ADDIS ABABA UNIVERSIYTY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

POSTGRADUATE PROGRAM

PREVALENCE AND DETERMINANTS OF OVERWEIGHT AMONG ADULT CARDIAC PATIENTS IN SELECTED CARDIAC HOSPITAL IN ADDIS ABABA, ETHIOPIA

BY: SEBLE KEBEDE GUDETA (BSC, MSc CANDIDATE)

A RESEARCH PROPOSAL TO BE SUBMITTED TO THE GRADUATE STUDY PROGRAMS OF THE SCHOOL OF NURSING AND MIDWIFERY, COLLEGE OF HEALTH SCIENCE, ADDISABABA UNIVERSITY IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF THE DEGREE OF MASTERS OF SCIENCE IN CARDIOVASCULAR NURSING.

MAY, 2023

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ADDIS ABABA, ETHIOPIA

APPROVAL SHEET
ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES.

SCHOOL OF NURSING AND MIDWIFERY

DEPARTMENT OF CARDIOVASCULAR NURSING

I, the undersigned MSc student, declare that I have submitted my original work on title prevalence and determinants of overweight among adult cardiac patients who visit the outpatient department of cardiac center Ethiopia and black lion specialization hospital. For the examination.

Submitted by:

SEBLE KEBEDE _____ _____

Name of student Signature Date

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

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STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from Addis Ababa University College of Health Sciences, School of Nursing and Midwifery Department of nursing. The thesis will be deposited in the Addis Ababa University Digital Library and is made available to the local, national, and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

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ABBREVIATIONS	
AOR	Adjusted Odds Ratio
BLSH	Black lion Specialized Hospital
BMI	Body Mass Index
BSc	Bachelor of Science
CVDS	Cardiovascular Disease
CHFE	Children's Heart Fund Of Ethiopia
DALYs	Disability Adjusted Life Years
DM	Diabetes Mellitus
EDHS	Ethiopian Demographic Health Survey
FAO	Food and Agriculture Organization
FFQ	Food Frequency Questionnaire
MSc	Master of Science
NCDs	Non-Communicable Disease
NHMS	National Health and Morbidity Survey
OPD	Outpatient Department
PHQ	Patient Health Questionnaire
SPSS	Statistical Package for the Social Sciences
TEM	Technical Error of Measurement
TPA	Total Physical Activity
WHO	World Health Organization

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ABSTRACT

Background: Overweight is an escalating problem worldwide, yet extensive evidence, especially in Africa, is still lacking. Excess body weight leads to extra fat deposition and serious health consequences such as cardiovascular disease (mainly heart disease and stroke), type 2 diabetes, musculoskeletal disorders like osteoarthritis, and some cancers.

Objective: The study aimed to assess the prevalence and determinants of overweight among adult cardiac patients in a selected cardiac hospital in Addis Ababa, Ethiopia, 2023.

Method: A hospital-based cross-sectional study design was employed from February to March 2023. **A** total of 292 eligible participants were included using systematic sampling. Anthropometric measurements (height and weight) were assessed using the World Health Organization's recommended techniques. The data was analyzed using the statistical package for social science (SPSS) software. The study conducted a binary logistic regression model to examine the association between independent variables and the outcome variables. The results were expressed as odds ratios (ORs) together with their 95% confidence intervals, first entering each factor alone in the logistic model (crude ORs) and then including all factors to assess potential confounding (adjusted OR). Finally, the direction and strength of the association were expressed using the adjusted odds ratio (AOR) with a 95% confidence interval. The level of statistical significance was considered to be 0.05.

Results: A total of 292 participants were included in the study, yielding a 100% response rate. This study illustrated that the overall prevalence of overweight based on body mass index **was (87=28.9%)** (95% CI: 24.7%–35.3%). Female sex (AOR = 1.54, 95% C.I.: 1.42, 4.07), had a history of depression [AOR (95% C.I.): 1.03 (1.02, 1.70), high meat consumption [AOR (95% C.I.): 1.8 (4.1, 1.48)], and high wealth rank [AOR (95% C.I.): 2.1 (1.05, 2.27)] were significantly associated with overweight.

Conclusions: The prevalence of overweight among adult cardiac patients seeking health care in a selected cardiac hospital in Addis Ababa, Ethiopia, was found to be high in this study, suggesting that it is a chronic nutrition-related condition. Being female, having a history of depression, being in a high-wealth class, and consuming more meat were the identified risk factors. Hence, we recommend that the focus of any action be on each of the identified relevant factors in order to reduce the magnitude of overweight among cardiac patients.

Key words: Prevalence, Adults, Obesity, Overweight, Cardiovascular disease

1. INTRODUCTION

1.1. Background

Obesity and overweight refer to the abnormal or excessive accumulation of body fat in adipose tissue, which can negatively impact health(1). When individuals consume more calories than they expend, the body stores the excess calories in adipose tissue's fat cells. These cells serve as energy reserves and expand or shrink based on energy utilization. Failure to maintain a balance between energy intake and expenditure through healthy dietary choices and regular physical activity can lead to the accumulation of fat, resulting in overweight and, ultimately, obesity(2).

If an adult has a BMI below 18.5, it is categorized as underweight. A BMI between 18.5 and 25 is considered within the healthy weight range, while a BMI between 25.0 and 29.9 is classified as overweight. If the BMI is 30 to 34.9, it falls within the obesity category. Other measurements of body composition and fat distribution include those of the waist and hip circumferences, Waist-to-hip ratio >0.9; men or women >0.85. Waist circumference >40 inches for men or women >35 inches Measurement of waist-to-hip ratio helps identify central or android obesity (3).

According to the World Health Organization (WHO) report, there are approximately 2.3 billion adults worldwide who are overweight. This high prevalence has detrimental effects on quality of life and places significant burdens on medical, psychological, and social aspects. While infectious diseases and malnutrition have historically been major causes of illness and death in sub-Saharan Africa, there has been a notable increase in the prevalence of non-communicable diseases (NCDs) such as overweight or obesity, diabetes, and cardiovascular disease. These NCDs have become alarmingly widespread globally due to the rapid urbanization and the far-reaching impact of globalization in recent decades(4). Even in low-income countries, these health issues are increasing at an alarming rate due to changes in lifestyle, including shifts in dietary patterns, reduced physical activity, heightened stress levels, and increased tobacco and alcohol consumption(5).

Overweight and obesity are considered clusters of risk factors for non-communicable diseases. They are often associated with a range of additional health conditions, particularly

cardiovascular diseases, type 2 diabetes, high blood pressure, elevated blood cholesterol and triglyceride levels, certain types of cancer, and sleep disorders(6).

Various indicators of cardiovascular and metabolic diseases are closely associated with overweight and obesity. Individuals, regardless of age, who have excess weight are at a significantly higher risk of experiencing high blood cholesterol, low levels of HDL (good cholesterol), elevated blood triglycerides, increased fasting glucose levels, and hypertension. These research findings support the existing knowledge on the connection between metabolic syndrome, increased cardiovascular disease risk, and the presence of overweight or obesity(7).

Studies indicate that the prevalence of overweight varies based on age and sex, with adult women more commonly affected than men. The age of 18 and above tends to be a critical period for weight gain in adults. Among women of childbearing age, one possible contributing factor to overweight is the retention of weight gained during pregnancy(8). Several potential factors can contribute to these trends, including the consumption of an unhealthy diet characterized by high fat and sugar content, as well as reduced physical activity resulting from increasingly sedentary lifestyles associated with urbanization. Numerous studies have reported varying prevalence rates for adult overweight, ranging from 16.1% to 25.3%, and obesity rates ranging from 5.6% to 16.2% (9).

Therefore, knowing the prevalence of overweight and determinants is paramount to designing preventive strategies. Hence, this study aimed to determine the Prevalence and determinants of overweight among adult cardiac patients in selected cardiac hospitals in Addis Ababa,

1.2. Statement of the problem

Overweight and obesity pose significant global public health challenges, with more than 1.9 billion adults reported as overweight in 2014, including over 600 million who were classified as obese(10).

In Sub-Saharan Africa, including Ethiopia, the average annual prevalence of overweight is approximately 5%, with studies indicating higher rates in urban areas. Overweight and obesity have emerged as major public health concerns in Africa, particularly among adults residing in urban areas. While overweight and obesity were not prevalent issues in Ethiopia in the past, there has been a recent increase in the prevalence of adult overweight and obesity, rising from 4% in 2000 to 6% in 2016. This trend contributes to various co-morbidities and even mortality in Ethiopia and other developing nations(11). Limited surveys have been conducted, including in Addis Ababa city and hospital-based studies, to determine the extent of overweight or obesity and the associated risks of conditions such as diabetes, high blood pressure, and heart disease(12).

Cardiovascular disease (CVD) refers to a variety of conditions and injuries that impact the cardiovascular system and its associated structures. Prominent CVDs encompass coronary heart disease, congestive heart failure, angina, peripheral arterial disease, deep vein thrombosis (DVT), and stroke. CVDs are a primary cause of disability and premature mortality, making a substantial contribution to the escalating healthcare expenses. The proportion of premature deaths resulting from CVDs ranges from 4% in high-income nations to 42% in low-income nations. The prevalence of CVDs is rapidly increasing, particularly among individuals affected by obesity(13).

Overweight and obesity are complex problems influenced by genetics, behavior, culture, and the environment. Addressing these challenges requires not only individual behavioral changes but also public policy interventions, changes in the social environment, and shifts in cultural norms. However, most nutritional interventions in Ethiopia have primarily focused on addressing childhood undernutrition(9).

Identifying the risk factors contributing to the rapid increase in overweight and obesity is crucial for preventing and controlling these emerging public health challenges in Ethiopia. Therefore, the purpose of this study is to bridge the knowledge gap by assessing and determining the prevalence and determinants of overweight among adult cardiac patients in selected cardiac hospitals in Addis Ababa, Ethiopia.

1.3. Rationale (Justification)

In Ethiopia, study reports about overweight and obesity among adult CVD patients are very limited. In many low-income countries, the prevention and control of the prevalence of overweight and obesity are not a priority and do not receive proper attention. Rather, communicable diseases such as TB and malaria and other pressing issues take up too much of the available healthcare resources. Nevertheless, a change in lifestyle and the adoption of new behaviors among the urban population can potentially increase the likelihood of overweight or obesity. The objective of the present study was to fill these knowledge gaps by examining the prevalence of overweight and obesity and the associated risks. Additionally, the study aimed to explore the connection between overweight or obesity and lifestyle factors such as physical activity, dietary intake, and socio-economic characteristics.

1.4. Significance of the Study

The findings of the study are expected to provide valuable insights into the issue of overweight and its primary contributing factors among adults in urban and rural areas, across various socio-economic groups. These findings can be instrumental in raising awareness about the problem of overweight and informing health sector professionals and public health planners. By understanding the specific factors that contribute to overweight, policymakers can allocate resources effectively for prevention and control measures. The study results can also serve as a foundation for the development of guidelines and messages aimed at reducing the prevalence of overweight among adults in Addis Ababa, Ethiopia, and similar contexts throughout the country. Ultimately, the study's findings have the potential to shape strategies and interventions that address the issue of overweight and promote healthier lifestyles in the population.

2. LITERATURE REVIEW

2.1. Definition of overweight and obesity

Overweight and obesity refer to the abnormal or excessive accumulation of body fat in adipose tissue, which can negatively impact health. When an individual consumes more calories than they expend through energy expenditure, the surplus calories are stored in fat cells within adipose tissue. These fat cells function as energy reservoirs, expanding or contracting depending on the individual's energy utilization. Failure to maintain a balance between energy intake and output through healthy eating habits and regular exercise can result in fat accumulation, leading to overweight and eventually obesity(14). Maintaining weight occurs when energy intake matches energy expenditure. When the balance between energy in and energy out shifts, it affects weight changes. The quantity of fat in an individual's body is influenced by the quantity and size of their fat cells. The period of late childhood and early puberty is marked by the most rapid increase in the number of fat cells. Even after growth stops, the number of fat cells can still rise whenever there is an excess of energy intake compared to expenditure, leading to a positive energy balance(15).

2.2. Prevalence of overweight and obesity

Globally, there are nearly 1 billion individuals classified as overweight, and among them, approximately 300 million are clinically obese (WHO, 2002). In the United States, almost one-third of adults are classified as obese, while in South Africa, over half of adults are overweight or obese. The prevalence of overweight and obesity has significantly increased in most developed and developing countries over the past two decades, affecting individuals of all ages, genders, racial and ethnic backgrounds, income levels, and educational attainment. Failure to achieve a balance between energy intake and output through the adoption of healthy eating habits and regular exercise can lead to the accumulation of fat, resulting in overweight and eventual obesity (16). Overweight has emerged as a critical global health issue, being associated with a range of chronic diseases including hypertension, cardiovascular disease, diabetes, arthritis, gall bladder diseases, certain types of cancer, and respiratory diseases(17).

The increase in obesity can be attributed to the combination of increased caloric intake and decreased energy expenditure. South Africa has the highest rates of obesity, with mean BMI values of 22.9 kg/m2 for men and 27.1 kg/m2 for adults, and a prevalence of central obesity among adults at 42%. Obesity rates differ among various ethnic groups, with black men having an 8% obesity rate and white men having a 20% obesity rate. Among different ethnicities, Indians and Asians have a 20% obesity rate, while black adults have a 30.5% obesity rate. In certain areas of sub-Saharan Africa, obesity can coexist with undernutrition. South Africa has reported the highest prevalence of obesity among black men and adults in Africa, surpassing the rates among black adults in the United States. Additionally, the prevalence of obesity among urban adults in South Africa is nearly double that of urban adults in the Gambia and Tanzania(14).

A recent study conducted in Kenya has revealed higher rates of overweight and obesity, particularly in urban areas, for both males and females. In a similar vein, the Cameroon burden of disease survey conducted a cross-sectional study in four urban districts of Cameroon and identified a significant prevalence of overweight and obesity, especially among adults aged 35 and above. When evaluating individuals based on their BMI, it was discovered that more than 25% of men and nearly half of all adults were either overweight or obese, with 19.5% falling into the obesity category. These findings emphasize the alarming prevalence of overweight and obesity in these populations, emphasizing the urgent need for effective strategies to tackle this public health concern(18). Obtaining accurate data on the prevalence of overweight and obesity in African countries poses challenges due to the lack of nationally representative data on these topics. However, it is widely recognized that the prevalence of overweight and/or obesity is increasing globally, affecting both developed and developing countries. This trend is particularly concerning in urban populations, where the impact is becoming more severe. While there may be inconsistencies in the reported numbers, the majority of literature indicates that overweight and obesity are increasing at an alarming rate, highlighting the urgent need for special attention to address this growing public health issue(4).

lthough BMI is widely utilized as a measure to assess overweight and obesity in populations, its usefulness when used alone in individuals is limited due to its susceptibility to influences from age, gender, and ethnicity. Age-related changes in body composition, gender disparities in fat distribution, and variations in body composition across ethnicities can impact BMI interpretation. Consequently, relying solely on BMI may not provide a comprehensive evaluation of an individual's overweight or obesity status. To obtain a more accurate assessment, it is recommended to incorporate additional measures such as waist circumference, body fat percentage, or relevant clinical indicators to better understand an individual's body composition and associated health risks(19). Incorporating a measure of fat distribution alongside BMI can potentially address certain limitations associated with using BMI alone in clinical settings(20). The current study utilized a combination of three measures, namely BMI, percentage of total body fat, and waist circumference, to evaluate and assess overweight and obesity. This approach aimed to provide a comprehensive understanding of these conditions by considering multiple indicators of body composition and fat distribution.

2.3. The Magnitude of overweight

By incorporating a measure of fat distribution alongside BMI, the limitations of using BMI alone in a clinical setting can be mitigated(21). Overweight is known to be linked to an elevated risk of cardiovascular disease, insulin resistance, cancer-related concerns, and type 2 diabetes mellitus. In Ethiopia, the prevalence of overweight has notably increased, especially in urban areas, with rates reaching 18% among adults(22). Several factors contribute to the occurrence of overweight among adults in Ethiopia, including sedentary lifestyles, economic changes, physical inactivity, consumption of saturated fats, high-fat snacks, and sweetened beverages(23). Overweight has detrimental effects on both physical and psychological well-being, contributing to premature mortality and long-term morbidity. It also imposes a significant economic burden through increased medical expenses and can reduce life expectancy by up to 20 years.

2.4. Factors associated with Overweight among adults

Excess weight is influenced by a combination of genetic, behavioral, physiological, pathological, and environmental factors. These factors interact to contribute to the development of obesity. Understanding and addressing this multifaceted nature is crucial for effective weight

management. (24). Overweight and obesity are influenced by a range of factors, including genetic predisposition, environmental and behavioral factors, aging, and pregnancies. While obesity is not solely attributed to excessive food consumption or lack of physical activity, these factors significantly impact the energy balance equation and can be modified through dietary choices and physical activity patterns. Understanding and addressing these factors is important for managing weight effectively(25). This study specifically examined socio-economic and socio-demographic factors, dietary intake, and physical activity patterns as key areas of focus. Overweight and obesity are recognized as significant global health issues associated with increased morbidity and mortality, particularly due to the risk of hyperlipidemia, hypertension, and atherosclerotic cardiovascular disease. However, in the case of individuals with cystic fibrosis (CF), who generally have low cholesterol levels and a lower prevalence of atherosclerotic cardiovascular disease, the impact of being overweight or obese on their health risks is less clear, given the relatively young age of the CF population(26). The objective of this study was to assess the prevalence of obesity and overweight among adults receiving care at a prominent cystic fibrosis (CF) center in Minnesota. Additionally, the study aimed to explore the association between obesity/overweight and cardiovascular risk factors as well as pulmonary health in this population. Interestingly, the study found a notable rise in the number of CF patients who are overweight or obese, which was uncommon in this population in previous years. Similarly, in Toronto, there has been a significant decrease in the proportion of underweight adults with CF, accompanied by a simultaneous increase in the proportion of patients who are overweight or obese over the course of several years(27).

2.4.1. Socio-demographic and Economic Factors

Different studies have presented varying perspectives on the influence of socio-demographic and economic factors on overweight. Regarding gender, there is a discrepancy in findings, with some researchers suggesting that women are more at risk, while others argue the opposite. For example, in the Spanish population, males have a higher likelihood of being overweight or obese, except for those aged 45 to 54. In contrast, research conducted in the northern region of Ethiopia suggests that women have a higher likelihood of being overweight than men, and individuals over 50 are more prone to overweight compared to those under 50. These variations

highlight the complex nature of socio-demographic factors and their association with overweight (24).

According to a study conducted in Spain, divorced individuals tend to have higher rates of overweight and obesity compared to married adults(28). In the United States, the National Survey of Midlife Development (MIDUS) discovered that married men generally have higher body weights than those who are divorced or separated, although they do not weigh more than men who have never been married. However, among adults in general, those who are married have similar body weights to those who are single or divorced. Interestingly, adults who have never been married are more likely to be obese and have higher BMIs compared to their married counterparts. These findings suggest that marital status may play a role in weight and BMI among adults(29). Research has consistently shown a correlation between income and educational attainment with overweight and mean BMI. Studies have found that individuals with lower incomes and educational levels tend to have higher rates of overweight and higher mean BMI. This suggests that socioeconomic factors play a significant role in shaping the prevalence of overweight and obesity, with lower socioeconomic status being associated with a higher risk (30).

2.4.2 Genetics

The development of overweight and obesity in the population is influenced by various factors, including genetics. Multiple genetic variants have been identified that contribute to an individual's susceptibility to gaining weight. Over 200 common genetic variants have been discovered thus far, highlighting the polygenic nature of these conditions. The heritability of BMI, which refers to the proportion of variation in BMI that can be attributed to genetic factors, has been estimated to be between 40% and 70%. This indicates that genetics play a significant role in determining an individual's propensity for weight gain(31)**.** The prevalence of overweight or obesity, defined as having a body mass index (BMI) of 25 or higher, is 49.7% in men and 63.9% in women. More specifically, the prevalence of obesity, defined as having a BMI of 30 or higher, is 10.5% in men and 22.5% in women. These statistics reveal a substantial rise in the occurrence of overweight and obesity among adults, with a secular change of 5.8% observed over time. These figures highlight the growing public health concern of excess weight in the population and the need for effective interventions to address this issue(32).

2.4.3. Lifestyle factors

2.4.3.1. Meals

Energy-dense meals are tasty, affordable, and practical because they have a high concentration of calories per unit of measurement and are frequently heavy in refined grains, added sugars, and added fats. They have, however, been linked to higher calorie intakes and poorer nutrition quality. Dietary energy density will independently and strongly link to increased BMI and waist circumference in the United States of America (USA). For males and adults, respectively, those with higher dietary energy densities had 1.11 and 1.33 times the likelihood of having higher. Similarly to this, a recent meta-analysis on the relationship between dietary patterns and overweight found that the highest categories of the healthy eating pattern had a lower chance of being overweight or obese than the lowest categories (33). Additionally, among Ethiopian adults, those who consumed fruits and vegetables had a 49% lower risk of being overweight or obese (34). Although it may seem evident that improper eating habits may be linked to overweight, studies in 2019 on the assessment of obesity and overweight have found no association between overweight and harmful eating habits in both young and old persons. Given the context-specific character of dietary patterns and the fact that the studies will primarily be done in high-income nations, the results might not be immediately transferable to low- and middle-income countries (35).

2.4.3.2. Physical activity

The American Heart Association and the Physical Activity Guidelines for Americans advise adults to strive for 150 minutes of moderate-intensity physical activity each week, in addition to incorporating muscle-strengthening exercises on two days. Although 150 minutes may appear substantial, it can be spread out over the course of a week and doesn't necessarily need to be done all at once. Insufficient physical activity is a significant risk factor for developing overweight and obesity. The lack of physical activity plays a crucial role in the progression of these conditions, and the level of physical activity can impact the amount of weight gained over time(36). he 2015 National Health and Morbidity Survey (NHMS) conducted in Malaysia uncovered findings that demonstrated a correlation between higher levels of physical activity and a decreased risk of overweight and obesity in adults. The study revealed that each additional 2 hours of daily standing or walking was associated with a 9% lower risk of obesity and overweight. Furthermore, engaging in one hour of brisk walking per day was linked to a 24% lower risk. These results emphasize the significance of regular physical activity in the prevention and management of weight-related concerns(37). A study conducted in Northwestern Ethiopia revealed that adults who participated in mild to moderate physical activity had a 39.2% reduced risk of developing overweight or obesity. This finding emphasizes the beneficial effect of physical activity in preventing weight-related problems within this population. However, additional research is required to gain a better understanding of how individual and environmental factors influence physical activity and to develop effective interventions for managing obesity. Conducting such studies can contribute to the enhancement of strategies aimed at controlling and preventing obesity.

2.4.3.3. Sedentary behaviors

The WHO Guidelines on Physical Activity and Sedentary Behavior include guidelines for the frequency, intensity, and duration of physical exercise needed to provide meaningful health benefits and reduce health hazards. For the first time, recommendations are given about the connections between sedentary behavior and health outcomes, as well as for certain subpopulations, including pregnant and postpartum adults, as well as individuals who are disabled or suffer from chronic diseases. The health of those who work is significantly impacted by sedentary behavior (38).

Likewise, there is evidence that white-collar workers, including those who work for universities, spend a lot of time sitting at their jobs, sometimes long past their usual working hours; Similarly, the health of those who work is significantly impacted by sedentary behavior (39).

Adults with daily television viewing increases of one hour had greater waist circumferences of 1.8, 0.4, and 2 cm, respectively. In Canada, the proportion of overweight men who watched television grew from 14% of those who did soon average for 5 hours or less per week to 25% of those who did soon average for 21 hours or more.

The prevalence of overweight in adults rose, going from 11% of those reporting 5 or fewer hours per week to 24% of those reporting 21 or more. Additional research is needed to discover if particular sedentary habits alone or in combination with other obesity-genetic behaviors are more strongly linked to overweight (40).

2.4.4.4. Substance use (Smoking, alcohol drinking, and chat chewing)

Studies linking alcohol use, smoking, and obesity have had mixed results. A cross-sectional study done in Spain found that daily alcohol drinkers had a 1.39 times greater chance of becoming overweight or obese (41). The consumption of alcohol throughout youth, however, has only a little impact on weight growth or the emergence of abdominal obesity from adolescence to early adulthood, according to longitudinal population-based research conducted in Finland (42).

In a prospective cohort study conducted in the United States, it was observed that normal-weight adults who consumed light to moderate amounts of alcohol had a lower risk of weight gain and becoming overweight or obese over a 12.9-year follow-up period compared to non-drinkers. Similarly, among Chinese individuals, there was a negative correlation between the number of cigarettes smoked and body mass index (BMI). However, in Switzerland, the odds ratio for overweight compared to normal weight was higher for former smokers and heavy smokers in males, indicating a potential association between smoking and increased risk of overweight or obesity(43).

2.4.4.5. Depression, Stress, and Emotional Factors

epression is linked to poor food choices, higher calorie intake, and a sedentary lifestyle, leading to weight gain and overweight. A community-based study in Debre Berhan town, Ethiopia, found that the prevalence of depression was 26.02% among normal-weight adults and 32.89% among overweight adults. These findings suggest a possible association between depression and overweight status in the studied population(44). A study conducted in the USA demonstrated that the prevalence of overweight showed a notable increase from 25.4% among individuals without depressive symptoms to 57.8% among those with moderate to severe depression. These findings highlight a significant association between depressive symptoms and an elevated risk of overweight. This suggests a significant association between depression and an increased risk of overweight in the adult population(45). Research studies have indicated that there is a relationship between insufficient sleep and an increased likelihood of being overweight. This connection can be attributed, in part, to the impact of sleep on hormone regulation, appetite control, and energy utilization in the body. Additionally, certain individuals tend to engage in excessive eating when experiencing emotions such as boredom, anger, distress, or stress.

2.5. Conceptual Framework

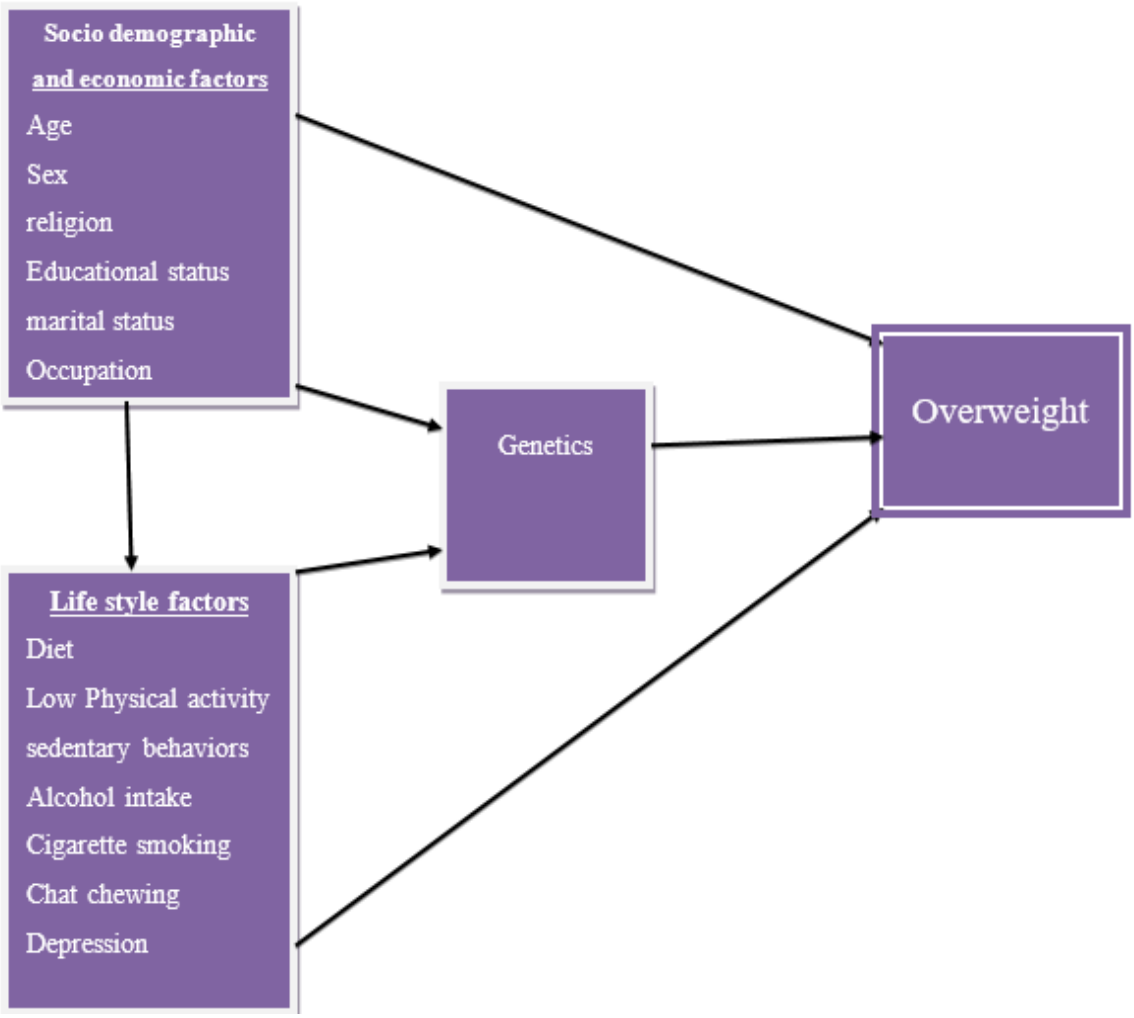

Figure 1 : Conceptual framework for determinants of overweight/obesity among adult Cardiac patients in selected cardiac hospital in Addis Ababa, Ethiopia, 2023.

Source: Swinburn et al 2011

3. OBJECTIVES

3.1. General objective

To assess the Prevalence and determinants of overweight among adult Cardiac patients in some selected cardiac hospital in Addis Ababa, Ethiopia 2023.

3.2. Specific objective

- To identify the Prevalence of Overweight among Adult cardiac patients attending health care in a selected cardiac hospital, in Addis Ababa, Ethiopia.
- To determine the relationship between contributing factors and overweight adult cardiac patients in the selected Cardiac hospital in Addis Ababa, Ethiopia.

4. METHOS AND MATERIALS

4.1. Study area and period

The study was conducted in two specific hospitals selected on purpose in Addis Ababa, Ethiopia. The hospitals included in the study were Black Lion Specialized Hospital (BLSH) and the cardiac center of Ethiopia. Cardiac Center-Ethiopia is located at Black Lion Specialized Hospital, Addis Ababa, Ethiopia. BLSH is one of the government hospitals with more than 1000 beds in medical, gynecological, obstetrics, cardiac, surgical, pediatric, emergency, and outpatient departments (OPD).

The OPD departments include the cardiac clinic of the BLSH, which provides a service for a maximum of 60 patients per day; an average of 35 to 40 patients was seen daily. Approximately 960 cardiac cases were seen in both cardiac outpatient departments in the last year (46). The cardiac center in Ethiopia has more than 10 doctors, 60 nurses, and 20 other professionals. The outpatient department of a cardiac center in Ethiopia sees 25 adult patients per day and 400 patients per month. Therefore, this study was conducted from February 27, 2023, to March 27, 2023.

4.2. Study Design

A quantitative institutional-based cross-sectional study was employed.

4.3. Study population

4.3.1. Source population

The source population for this study was all adults aged above 18 who visited the OPD department of Black Lion specialized hospital and cardiac center in Ethiopia.

4.3.2. Study population

The study population was all adults above 18 years old with CVD who visit the cardiac clinics of the selected hospitals and who fulfill the inclusion criteria during data collection time.

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

All ambulatory adults who was willing to participate and who can hear and speak as adults was included in the study.

4.4.2. Exclusion criteria

- Seriously ill adults during data collection was excluded.
- Pregnant women.

4.5. Sample size and sampling technique

4.5.1. Sample Size

Sample size was calculated using the single population proportion formula, considering a 95% confidence interval (CI), a 5% margin of error (d), and a prevalence of overweight among adults of 0.39%. In the study of Wolayita Sodo City, and by considering a 10% non-response rate, the total sample size of the study was 292.

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

$$n = \frac{(1.96)^2\ (0.39)(1-0.25)}{(0.05)^2}$$

= <u>366</u>

Sample size correctional formula for a finite population of less than 10,000

n corrected sample size

n sample size calculated early

N total population in the study

$$n = \frac{n}{\frac{1+n\ ((n-1)}{N}}$$

366/1+366-1/960= 366-1/960= 365/960=0.38+1 = 1.38

366/1.38 =<u>265</u>

Considering the non-response rate of 10%, the final sample size was **<u>292</u>**

4.5.2. Sampling Techniques

The study participants was selected using a systematic random sampling technique. The daily registration book of patients was used as a sampling frame. By using the proportional allocation formula for the sample size for two hospitals 122 samples came from the cardiac center in Ethiopia, and 170 from the BLSH OPD of the cardiac clinic. The unit were working four days per week; about 25 patients per day was sampled for four weeks, and data collection was carried out. The first sample was selected using simple random sampling, and every third interval, the sample was enrolled until it reaches the desired sample size. K values are equal to N/A by dividing the total population by the sample size.

Proportional allocation for two hospitals

The proportional value was calculated with the formula:

$$= \frac{\text{Total sample}}{\text{Total population}} \times \text{total population of specific area}$$

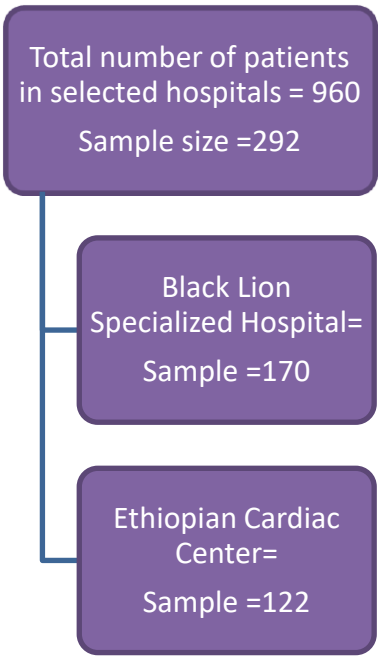

Figure 2: Proportional presentation of sample for Prevalence and determinants of overweight among adult Cardiac patients in selected cardiac hospital in Addis Ababa, Ethiopia, 2023.

4.6. Operational Definition

Adults: Are individuals whose age is 18 years.

Overweight: If the BMI of the study participant is greater than or equal to 25.0 but less than 30.0 kg/m2, the participant was labeled as overweight.

Body Mass Index: Anthropometric measurement is defined as weight in kilograms divided by height in meters squared (weight (kg)/height (m2)).

Obesity: A BMI 30 kg/m2, a fat percentage of > 39% for adults who are over 18 years old, or Obesity using waist circumference (central obesity) was defined as a waist measurement 88 cm.

4.7. Variables

4.7.1. Dependent Variables

- Overweight

4.7.2. Independent variable

The study examined several socio-demographic variables, including age, gender, height, weight, religion, and marital status. Socio-economic variables such as occupation, monthly income, level of education attained, and place of residence were also considered.

Lifestyle factors investigated in the study included diet, low physical activity, sedentary behaviors, alcohol intake, cigarette smoking, chat chewing, and depression.

4.8. Data Collection Methods

4.8.1. Data Collection tool

The study employed a structured questionnaire administered by interviewers to collect data, along with anthropometric measurements. The questionnaire consisted of four sections: socio-demographic and socio-economic, dietary information, physical activities, and substance use. The socio-demographic section included questions on age, gender, religion, marital status, height, weight, and body mass index. Additional information on the respondent's area of residence, income status, primary occupation, sources of income, monthly expenditure, and household possessions was also gathered. The dietary information section included a 7-day food frequency and a 24-hour food recall to assess the types of foods consumed. The physical activity questions aimed to gather information on the kind, frequency, duration, and intensity of physical activities performed during work, travel, and leisure time over a typical week. The substance use section covered cigarette use, alcohol consumption, and chat chewing. The questionnaire comprised a total of 47 items or questions, with 11 for socio-demographic and socio-economic factors, 14 for dietary information, 17 for physical activity, and 7 for substance use. The questionnaire was developed based on a previous study's framework, modified to align with the objectives of the current study and review of relevant literature.

4.8.2. Data collection procedure

For this study, a team of five clinical nurses was involved in data collection, supervised by a designated supervisor. The participants in the study were informed about the purpose of the research by the data collectors, and written informed consent was obtained from each participant. Before collecting data, the data collectors received comprehensive training and practical demonstrations on interview techniques and measurement procedures. The training lasted for a full day to ensure proficiency. Height measurements were taken using a steel tape measure that was securely attached to a flat wall. Participants were instructed to stand on a level surface while their height was accurately measured.

5. Data Quality Management

During the study, several data quality assurance measures were implemented. The data collectors and supervisors received one day of theoretical and practical training conducted by the principal investigator, which covered the study's purpose and anthropometric measurements. The questionnaire was initially prepared in English and then translated into Amharic, followed by back-translation into English by a different individual to ensure consistency of meaning. A pre-test of the questionnaire was conducted on 15 adults, representing 5% of the total sample, in a location outside the actual study area. This pre-test aimed to assess the accuracy of the questionnaire, estimate the time required for completion, and identify any inconsistencies or issues. Based on the feedback received during the pre-test, necessary amendments were made to the questionnaire to address any identified concerns. The principal investigator and supervisors actively monitored the data collection process, checking completed questionnaires on-site and reviewing them for completeness and consistency of the collected information. These measures were implemented to ensure the overall quality and reliability of the data collected.

4.8.4 Data Management and Analysis

The collected data was entered into the Kobo Toolbox platform and carefully checked for completeness. Subsequently, the data was coded and exported to SPSS version 25 for further analysis. Descriptive statistics such as frequency, proportions, mean, and standard deviation were calculated to summarize the data, and these results were presented using tables. Bivariate and multivariable logistic regression analyses were conducted to assess the associations between different variables and calculate odds ratios with 95% confidence intervals. The primary objective was to identify significant determinants of overweight and obesity. In the multivariable analysis, adjustments were made for potential confounding variables identified in the bivariate analysis. Collinearity among the variables was assessed during the analysis. Both crude odds ratios and adjusted odds ratios (AOR) were reported along with their corresponding confidence intervals. A significance level of $p < 0.05$ was utilized to determine statistical significance.

4.9. Dissemination of the finding

A copy of the final thesis was provided to BLSH and the cardiac center in Ethiopia. Efforts was made to publish an article in reputable journals.

4.10. Expected outcome

The outcome of this study measures the magnitude of overweight, which was assessed by body mass index (BMI).

4.11. Ethical consideration

The study obtained ethical approval from the Ethical Review Board of the School of Nursing, College of Health Sciences, and Addis Ababa University, with a specific reference number. Furthermore, permission was obtained from Black Lion Specialized Hospital and the Cardiac Center of Ethiopia to conduct the study in their facilities. Prior to data collection, a letter describing the purpose of the study was prepared by the Dean's Office of the School of Nursing. Verbal consent was obtained from all participants in the study after providing them with a concise explanation of the study objectives and procedures.

5. RESULTS

5.1. Socio-economic profile of the study participants

A total of 292 adult cardiac patients participated in the study, resulting in a 100% response rate. Among the participants, 179 (61.3%) were females. Approximately 126 (43.2%) had attained a college diploma. The average age of the participants was 47.63±17.83 years. In terms of monthly income, the study participants were categorized into different quartiles, with incomes of 5000, 7000, and 8,500 falling within the lowest quartile of 25, 50, and 75, respectively(Table 1).

Table 1: Socio-economic characteristics of adult cardiac patients at cardiac center of Ethiopia and Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2023(n=292).

Variables	Response	Frequency	Per cent
Sex of participants	Male	113	38.7
	Female	179	61.3
Residence	Urban	191	65.4
	Rular	101	34.6
Employment status	Employed	178	61
	Not employed	114	39
Marital status	Divorced	23	7.9
	Married	184	63
	Single	67	22.9
	Widowed	18	6.2
Religion	Orthodox	83	28.4
	Muslim	99	33.9
	Protestant	92	31.5
	Others	18	6.2
	Read and write	15	5.1
The level of Education	Primary (1-8 grade)	17	5.8
	Secondary (9-12 grade)	60	20.5
	College diploma	126	43.2
	Degree and above	73	25
Occupation	Farmer	9	3.1

	Government	101	34.6
	House wife	23	7.9
	Merchant	25	8.6
	Other	11	3.8
	Private	66	22.6
	Retire	32	11
	Student	25	8.6

5.2. Personal characteristics of the study participant

The present study revealed that the mean body mass index (BMI) of participants was 24±4.5. The majority (65.4%) of the participants reported high meat consumption and snake use. Well over half (61.7%) of them had a habit of skipping meals. Nearly two-thirds (65.1%) of the respondents came from medium to high economic status (Table 2).

Table 2: Personal characteristics of adult cardiac patients at cardiac center of Ethiopia and Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2023 (n=292).

Variables	Response	Frequency	Per cent
Alcohol intake	Yes	113	38.7
	No	179	61.3
Chat chewing	Yes	58	19.9
	No	234	80.1
Cigarette smoking	Yes	46	15.8
	No	246	84.2
Having a depression condition	Yes	151	51.7
	No	141	48.3
Having habit of skipping meals	Yes	183	62.7
	No	109	37.3
high meat consumption and snake use	Yes	190	65.4
	No	101	34.6
Income status	Lower	102	34.9
	Medium to high	190	65.1

5.3. Dietary habits

In this study, it was found that 161 (51.1%) of the study participants consumed cereal-based foods on a daily basis. Likewise, more than half of the participants, specifically 182 (63.3%), reported consuming fruits on a monthly basis. Additionally, approximately 137 (46.9%) of the study participants reported consuming vegetables(Table 3).

Table 3: : Dietary habits among adult cardiac patients at cardiac center of Ethiopia and Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2023 (n=292).

Variables	Response	Frequency	Percent
Cereals	Daily	161	51.1
	Weekly	12	4.1
	Monthly	40	13.7
	Never	79	27.1
Fruit intake	Daily	58	19.9
	Weekly	48	16.4
	Monthly	182	63.3
	Never	4	1.4
Fast food	Daily	169	59.9
	Weekly	61	20.9
	Monthly	38	13
	Never	24	8.2
Vegetables	Daily	137	46.9
	Weekly	79	27.1
	Monthly	44	15.1
	Never	32	11
Milk and Milk products	Daily	146	50
	Weekly	76	26
	Monthly	48	16.4
	Never	22	7.5
Oil and Fats	Daily	56	19.2
	Weekly	34	11.6

	Monthly	50	17.1
	Never	152	52.1
	Daily	43	13.7
Meat, egg, and Fish consumption	Weekly	57	19.5
	Monthly	164	56.2
	Never	28	9.6
	Daily	171	58.6
Sweets	Weekly	50	17.1
	Monthly	18	6.2
	Never	53	18.2
	Daily	16	5.5
Soft drinks intake	Weekly	11	3.8
	Monthly	83	28.4
	Never	182	62.3

5.4. Physical activity

This study demonstrated that about 155 (53.1%) and 222 (76%) of the study participants were engaged in vigorous-to-moderate-intensity workplace activities. Additionally, our study findings showed that two hundred thirty-eight (81.5%) of the study respondents walked or used a bicycle for at least 10 minutes continuously (Table 4).

Table 4: Physical activities among adult cardiac patients at cardiac center of Ethiopia and Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2023 (n=292).

Physical activities	Response	Frequency	Per cent
	Yes	155	53.1
Work involves vigorous, intense activity for at least 10 minutes continuously	No	137	46.9
	Yes	222	76

Work involves moderate-intensity activity for at least 10 minutes continuously	No	70	24
	Yes	238	81.5
Walk or use a bicycle for at least 10 minutes continuously	No	54	18.5
Ever done any vigorous-intensity sport, fitness, or leisure-time physical activity	Yes	107	36.6
	No	185	63.4
Ever done any moderate-intensity sport, fitness, or leisure-time physical activity for at least 10 minutes continuously	Yes	119	40.8
	No	173	59.2
Time spent sitting without any activity	< 2 hours per day	176	60.3
	2–3 hours per day	4	1.4
	> 3 hours per day	112	38.3

5.5. The prevalence of overweight among adult cardiac patients

In this study, the body mass index (BMI) of participants was over 25, which could be considered overweight. The present study's findings documented that the overall prevalence of overweight among adult cardiac patients was (87=29.8%) (95% CI: 24.7%–35.3%). In this investigation, about 87 (19.52%) female adult cardiac patients experienced overweight.

5.6. Factors associated with overweight

In the fully adjusted model, a binary logistic regression analysis model discovered statistically significant associations between being overweight, being female, having a history of depression, high meat consumption, high wealth rank, and weekly vegetable consumption (Table 5).

This study illustrated that the odds of developing overweight among female participants was nearly 46% higher as compared to their male counterparts after adjusting for all factors included in the model (AOR = 1.54, 95% C.I.: 1.42, 4.07). The odds of being overweight among adult cardiac patients with depression were 1.03 times higher than their fellow counterparts after adjusting for all covariates in the model (AOR= 1.03; CI= 1.02-1.70). Additionally, the odds of sustaining overweight were 20% higher among patients who consumed high meat and snake use

as compared to those who didn't consume high meat [AOR (95% C.I.): 1.8 (1.48, 4.1))]. Having a high wealth rank increased the odds of sustaining overweight by 2.1 times when compared to those who didn't have a high wealth status [AOR (95% C.I.): 2.1 (1.05, 1.27) (Table 5).

Table 5: Associated factors of overweight among adult cardiac patients at cardiac center of Ethiopia and Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2023 (n=292).

		Outcome			
Variables		Overweight	Normal	COR (95% CI)	AOR (95% CI)
	Male	83	30	1	
Sex of participants	Female	122	57	1.29 (1.07, 2.18)*	1.54 (1.42,4.07)**
Had history of depression	Yes	106	45	1.01(1.001,1. 65) *	1.03 (1.02,1.70)**
	No	99	42	1	
High meat consumption	Yes	142	49	1.16 (1.09, 1.97)*	1.8 (1.48, 4.1) **
	No	63	38	1	
	Low	63	35	1	
Wealth rank status	Medium to high	142	52	1.51 (1.32, 1.97)*	2.1 (1.05, 1.27)**
	Daily	105	56	1	
Cereals	Weekly	10	2	0.37 (0.07, 1.77)*	0.84 (0.08, 8.39) **
	Monthly	35	5	0.26 (0.09, 0.72) *	0.74 (0.16,3.4) **
	Ever	55	24	0.81 (0.45, 1.46)*	0.79(0.13,4.8) **
	Daily	103	34	1	
Vegetables	Weekly	49	30	1.85 (1.02, 3.37)*	1.26 (1.14, 3.7)
	Monthly	29	15	1.55 (0.75, 3.26)*	0.91 (0.35,2.3) **
	Ever	24	8	1.01 (0.41, 2.45)*	0.58 (0.14,2.22) **
	Daily	35	21	1	
Oil and fat	Weekly	17	7	1.67 (0.703, 3.95)*	2.3 (0.62,8.6) **
	Monthly	36	14	0.64 (0.28, 1.47)*	1.2 (0.33,4.4) **
	Ever	117	35	0.49 (0.25, 0.96)*	0.57(0.15,2.21)**

1= Reference *= statistically significant by COR at p value ≤ 0.25 **=statistically significant by AOR at p value≤ 0.05 COR: Crude odds ratio AOR: Adjusted odds ratio CI=Confidence interval

6.DISCUSSION

To design strategies to reduce the burdens of being overweight, the availability of trustworthy evidence is essential for governmental bodies, policymakers, cardiac caregiving centers, clinicians, and other stakeholders. Therefore, this study aimed to assess the prevalence and associated factors of overweight among adult cardiac patients.

The findings of this study found that the burden of being overweight among adult cardiac patients remains a worrying concern that requires special attention from a variety of angles. The present study illustrated that the overall prevalence of overweight among adult cardiac patients was higher as compared to the results of prior studies conducted in Ethiopia (2),German, (47). Canada, and United State (48). In our study, it has been suggested that the possible explanation for the incongruity may be related to differences in food choices, including the socio-economic status of the target population. Besides, the difference is likely to reflect the different ages of the population, the living conditions and lifestyle of the study population, and the knowledge of the study unit.

Additionally, the level of overweight among adult cardiac patients in the present study, however, did not match the findings of previous studies reported from the United States (49), Brazil, and Denmark (50). In part, the discrepancy is due to different cut-points used to define overweight, as well as differences in the age and the knowledge of the population studied, the sampling strategy used, the sample size and study population variations can be additional contributors for the differences.

This study reveals that there are numerous potential contributing factors that increase the likelihood of developing overweight among adult cardiac patients. Among these factors, being female was identified as a significant predictor of overweight. The study found that women were approximately 46% more likely to develop overweight compared to their male counterparts. Our study result is in line with various past studies documented in Nigeria (51), Spain (52), and China (53). Biological differences, such as women having a higher body fat composition than men, could explain the difference between males and females. Women's cultural and social constraints may also explain this gender disparity. Women tend to be less physically active due to lower educational level, sedentary lifestyle, and higher household activities engagement as

Evidence from Oman (54) and Iran (55) showed. Besides, the possible cause for this variation in prevalence could be that females have more steroid hormones, which expose them to fat. Another probable explanation is that in Ethiopian culture, men are primarily engaged in tasks that take more energy than women.

Furthermore, having a history of depression is a significant risk factor that can predispose to acquiring overweight in adult cardiac patients, according to this study. Thus, the odds of becoming overweight are 1.03 times higher in adult cardiac patients with a history of depression than in those without a history of depression. The observed association between depression and weight gain or obesity could be attributed to several factors. People with depression may experience weight gain as a result of their condition or the medications prescribed for its treatment. Additionally, depression has been linked to overeating, making poor food choices, and leading a sedentary lifestyle, all of which can contribute to weight gain over time. As weight gradually increases, it may eventually lead to the development of obesity. Our findings were consistent with the findings of related studies employed in China (56), France (57) , America, and European (57) that reported that having a history of depression elevated that the risk of sustaining overweight.

Additionally, the current study indicates that adult cardiac patients who consume a lot of meat are more likely to be overweight. As a result, the odds of being overweight among adult cardiac patients who consumed a lot of meat were 20% times greater than those who didn't consume a lot of meat in this study. The possible description could be related to meat being high in energy and fat content and thus being associated with a higher risk of being overweight. Our study results were supported by related literature in Kenya (58), Iran (59), Costa Rica (60), and China (61), that consuming high meat plays a great role in experiencing overweight.

According to this study, being in the upper wealth quintiles is a potential predictor of acquiring overweight. Thus, the odds of sustaining overweight were 2.1 times higher in adult cardiac patients compared to their lowest income quintile peers, and overweight is generally more prevalent in the top wealth quintiles. The present study findings were agreed with the previous studies carried out in Kenya (15), Bangladesh (62), Nepal (62) and other findings from low- and middle-income countries (63). Additionally, only weekly vegetable consumption is likely to be a major risk factor for developing overweight in this study. When compared to patients who

are consuming vegetables daily basis, those who are consuming vegetables weekly have higher odds of developing overweight. This could be related to. The present study finding agreed with previous considerable studies in Korea (63), United state (64), and Spain (65). Overall, the implications for policymakers, health professionals, and supporting agencies are to encourage the prevention of overweight and more physical activity in women.

7. STRENGTH AND LIMITATION

7.1. Strength

The study's strength is that it used representative data to analyze the prevalence and risk variables linked to adult overweight. It does, however, have limitations that must be considered. For starters, the portion size and quantity of meals consumed by adults were not examined. There could also be recall bias among respondents who answered questions about their monthly nutritional intake and time spent on physical activities. The survey is cross-sectional, and the analyses presented show relationships and causality between overweight and risk factors that cannot be explained. Finally, the association between overweight, food insecurity, and workload among the study participants was not investigated.

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7.2. Limitation

It does, however, have limitations that must be considered. For starters, the portion size and quantity of meals consumed by adults were not examined. There could also be recall bias among respondents who answered questions about their monthly nutritional intake and time spent on physical activities. The survey is cross-sectional, and the analyses presented show relationships and causality between overweight and risk factors that cannot be explained. Finally, the association between overweight, food insecurity, and workload among the study participants was not investigated.

8. CONCLUSIONS AND RECOMMENDATION

8.1.Conclusion

This study revealed a high prevalence of overweight among adult cardiac patients. This implies that adult cardiac patients were faced with dual burdens from cardiovascular disorders and overweight. Being female, having depression, high meat consumption, high wealth rank, and only weekly vegetable consumption were the identified potential factors that elevated the odds of sustaining overweight among adult cardiac patients in this investigation.

8.2. Recommendations

8.2.1. For ministry of health and health bureau

- Should develop short- and long-term strategic plans targeted at cardiac patients in order to reduce the burdens of being overweight.
- Should enforce and take supportive action on the World Health Organization's (WHO) recommendations and strategies aimed at the reduction of overweight and healthy eating and physical activity both at the individual and community levels.

8.2.2. For hospital manager and cardiac treatment center

- It is recommended to strictly follow the recommendations and strategies outlined by the World Health Organization (WHO) to reduce overweight among adult cardiac patients. These strategies should focus on promoting healthy eating habits and encouraging regular physical activity.
- Large-scale awareness campaigns should be conducted to create awareness and educate the general population as well as adult cardiac patients about the risks and consequences of overweight and obesity. These campaigns should provide practical guidance and tips for adopting healthier eating habits and engaging in regular physical activity.
- Prevention strategies should be tailored to the specific needs and contexts of adult cardiac patients. It is important to address lifestyle factors such as diet, physical activity, sedentary behaviors, and psychological well-being. These strategies should provide practical solutions and support to help patients make sustainable lifestyle changes.

- A comprehensive approach should be taken to address the relevant factors contributing to overweight among adult cardiac patients. This includes considering factors such as gender, socioeconomic status, lifestyle choices, and psychological well-being. By addressing these factors, the burden of overweight in this population can be reduced.
- Early detection and monitoring measures should be implemented to identify and address overweight-related issues in adult cardiac patients. Regular health check-ups, screening for weight-related problems, and providing necessary interventions and support can help prevent further weight gain and manage existing weight issues effectively..

8.2.3. For cardiac patients

- should reduce the conditions that make them more depressed after consultation with psychologists and psychiatric professionals.
- Should give special attention to healthy eating and physical activity.

8.2.4. rocommmendation for further Studies

To address the limitations of this research, I recommended that further research can be conducted to investigate the Prevalence and determinants of overweight among adult Cardiac patients. Since this research is only limited to at some selected public hospitals which is black lion specialized hospital and at the cardiac center of Ethiopia. any interested body can use it as a bench mark for the study of other similar public and private hospital. Further research should also be conducted using large sample data to pin out the exact determinants of overweight among adult Cardiac patients.

Longitudinal study is needed to verify cause effect relationship of cardiovascular disease and overweight/obesity

9. REFERENCE

1. Dagne S, Gelaw YA, Abebe Z, Wassie MM. Factors associated with overweight and obesity among adults in northeast Ethiopia: A cross-sectional study. Diabetes, Metab Syndr Obes Targets Ther. 2019;12:391–9.

2. Ayza A, Tadesse E, Halala Handiso Y. Prevalence of overweight/obesity and associated factors among adults in Wolaita Sodo Town, Southern Ethiopia. Cogent Med [Internet]. 2021;8(1). Available from: https://doi.org/10.1080/2331205X.2021.1965709

3. Kontsevaya A, Shalnova S, Deev A, Breda J, Jewell J, Rakovac I, et al. Overweight and Obesity in the Russian Population: Prevalence in Adults and Association with Socioeconomic Parameters and Cardiovascular Risk Factors. Obes Facts. 2019;12(1):103–14.

4. Regassa B, Mosisa G, Biru B, Fekadu G. Prevalence and Factors Associated with Overweight and Obesity among Adults in the Selected Towns of Western Ethiopia : A Community Based Cross-Sectional Study. J Obes Overweight [Internet]. 2021;7(1):1–13. Available from: www.annexpublishers.com

5. Alberts M, Urdal P, Steyn K, Stensvold I, Tverdal A, Nel JH, et al. Prevalence of cardiovascular diseases and associated risk factors in a rural black population of South Africa.

6. Ellulu M. Epidemiology of obesity in developing countries : challenges and prevention. 2014;(March).

7. Peltzer K, Pengpid S, Alafia Samuels T, Özcan NK, Mantilla C, Rahamefy OH, et al. Prevalence of overweight/obesity and its associated factors among university students from 22 countries. Int J Environ Res Public Health. 2014 Jul 21;11(7):7425–41.

8. Kelly T, Yang W, Chen C-S, Reynolds K, He J. Global burden of obesity in 2005 and projections to 2030. Int J Obes (Lond). 2008 Sep;32(9):1431–7.

9. Kassie AM, Abate BB, Kassaw MW. Prevalence of overweight/obesity among the adult population in Ethiopia: a systematic review and meta-analysis. BMJ Open. 2020 Aug;10(8):e039200.

10. Marques A, Peralta M, Naia A, Loureiro N, de Matos MG. Prevalence of adult overweight and obesity in 20 European countries, 2014. Eur J Public Health. 2018 Apr;28(2):295–300.

11. Bibbins-Domingo K, Coxson P, Pletcher MJ, Lightwood J, Goldman L. Adolescent Overweight and Future Adult Coronary Heart Disease. N Engl J Med. 2007;357(23):2371–9.

12. Hinton W, McGovern A, Coyle R, Han TS, Sharma P, Correa A, et al. Incidence and prevalence of cardiovascular disease in English primary care: A cross-sectional and follow-up study of the Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC). BMJ Open. 2018 Aug 1;8(8).

13. Angaw DA, Ali R, Tadele A, Shumet S. The prevalence of cardiovascular disease in Ethiopia: a systematic review and meta-analysis of institutional and community-based studies. BMC Cardiovasc Disord. 2021 Dec 1;21(1).

14. Mohammadnezhad M. Prevalence and determinant factors of overweight and obesity among Pacific people : A systematic review study. 2017;(July).

15. Pengpid S, Peltzer K. The prevalence and associated factors of underweight and overweight/obesity among adults in kenya: Evidence from a national cross-sectional community survey. Pan Afr Med J. 2020 May 1;36(338):1–11.

16. Original_research_Prevalence_of_overweightobesity_among_the_adult.

17. Moges B, Amare B, Fantahun B, Kassu A. High prevalence of overweight, obesity, and hypertension with increased risk to cardiovascular disorders among adults in northwest Ethiopia: A cross sectional study. BMC Cardiovasc Disord. 2014 Nov 5;14(1).

18. Fallis A. Overweight and Obesity Prevalence and Associated Socioeconomic Factors, Physical Activity and Dietary Int Ake Among Women in Kibera Division, Nairobi. J Chem Inf Model. 2013;53(9)(9):1689–99.

19. Mohammed Alluhidan, Reem F. Alsukait, Taghred Alghaith, Meera Shekar, Nahar Alazemi, and Christopher H. Herbst E. Overweight and Obesity in Saudi Children. Annsaudimed.Net. 2022.

20. Shiferaw F, Letebo M, Misganaw A, Feleke Y, Gelibo T. Original article Non-communicable Diseases in Ethiopia : Disease burden , gaps in health care delivery and strategic directions .

21. Consultation WHO. OBESITY : PREVENTING AND MANAGING THE GLOBAL EPIDEMIC Report of a. 2000;

22. NHLBI. Managing Overweight and Obesity in Adults: Systematic Evidence Review from the Obesity Expert Panel. Natl Hear Lung, Blood Inst [Internet]. 2013;501. Available from: https://www.nhlbi.nih.gov/sites/default/files/media/docs/obesity-evidence-review.pdf

23. Resnick HE, Valsania P, Halter JVB, Lin X. Relation of weight gain and weight loss on subsequent diabetes risk in overweight adults. 2000;596–602.

24. Shemsu M. ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH Assessment of association between Sleep quality and Overweight/Obesity among adults in Addis Ababa, Ethiopia SCIENCE SCHOOL OF PUBLIC HEALTH Assessment of association between Sleep .

25. Wang Y, Beydoun MA, Min J, Xue H, Kaminsky LA, Cheskin LJ. Has the prevalence of overweight, obesity and central obesity levelled off in the United States? Trends, patterns, disparities, and future projections for the obesity epidemic. Int J Epidemiol. 2020 Jun;49(3):810–23.

26. Bereka SG, Demisse AW, Getahun GK. Prevalence of abdominal obesity and associated risk factors among women civil servants in Addis Ababa, Ethiopia, 2021: an institution-based study. BMC Nutr [Internet]. 2022;8(1):1–13. Available from: https://doi.org/10.1186/s40795-022-00613-9

27. Kiadaliri AA, Jafari M, Mahdavi MRV, Faghihzadeh S, Kalantari N, Asadi-Lari M. The prevalence of adulthood overweight and obesity in Tehran: Findings from Urban HEART-2 study. Med J Islam Repub Iran. 2015;29.

28. Tona Zema D. Prevalence of Overweight/Obesity and Its Association with Socioeconomic Status in Ethiopia: Systematic Review and Meta-Analysis. J Obes Weight Medicat.

2021;7(1):1–10.

29. Ene-Obong H, Ibeanu V, Onuoha N, Ejekwu A. Prevalence of overweight, obesity, and thinness among urban school-aged children and adolescents in southern Nigeria. Food Nutr Bull. 2012;33(4):242–50.

30. Seltzer B. Public Health: Public Health. Ind Med Gaz. 1900;35(4):154.

31. Experience S, Correlates T, Jigjiga A, For R, Degree THE, Masters OF, et al. College of Health Sciences School of Public Health College of Health Sciences. 2011;1–14.

32. Shah C, Vyas Jaisani P, Pandey M, Prakash Sah O, Jha M. Risk factors associated with overweight and obesity among reproductive aged (15–49) years females in urban areas of Rajbiraj Municipality, Saptari. Adv Obesity, Weight Manag Control. 2020;10(3):84–8.

33. Liu J, Ayada I, Zhang X, Wang L, Li Y, Wen T, et al. Estimating Global Prevalence of Metabolic Dysfunction-Associated Fatty Liver Disease in Overweight or Obese Adults. Clin Gastroenterol Hepatol Off Clin Pract J Am Gastroenterol Assoc. 2022 Mar;20(3):e573–82.

34. RI MK. No TitleΕΛΕΝΗ. Αγαη. 2019;8(5):55.

35. Yohannes M. Prevalence of overweight and obesity among office-based urban civil servants in southern nations, nationalities and peoples' region, Ethiopia. Ethiop Med J. 2019;57(16):391–9.

36. Alemu E, Atnafu A. Prevalence of Overweight and/or Obesity and Associated Factors among High School Adolescents in Arada Sub city, Addis Ababa, Ethiopia. J Nutr Food Sci. 2014;04(02).

37. van Baak MA, Pramono A, Battista F, Beaulieu K, Blundell JE, Busetto L, et al. Effect of different types of regular exercise on physical fitness in adults with overweight or obesity: Systematic review and meta-analyses. Obes Rev. 2021;22(S4):1–11.

38. Karki A, Shrestha A, Subedi N. Prevalence and associated factors of childhood overweight/obesity among primary school children in urban Nepal. BMC Public Health. 2019;19(1):1–12.

39. Peytremann-bridevaux I, Santos-eggimann B. Health correlates of overweight and obesity in adults aged 50 years and over. 2010;8:5–7.

40. Bossaert L, Bahr J. Chapter 13 Ethical issues in cardiac arrest and acute cardiac care: a European perspective. In: The ESC Textbook of Intensive and Acute Cardiac Care. 2011.

41. Kassa A, Wakgari N, Taddesse F. Determinants of alcohol use and khat chewing among Hawassa university students, Ethiopia: A cross sectional study. Afr Health Sci. 2016;16(3):822–30.

42. Diamantis D V, Karatzi K, Kantaras P, Liatis S, Iotova V, Bazdraska Y, et al. Prevalence and Socioeconomic Correlates of Adult Obesity in Europe: The Feel4Diabetes Study. Int J Environ Res Public Health. 2022 Oct;19(19).

43. SCHOOL OF NURSING AND MIDWIFERY PREVALENCE OF MENTAL DISTRESS AND ASSOCIATED FACTORS AMONG HOSPITALIZED MEDICAL SURGICAL ADULT INPATIENTS IN PUBLIC HOSPITALS, ADDIS ABABA, ETHIOPIA, 2020. BY: SHEGAW TESFA (BSC N) A RESEARCH THESIS WAS SUBMITTED TO ADDIS A. 2020.

