*;0940521195,*Email*;sidisedebelo958@gmail.com

3, Melese Chego(MPH), phone 0974315003

JemalBio-sketch

Name: Professor Jemal Haidar

AcademicRank: Professor of Public Health

Address: **AAU,CHS,SPH**

Phone:+251911505465

Email:jemal.haidar@aau.edu.et

Brief biography: Over 37 years of experiences in teaching and operational research in the field of public health; provided training on the control and prevention of micronutrient deficiencies; research methodology and reproductive health;scientific writings;and variousconsultancy servicetolocal and international organizations that includes Child health days, evaluation of therapeutic/supplementary feeding program, impact of micronutrient powder in the control of child anaemia, and linked dairy project to human nutrition.

At national level, served as a deputy director general of the Ethiopian Health and Nutrition Research Institute, member of the National technical working group of nutrition; Micronutrient Control and Prevention Committee; a member of National Health Council, National Ethical Review Committee at Ministry of Ethiopian Science and Technology as well; a founder and member of Food and nutrition society of Ethiopia (FONSE).

At AAU level, served as honorary for 4 years and as permanent employee for 17 years and assumed various positions which includes department head from January 2012-april 2012; Dean of school of Public Health, managing counsel and AC member of the college of health sciences as well as senate Member of AAU from April 2012 to February2013. Presently; teach public health nutrition to both undergraduates and graduate students.

Degrees

- Doctorate in Medicine from Addis Ababa University Medical Faculty,Ethiopia,1986,
- MSc in Applied Human Nutrition(Speciality) from Nairobi University,Kenya,2000,

- Sub-speciality,(CertificatesinVitamin/SerumRetinolAnalysis) Stellenbosch University,SouthAfrica,1998),
- Certificates in qualitative and quantitative data management (CDM) from Nairobi University, Kenya, (January-March,2002),
- Certified in medical education (CME) from University of Toronto, Faculty of Medicine, Department of Family and Community Medicine, Graduate Studies & Academic Fellowship Programs, (March- December, 2009),
- Higher Diploma(HD) in pedagogy,AAU,March2016.

Expertise/contribution to science

- Mapped out the distribution of the majo rmicronutrient deficiency by agro ecology in the country which paved the way to introduce feasible intervention in the country.
- Examined the Impacts of various nutrition intervention programs.

Publications (samples): Authored and co-authored over 200 articles inreputable journals (Nature, Lancet, BMJ, BMC, Plose, SAGE, SAMJ, etc.)

1. Laura Lara et al. Intake of sugar sweetened beverages among children and adolescents in 185 countries between1990and2018:populationbasedstudy.***BMJ***2024;386:e079234|doi:10.1136/bmj-2024-079234
2. AgajieLikie Bogale, Jemal Haidar Ali, and ZakiA. Sherif.Knowledgeand PracticeofWomen With HIV on CervicalCancerPreventionandControlandtheirAttributestoUtilizetheScreeningServicesin Ethiopia:A Cross Sectional Study. Cancer Control 2024; Volume 31: 1–12. DOI: 10.1177/10732748241284943.
3. UmetaM,WestC,HaidarJ,DeurenbergP,HautvastJ.ZincsupplementationandstuntedinfantsinEthiopia:a randomised controlled trial. **Lancet** 2000; 355:2021-26.

4. MeganEtal.Incidenttype2diabetesattributabletosuboptimaldietin184countries. **NatureMedicine 2023; 29**: 982–995.
5. VictoriaMilleetal.Globaldietaryqualityin185countriesfrom1990to2018showwidedifferencesbynation, age, education, and urbanicity. **Nature Food 2022; 3: 694–702. www.nature.com/natfood**
6. VictoriaMilleetal..Children'sandadolescents'risinganimal-sourcefoodintakesin1990–2018wereimpacted by age, region, parental education and urbanicity. **Nature Food 2023; 4: 305–319.**
7. Salahadin M, Jemal H, Binyam A, Yared M. Post-stroke Limitations in Daily Activities: Experience from aTertiarycareHospitalinEthiopia.**BMCNeurology2023;23:364.**https://doi.org/10.1186/s12883-023-03419- 9.
8. Werissaw H, Mizan H, Ruth A, Haidar J, Randy E. Ayele B, Abenet T, Cristian K, Wakgari D, Daniel M.