44. Engda AS, Belete H, Tilahun FA. Prevalence of Depression and Associated Factors Among Normal and Overweight Reproductive Age Women , Ethiopia : Community-Based Comparative Cross-Sectional Study Prevalence of Depression and Associated Factors Among Normal and Overweight Reproductive Age . 2022;

45. Ethiopia Public Health Institue, Woronkowicz A, Kryst Ł, Sobiecki J, Pilecki MW, Shiferaw F, et al. Prevalence and determinant factors of overweight and obesity among Pacific people : A systematic review study. J Obes Weight Medicat [Internet]. 2014;7(1):1–13. Available from: https://doi.org/10.1080/2331205X.2021.1965709

46. black lion hospital.

47. Andonian C, Langer F, Beckmann J, Bischoff G, Ewert P, Freilinger S, et al. Overweight and obesity: an emerging problem in patients with congenital heart disease. Cardiovasc Diagn Ther. 2019;9(Suppl 2):S360.

48. Willinger L, Brudy L, Meyer M, Oberhoffer-fritz R, Ewert P, Müller J. Overweight and

Obesity in Patients with Congenital Heart Disease : A Systematic Review. 2021;

49. Manrique-Acevedo C, Chinnakotla B, Padilla J, Martinez-Lemus LA, Gozal D. Obesity and cardiovascular disease in women. Int J Obes. 2020;44(6):1210–26.

50. Reuter CP, Burgos LT, Camargo MD, Possuelo LG, Reckziegel MB, Reuter EM, et al. Prevalence of obesity and cardiovascular risk among children and adolescents in the municipality of Santa Cruz do Sul, Rio Grande do Sul. Sao Paulo Med J. 2013;131:323–30.

51. Bashir MA, Yahaya A, Gwarzo IM, Yusuf A. Prevalence of Central Obesity in Nigeria : a systematic review and meta- analysis Prevalence of central obesity in Nigeria : a systematic review and. 2022;(April).

52. Aranceta-Bartrina J, Pérez-Rodrigo C, Alberdi-Aresti G, Ramos-Carrera N, Lázaro-Masedo S. Prevalence of general obesity and abdominal obesity in the Spanish adult population (aged 25–64 years) 2014–2015: the ENPE study. Rev Española Cardiol (English Ed. 2016;69(6):579–87.

53. Wong MCS, Huang J, Wang J, Chan PSF, Lok V, Chen X, et al. Global, regional and time-trend prevalence of central obesity: a systematic review and meta-analysis of 13.2 million subjects. Eur J Epidemiol. 2020;35:673–83.

54. Al-Lawati JA, Mohammed AJ, Al-Hinai HQ, Jousilahti P. Prevalence of the metabolic syndrome among Omani adults. Diabetes Care. 2003;26(6):1781–5.

55. Azizi F, Salehi P, Etemadi A, Zahedi-Asl S. Prevalence of metabolic syndrome in an urban population: Tehran Lipid and Glucose Study. Diabetes Res Clin Pract. 2003;61(1):29–37.

56. Zhao Z, Ding N, Song S, Liu Y, Wen D. Association between depression and overweight in Chinese adolescents: a cross-sectional study. BMJ Open. 2019;9(2):e024177.

57. Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BWJH, et al. Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Arch Gen Psychiatry. 2010;67(3):220–9.

58. Rouhani MH, Salehi-Abargouei A, Surkan PJ, Azadbakht L. Is there a relationship between red or processed meat intake and obesity? A systematic review and meta-analysis of observational studies. Obes Rev. 2014;15(9):740–8.

59. Daneshzad E, Askari M, Moradi M, Ghorabi S, Rouzitalab T, Heshmati J, et al. Red meat, overweight and obesity: A systematic review and meta-analysis of observational studies. Clin Nutr ESPEN. 2021;45:66–74.

60. You W, Henneberg M. Meat consumption providing a surplus energy in modern diet contributes to obesity prevalence: an ecological analysis. BMC Nutr. 2016;2:1–11.

61. Shin SM. Association of meat intake with overweight and obesity among school-aged children and adolescents. J Obes Metab Syndr. 2017;26(3):217.

62. Biswas T, Garnett SP, Pervin S, Rawal LB. The prevalence of underweight, overweight and obesity in Bangladeshi adults: Data from a national survey. PLoS One. 2017;12(5):e0177395.

63. Templin T, Cravo Oliveira Hashiguchi T, Thomson B, Dieleman J, Bendavid E. The overweight and obesity transition from the wealthy to the poor in low-and middle-income countries: A survey of household data from 103 countries. PLoS Med. 2019;16(11):e1002968.

64. Wagner MG, Rhee Y, Honrath K, Salafia EHB, Terbizan D. Nutrition education effective in increasing fruit and vegetable consumption among overweight and obese adults. Appetite. 2016;100:94–101.

65. Arnotti K, Bamber M. Fruit and vegetable consumption and high-density lipoproteins in overweight or obese individuals: a meta-analysis. J Cardiovasc Nurs. 2021;36(1):78–87.

10. APPENDIX

Appendix1: English versions of a subject information sheet

How are you I am----------, a student at Addis Ababa University, college of health science, school of nursing and midwives, cardiovascular department. she is researching the prevalence and determinants of overweight in adults. This study will have a great contribution to the prevalence of adult overweight and its determinants. Policymakers and relevant stakeholders to have an insight into the association between the prevalence and determinants of adult overweight could use the findings of the study. Furthermore, it could be used as a baseline to understand the prevalence and determinants of adult overweight in the study area. You are selected by systematic sampling techniques for the study. Your participation in this study will only be based on your willingness. You have the right not to take part in this study. If you take part in the study, you have the right to stop at any time. You will not be subjected to any ill-treatment for your decision. If you agree to participate I kindly request you to give me your attention to explain about the study. In the study, your height and weight were measured using standard measuring instruments. Only light clothes were worn barefoot during the measurement. You will also be interviewed about your characteristics, feeding practices, physical activity, sedentary behaviors, and substance use. Your name will not be written in this form and will never be used in connection with any information you tell me. All information given by you was kept confidential by using code numbers and locking the data. Your participation is voluntary and you are not obligated to answer any question, which you do not wish to answer. If you feel discomfort with the interview, or measurement please feel free to drop it any time you want. Your willingness and active participation are very important for the success of this study.

The data collectors will interview the participants in their first language using interview guides and it will take 25-30 minutes.

Appendix 2: English version of informed consent

Having the above information, I cordially invite you to participate in the study. Are you willing to participate in the study?

A. Yes

B. No

If yes continue the questionnaire

If no skip to the next participant

Are you pregnant or delivered in the last six months?

1. Yes (thank and leave for the next participant)

2. No (continue the interview)

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

Questionnaire number----------

Sub city ----------werada ----------ketema----------mender----------

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

Result of interview:

1. Completed

2. Respondent not available

3. Refused

4. Partially completed

Checked by Supervisor: Name _____ Signature_____

For any further information, inconvenience, and problem-related to the questionnaire please contact

Principal investigator.

Name of principal investigator: seble kebede Tell: +251-09 20- 70 67 17

+251-09 49-46 13 00

Email: seblekebedde@gmail.com

Appendix 3: English version of the questionnaire

<u>Part 1</u>: socio-demographic and socioeconomic characteristics

S.N	Question	Responses		
101	Sex	1. Male 2. Female		
102	Age in year			
103	Body weight	_____ kg		
103	Height	_____ meter		
104	BMI	_____Kg/M^2		
105	The level of education you have attained	1. Read and write 2. Primary (1-8) 3. Secondary (9-12) 4. College diploma/certificate 5. Degree and above		
106	Marital status	1 Single 2 Married 3 Divorcé 4 Widowed		
107	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Other		
108	Employment status	1. Not employed 2. Employed		
109	Monthly income in Ethiopian birr			
110	Residence	1. Urban 2. Ruler		
111	Occupational status	1. Government 2. private 3. housewife 4. student		

		5. merchant 6. Farmer 7. Retire 8. Others		

Part 2:-Questionnaire about dietary information

Instructions: - In this section of the questionnaire I will ask you a few questions about your dietary practices with special preference to eating habits.

No	Question	Response	Skip
201	How many times a day do you eat?	1. times……..…1 2. times……..2 3times ……..3 Greater than 3 times…….4	
202	Do you have a habit of skipping meals?	Yes……1 No…….2	If no go to 205
203	Which meal do you usually skip?	Breakfast…….1 Lunch……..2 Dinner…….3 Snakes----------4	
205	In a typical week, how often do you eat Breakfast?	6-7 days/week…….1 4-5 days/week ……..……. 2 2-3 days/week …….. 3 0-1 days/week…….4	

206	In a typical week, how often do you eat Lunch?	6-7 days/week……1 4-5 days/week ……..……..… 2 2-3 days/week …….…….. 3 0-1 days/week……4	
207	In a typical week, how often do you eat snacks?	6-7 days/week……1 4-5 days/week ……..……..… 2 2-3 days/week …….…….. 3 0-1 days/week……4	
208	In a typical week, how often do you take dinner?	6-7 days/week……1 4-5 days/week ……..……..… 2 2-3 days/week …….…….. 3 0-1 days/week……4	

How many times did you consume the following foods in the last 7 days?

	Frequency of consumption in the last one week (Tick where appropriate)								
	Once	**2 times**	**3 times**	**4 times**	**5.times**	**6.times**	**Daily**	**Never**	**Type**
Cereals, carbohydrates, starch									
White Bread									
Bread									
Injera									
Pasta									
Porridge									
Firfir									
Kitchen									
Rice									

Chechebsa									
Roasted maize									
Chuko									
Chips									
Vegetables									
Boiled potato									
Sweet potatoes									
Beet root									
Tomato souse									
pumpkin									
Pepper									
broccoli									
Cabbage									
Tomatoes									
Carrots									
Cucumber									
Dairy foods									
Whole milk									
Low-fat milk									
Skimmed milk									
Fermented milk									
Yogurt									
Ice cream									
Cheese									
Butter									
Margarine									
Meats, meat products, eggs									
Beef									
Lamb									

Chicken									
Fish									
Goat									
Organ meat									
Eggs									
Legumes									
Shiro wet									
Barley									
Pea									
Aterkik									
Misirkik									
Peanut butter									
Fruits									
Apples									
Bananas									
orange									
Strawberry									
Papaya									
Pineapple									
Mangoes									
Avocado									
Fast food									
Pizza									
Burger									
Oil and fat									
oil									
butter									
Sweets									
Sugar									
Honey									

Cakes									
Biscuits									
Sweets									
Beverages									
Juice									
Alcohol									
Mirinda									
Coca-Cola									
Sprite									
Tea									
Coffee									
Makiyato									

Part 3: - Assessment of physical activity and sedentary behaviors

No	Question	Response	Skip
Vigorous intensity physical activities			
301	Does your work involve a vigorous-intensity activity that causes large increases in breathing or heart rate such as [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously	Yes……. 1 No ……..….2	If No, go to 304
302	In a typical week, how many days do you do vigorous-intensity activities as part of your work?	Number of days ☐	
303	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours: minutes ☐☐ ☐☐	

Moderate-intensity activity			
304	Does your work 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 307
305	In a typical week, how many days do you do moderate-intensity activities as part of your work?	Number of days	
306	How much time do you spend doing moderate-intensity activities at work on a typical day?	☐☐ ☐☐ Hours: minutes	
307	Do you walk or use a bicycle for at least 10 minutes continuously to get to and from places?	Yes ……....1 No …….. .. 2	If No, go to 309
308	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 ☐	
309	How much time do you spend walking or bicycling for travel on a typical day?	Hours: minutes ☐ ☐	

	Only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs.) to verify.		
vigorous-intensity physical activities			
310	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 313
311	In a typical week, how many days do you do vigorous-intensity sports, fitness, or recreational (leisure) activities?	Number of days ☐	
312	How much time do you spend doing vigorous-intensity sports, fitness, or recreational activities on a typical day?	Hours: minutes ☐ ☐	
moderate-intensity physical activity			
313	Do you do any moderate-intensity sports, fitness, or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, or volleyball] for at least 10 minutes continuously?	Yes……..…….1 No …….……..2	If No, go to 316
314	In a typical week, how many days do you do moderate-intensity sports, fitness, or recreational (leisure) activities?	Number of days ☐	
315	How much time do you spend doing moderate-intensity sports, fitness or	Hours: minutes ☐ ☐	

	Recreational (leisure) activities on a typical day?		
316	How much time do you usually spend sitting Or reclining on a typical day?	Hours: minutes	

Part 4:- Quetionner about substance use and depression assessment.

Instructions: - Now I would like to ask you about alcohol drinking, cigarette smoking,chat chewing and depression feeling.

401	Have you ever chewed chat?	Yes ……1 No …….2	If no go to 403
402	During the last 30 days, how many days did you chew chat?	_____days	
403	Do you currently smoke a cigarette	Every day……1 Someday/less than daily…….2 Not at all……..3	If every day go to 404, if less than daily go to 405, if not at all go to 406
404	On average, how many cigarettes do you currently smoke each day?	Number of Cigarette…	
405	In the past have you smoked a cigarette and how?	Daily ……..1 Less than daily ……...……...2 Not at all ……...…….3	

406	Have you ever taken a drink that contains alcohol (Tella/Tegi/Areke/Beer/Wine , etc...)?	Yes ……...…….1 No……...……2	If no go to 408
407	Currently how often do you have a drink containing alcohol?	Almost every day . . . . 1 At least once a week . . . . 2 Less than once a week. . . . . 3 Never……...……...……4	
408	Have you felt low or depressed in yourself lately?	Yes…….....1 No ……2	
409	Have you felt low/depressed/tearful every day, for most of the day, in the last two weeks?	Yes…….....1 No ……2	

Appendix 4: Amharic version of subject information sheet

አዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል የተሳታፊው መለያ ቁጥር/

እንደምን አደሩ/ ዋሉ ፡፡ ስሜ ---------- ይባላል፡፡ በአዲስ አበባ ዩኒቨርሲቲ፣ የጤና ሳይንስ ኮሌጅ፣ የነርሲንግ እና አዋላጅ ትምህርት ክፍል፣ የልብና የደም ህክምና ክፍል ትምህርት ክፍል ተማሪ የሆነችውን ሰብለ ከበደ ወክዬ ነው፡፡ ከመጠን ያለፈ ውፍረት እና በአዋቂዎች ላይ የሚወስኑትን ነገሮች እየመረመረች ነው፡፡ ይህ ጥናት ለአዋቂዎች ከመጠን ያለፈ ውፍረት መስፋፋት እና ለውሳኔዎቹ ትልቅ አስተዋፅ ይኖረዋል፡፡ የጥናቱ ግኝቶች በአዋቂዎች ከመጠን ያለፈ ውፍረት እና በውሳኔዎቹ መካከል ስላለው ግንኙነት ግንዛቤ እንዲኖራቸው ፖሊሲ አውጪዎች እና የሚመለከታቸው ባለድርሻ አካላት ሊጠቀሙበት ይችላሉ፡፡ በተጨማሪም፣ የአዋቂዎች ከመጠን ያለፈ ውፍረት መስፋፋትን እና በጥናቱ አካባቢ ያለውን ቁርጠኝነት ለመረዳት እንደ መነሻ ሊያገለግል ይችላል፡፡ ለጥናቱ በዘፈቀደ የናሙና አሰራር ተመርጠዋል፡፡ በዚህ ጥናት ውስጥ ያለዎት ተሳትፎ በእርስዎ ፍላጎት ላይ ብቻ የተመሰረተ ይሆናል፡፡ በዚህ ጥናት ላይ ላለመሳተፍ መብት አልዎት፡፡ በጥናቱ ውስጥ ከተሳተፉ, በማንኛውም ጊዜ ለማቆም መብት አለዎት. ለውሳኔህ ምንም አይነት እንግልት አይደርስብህም፡፡ በጥናቱ ለመሳተፍ ከተስማሙ ቁመትዎ እና ክብደትዎ የሚለካው መደበኛ የመለኪያ መሳሪያዎችን በመጠቀም ነው፡፡ በመለኪያ ጊዜ ቀለል ያሉ ልብሶች እንድሁም፤ በባዶ እግራቸው ይሆናሉ፡፡ እንዲሁም ፣ ስለ የቤት መረጃ፤ አመጋገብ ልምድ፣ የአካል ብቃት እንቅስቃሴዎ፣ የማይንቀሳቀሱ ባህሪያት ቃለ መጠይቅ ይደረግልዎታል፡፡ ስሞት በዚህ ቅጽ አይጻፍም እና የምትነግሩኝ በሙሉ የኮዲ ቁጥሮችን በመጠቀም ከስሞት ጋር አይያዝም፡፡ በእርስዎ የተሰጡ መረጃዎች በሙሉ የኮድ ቁጥሮችን በመጠቀም እና ውሂቡን በመቆለፍ በሚስጥር ይያዛሉ፡፡ የእርስዎ ተሳትፎ በፍቃደኝነት ነውና እና እርስዎ ለመመለስ የማይፈልጉትን ማንኛውንም ጥያቄ ለመመለስ አይገደዱም፡፡ በቃለ መጠይቁ ወይም በመለኪያው ላይ ምቾት ካልተሰማዎት እባክዎን በፈለጉት ጊዜ ለማቋረጥ መብት አለዎት፡፡ ለዚህ ጥናት ስኬት የእርስዎ ፍላጎት እና ንቁ ተሳትፎ በጣም አስፈላጊ ናቸው፡፡

Appendix 5: Amharic version of subject informed consent form

የመስማማት መጠየቂያ / ማረጋገጫ ቅፅ በተሰጦት መረጃ መሰረት ጥናቱ ላይ እንዲሳተፉ እጋብዝታለሁ.፡፡ለመሳተፍ ፍቃደኛ ነዎት?

ሀ. አዎ

ለ. አይደለሁም

አዎ ከሆነ መጠይቁ ይቀጥላል፡፡

ፍቃደኛ ካልሆኑ ምክንያቱን ፅፈው ወደ ሚቀጥለው ተሳታፊ እለፍ_____

በህክምና የተረጋገጠ የደም ግፊት፣ የስኳር በሽታ ፣ካንሰር፣ልብ እና ኩላሊት (የኩላሊት ስራውን ማቆም) በሽታ አለብዎት?

1. አዎ (ቃለ መጠይቁን ይቀጥሉ)

2. አይ (አመሰግናለው ለቀጣዩ ተሳታፊ ተወው)

ነፍሰጡር ነዎት ለሴት ተሳታፍዎች

1. አዎ (አመሰግናለው ለቀጣዩ ተሳታፊ ተወው)

2. አይ (ቃለ መጠይቁን ይቀጥሉ)

ጠያቂ፡ ስም----------

መጠይቅ ቁጥር.....

ክፍለ ከተማ -------ወረዳ_____ከጠና_____መንደር_____

የቃለ መጠይቁ ቀን ------- የተጀመረበት ሰዓት..... የተጠናቀቀበት ሰዓት _____

የቃለ መጠይቁ ውጤት፡-

1. ሙሉ በሙሉ የተሞላ

2. በከፍል የተሞላ

3. ምንም ያልተሞላ

4. የተሞላ

በተቆጣጣሪ የተረጋገጠ፡ ስም _____ ፊርማ _____

ለማንኛውም ተጨማሪ መረጃ፣ ከመጠይቁ ጋር የተያያዘ ችግር ካለ እባክዎን ዋና ጥናት አድራግዉን ያነጋግሩ

ዋና ጥናት አድራጊ፡፡የዋና ጥናት አድራጊ ስም፡- ሰብለ ከበደ ይንገሩ፡ +251-09 20- 70 67 17+251-09 49-46 13 00 .....ኢሜል፡ seblekebedde@gmail.com

Appendix 6: Amharic version of the questionnaire

ክፍል አንድ: መስረታዊ መረጃዎችን የተመለከቱ ጥያቄዎች

መመሪያ፡- በቀጣይነት ስለ እርሶ መስረታዊ መረጃዎችን የተመለከቱ አንዳንድ ጥያቄዎች እጠይቆታለሁ::

ተ.ቁ	ጥያቄ	መሌስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
101	እድሜዎ ስንት ነዉ?	---------- አመት	
102	ጾታ?	ወንድ……..……1 ሴት……...……2	
103	ሃይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ	
104	ት/ት ቤት ገብተው ያውቃሉ?	አዎ……..1 አሊቅም…….....2	አላውቅም ከሆነ ወደ ጥያቄ ቁጥር 105 ይሂዱ
105	ከፍተኛ የትምህርት ደረጃዎ ስንት ነው/ እስከ ስንት ተምረዋል?	ያልተማረ (ማንበብ እና መጻፍ የማችል)……..1 ማንበብ እና መጻፍ የሚችል……..2 የመጀመሪያ ደረጀ (1-8 ክፍል)……3 ሁለተኛ ደረጀ (9-12 ክፍል)….4 የሙያት ምህርት……..……..5 ኮሌጅ ያጠናቀቀ፣ደግሪ ወይም ከዚያ በላይ…6	

106	የጋብቻ ሁኔታ?	ያላገባ/ች…….....……1 ያገባ/ች……...…2 የፈታ/ች/ የተያየ/ች…….3 የሞተበት/ባት……...…4	
107	የስራ ሁኔታ (በዋናነት የሚሰሩት ስራ) (ከአንድ በላይ መልስ መስጠት ይቻላል)	የመንግስትሰራተኛ…...……1 ነጋዴ……2 ተማሪ……..……...3 የቀን ሰራተኛ……4 የቤት እመቤት……..…….5 ስራ የለኝም…….……6 ሌላ ካለ ይግለጹ……...…..7 ገበር----------8	
108	የቅጥር ሁኔታ	1. አልተቀጠረም 2. የተቀጠረ	
109	አማካይ ገቢ ምን ያክል ነው	_____ብር	
110	ቁመት (በሴንቲ ሜትር) ክብደት በኪሎግራም	---------- _____	
111	የመኖሪያ ቦታ	1. ከተማ 2. ገተረ	

ክፍል 2: - የአመጋገብ ልምድ የተመለከቱ ጥያቄዎች

መመሪያ፡ ከዚህ በመቀጠል የአመጋገብ ሁኔታን/ ልምድ በተመለከተ ጥያቄ እጠይቆታለሁ፡፡ ምላሽዎትን ከማነብልዎት ምርጫ ዉስጥ የትኛዉ እንደሆነ ይነግሩኛል::

ተ.ቁ	ጥያቄ	መልስ	ወደ ሚቀጥለው ጥያቄ ይሂዱ
201	በቀን ምን ያህል ጊዜ ይመገባሉ	አንድጊዜ…….1 ሁለት ጊዜ……..2 ሶስት ጊዜ……3 ከሶስት ጊዜ በላይ…..4	
202	ምግብ የምትዘልበት ጊዜ አለ?	አዎ……....1 የለም…….2	
203	የምትዘለው ምግብ ካለ ብዙ ጊዜ የሚሆነዉ የትኛው ነው?	ቁርስ…… 1 ምሳ…….. 2 መክሰስ……3 እራት……4	
204	በአብዛኛው (ተለምዶአዊ) ሳምንት ውስጥ በምን ያህል ጊዜ ቁርስ ይመገባሉ?	6-7 ቀን/ በሳምንት…....……1 4-5ቀን/በሳምንት…....…….2 2-3 ቀን/በሳምንት…….....3 0-1 ቀን/ በሳምንት…….....4	
205	በአብዛኛው (ተለምዶአዊ) ሳምንት ውስጥ በምን ያህል ጊዜ ምሳ ይመገባሉ?	6-7 ቀን/ በሳምንት…....……1 4-5ቀን/ በሳምንት……...…….2 2-3ቀን/በሳምንት……...…….3 0-1 ቀን/ በሳምንት……..…..4	
206	በአብዛኛው (ተለምዶአዊ) ሳምንት ውስጥ ከመደበኛ የምግብ ፕሮግራምህ ውጪ በምን ያህል ጊዜ መክሰሶትን ይመገባሉ?	6-7ቀን/ በሳምንት…....……..1 4-5ቀን/በሳምንት…….....…2 2-3 ቀን/በሳምንት…….....…3 0-1 ቀን/ በሳምንት……..……4	

207	በአብዛኛው (ተለምዶአዊ) ሳምንት ውስጥ በምን ያህል ጊዜ እራት ይመገባሉ?	6-7ቀን/በሳምንት……..……..1 4-5ቀን/በሳምንት…....……..2 2-3ቀን/በሳምንት….....…….3 0-1 ቀን/ በሳምንት……..……4	

የምግብ አይነት (ከዚህ በታች የተዘረዘሩትን ምግቦች በአንድ ሳምንት ውስጥ መመገባቸዉን ይጠይቁ)		በቀን አንዴ	በቀን 2 ግዜ	በቀን 3 ግዜ	በቀን 4 ግዜ	በቀን 5 ግዜ		በቀን 6 ግዜ	በየቀኑ	በፍፁም
የእህሌ ዘር										
11	ቀይ ጤፍ እንጀራ									
2	ነጭ ጤፍ እንጀራ									

3	እንጀራ ፍርፍር									
4	የገብስ ዳቦ									
5	ነጭ ስንዴ ዳቦ									
6	ቂንጬ									
7	የአጃ አጥሚት									
	ፓሰታ									
	ማካሮኒ									
	ሩዜ									
	ጨጨብሳ									
	ነጭ ገብስ ገንፎ									
	ጭኮ									

ስር ምግቦች

	የተጠበሰ ድንች									

	ድንች ቅቅሌ									
	ድንች ወጥ									
	ስካር ድንች									
	ካሮት									
	ቀይስር									
	ቆጮ									

አታክልት

ዱባ									
ቃሪያ									
አበባ ጎመን									
ኪያር									
ዜኩኒ									
			ጥራጥሬዎች						
ሽሮ ወጥ									
በቆል									

ባቄላ									
ሽንብራ									
አተር									
አተር ክክ ወጥ									
ምስር ክክ ወጥ									
የለዉዝ ቅቤ									

ፍራፍሬ

አቮካዶ									
ሙዙ									
ማንጎ									
ብርቱካን									
አናናስ									
ፓፓያ									
ልሚ									
ፖም									
ኢንጀሪ									

ስጋ

በሬ ስጋ									
የበግ ስጋ									
የፍያሌ ስጋ									

አሳ									
የዶሮ ስጋ									
ኩሊሉት ፣ ገበት ፣ ሌብ									

እንቁሊሌ እና የወተት ተዋጽዎች

የሊምወተት									
እርጎ									
አይብ									
እንቁሊሌ ቅቅሌ									
የእንቁሊሌ ጥብስ									

ጣፋጮች

ማር									
ስኮር									
ማርማራታ									
ኬክ፣ኩኪስ									

መጠጦች እና ፈጣን ምግቦች

ሚሪንዳ									
ኮካኮሊ									
ስፕራይት									
ሻይ									
ቡና									
ማኪያቶ									

ቢራ									
ጠሊ									
ጠጅ									
ወይን									
ፒዚ									
በርገር									
የቅባት ዉጤቶች									
ዘይት									
ቂቤ									

ክፍል 3: - የአካላዊ እንቅስቃሴ እና እንቅስቃሴ ውጭ መጠይቅ

መመሪያ፡- በመቀጠል በአብዛኛው (ተለምዶ) በሳምንት ውስጥ የተለያዩ እንቅስቃሴዎችን በማድረግ የምታሳልፉትን የጊዜ መጠን እጠይቆታለሁ፡፡

ጠንካራ የአካላዊ እንቅስቀሴ			
301	ስራህ/ሽ ላይ ከፍተኛ የትንፋሽ ወይም የልብ ምት መጨመር የሚያመጡ ጠንካራ አካላዊ ተግባራትን ያካታተ ነበር ለምሳለ፤ ከባድ እቃ ማንሳት/መሸከም፣ ቁፋሮ፣ የግንባታ ስራ ቢያንስ ለተከታታይ 10 ደቂቃ?	1. አዎ 2. አይደለም	መልሶ አይደለም ከሆነ ወደ ጥያቄ ቁጥር 304 ይሂዱ
302	በሳምንት (በአብዛኛው) ውስጥ እነዚህን ጠንካራ አካላዊ እንቅስቃሴዎች ምን ያህል ቀናት ይሰራሉ?	☐ ቀናት	

303	ከእነዚህ ቀናት (በአብዛኛው) በአንዱ ቀን ጠንካራ አካሊዊ እንቅስቃሴዎችን በመስራት ምን ያህሌ ግዛ በጠቅሊሊው ያጠፋለ?	ሰዓት _____ ደቂቃ _____	
መካከለኛ አካሊዊ እንቅስቃሴዎች			
304	ስራህ/ሽ ላይ መጠነኛ የትንፋሽ እና የልብ ምት መጨመር የሚያስከትል መካከለኛ አካላዊ ተግባራትን ይጨምራል ለምሳለ ፈጠን ያለ እርምጀ ወይም ቀለል ያለ እቃዎችን መሸከም ቢያንስ ለተከታታይ 10 ደቂቃ?	1. አዎ 2. አይደለም	መልሶ አይደ|ም ከሆነ ወደ ጥያቄ ቁጥር 307 ይሂዱ
305	በሳምንት ውስጥ (በአብዛኛው) እነዚህን መካከለኛ አካላዊ እንቅስቃሴዎች ምን ያህል ቀናት ይሰራሉ?	ቀናት ☐	
306	ከእነዚህ ቀናት (አብዛኛው) በአንዱ በእነዚህ መካከሇኛ አካሊዊ እንቅስቃሴዎች ላይ በጠቅላላው ምን ያህል ጊዜ ያጠፋሉ?	ሰሀት_____ ደቂቃ_____	
ከቦታ ቦታ መገገዝ			
ቀጥሎ ያለት ጥያቄዎች ከላይ የጠቀሳችሀቸውን በስራ ያደረጉትን አካሊዊ እንቅስቃሴዎች አያካትትም፡፡ አሁን ደግሞ በተለምዶ (አብዛኛውን ግዜ) ከቦታ ቦታ የሚ□ ▯ባቸው መንገዶችን እጠይቆታለሁ፡፡ለምሳሌ፤ ከቤት ወደ ስራ, ወደ አምልኮ ቦታ, ገበያ ቦታ ወ.ዘ.ተ.			
307	ከቦታ ወደ ቦታ በመ□ ▯ሌ በእግር ወይም በሳይክል ቢያንስ ለተከታታይ 10 ደቂቃ ይጠቀማለ?	1. አዎ 2. አይደለም	መሌሱ አይደለም ከሆነ ወደ ጥያቄ ቁጥር 310 ይሂዱ
308	በሳምንት ውስጥ (አብዛኛውን ግዜ) ከቦታ ወደ ቦታ በመ□ ▯ር ስንት ቀን በእግር ወይም በሳይክል	ቀናት ☐	

	ለተከታታይ 10 ደቂቃ ይ□ዛሉ?		
309	ከእነዚህ ቀናት በአንዱ (አብዛኛውን ግዜ) በእግር ወይም በሳይክል በመ□ □ር ምን ያህል ሰዓት ያጠፋሉ?	ሰዓት _____ ደቂቃ _____	
የመዜናኛእንቅስቃሴዎች			
ቀጥል ያለት ጥያቄዎች ከሊይ የጠቀሳችሀቸውን በስራ ያደረጉትን እንቅስቃሴዎች እና የመ□ □ር ሁኔታ አያከትትም፡፡አሁን ደግሞ የመዝናኛ ተግባራትን ለምሳላ በትርፍ ጊዜ ወይም በቤት ውስጥ ስለሚያደርጋቸው የመዝናኛ እንቅስቃሴዎች ለምሳለ ስፖርት፣ የአካል ብቃት፣ የመዝናኛ እንቅስቃሴዎች (የትርፍ ግዜ) እጠይቆታለሁ፡፡			
ጠንካራ አካላዊ እንቅስቃሴዎች			
310	እንደመዝናኛ/ የትርፍ ጊዜ እንቅስቃሴዎች ከፍተኛ የትንፋሽ ወይም የልብ ምት መጨመር የሚያመጡ ጠንካራ አካላዊ ተግባራትን ቢያንስ ለተከታታይ 10 ደቂቃ ያደርጋሉ ለምሳለ የእግር ካስ ጨዋታ ወይም ሩጫ?	1. አዎ 2. አይደለም	መልሶ አይደለም ከሆነ ወደ ጥያቄ ቁጥር 313 ይሂዱ
311	አብዛኛውን ግዜ በሳምንት ምን ያህል ቀናት ጠንካራ አካላዊ እንቅስቃሴዎች ያላቸዉን ስፖርት፣ የአካል ብቃት፣ የመዜናኛ /የትርፍ ጊዛ እንቅስቃሴዎችን ያደርጋለ?	ቀናት ☐	
312	አብዚኛውን ግዜ ከእነዚህ ቀናት በአንዱ ጠንካራ አካላዊ እንቅስቃሴዎችን ወይም ስፖርት፣ የአካል ብቃት፣ የመዝናኛ /የትርፍ ጊዜ እንቅስቃሴዎችን ምን ያህል ሰዓት ያደርጋለ?	ሰዓት_____ ደቂቃ_____	
መካከለኛ አካላዊ እንቅስቃሴዎች			

313	እንደመዝናኛ/ የትርፍ ጊዜ እንቅስቃሴዎች መጠነኛ የትንፋሽ ወይም የልብ ምት መጨመር የሚያመጡ መካከለኛ አካላዊ ተግባራትን ቢያንስ ለተከታታይ 10 ደቂቃ ያደርጋሉ ለምሳሌ፡- ፈጣን የሆነ እርምጃ፡ዋና፡ የእጅ ካስ ጨዋታ?	1. አዎ 2. አላደርግም	መልሱ አሊደርግም ከሆነ ወደ ጥያቄ ቁጥር 316 ይሂዱ
314	አብዛኛውን ግዜ በሳምንት ምን ያህል ቀናት መካከለኛ አካላዊ እንቅስቃሴዎችን ስፖርት፣ የአካል ብቃት፣ የመዝናኛ /የትርፍ ጊዜ እንቅስቃሴዎችን ያደርጋሉ?	☐ ቀናት	
315	አብዛኛውን ግዜ ከእነዚህ ቀናት በአንዱ መካከለኛ አካላዊ እንቅስቃሴዎችን (የመዝናኛ /የትርፍ ጊዜ እንቅስቃሰዎችን፣ ስፖርት፣ የአካል ብቃት) ምን ያህል ሰዓት ያደርጋሉ?	ሰዓት _____ ደቂቃ _____	
ከእንቅስቃሴ ውጭ የሚያሳሌፉት ጊዛ			
የሚቀጥለው ጥያቄ በቤት፣ በስራ፣ ከቦታ ቦታ በመንቀሳቀስ ወይም በትርፍ ጊዛዎ በመቀመጥ ወይም ጋደም ብለዉ ያሳለፉትን ጊዜ ይመለከታል፡፡ (በዴስክ ላይ ፡ በመኪና ውስጥ፡ ከ□ደኞችዎ ጋር ወይም ቴለቪዥን በመመልከት ተቀምጠው ወይም ጋደም ብለው፣ መጽሐፍ በማንበብ፣ ካርታ በመጫወት ያሳፉለትን ጊዜ ይጫምራል፡፡ ነገር ግን በእንቅልፍ ያሳለፉትን ጊዜ አያካትትም፡፡			
316	አብዚኛውን ግዜ በቀን ውስጥ በጠቅላላው ምን ያህል ጊዜ ተቀምጠው ወይም ጋደም ብለው ያሳልፉሉ?	ሰአት _____ ደቂቃ _____	

ክፍል 4:- እጾችን የሚመለከቱ ጥያቄዎች

መመሪያ:- አሁን ስለ አልኮል መጠጥ፣ ሲጋራ እና ጫትን የተመለከቱ ጥያቄዎችን እጠይቆታለሁ፡፡

401	ጫት ቅመው ያቃሉ?	አዎ.....1 አላቅም.....2	አላቅም ከሆነ ወደ ጥያቄ ቁጥር 403 ይሂዱ
402	ባለፉት 30 ቀናት ዉስጥ ለስንት ቀናት ቅመዋል	----------ቀናት ባለፉት 30 ቀናት ዉስጥ አልቃምኩም	
403	በአሁኑ ሰአት ሲጋራ ታጨሳለህ/ሽ	በየቀኑ.....1 የተወሰነ ቀን/አንዳንዴ.....2 ምንም አላጨስም.....3	መልሱ በየቀኑ ከሆነ ወደ ጥያቄ ቁጥር 404 ይሂዱ፣ መልሱ የተወሰነ ቀን/ አንዳንዴ ከሆነ ወደ ጥያቄ ቁጥር 405 ይሂዱ፣ መልሱ አላጨስም ከሆነ ወደ ጥያቄ ቁጥር 406 ይሂዱ
404	በአማካይ በቀን ውስጥ ምን ያህል ሲጋራ ያጨሳል	በቁጥር----------	
405	ከአሁን በፊት ሲጋራ አጭሰህ ታውቃለህ?	በየቀኑ.....1 የተወሰነ ቀን/አንዳንዴ.....2	

		ምንም 3አላጨስም……4	
406	አልኮል ያለበት መጠጥ ጠጥተው ያቃሉ? (ጠላ፣ጠጅ፣አረቄ፣ቢራ…)	አዎ……...1 አላቅም…… …..2	መልሱ አላቅም ከሆነ ወደ ጥያቄ ቁጥር 408 ይሂዱ
407	በአሁኑ ሰአት በምን ያህል ግዜ አልኮል ያለበት መጠጥ ይጠጣሉ?	በየቀኑ…..……1 በሳምንት አንድግዜ…….....2 በሳምንት ከአንድ ግዜ በታች.....3 ምንም…...……4	
408	**በቅርብ ጊዜ በራስህ ውስጥ ዝቅተኛ ወይም የመንፈስ ጭንቀት ተሰምቶህ ያውቃል?**	**አዎ ……1** **አይደለም ……2**	

Appendix 7: Anthropometric measurement guideline

Height Measurements

Position the board on a firm surface against a wall

Step 1-Ask the participant to remove their:

- Footwear (shoes, slippers, sandals, etc)
- Headgear (hat, cap, hair bows, comb, ribbons, etc).
- Any fancy or high hairdos may have to be pressed.

Step 2-Ask the participant to stand on the board facing you.

Step 3-Ask the participant to stand with:

Back of head, shoulder blade, buttock, and heels against the backboard

• Feet together

• Place arms on the side

Step 4-Ask the participant to look straight ahead and not tilt their head up.

Step 5- Make sure the eyes are on the same level as the ears.

Step 6- Move the measuring arm gently down onto the head of the participant and ask the Participant to breathe in and stand tall.

Step 7- Read the height in centimeters at the exact point to the nearest 0.1 cm.

Step 8- Ask the participant to step away from the measuring board.

Step 9- Record the height measurement in centimeters

Weight measurement

Make sure the scales are placed on a firm, flat surface.

Turn on the scale and wait until the display shows 0.0.

Step 1-Ask the participant to remove their footwear (shoes, slippers, sandals, etc) and socks. They should also take off any heavy belts and empty their pockets of mobiles, wallets, and coins.

Step 2- Ask the participant to step onto the scale with one foot on each side of the scale.

Step 3- Ask the participant to:

- Stand still
- Face forward
- Place arms on the side
- Wait until asked to step off

Step 4- Record the weight in kilograms to the nears