   Regional and socioeconomic disparity in insecticide-treated nets uses to prevent malaria among pregnant women in Kenya. **Plose 0174R3: 2022.**
9. AlisonT,Jean-PierreH,MduduziN.N,Mbuya[3],TyBeal,RobertN,FabianR,BradleyA.W, TezeraF,HaidarJ, Nigussie A, Gretel H. P, Hana Y,Lynnette M. Identifying Bottlenecks and Predictors of Coverage and AdherenceOutcomesforaMicronutrientPowderPrograminNorthernEthiopia. **MaternalChildNutr2019; 15(55):e12807. doi.org/10.1111/mcn.12807**
10. HamidY.Hassen,HaidarJ,SeifuH,BilalS,AwokeM.Nationalincidence,prevalenceanddisability-adjusted life years(DALYs) ofcommon micronutrient deficienciesin Ethiopia from 1990 to 2017: estimates from the global burden of diseases study.**Glob Health Action 2020;13(1): 1776507. Https://doi.org/10.1080/16549716.2020.1776507**
11. LikeA,HailuH,BerheN,MedhinG,Haidar J.MolecularepidemiologyofHPVamongHIVinfectedwomenin developing countries. Systematic review and meta-analysis. **BMC Virol J 2020 17:179 https://doi.org/10.1186/s12985-020-01448-1**
12. NastaranM,FarzadF,SaeedP,MahboobehK,AmirA,HaidarJ.BurnoutandClinicalLearningE

nvironment among Residents as Health Workforce: Study to Find Relationship. **Cell Press 2021; 7 (6): e07238 DOI:https://doi.org/10.1016/j.heliyon.2021.e07238**

13. SahileZ,TezeraR,HaileMariamD,CollinsJ,AliJH.NutritionalstatusandTBtreatmentoutcomesinAddis Ababa, Ethiopia: An ambi-directional cohort study. **PLoS ONE 2021; 16(3): e0247945. https://doi.org/10.1371/journal. pone.0247945.**
14. Haidar J, Rebeca P. Iron deficiency anemia is not a rare problem among women of reproductive ages in Ethiopia:acommunitybasedcrosssectionalstudy. ***BMC,blooddisorder2009;***9:**7doi:10.1186/1471-2326-9-7.**
15. Mulusew A, Haidar J. Male involvement in prevention of mother to child transmission of HIV in the context to partner testinginruralEthiopia:Evidence fromGoba, Bale zone, Oromia. **SAfrMedJ2017;107(10):900-903. DOI:10.7196 / SAMJ.2017.v107i10.12463.**
16. HaidarJ.CommonMicronutrientDeficienciesamongFoodAidBeneficiariesinEthiopia. **EthiopJHealthDev 2011; 25(3):222-229.**
17. Mukerrem M, Haidar J. Assessment of the prevalence and factors influencing adherence to exclusive breast feeding among HIV positive mothers in selected health institution ofAddis Ababa, Ethiopia. **Ethiop J Health Dev 2012; 26(3):169-175.**
18. Gizaw S, Haidar J. Validation of Satisfaction Questionnaire for Outpatient Neurology Services of a Tertiary Hospital in Addis Ababa, Ethiopia: A facility based cross-sectional study. **East Afr J Public Health 2014; 11(4):871-877.**

Awards

2000 *Swiss Trans-Disciplinary Award,Zurich*

2003 *Certificate of recognition for the development of marketplace global competition in Washington*

2011 *Teacher of the year,School of medicine*

2012 *Teacher of the year,School of medicine*

2014 *Outstanding contribution to the academic achievement,college of Health sciences*

2013 *Seedgrant on key population,NORAD/NORHED*

2017 *Recipient of Gold medal Award and certificate for the senior researcher position, EPHA*

2021 *Recipient of AAU distinguished service award*

Affiliations:

2008todate	Registered and accepted as amember of Geneva Foundation For Medical Education and Research
1987todate	Member of Ethiopian Medical Doctors Associations**(EMA**)
1987todate	Life time member of Ethiopian Public Health Associations(**EPHA**)
2006todate	Founding Member of Food and Nutrition society of Ethiopia(**FONSE**)

1. **ThesesSupervised:**

- MPH As primary advisor:over 150
- PhD Theses Supervised:Seven

2. **Theses Examined:**

- MPH/MSc:Over200(Mekele,Jimma,Haromaya,Gonder, Hawasa,Jimmma,Defencecollege,AAUand other Universities)
- PhD:Asexternalandinternal–7(HonkKongUniversity,MalysiaUniversity,Jimmauniversity,Bahir- Dar university and Addis Ababa University)

AdvisorName: Prof Jemal Haidar **Signature**: