SEDENTARY BEHAVIOR AND CENTRAL OBESITY AMONG ADULTS WORKING IN PUBLIC OFFICES IN ADDIS ABABA, ETHIOPIA

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A research thesis to be Submitted to the School of Public Health, Department of Nutrition and Dietetics for the partial fulfilment of masters of Public Health in Public Health Nutrition.

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LIST OF ACRONYMS AND ABREVIATIONS

ACSM ..... American College of Sports Medicine

AOR ..... Adjusted Odds Ratio

BMI ..... Body Mass Index

COR ..... Crude Odds Ratio

cm ..... Centimeter

CVD ..... Cardio Vascular disease

DHS ..... Demographic Health Survey

EDHS ..... Ethiopian Demographic Health Survey

EPI INFO ..... Epidemiological Information

ETB .....Ethiopian Birr

GPAQ..... Global Physical Activity Questionnaire

Hr..... Hour

IQR .....Inter Quartile Range

ISAT ..... International Sedentary Assessment Tool

MET.....Metabolic Equivalent

Min ..... Minute

MVPA..... Moderate-to-Vigorous Physical Activity

R..... Coefficient of reliability

SD..... Standard Deviation

SSA..... Sub-Saharan Africa

TEM..... Technical Error of Measurement

TPA ..... Total Physical Activity

TV..... Television

VIF.....Variable of Influence Factor

WC.....Waist Circumference

WHO.....World Health Organization

WHR.....Waist to hip ratio

WHtR..... Waist to height ratio

ABSTRACT

Background:

As a result of modernization, prolonged time spent in sedentary behaviors has emerged as an important behavioral risk factor for chronic diseases, independent of leisure-time physical activity. Sedentary lifestyles are prevalent among office workers and little is known whether they are being predisposed to central obesity, which is an independent risk factor for cardiovascular and metabolic disorders. Understanding the domains of sedentary behavior, which are prevalent among office workers, is also important for targeted interventions.

Objective:

To assess the domains of sedentary behavior, and its association with central obesity among adults working in public offices in Addis Ababa, Ethiopia.

Methods:

Institution-based cross-sectional study was conducted among a sample of 1230 working adults. A two-stage random sampling technique was employed. Data was collected by interviewer-administered questionnaire while central obesity was measured based on WHO recommendation for waist circumference measurement. Data was entered and cleaned using EPI INFO version 7 and exported to STATA version 15.1 for analysis. Descriptive statistics was used to present the study results while binary and then, multivariable logistic regression were employed to examine the association between sedentary behavior and central obesity, adjusting for confounders. Adjusted odds ratio with 95% Confidence Interval was computed to evaluate the association and p-value <0.05 was used to declare statistical significance.

Results:

The overall magnitude of central obesity among adults working in public offices of Addis Ababa was 49.4%. The proportion of workers who did not meet the WHO recommendation of physical activity for health was 71.4%. Workers who spent sitting at least 5 hours at work had 4.9-times higher odds of central obesity than those who sat for less than 5 hours, AOR (95% CI) = 4.9 (3.0, 8.1). Those who spent at least 2 hours sedentary while watching televisions and during other leisure activities also had 3.5- and 6.8-times higher odds of central obesity than those who sat for less than 2 hours, AOR (95% CI) = 3.5 (2.3, 5.5) and 6.8 (4.1, 11.4), respectively, after adjusting for observed covariates including age and sex.

Conclusions and recommendations:

The magnitude of central obesity is substantially high among office workers in Addis Ababa. Workers who spent significant time sitting at work are more likely to have central obesity, while time spent sedentary while watching televisions and during other leisure activities are important contributors to central obesity. Hence, interventions should target those who spend significant time sedentary at work and during their leisure time, mainly through watching televisions.

1. INTRODUCTION

1.1. Background

Due to advances in technology, activities that pose energy expenditure are being reduced and sedentary lifestyles that involve little or no regular physical activity, are getting predominant (1). Accordingly, sedentary behavior is not merely lack of physical activity, it is rather defined as, "any waking behavior characterized by an energy expenditure of ≤1.5 metabolic equivalents (METs) while in a sitting or reclining posture" (2). Sedentary behaviors may include behaviors at work or school, during transport, while watching television (TV) and in leisure-activities which include other screen-time such as using computer and mobile, and sitting to read, talk, do homework, or listen to music (3).

White collar office workers and blue collar workers such as drivers and assemblers are found to be at higher risk of sedentary behavior due to their work conditions (4, 5). Office workers spend most duration of their time in sedentary activity (6). Physical activity time of most sedentary workers is not likely to increase during non-working hours when compared to workers who had more physically active occupation (7). Prolonged time spent in sedentary behaviors is emerging as an important behavioral risk factor for chronic diseases, independent of leisure-time physical activity (8). Therefore, office workers are at higher risk of developing diseases such as cardio vascular, type 2 diabetes and hypertension (9).

According to the World Health Organization (WHO), obesity is defined as abnormal or excessive fat accumulation that may impair health (10). Obesity is, generally, a result of long term positive energy imbalance between energy intake and expenditure (11). Sedentary behavior is widely implicated as a primary contributor to the increasing prevalence of obesity in a society and poses independent risks to health (12).

Although Body Mass Index (BMI) is the most frequently used measure of adiposity, BMI alone is not the most accurate measure of increased Cardio Vascular disease (CVD) risk (13). Instead, waist circumference (WC), waist-to-hip ratio (WHR) or waist to height ratio (WHtR) are reported to be better predictors of obesity (14). Studies showed that the risk of metabolic complications are not totally attributable to excess body weight, but to the location of this excess weight, particularly central obesity (or android obesity, abdominal obesity or upper

body obesity) unlike gynoid obesity (or lower body obesity with fat located around the hips and buttocks) (15). Hence, abdominal obesity was established to be the most prevalent cause of cardio metabolic risk, even among those with normal BMI (13). A study conducted among workers of public schools and commercial banks in Addis Ababa indicated that WC is the best measure of central adiposity for predicting the risk of CVD among working adults (16).

Central obesity is defined by the WHO as, WC measurement of >94 cm for men and >80 cm for women, WHR ≥0.90 for men and ≥0.85 for women, and WHtR cut-off points for the increased cardiovascular risk (17), that differ among diverse ethnic groups due to differences in energy imbalance, physical activities and body build level (18).

Regular level of Moderate-to-Vigorous Physical Activity (MVPA) is, therefore, recommended for physiological benefits (including reduced visceral fat) and a reduced risk of chronic disease and premature mortality (19).

1.2. Statement of the problem

According to WHO, more than 650 million of the world population were obese and the worldwide prevalence of obesity has nearly tripled since 1975, obesity being a major threat to health throughout the world and killing more people than underweight (20).

Obesity and other non-communicable diseases occur not only among the wealthy but also are rapidly rising in the African Region (21), particularly in urban settings (22). The rapid urbanization accompanied by nutrition transition is changing the disease pattern in sub-Saharan Africa with CVD and its related risk factors gaining prominent position (23). These factors coupled with a more sedentary lifestyle, all of which promote obesity (24). Additionally, sub-Saharan women are far more likely to be obese than men affecting women's health issues, pregnancy, maternal and infant health (25).

Non-communicable diseases are estimated to account for 30% of total deaths in Ethiopia (26). Studies also show that Addis Ababa is experiencing double burdens of under and over nutrition (27). About 31% of deaths reported from hospitals in Addis Ababa were attributed to diabetes mellitus and cardiovascular diseases (28). The prevalence of hypertension is around 20% and

15% among healthy working men and women, respectively (29). This increased risk of cardio metabolic disorders could be attributable to central obesity (30).

The city administration of Addis Ababa has launched weekend based monthly campaigns on mass sport activities with the motto “roads for pedestrians”. But the proportion of office workers who actually take part and its impact in their obesity status is not known. Although local studies are lacking, according to the Ethiopian law of labor proclamation, Ethiopian public office workers are expected to spend the 8 working hours of a day in their office during working days of the week, being more likely to experience long time sitting (31). This may contribute to health risks associated with their sedentary behavior (32). Sitting time at office, coupled with time spent on leisure time, was also associated with cardio-metabolic risk biomarkers, with sitting time being an independent risk of central adiposity (33).

A review of studies on sedentary behavior and health found that adults spend 46-59% of the day being sedentary and indicated this could be a new focus of research area (34). Therefore, this study will assess the domains of sedentary behavior and its association with central obesity among office workers in Addis Ababa, which will contribute to the targeted intervention plan of reducing sedentary behavior.

1.3. Rationale and significance of the study

Since obesity related chronic diseases are associated with long time medical care and service, interventions should focus to prevent the growing prevalence of obesity to improve health and reduce economic costs (35).

For public health intervention programs to be more effective in the reduction of obesity and related risk of non-communicable diseases, special attention should be paid to a common risk factor such as sedentary behavior among groups of people, office workers in particular, who at more risk of exposure to prolonged sedentary time (36). Even though office workers do not have a well-established and legally bound breaks to support physical activity, studies on sedentary behavior and central obesity in particular, have not been conducted in Ethiopia, yet.

Therefore, the finding of this research would be useful to serve as a base line evidence for researchers, policy makers, health professionals, communities and other stakeholders.

2. LITERATURE REVIEW

2.1 Magnitude of obesity

The World Health Organization indicated that the global prevalence of obesity in 2018 has grown by nearly three times the prevalence of obesity that was during the 1975, ending up with about 13% of the world population being obese (20).

The Demographic Health Survey (DHS) analysis of 32 Sub- Saharan African countries showed the pooled prevalence of obesity in the region to be 15.9% (37). A study in Tanzania revealed that the prevalence of obesity among adults was 19.2% (38).

Analysis of the Ethiopian Demographic Health Survey (EDHS) found the prevalence of obesity for urban settings to be 2.8% (39), whereas the prevalence of obesity in Gondar was 16.2% (40), and 51.2% in Bahir Dar, based on WHR ≥0.95 for men & ≥0.85 for women (41).

A study among working adults in Wolayta Sodo Town, Southern Ethiopia, revealed the prevalence of central obesity was 52.7%, based on WC ≥94 cm for men & ≥80 cm for women, and 67% based on WHR ≥0.85 & ≥0.90 for men and women, respectively (42). A study done among employees of the Commercial Bank of Ethiopia and teachers in public schools of Addis Ababa found a mean WC of 85.6 cm in men and 80.6 cm in women (29).

2.2 Determinants of central obesity

2.2.1 Determinants at population level

A. Globalization

Shifts in agriculture to commercial crop and increases in food imports resulted in the introduction of unhealthy, low-cost and processed foods to urban areas of Sub-Saharan Africa (SSA) (43). Low-cost vegetable oils from industrialized countries also increase fat consumption in the developing world (44). Globalization fastens ‘nutrition transition’, where traditional staple diets rich in whole grain, fruits and vegetables are replaced by ‘Westernized’ diets rich in fat, sugar and nutritionally poor calories, thereby increasing the risk of obesity and related illnesses, and social costs (45).

B. Urbanization

Urban dwellers have increased access to imported high-calorie, high-fat 'Western' food choices (46), These foods are often available at low, affordable prices, making it economically accessible to substitute cheap vegetable fats and convenience and fast foods for traditional staples (47). Additionally, more urban women work outside of their homes and spend less time for preparing meals, hence, increasing reliance of their families on packaged foods outside home (48). Evidences also show that, immigration from a rural community to a more urbanized community poses an additional risk of obesity (49).

C. Government Policy

Based on the evidence from a systematic policy review of 116 low-to-middle income countries that are members of the WHO, 47% of the countries had NCD prevention strategies such as salt consumption, fat consumption, fruit and vegetable intake or physical activity out of which proposed actions to promote healthier diets and physical activity account for small proportions of the strategy. The coverage of policies in Africa, Europe, America and Eastern Mediterranean that specifically targeted at least one of the risk factors reviewed was lower than that of South-East Asia and Western Pacific (50). Therefore, the government policy to prevent the NCD challenges in low and middle income countries, through physical activity in particular, should be provided the due attention in population groups such as office workers who have higher chance of exposure to sedentary behaviors and NCDs.

Although weekend based monthly campaigns on mass sport activities with the motto "roads for pedestrians" launched by the city administration of Addis Ababa Ethiopia in particular, is appreciable, this will also be challenged by the pandemic occurrence of Covid-19 disease whose transmission favors participation in mass events.

2.2.2. Determinants at individual level

A. Socio-demographic factors

Evidences from various studies indicated that sex (38, 39, 51), age (37), educational status (38), marital status (52), sedentary occupational status (51), level of income (38), urban residences (29) and childhood nutritional status (53) are the most frequently reported factors that contribute to central obesity among adults.

B. Genetic factors

Genes have been identified to influence an uncontrollable urge to eat; an inclination to physical inactivity; an increased capacity to store fat; and a minimal ability to expend dietary fat (54). They are impacted by environmental factors, and this gene–environment interaction can create additional risk of central obesity (55)..

C. Dietary factors

Increased total caloric intake has a direct link with development of obesity (47). As a result of 'the nutrition transition' to more Western style diets, calories consumed are getting increased (49). This transition involves replacement of fruits, vegetables and whole grains with foods rich in animal and vegetable fats and simple sugars, but low in fiber (48, 56). 'Luxury foods' such as meat, fried foods, soft drinks, butter, sugar, bottled beer, tinned food and cheese are being consumed in higher amounts (56).

D. Behavioral risk factors

A cross sectional Spanish study conducted in Spain shows daily alcohol consumption was positively associated with obesity (57). Whereas, a prospective cohort study among US women found normal-weight women who consumed light-to-moderate amount of alcohol had lower risk of obesity (58). Therefore, alcohol consumption has inconsistent association with obesity.

Ex-smokers and heavy smokers were found to have higher odds of obesity (59). While khat extracts or cathinone results in changes in fat mass, appetite, lipid biochemistry and hormonal levels (60).

A meta-analysis of 30 studies from around the world showed consistent increased risk of obesity amongst short sleepers in adults in cross-sectional studies (61).

E. Activity/Sedentary factors

Decreases in physical activity levels, directly related to caloric imbalance and weight gain, are rising globally (62). The WHO report in 2010 showed that 60% of the world's population does not meet the level of physical activity recommended for health (62). Physical inactivity rates in developing countries have been found to vary from 17 to 91% (63).

Decreases in physical activity is usually associated with increased urbanization and introduction of technologies that make work more sedentary (64). Changes in occupation with urban jobs becoming more sedentary led to drops in physical activity at work (45, 47). The recording of the physical activity level of office workers have produced poor results with only 49% of participants meeting the recommended duration of MVPA set by the ACSM of 150 minutes a week (65). An Australian study also found a strong association between 'occupational sitting time' and obesity (66). Sufficient energy expenditure with leisure-time activity, may not offset the effects of sedentary occupations in relation to obesity (67).

Studies showed that high proportions of days of office workers are sedentary and sedentary activities are often long and uninterrupted, with 55% of sedentary behaviors being spent in durations of 20 or 30 minutes (68). This is supported by studies whose findings show between 25-67% of sitting time among office workers to be more than 20 and 30 minutes (69). Behaviors of long durations of uninterrupted sitting are also risks to health, while regular changes in posture after food consumption helps reduce plasma glucose and insulin levels (70) and enhance musculoskeletal health and levels of productivity at work (36).

TV viewing is reported to be the most prevalent leisure time activity in adults (71). Adults who report longer durations of sitting time and time spent watching TV are more likely to be obese (72). Evidences show that indicators of sedentary behavior, like time spent watching TV, total sitting time, and objectively measured accumulated sedentary time, predict insulin resistance, type 2 diabetes, cancer, cardio-vascular, and all-cause mortality (73). A meta-analysis also found mortality risk to increase by 5% for each additional hour spent sitting beyond seven hours per day (74).

Decreases in physical activity are also found in increased use of transportation to get to work, while using computers at home and during more passive leisure time activities (45). This further signifies role of not only the job of office workers but also their low levels of physical activity outside of working hours (5).

2.3. Measurement of sedentary behavior

The total time spent in sitting, or in specific sedentary behaviors, can be assessed by subjective self-report questions or objective monitoring devices, such as accelerometers, inclinometers, or sensors assessing variations in physiological parameters.

Accelerometers can quantify the amount and temporal patterns of time spent sitting across the day of time below the threshold of movement (75). Whereas, inclinometers can distinguish between lying, sitting and standing, and hence, quantify time spent in different postures. Although these approaches are valuable and avoid the biases of self-reported methods, sometimes what people are doing with respect to different sedentary behaviors needs to be known, and hence, self-report assessment methods are required.

Self-report on sedentary behavior, which is the most widely used, can ask respondents to report frequency and duration of time spent in different settings, such as sitting at work, transportation, watching TV and playing computer game, over a specific time period (76). Alternatively, diaries of time-use, whereby participants record their behavior at set time periods over several days, is used (3). Direct observation of sedentary behaviors is also an alternative method that could have reliable estimates, despite the issues of privacy and cost.

2.6. Sedentary behavior and central obesity among office workers

A cross-sectional study among workers on data from the 2007–2008 Australian National Health Survey found that workers with mostly sitting jobs had significantly higher risk of obesity than workers with mostly standing jobs (RR=0.88) and workers with leisure-time sitting of less than four hours per day had significantly lower obesity risk than workers with four or more hours per day of leisure time sitting (RR=0.77) (77).

A study done among United States workers found that sedentary work, low physical job demand, or their combination increased the risk for central obesity in male workers, particularly when they worked longer than 40 hr. per week, after controlling for covariates, and sedentary work marginally increased the risk for central obesity in female workers (78).

A study in Korean National Health and Nutrition Examination Survey found Men who reported sitting for ≥5 h/day were 1.5-times more likely to be obese than those who reported sitting for <5 h/day after adjusting for all covariates, but sitting time was not significantly associated with the prevalence of abdominal obesity after adjusting for covariates (79).

In general, all the studies revealed inconsistent association between the domains of sedentary behavior and central obesity, and there is also limited evidence on the association between the domains of sedentary behavior and central obesity, in particular. This study addressed the association between domains of sedentary behavior and central obesity while considering important confounders such as the breaks in sedentary behavior, dietary habits, physical activity, age and sex.

3. OBJECTIVES

3.1. General objective

The general objective of the study is to assess the domains of sedentary behavior and its association with central obesity among adults working in public offices in Addis Ababa, Ethiopia, 2019.

3.2. Specific objectives

1. To determine the magnitude of central obesity among adults working in public offices in Addis Ababa, Ethiopia, 2019.

2. To assess the proportions domains of sedentary behavior among adults working in public offices in Addis Ababa, Ethiopia, 2019.

3. To examine the association of domains of sedentary behavior with central obesity among adults working in public offices in Addis Ababa, Ethiopia, 2019.

4. METHODS AND MATERIALS

4.1. Study Area

The study was conducted in public offices in Addis Ababa, the capital of Ethiopia. Adds Ababa, as the largest city of Ethiopia, has a population 3.24 million with annual growth rate of 3.8 and located at 901'48" N and 38044'24" E. with 2355 m above sea level and landed in 527 km^2. The city is a home of various ethnicities, which come from different regions of Ethiopia. The city is subdivided into 10 sub-cities and 117 districts.

In Addis Ababa city Administration, there are 10 sub city and 117 district level administration offices, within which there are a total of 38 649 working adults. In each 117 district, there is a youth center within which gym facility is available for its people including the office workers. A study conducted in Addis Ababa in 2011 showed that the prevalence of overweight/obesity among working adults in Addis Ababa was 28.8% (16).

4.2. Study period

The time of data collection was from March to May 2019 in Addis Ababa.

4.3. Study Design

Institution based cross-sectional study was conducted among adults working in administration offices of Addis Ababa, Ethiopia.

4.4. Population

4.4.1. Target population:

All adults working in public offices of Addis Ababa, Ethiopia.

4.4.2. Source population

All adults working in Yeka sub-city administration offices in Addis Ababa during the time of data collection.

4.4.3. Study participants

Randomly selected adults working in the selected district administration offices of Yeka sub-city during the study period.

4.4.4. Inclusion criteria

All adults working in Yeka sub-city administration who were voluntary to participate in the study during the time of data collection.

4.4.5. Exclusion criteria

- Women with known pregnancy
- Women on maternity leave

4.5. Sample size

The sample size is calculated using the formula of sample size determination using Epi Info windows version 7 statistical software.

For the first and the second objectives:

Using single population proportion formula, sample size determination was as follows:

$$n = \frac{Z^2_{\alpha/2}(p)(1-p)}{D^2}$$

Where, n = the calculated number of sample size

$Z_{\alpha/2}$ = the standard score corresponding 95% confidence level =1.96

D = margin of sampling error 5% = 0.05

n_{total} = total sample size after adding 10% non-response rate

N = Final number of sample size after considering design effect of 1.5

Objective 1:

P = 52.7%, prevalence of central obesity based on WC among working adults (77)

n = 383, n_{total} = 422, and the final sample size, N = 633

Objective 2:

P= 50%, prevalence of sedentary behavior among adults who spent sedentary ≥5 hours at work or ≥1 hour during transport or ≥2 hours while watching TV and during other leisure activities. These assumptions were considered due to the lack of studies done in comparable study areas showing the prevalence of central obesity with the sedentary domain of interest.

n = 384, n_{total} = 421, and the final sample size, N = 632

For the third objective

Using the following double proportion formula:

$$n = \frac{[Z_{\alpha/2}\sqrt{(1+\frac{1}{r})} + Z_{\beta}\sqrt{p_1(1-p_1) + \frac{p_2(1-p_2)}{r}}]^2}{(p_1 - p_2)^2}$$

Where,

- P_1= 50%, proportion of central obesity among adults who spent sedentary for ≥5 hours at work or ≥1 hour during transport or ≥2 hours while watching TV and during other leisure activities, due to lack evidence from previous studies.

  P_2= 40%, proportion of central obesity among adults who spent sedentary for <5 hours at work or <1 hour during transport or <2 hours while watching TV and other leisure time. Hence, assumptions of 10% difference were considered due to the lack of similar studies conducted in comparable study areas showing the association of interest.
- α, probability of committing type I error; for 95% Significance, two tailed Z_α = 1.96
- β-20%, probability of rejecting a true hypothesis; for 80% Power, using $Z_ß$ = 0.84
- r - the proportion of n: P_1 is 1.

Using the above formula, the calculated sample size was 816 and considering a contingency of 5% for non-respondent, the total sample size became 857. Using a design effect of 1.5, the final sample size, required was 1,286.

Therefore, the final sample size of the third objective which yields the largest sample size of 1,286 was taken as the final sample size of this study.

4.6. Sampling procedures

We used a two-stage random sampling technique among administrative offices of Addis Ababa, Ethiopia. Since office workers in a sub-city are recruited from all parts of the city and for that reason the city administration serves hundreds of public service transport facilities for its workers, we considered any adult working in a typical sub-city could be representative of the whole adults working in public offices in Addis Ababa. Hence, Yeka sub-city was randomly selected from the 10 sub-cities, as a primary sampling unit. Since the average number of office workers in a district is 257, five (of the fourteen) districts were required to meet the sample

size of this study for feasibility reasons. Hence, the five districts were randomly selected as secondary sampling units. Finally, the list of workers from the selected districts was used as a sampling frame to select the participants of the study, by simple random sampling technique, from each district as shown in Figure 4.1.

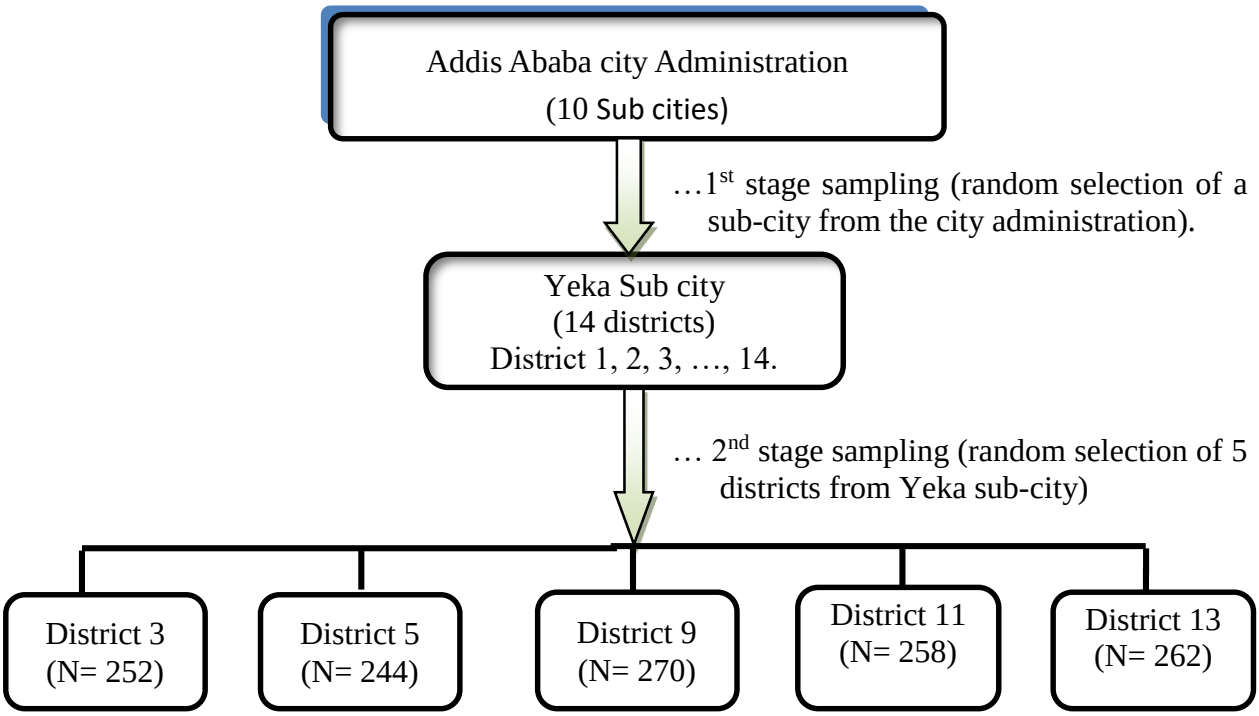

Figure 4.1. Sampling procedure

4.7. Data collection tools and procedures

Data was collected with structured interviewer-administered questionnaire. The questionnaire consisted of information on demographic and socioeconomic characteristics adapted from Ethiopian demographic and health survey; factors associated with obesity were adapted from different literatures; dietary habit was assessed by using food frequency questionnaires (FFQ). Sedentary behavior was assessed by questionnaires adapted from the International Sedentary Assessment Tool (ISAT) (80), and physical activity was assessed by a questionnaire adapted from validated global physical activity questionnaire (GPAQ) (81). To check for consistency, the questionnaires was first developed in English, translated to local language (Amharic) and finally translated back to English by another language expert.

Anthropometric Evaluation

Based on the written consent taken from the participants, the respondents confirmed that they would cooperate to the study coming without having a breakfast for the due waist circumference measurement. Waist circumference was measured at the midpoint between the lower margin of the least palpable rib and the top of anterior superior iliac crest in the mid axillary line using non-stretchable fixed tension tape wrapped around at this point, parallel to the floor, ensuring it is adjusted without compressing the skin. While taking the measurement, the participant wearing light clothing stood relaxed with feet close together, arms at the side and body weight evenly distributed. The measurements were taken at the end of a normal expiration. Each measurement was repeated twice; when the measurements are within 1 cm of one another, the average was calculated. When the difference between the two measurements exceeded 1 cm, the two measurements were repeated (17).

Evaluation of physical activity

The GPAQ Analysis Guide was used to assess the total physical activity level of the study participants. The study participants were asked about days per week and hours per day they spend on different activities. Then minutes spent on each domain of physical activity were calculated and multiplied by number days of physical activity to get a week's physical activity in minutes. Total physical activity was categorized based on the WHO recommendation of physical activity for health of 600 MET-minutes/week. Participants with TPA ≥600 MET-minutes per week were categorized as they "met" the recommendation, otherwise they were considered as they did "not met" the WHO recommendation of physical activity for adults.

Data collection

Two data collectors and one supervisor were recruited with qualifications of health officer. Training was given for the data collectors and the supervisor on sampling procedures, techniques of interview and data collection process by the principal investigator for a duration of five days and any doubt in the questionnaire was clarified. Demonstration of measurement was performed for each data collector, on volunteer employees at a sample office.

4.8. Study Variables

Outcome variable

- Abdominal obesity (No, Yes)

Covariates

A. Socio demographic characteristics:

- Sex (Male, Female)
- Age, in years (18-24, 25-34, 35-44, 45-62)
- Marital status (Never married, currently married, cohabitating, separated/divorced, widowed)
- Monthly income, in Ethiopian Birr (<3,262, 3,262 - 4,355, >4,355)
- Education level (Diploma, Degree, Masters and above)
- Family size (<2, 2-4, ≥5)
- History of migration from another place to Addis Ababa (No, Yes)
- Type of migration to Addis Ababa (Another urban to Addis, Rural to Addis)
- Total years spent at office **(**≤2, 3-5, >5)

B. Dietary pattern:

- Fruits, Meat, Eggs, Milk, cheese or yogurt, Sweetened beverages, Butter or fat (No more than once/month, 2 to 3 days/month, At least once/week)
- Vegetables (No more than once/week, 2 to 6 days/week, At least once/day)
- Legumes, Bread or cereals, Sugar and sweets, Fast foods (Not daily, Once a day, More than once a day)

C. Dietary habits:

- Frequency of meal consumption (<3 Meals/day, ≥3 Meals/day)
- Consumption frequency of breakfast, lunch, dinner, snack, eating during bedtime, meal not prepared at home, lunch box use (No, Yes)
- Number of snacks (Not daily, Once a day, >Once a day)
- Type of oil most often used for meal preparation at home (Vegetable oil, Cereal oil, Butter, Don't know)

D. Health behaviors:

- Sleep duration (<7 hours, 7-8 hours, >8 hours) (82)
- Cigarette smoking status (Never, 1 to 5 cigars/month, ≥6 cigars/month)

- Alcohol consumption (Never, 1 to 2 days/month, ≥3 days/month)
- Chewing khat (Never, 1 to 3 days/month, ≥4 days/month)
- Perceived childhood body status (Thin/below normal, Normal/healthy, Fat/over normal, Very Fat/Obese, Don't remember,
- Perceived current body status (below normal, Normal, Fat, Very Fat)
- Preference about body status (To lose, to maintain, to gain weight)
- Exercise such as gym or aerobics (No, Yes)
- Participation in races as the great run (No, Yes)
- Participation in vehicle free weekend walk (No, Yes)
- Dietary modification (No, Yes)
- Skipping meal (No, Yes)
- Eating more to gain weight (No, Yes)
- None of weight control practice used (No, Yes)
- Predominant mode of travel (Walking, Car)

E. Physical Activity

- Total Physical Activity of 600 MET-minutes per week (Not met, Met)

F. Domains of sedentary behavior

- Time spent sitting at work (<5 hours, ≥5 hours)
- Time spent sedentary while using computer at home (<1 hour, ≥1 hour)
- Time spent sedentary while traveling to and from places (<1 hour, ≥1 hour)
- Time spent sedentary while watching TV (<2 hours, ≥2 hours)
- Time spent sedentary during other leisure activities, NOT including watching TV (<2 hours, ≥2 hours)

G. Sitting breaks

- Number of sitting breaks (≤3, 4 and more)
- Total time spent in short physical activity breaks (<20 minutes, 20-29 minutes, 30 minutes and more)

4.9. Data quality control

Before data collection:

- Structured questionnaire and fixed-tension measuring tape was prepared;
- Training of five days was provided for the data collectors and the supervisor.
- Pre-test of the questionnaire was undertaken on a sample of 10 office workers whose characteristics are similar to the participants a week prior to the actual data collection.
- Face validity of the ISAT questionnaire was conducted on the participants selected for the pre-test to check for its transparency or relevance as it appears to the participants.
- Technical error of measurement (TEM) for WC was calculated. The intra- and inter-observer TEM were found to be 0.012 and 0.019, respectively. The coefficient of reliability (R) was also 98.5%. These were all within the acceptable range, which is 0.010 - 0.016 for intra-observer TEM, 0.0006 - 0.042 for inter-observer TEM and R >0.95 for coefficient of reliability (83).

During data collection:

- Completeness and logical consistency checks were made in the field.
- A day-to-day close supervision was made to ensure the appropriateness of anthropometric measurements.
- Data coding, entry and cleaning were performed by the principal investigator.

After data collection:

- The supervisor and the PI together rechecked the completeness and consistency of the questionnaire.
- Non-overlapping numerical code was assigned for each question and the coded data was entered and cleaned into Epi info software version 7.

4.10. Data processing and analysis

Data were coded, entered and cleaned by Epi info version 7; and then, exported into STATA version 15.1 for statistical test analysis. Descriptive statistical analysis was conducted using frequency, percentage, mean, median, standard deviation (SD), Inter Quartile range (IQR) and p-value to describe the study population by the explanatory variables and central obesity.

Binary logistic regression was done to investigate the association between each explanatory variable and central obesity.

To check whether the exposure variables are highly correlated, collinearity was checked based on the value of variance inflation factor (VIF) of greater than 2.5 (84). The variables use of lunch box were excluded from the model of having a large VIF value. The variable total time spent at office was removed of being collinear with total monthly income. The variable total time spent in short physical activity breaks at work was removed of being collinear with time spent sitting at work. Finally, the variable exercise such as gym or aerobics was removed of being collinear with total physical activity (TPA).

To check the explanatory power of time spent sedentary on central obesity controlling for the effect of total physical activity, partial correlation test was computed to get statistically significant strong partial correlation coefficient (r) = 0.709 and p-value of <0.001.

Variables with P-value <0.2 in bivariable analysis and variables theoretically confirmed important for the objective of the study based on literature review were entered to the multivariable model (85). Then, stepwise backward regression procedure was conducted.

The variables type of oil predominantly used for meal preparation at home, age, consumption of sugars or sweets, consumption of vegetables, consumption of alcohol, consumption of fast-food, marital status and monthly income were removed, respectively, from the model based on the stepwise selection procedure.

Finally, the variables type of migration before moving to Addis, consumption of meal that is not prepared at home, predominant mode of travel, total physical activity, number of sitting breaks, time spent sitting at work, time spent sedentary while watching TVs and time spent sedentary during other leisure activities were included in the final multivariable logistic regression model. Multivariable logistic regression was used to statistically adjust the estimated effects of each variable in the model, adjusted odds ratio with 95% confidence interval was computed and p-value <0.05 was used to declare statistically significant association.

4.11. Operational definitions

- Domains of sedentary behavior: self-reported sedentary time spent in different settings such as at work, during transportation, while watching TV and during other leisure activities.
- Central obesity: abdominal obesity based on the WHO waist circumference cut-off point.
- Time spent sitting in a typical sedentary domain: (time spent sedentary during that domain in a week day x 5 + Sitting time spent during that domain in a weekend day x 2) / 7
- Sitting break: any interruption to sitting time at work (such as standing up, or stretching or taking a short walk) during one hour of sitting.
- Sleep duration: the average of the difference between bedtime and wakeup time in a typical week day and weekend day.
- Eating habit: a measure of daily consumption of diet during the past one month.
- Fast food: easily prepared processed food served in snack bars, restaurants or across roads as a quick meal or take away; such as burger, pizza, sandwich, cake, dounat or chips.

4.12. Ethical Issues

Ethical approval for this study was obtained from ethical Review Committee of Addis Ababa University, College of Health Sciences, and School of Public Health. Letter of ethical approval was obtained from Institutional Review Board (IRB) of College of Health Science, Addis Ababa University. Support letter was written for each selected district office. Then permission was obtained from each office head. After getting permission from the offices, eligible and volunteer office workers were included in the study.

Written informed consent was sought from each office workers. Each participant in selected offices was given a written consent form which includes the aim, procedure and benefit of the study. Selected office workers who were willing to participate in the study were included in the study. Those who were found to have waste circumference measurement beyond the recommended cut-off were told that they are at risk of cardiovascular and metabolic disorders and hence, should make lifestyle modification measures in terms of diet or physical exercise. Privacy and confidentiality of the interviews and information gathered was assured. The names of the informants were also not included in the questionnaire.

4.13. Dissemination of Results

The final result of this study will be submitted to Addis Ababa University, College of Health Sciences, School of Public Health. The findings of the study will also be reported to the Ethiopian Ministry of Health, Addis Ababa health bureau, Addis Ababa city administration public service and human development office, Addis Ababa Youth and Sport office.

Efforts will also be made to disseminate the result through publication on reputable peer review journals and presentation in scientific conferences.

5. RESULTS

5.1 Descriptive statistics

A total of 1286 working adults were sampled, out of which 1230 participated in this study with a response rate of 95.7%.

5.1.1. Socio demographic characteristics

Of the total respondents, 656 (53.3%) were females, 743 (60.4%) were Orthodox Christians, 695 (56.5%) were never married, and 1021 (83%) had bachelor's degree. Out of the 667 (54.6%) the respondents who had history of migration before moving to Addis, 255 (45.5%) migrated from rural areas to Addis.

The mean (SD) of age of the respondents was 29.1 ± 4.2 years, out of which 81.6% were between 25 and 34 years. The mean (SD) of total monthly income of the respondents was 4355.08 ± 1092.66 Ethiopian birr (ETB) while the mean (SD) of total years spent by the respondents working in office was 5.6 ± 3.5 years.

Table 5.1 Socio-demographic characteristics of adults working in public offices in Addis Ababa, 2019

Variables	Frequency	Percent
Sex		
Male	574	46.7
Female	656	53.3
Age (in years)		
18-24	101	8.2
25-34	1004	81.6
35-44	112	9.1
45-62	13	1.1
Religion		
Orthodox	743	60.4
Muslim	162	13.2
Catholic	34	2.8

Variables	Frequency	Percent
Protestant	273	22.2
Other	18	1.5
Educational Level		
Diploma	180	14.6
Degree	1021	83
Masters and above	29	2.4
Total monthly income (ETB)		
<3262	239	19.4
3262-4355	382	31.1
>4355	609	49.5
Marital status		
Never Married	695	56.5
Currently Married	433	35.2
Cohabitating	55	4.5
Separated/Divorced	27	2.2
Widowed	20	1.6
Family size		
1	491	39.9
2-4	571	46.4
≥5	168	13.7
History of migration from another place to Addis		
No	667	54.2
Yes	563	45.8
Type of migration to Addis Ababa		
Urban area to Addis	306	54.5
Rural area to Addis	255	45.5
Total time spent at office (in years)		
≤2	206	16.7
3-5	526	42.8
>5	498	40.5

5.1.2. Dietary pattern

Based on the data from food consumption frequency, 1061 (86.3%) of the participants consumed bread or cereals while 1016 (82.6%) of them consumed legumes at least once a day. Hence, cereal based products are most common sources of food among the respondents.

From the total, 392 (31.9%) respondents consumed vegetables at least once a day, while 308 (25%) of them consumed fast foods on daily basis. Only 76 (6.2%) of the respondents consumed fruits, while 392 (31.9%) consumed vegetables daily.

Table 5.2 Dietary pattern of adults working in public offices in Addis Ababa, 2019

Variable	Frequency	Percent
Fruits		
No more than once a month	305	24.8
2 to 3 days a month	635	51.6
At least once a week	290	23.6
Vegetables		
No more than once a week	497	40.4
2 to 6 days a week	341	27.7
At least once a day	392	31.9
Bread or cereals		
Not daily	169	13.7
Once a day	278	22.6
More than once a day	783	63.7
Meat		
No more than once a month	715	58.1
2 to 3 days a month	395	32.1
At least once a week	120	9.8
Eggs		
No more than once a month	463	37.6
2 to 3 days a month	495	40.2
At least once a week	272	22.1

Variable	Frequency	Percent
Legumes		
Not daily	214	17.4
Once a day	340	27.6
More than once a day	676	55.0
Dairy products		
No more than once a month	762	62.0
2 to 3 days a month	322	26.2
At least once a week	146	11.9
Sugar and sweets		
No more than once a week	718	58.4
2 to 6 days a week	265	21.5
At least once a day	247	20.1
Sweetened beverages		
No more than once a month	415	33.7
2 to 3 days a month	402	32.7
At least once a week	413	33.6
Fast foods		
No more than once a week	695	56.5
2 to 6 days a week	227	18.5
At least once a day	308	25.0
Butter or fat		
No more than once a month	387	31.5
2 to 3 days a month	620	50.4
At least once a week	223	18.1

5.1.3. Dietary habits

With regard to dietary habit, 1048 (85.2%) of the respondents consumed at least three meals a day, while 174 (14.1%) of them did not consume breakfast daily and 652 (53%) of the respondents consumed snack at least once a day. From the total respondents, 310 (25.2%) of them consumed meal that is not prepared at home daily.

Table 5.3 Dietary habit of adults working in public offices in Addis Ababa, 2019

Variable	Frequency	Percent
Number of meals per day		
<3 meals a day	182	14.8
≥3 meals a day	1048	85.2
Consumption of breakfast		
Not daily	174	14.1
Daily	1056	99.4
Consumption of lunch		
Not daily	26	2.1
Daily	1204	51.7
Consumption of snacks		
Not daily	578	47.0
At least once a day	652	53.0
Frequency of dinner		
Not daily	43	3.5
Daily	1187	96.5
Frequency of eating during bedtime		
Not daily	1167	94.9
Daily	63	5.1
Consumption of meal not prepared at home		
Not daily	920	74.8
Daily	310	25.2

Variable	Frequency	Percent
Use of lunch box to fetch food to workplace		
No	524	42.6
Yes	706	57.4
Type of oil predominantly used for meal preparation at home		
Seed oil	430	35.0
Palm oil	742	60.3
Butter	28	2.3
Don't know	30	2.4

5.1.4. Behavioral risk factors

From the total respondents, 268 (21.8%) of them sleep for a short duration of less than 7 hours per day (82), while 596 (48.5%) of the participants consumed a drink that consists alcohol. Majority, 1020 (82.9%) of the respondents perceived their current body status to be healthy or normal and 831 (67.6%) of the respondents prefer to maintain their current body status. Of the total respondents, 799 (65%) of them used public service provided by the city administration, as a predominant mode of travel to and from their workplace.

Table 5.4 health related behavior of adults working in public offices in Addis Ababa, 2019

Variable	Frequency	Percent
Sleep duration		
<7 hours per day	268	21.8
7-8 hours per day	784	63.7
>8 hours per day	178	14.5
Cigarette smoking status		
Never	1211	98.5
1-5 cigars per day	12	1.0
≥6 cigars per day	7	0.6

Variable	Frequency	Percent
Consumption of alcohol		
Never	630	51.2
1 to 2 days a month	552	44.9
≥3 days a month	48	3.9
Chewing khat		
Never	1214	98.7
1-3 days per month	10	0.8
≥4 days per month	6	0.5
Perceived childhood body status		
Thin/below normal	417	33.9
Normal/healthy	666	54.1
Fat/over normal	89	7.2
Very Fat/Obese	32	2.6
Cannot remember	26	2.1
Perceived current body status		
Thin/below normal	29	2.4
Normal/healthy	1020	82.9
Fat/over normal	178	14.5
Very Fat/Obese	3	0.2
Preference about body weight		
To Lose Weight	362	29.4
To Maintain Weight	831	67.6
To Weight Gain	37	3
Exercise such as gym or aerobics		
No	1145	93.1
Yes	85	6.9

Variable	Frequency	Percent
Races as the great run		
No	1097	89.2
Yes	133	10.8
Vehicle free weekend walk		
No	1173	95.4
Yes	57	4.6
Dietary modification		
No	1039	84.5
Yes	191	15.5
Skipping meal		
No	1054	85.7
Yes	176	14.3
Eating more to gain weight		
No	1207	98.1
Yes	23	1.9
None of weight control practice used		
No	518	42.
Yes	712	57.9
Predominant mode of travel		
Walking	315	25.6
Public Transport	104	8.5
Public Service	799	65.0
Private car	12	1.3

5.1.5. Physical Activity

The proportion of office workers who did not meet the WHO recommendation of physical activity per week was 71.4% (95% CI; 68.8%, 73.8%), which was 69.2% (95% CI; 65.3%, 72.8%) among men and 73.3% (95% CI; 69.8%, 76.6%) among women.

Considering office workers as a population group, the median (Inter quintile range) TPA of adults working in public offices in Addis Ababa was 596.3 (200) MET-minutes, which is slightly lower than the WHO recommendation of physical activity for adults.

Table 5.5 Total physical activity of the working adults by sex in public offices in Addis Ababa, 2019

Total Physical Activity (WHO recommendation of 600 MET-minutes per week)					
Sex	**Not met**		**Met**		**P value**
	n	**%**	**N**	**%**	
Men	397	69.2	177	30.8	<0.001
Women	481	73.3	175	26.7	
Total	878	71.4	352	28.6	

Regarding the total time spent in sitting or reclining position, the mean (SD) of total time spent sedentary among the participants was 8.9 (2) hours per day.

5.1.6 Domains of sedentary behavior

Concerning the proportions of domains of sedentary behavior in a typical day, 64.6% (95% CI; 61.8%, 67.2%) of the respondents spent at least 5 hours sitting at work.

From the total, 21.5% (95% CI; 19.3%, 23.9%) of the respondents spent sedentary at least 1 hour while traveling to and from places while 17.0% (95% CI; 15.0%, 19.2%) of them spent at least 1 hour sedentary while using computers at home.

From the total, 51.9% (95% CI; 49.1%, 54.7%) of the respondents spent at least 2 hours sedentary watching TVs, while 32.6% (95% CI; 30.0%, 35.3%) of the respondents spent at least 2 hours sedentary during other leisure activities such as visiting friends, movies, dining out, reading.

Table 5.6 Domains of sedentary behavior among adults working in public offices in Addis Ababa, 2019

Variable	Frequency	Percent
Time spent sitting at work		
<5 hours	436	35.4
≥5 hours	794	64.6
Time spent sedentary while traveling to and from places		
<1 hour	966	78.5
≥1 hour	264	21.5
Time spent sedentary while using computer at home		
<1 hour	1021	83
≥1 hour	209	17
Time spent sedentary while watching TV		
<2 hours	592	48.1
≥2 hours	638	51.9
Time spent sedentary during other leisure activities, NOT including watching TVs		
<2 hours	829	67.4
≥2 hours	401	32.6

The median (IQR) of time spent sitting at work is 300 (120) minutes or 5 hours while the median (IQR) of time spent sedentary while watching TV is 120 (64) minutes.

Concerning the sedentary behavior of office workers on week and weekend days, the median (IQR) of time spent sedentary during a week day is 660 (180) minutes while the median (IQR) of time spent sedentary in a weekend day is 420 (180) minutes.

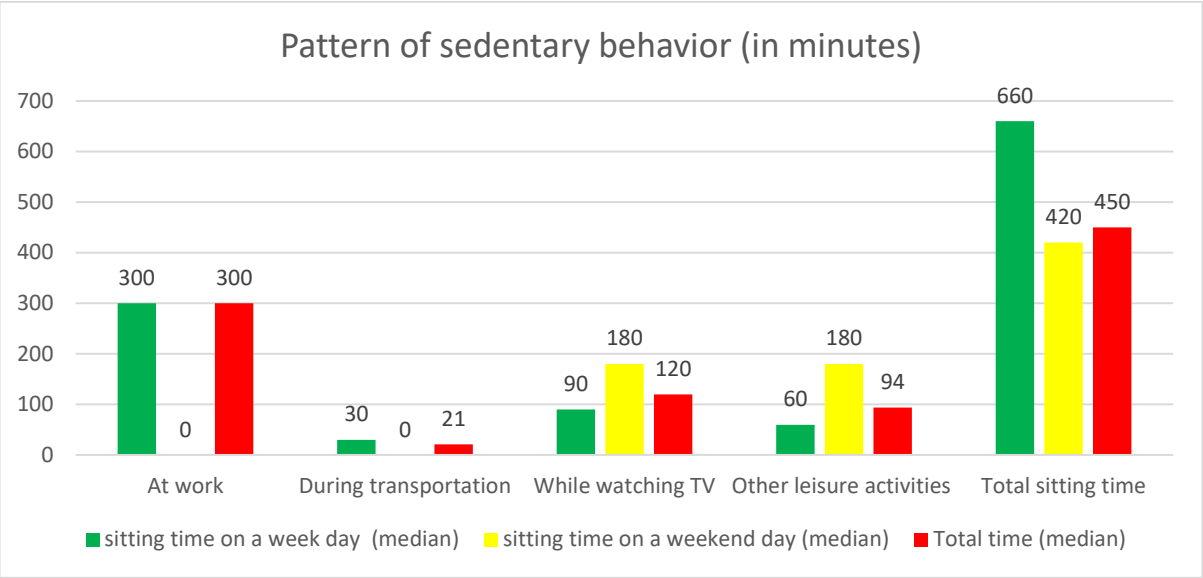

Figure 5.1 Pattern of sedentary behavior on a typical week day and weekend day among adults working in public offices in Addis Ababa, 2019

5.1.7. Sitting breaks

Concerning the breaks in sitting during one hour of sitting at work, 698 (56.7%) of the respondents break only for no more than 3-times from sitting (such as standing up, or stretching or taking a short walk).

Table 5.7 Number of sitting breaks and total time spent in short physical activity breaks among working adults of public offices in Addis Ababa, 2019

	Frequency	Percent
Number of sitting breaks		
≤3	698	56.7
4 and more	532	43.3
Total time spent in short physical activity breaks		
<20 min	499	40.6
20-29 min	272	22.1
≥30 min	459	37.3

5.1.8. Central obesity

The overall magnitude of central obesity among the study office workers was 49.4% (95% CI; 46.6%, 52.2%). The magnitude of central obesity among men was 44.3% (95% CI; 40.2%, 48.4%), which was significantly lower than that of 53.8% (95% CI; 50.0%, 57.6%) among women, (p-value= 0.01).

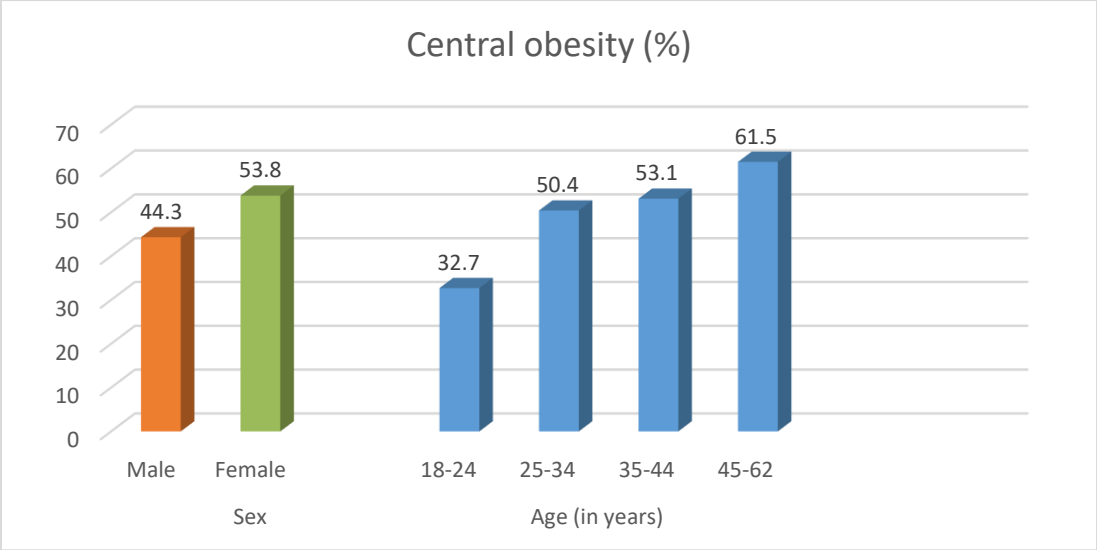

Figure 5.2 Percentage of central obesity by sex and age among adults working in public offices in Addis Ababa, 2019

The mean (SD) of waist circumference among adults working in public office was 85.0 (9.5) cm, which was 90.0 (7.5) cm among men and 80.7 (8.8) among women. Although it seems higher than that of women, the mean of waist circumference among women is above the WHO cut-off point for waist circumference unlike that of men.

5.2 Bivariable analysis

5.2.1 Socio-demographic characteristics

From the bivariate logistic regression analysis of socio-demographic characteristic and central obesity, statistically significant positive associations were found for female sex, age, total monthly income, >5 years of experience at office, currently married marital status, migration history before moving to Addis, particularly from rural area to Addis Ababa were positively associated with central obesity.

Table 5.8 Socio-demographic characteristics and central obesity among adults working in public offices in Addis Ababa, 2019

Characteristics	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Sex					
Male	320	55.7	254	44.3	1.0
Female	303	46.2	353	53.8	1.5 (1.2,1.8)*
Age (in years)					
18-24	68	67.3	33	32.7	1.0
25-34	497	49.6	506	50.4	2.0 (1.3, 3.1)*
35-44	53	46.9	60	53.1	2.3 (1.3, 3.9)*
45-62	5	38.5	8	61.5	3.2 (1.0, 10.5)
Religion					
Orthodox	354	47.6	389	52.4	1.0
Muslim	90	55.6	72	44.4	0.7 (0.5, 1.0)
Catholic	21	61.8	13	38.2	0.6 (0.3, 1.1)
Protestant	147	53.8	126	46.2	0.8 (0.6, 1.0)
Other	11	61.1	7	38.9	0.6 (0.2, 1.5)
Educational Level					
Diploma	102	56.7	78	43.3	1.0
Degree	502	49.2	519	50.8	1.4 (1.0, 1.9)
Masters and above	19	65.5	10	34.5	0.7 (0.3, 1.6)

Characteristics	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Monthly income (ETB)					
<3262	174	72.8	65	27.2	1.0
3262-5448	197	51.6	185	48.4	2.5 (1.8, 3.6)*
>5448	252	41.4	357	58.6	3.8 (2.7, 5.3)*
Marital status					
Never Married	377	54.2	318	45.8	1.0
Currently Married	187	43.2	246	56.8	1.6 (1.2, 2.0)*
Cohabitating	36	65.5	19	34.5	0.6 (0.4, 1.1)
Separated/Divorced	12	44.4	15	55.6	1.5 (0.7, 3.2)
Widowed	11	55.0	9	45.0	1.0 (0.4, 2.4)
Family size					
1	262	53.4	229	46.6	1.0
2-4	285	49.9	286	50.1	1.2 (0.9, 1.5)
≥5	76	45.2	92	54.8	1.4 (1.0, 2.0)
History of migration from another place to Addis Ababa					
No	370	55.5	297	44.5	1.0
Yes	253	44.9	310	55.1	1.5 (1.2, 1.9)*
Type of migration to Addis Ababa					
Another urban area to Addis	154	50.3	152	49.7	1.0
Rural area to Addis	99	38.8	156	61.2	1.6 (1.1, 2.2)*
Total years spent at office					
≤2	125	60.7	81	39.3	1.0
3-5	290	55.1	236	44.9	1.3 (0.9, 1.7)
>5	208	41.8	290	58.2	2.2 (1.6, 3.0)*

* = statistically significant

5.2.2. Frequency of food consumption

Performing bivariate logistic regression analysis of frequency of food consumption and central obesity, statistically significant associations were found for consumption of vegetables, sugars or sweets and fast foods.

Table 5.9 Food consumption frequency and central obesity among adults working in public offices in Addis Ababa, 2019

Variable	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Fruits					
No more than once a month	155	50.8	150	49.2	1.0
2 to 3 days a month	303	47.7	332	52.3	1.1 (0.9, 1.5)
At least once a week	165	56.9	125	43.1	0.8 (0.6, 1.1)
Vegetables					
No more than once a week	220	44.3	277	55.7	1.0
2 to 6 days a week	179	52.5	162	47.5	0.7 (0.6, 1.0)*
At least once a day	224	57.1	168	42.9	0.6 (0.5, 0.8)*
Legumes					
Not daily	96	44.9	118	55.1	1.0
Once a day	177	52.1	163	47.9	0.8 (0.5, 1.1)
More than once a day	350	51.8	326	48.2	0.8 (0.6, 1.0)
Bread and cereals					
Not daily	95	56.2	74	43.8	1.0
Once a day	140	50.4	138	49.6	1.3 (0.9, 1.9)
More than once a day	388	49.6	395	50.4	1.3 (0.9, 1.8)
Meat					
No more than once a month	347	48.5	368	51.5	1.0
2 to 3 days a month	214	54.2	181	45.8	0.8 (0.6, 1.0)
At least once a week	62	51.7	58	48.3	0.9 (0.6, 1.3)

Variable	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Eggs					
No more than once a month	251	54.2	212	45.8	1.0
2 to 3 days a month	242	48.9	253	51.1	1.2 (0.1, 1.6)
At least once a week	130	47.8	142	52.2	1.3 (1.0, 1.8)
Milk, cheese and yogurt					
No more than once a month	395	51.8	367	48.2	1.0
2 to 3 days a month	150	46.6	172	53.4	1.2 (1.0, 1.6)
At least once a week	78	53.4	68	46.6	0.9 (0.7, 1.3)
Sugar and sweets					
No more than once a week	399	55.6	319	44.4	1.0
2 to 6 days a week	142	53.6	123	46.4	1.1 (0.8, 1.4)
At least once a day	82	33.2	165	66.8	2.5 (1.9, 3.4)*
Sweetened beverages					
No more than once a month	202	48.7	213	51.3	1.0
2 to 3 days a month	217	54.0	185	46.0	0.8 (0.6, 1.1)
At least once a week	204	49.4	209	50.6	1.0 (0.7, 1.3)
Fast foods					
No more than once a week	387	55.7	308	44.3	1.0
2 to 6 days a week	123	54.2	104	45.8	1.1 (0.8, 1.4)
At least once a day	113	36.7	195	63.3	2.2 (1.7, 2.9)*
Butter or fat					
No more than once a month	213	55.0	174	45.0	1.0
2 to 3 days a month	304	49.0	316	51.0	1.3 (1.0, 1.6)
At least once a week	106	47.5	117	52.5	1.4 (1.0, 1.9)

* = statistically significant

5.2.3. Dietary habits

Statistically significant association was found for consumption of <3 meals a day, daily consumption of meal that is not prepared at home, use of lunchbox and use of palm oil or butter predominantly for meal preparation at home.

Table 5.10 Dietary habit and central obesity among adults working in public offices in Addis Ababa, 2019

Variable	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Number of meal consumption					
≥3 meals a day	518	49.4	530	50.6	1.0
<3 meals a day	105	57.7	77	42.3	1.4 (1.0, 1.9)*
Pattern of breakfast consumption					
Not daily	93	53.4	81	46.6	1.0
Daily	530	50.2	526	49.8	1.1 (0.8, 1.6)
Pattern of lunch consumption					
Not daily	15	57.7	11	42.3	1.0
Daily	608	50.5	596	49.5	1.3 (0.6, 2.9)
Consumption of snacks					
Not daily	288	49.8	290	50.2	1.0
At least once a day	335	51.4	317	48.6	0.9 (0.8, 1.2)
Consumption of dinner					
Not daily	28	65.1	15	34.9	1.0
Daily	596	50.2	592	49.8	1.9 (1.0, 3.5)
Consumption of meal during bedtime					
Not daily	600	51.0	576	49.0	1.0
Daily	23	42.6	31	57.4	1.4 (0.8, 2.4)
Consumption of meal not prepared at home					
Not daily	498	54.1	422	45.9	1.0
Daily	125	40.3	185	59.7	1.8 (1.4, 2.3)*

Variable	Central obesity				COR (95% CI)
	No		Yes		
	n	%	n	%	
Use of lunch box to fetch food to workplace					
No	240	45.8	284	54.2	1.0
Yes	383	54.2	323	45.8	0.7 (0.6, 0.9)*
Type of oil predominantly used for meal preparation at home					
Seed oil	244	56.7	186	43.3	1.0
Palm oil	352	47.4	390	52.6	1.5 (1.1, 1.9)*
Butter	9	32.1	19	67.9	2.8 (1.2, 6.3)*
Don't know	18	60.0	12	40.0	0.9 (0.4, 1.9)

* = statistically significant

5.2.4. Behavioral risk factors

Statistically significant association was found for alcohol consumption, regular physical exercise and using car as predominant mode of travel to and from workplace.

Table 5.11 Health related behavior and central obesity among adults working in public offices in Addis Ababa, 2019

Variable	Response	Central obesity				COR (95% CI)
		No		Yes		
		n	%	n	%	
Sleep duration						
7-8 hours		393	50.1	391	49.9	1.0
<7 hours		136	50.7	132	49.3	1.0 (0.7, 1.3)
>8 hours		94	52.8	84	47.2	0.9 (0.7, 1.2)
Cigarette smoking status						
Never		617	50.9	594	49.1	1.0
1-5 cigars per day		5	41.7	7	58.3	1.5 (0.5, 4.6)
≥6 cigars per day		1	14.3	6	85.7	6.2 (0.8, 51.9)

Variable	Response	Central obesity				COR (95% CI)
		No		Yes		
		n	%	n	%	
Consumption of alcohol						
	Never	379	60.2	251	39.8	1.0
	1 to 2 days per month	114	51.6	107	48.4	1.4 (1.0, 1.9)*
	≥3 days per month	130	34.3	249	65.7	2.9 (2.2, 3.8)*
Chewing khat						
	Never	612	50.4	602	49.6	1.0
	1-3 days per month	7	70.0	3	30.0	0.4 (0.1, 1.7)
	≥4 days per month	4	66.7	2	33.3	0.5 (0.1, 2.8)
Perceived childhood body status						
	Thin/below normal	350	52.6	316	47.4	1.0
	Normal/healthy	203	48.7	214	51.3	0.9 (0.7, 1.1)
	Fat/over normal	43	48.3	46	51.7	1.0 (0.6, 1.6)
	Very Fat/Obese	14	43.8	18	56.3	1.2 (0.6, 2.5)
	Don’t remember	13	50.0	13	50.0	1.0 (0.4, 2.1)
Perceived current body status						
	Thin/below normal	18	62.1	11	37.9	1.0
	Normal/healthy	521	51.1	499	48.9	1.6 (0.7, 3.4)
	Fat/over normal	83	46.6	95	53.4	1.9 (0.8, 4.2)
	Very Fat/Obese	1	33.3	2	66.7	3.3 (0.3, 40.5)
Preference about body weight						
	To Lose Weight	169	46.7	193	53.3	1.0
	To Maintain Weight	431	51.9	400	48.1	0.8 (0.6, 1.0)
	To Weight Gain	23	62.2	14	37.8	0.5 (0.3, 1.1)
Regular physical exercise such as gym or aerobics						
	No	570	49.8	575	50.2	1.0
	Yes	53	62.4	32	37.6	0.6 (0.4, 0.9)*
Races as the great run						
	No	564	51.4	533	48.6	1.0
	Yes	59	44.4	74	55.6	1.3 (0.9, 1.9)

Variable	Response	Central obesity				COR (95% CI)
		No		Yes		
		n	%	n	%	
Vehicle free weekend walk						
	No	598	51.0	575	49.0	1.0
	Yes	25	43.9	32	56.1	1.3 (0.8, 2.3)
Dietary modification						
	No	535	51.5	504	48.5	1.0
	Yes	88	46.1	103	53.9	1.2 (0.9, 1.7)
Skipping meal						
	No	524	49.7	530	50.3	1.0
	Yes	99	56.3	77	43.8	0.8 (0.6, 1.1)
Eating more to gain weight						
	No	611	50.6	596	49.4	1.
	Yes	12	52.2	11	47.8	0.9 (0.4, 2.2)
None of weight control practice used						
	No	258	49.8	260	50.2	1.0
	Yes	365	51.3	347	48.7	0.9 (0.8, 1.2)
Predominant mode of travel						
	Walking	207	65.7	108	34.3	1.0
	Car	416	45.5	499	54.5	2.3 (1.8, 3.0)*

* = statistically significant

5.2.5. Physical Activity

Respondents who did not met the WHO recommendation on physical activity for health (at least 600 MET-minutes per week) had 1.5-times increased odds of central obesity than those who met the recommendation (P-value = 0.001).

Table 5.12 Total Physical Activity and central obesity among adults working in public offices in Addis Ababa, 2019

	Central obesity				
	No		Yes		COR (95% CI)
	N	%	n	%	
Total Physical Activity (600 MET-minutes per week)					
Met	204	58.0	148	42.0	1.0
Not met	419	47.7	459	52.3	1.5 (1.2, 1.9)*

* = statistically significant

5.2.6 Domains of sedentary behavior

Concerning the domains of sedentary behavior, ≥5 hours of time spent sitting at work, ≥2 hours of time spent sedentary while watching TVs and during other leisure activities were found to be significantly associated with central obesity.

Table 5.13 Time spent sedentary on each domain of sedentary behavior and central obesity among adults working in public offices in Addis Ababa, 2019

	Central obesity				
Domain of sedentary behavior	No		Yes		COR (95% CI)
	N	%	n	%	
Time spent sedentary while watching TV					
<2 hour	405	68.4	187	31.6	1.0
≥2 hour	218	34.2	420	65.8	4.2 (3.3, 5.3)*
Time spent sedentary while using computer at home					
<1 hour	524	51.3	497	48.7	1.0
≥1 hour	99	47.4	110	52.6	1.2 (0.9, 1.6)
Time spent sedentary while traveling to and from places					
<1 hour	486	50.3	480	49.7	1.0
≥1 hour	137	51.9	127	48.1	0.9 (0.7, 1.2)

Domain of sedentary behavior	Central obesity				COR (95% CI)
	No		Yes		
	N	%	n	%	
Time spent sitting at work					
<5 hours	302	69.3	134	30.7	1.0
≥5 hours	321	40.4	473	59.6	3.3 (2.6, 4.3)*
Time spent sedentary during other leisure activities, NOT including watching TVs					
<2 hours	501	60.4	328	39.6	1.0
≥2 hours	122	30.4	279	69.6	3.5 (2.7, 4.5)*

* = statistically significant

5.2.7. Sitting breaks

Concerning sitting breaks (such as standing up, or stretching or taking a short walk) during one hour of sitting at work, ≥4 sitting breaks and total short physical activity breaks of 20-29 minutes and ≥30 were significantly associated with central obesity.

Table 5.14 Number of sitting breaks, total time spent in short physical activity breaks and central obesity among adults working in public offices in Addis Ababa, 2019

Variable	Response	Central obesity				COR (95% CI)
		No		Yes		
		n	%	n	%	
Number of sitting breaks						
	≤3	286	41.0	412	59.0	1.0
	4 and more	337	63.3	195	36.7	0.4 (0.3, 0.5)*
Total short physical activity breaks						
	<20 min	178	35.7	321	64.3	1.0
	20-29 min	132	48.5	140	51.5	0.6 (0.4, 0.8)*
	≥30 min	313	68.2	146	31.8	0.3 (0.2, 0.3)*

* = statistically significant

5.3 Multivariable analysis

Adjusting for age, sex, marital status, monthly income, type of oil predominantly used for meal preparation at home, consumption of vegetables, sugars or sweets, fast-food and alcohol, statistically significant associations with central obesity were found for type of migration from rural area to Addis, using car as a predominant mode of travel, inadequate TPA, ≥5 hours spent sitting at work, ≥2 hours spent sedentary while watching TV and during other leisure activities.

Although the variables consumption of meal that is not prepared at home and number of sitting breaks were significantly associated with central obesity in bivariable regression, their association disappeared in the multivariable model after being adjusted for the other covariates.

Adjusting for the covariate variables, study participants who migrated from urban area to Addis Ababa had 1.7-times higher odds of central obesity than those who moved from another urban area to Addis, AOR (95% CI) = 1.7 (1.2, 2.6) and P-value = 0.008.

Participants who used car as a predominant mode of travel had 2.7-times increased odds of central obesity than those who walked, AOR (95% CI) = 2.7 (1.7, 4.4) and P-value <0.001.

Respondents who did not met the WHO recommendation on physical activity for health had 1.6-times increased odds of central obesity than those who met the recommendation, AOR (95% CI) = 1.6 (1.0, 2.4) and P-value <0.05.

Participants who spent ≥5 hours/day sitting at work had 3.5-times higher odds of central obesity than those who sat for <5 hours, AOR (95% CI) = 4.9 (3.0, 8.1) and P-value <0.001

Concerning non-working hours, participants who spent ≥2 hours/day sedentary while watching TVs were found to have 3.5-times higher odds of central obesity than those who spent less than 2 hours, AOR (95% CI) = 3.5 (2.3, 5.5) and P-value <0.001.

Those who spent ≥2 hours/day sedentary during other leisure activities had 6.8-times higher odds of central obesity than those who spent sedentary less than 2 hours, AOR (95% CI) = 6.8 (4.1, 11.4) and P-value <0.001.

Table 5.15 Multivariable analysis showing the association between the domains of sedentary behavior and covariate variables with central obesity among adults working in public offices in Addis Ababa, 2019

Variable	Central obesity				COR (95% CI)	AOR (95% CI)
	No		Yes			
	N	%	n	%		
Type of migration before moving to Addis						
Another urban area to Addis	154	50.3	152	49.7	1.0	1.0
Rural area to Addis	99	38.8	156	61.2	1.6 (1.1, 2.2)*	1.7 (1.2, 2.6)*
Consumption of meal NOT prepared at home						
Not daily	498	54.1	422	45.9	1.0	1.0
Daily	125	40.3	185	59.7	1.8 (1.4, 2.3)*	1.2 (0.8, 2.0)
Predominant mode of travel						
Walking	207	65.7	108	34.3	1.0	1.0
Car	416	45.5	499	54.5	2.3 (1.8, 3.0)*	2.7 (1.7, 4.4)*
Total Physical activity (600 MET-min per week)						
Met	204	58.0	148	42.0	1.0	1.0
Not met	419	47.7	459	52.3	1.5 (1.2, 1.9)*	1.6 (1.0, 2.4)*
Number of sitting breaks						
≤3	286	41.0	412	59.0	1.0	1.0
4 and more	337	63.3	195	36.7	0.4 (0.3, 0.5)*	0.8 (0.5, 1.2)
Time spent sitting at work						
<5 hours	302	69.3	134	30.7	1.0	1.0
≥5 hours	321	40.4	473	59.6	3.3 (2.6, 4.3)*	4.9 (3.0, 8.1)*
Time spent sedentary while watching TV						
<2 hours	501	60.4	328	39.6	1.0	1.0
≥2 hours	122	30.4	279	69.6	4.2 (3.3, 5.3)*	3.5 (2.3, 5.5)*
Time spent sedentary during other leisure activities						
<2 hours	501	69.3	134	30.7	1.0	1.0
≥2 hours	122	40.4	473	59.6	3.5 (2.7, 4.5)*	6.8 (4.1, 11.4)*

* = statistically significant

6. DISCUSSION

This was a cross-sectional study whose aim was to assess the domains of sedentary behavior and its association with central obesity among adults working in public offices of Addis Ababa. Workers who spent ≥5 hours sitting at work had a significantly higher odds of central obesity while ≥2 hours spent sedentary while watching TVs and during other leisure activities were also significantly associated with higher odds of central obesity among the working adults.

The overall magnitude of central obesity among adults working in public offices was 49.4%. This was slightly lower than the findings of a study conducted among government employees working in Wolayta Sodo, which found the prevalence of central obesity among working adults to be 52.7 (42). This high magnitude of central obesity among office workers could be due to the increased time spent sitting at work accompanied with more time spent sedentary during their leisure time too.

In this study, the mean (SD) of waist circumference among adults working in public offices in Addis Ababa was 90.0 (7.5) cm among men and 80.7 (8.8) cm among women. This was slightly higher than the finding of a study done among working adults in Addis Ababa which found the mean (SD) of waist circumference to be 85.6 (11.3) cm among men and 80.6 (12.9) among women (29). This might be because the study included teachers in government schools whose nature of job could make them non-sedentary during their working hours. Hence, the reduced time spent sitting at work could contribute to a negative energy imbalance, resulting in the slightly lower gap of waist circumference compared to our study.

This study also found that participants who migrated from rural area to Addis Ababa had 1.7-times higher odds of central obesity than those who moved from another urban area to Addis. This is supported with the finding of a secondary-data analysis from the Peru, (DHS 2005 to 2012) which participants with rural to urban migration had greater odds of two- to three-fold higher odds of obesity (86). The finding of this study is also consistent with the finding of a study conducted in India which found migration into urban areas to be associated with increases in obesity (87). This could be because evidences show that the prevalence of malnutrition is generally high among rural areas and due to the speculation that those from rural origin might be exposed to undernutrition during their intrauterine life or at younger ages and that in turn could expose them to obesity and other complications in later ages through the developmental

original chronic disease mechanisms in that the exposure of childhood undernutrition makes their body cells adapted and programmed to this low energy levels leading to accumulation of the normal energy consumptions as energy in excess. Growing evidences also suggest, since migration from rural areas to urban is associated with increased isolation, they will be exposed to new stresses of urban life such as the struggle to find work and poor living conditions leads to consumption of more processed and other low-quality foods, and may become part of new social networks where sedentary behaviors are prevalent and obesity is more normative. These all could also put the office workers who migrated rural to urban areas at risk of central obesity.

Working adults who used cars as a predominant mode of travel were found to have 2.7-times higher odds of central obesity than those who predominantly walked. This is supported with the finding of a study conducted in China which found motorized transportation to be associated with 1.3- and 2-times increased odds ratio for central obesity in men and women, respectively (88). This might be because, using car as a predominant mode of travel could reduce the total physical activity. This might contribute to positive energy imbalance resulting in central obesity.

The study also found those with inadequate total physical activity per week had 1.6-times increased odds of central obesity than those who met the WHO recommendation of TPA. This is supported by the finding of a study done among institution workers in Ghana which found physical inactivity is significantly associated with increased odds of obesity (89). This is also supported by a study conducted among US adults which revealed physical activity to be associated with a reduced risk of central obesity (90). This could be because physical inactivity results in excess fat accumulation due to positive energy imbalance, ending up with the risk of central obesity.

This study also found that workers who spent ≥5 hours sitting at work were found to have 4.9-times higher odds of central obesity than those who sat <5 hours. This was supported with the result of a study conducted in Finland which found sedentary working men had more body fat (91). This might be because, since sedentary workers spend most of their time sitting at work, accompanied with the time spent sedentary during non-working hours, their total physical activity gets lowered. This may contribute to positive energy imbalance resulting in central obesity. This was also consistent with the finding of a study conducted in Scotland which

revealed standing time of workers to have a significant inverse association with waist circumference (92). Therefore, adults working in non-sedentary workers could have a significantly reduced odds of central obesity than sedentary workers.

At least 2 hours of time spent sedentary while watching TV was found to be associated with 3.5-times higher odds of central obesity. This might be supported with a study conducted in Finland which found watching TV for ≥2 hours a day to be associated with 1.6-times higher odds of central obesity (93). This might be because when the working adults spend more time watching TV, their time for energy expenditure gets reduced and accompanied with the chance of taking more time to consume additional food stuffs, the risk of central obesity could increase.

This study also revealed that more than 2 hours of time spent sedentary during leisure activities other than watching TV was found to be associated with 6.8-times higher odds of central obesity. This is supported with the finding of a study done in Spain which found more time spent sedentary per day in leisure activities was significantly associated with 1.4-times higher odds of central obesity (94). This might be because, when office workers spend their leisure time sedentary, accompanied with the time spent sitting at work, their total physical activity fails to meet the daily recommendation. This may contribute to energy accumulation and central obesity.

Although the mechanisms underlying the contribution of increased time spent sedentary in different settings to obesity are not clear, it is hypothesized that the time spent sedentary could result in a decrease in total energy expenditure by reducing time for physical activity (95). Therefore, the energy in excess will be deposited as adipose tissue or triglycerides within locations not classically associated with adipose storage, particularly within the intra- and inter abdominal organs forming ectopic fat, that poses a higher metabolic risk (96, 97). The association may also be bidirectional (98).

7. STRENGTH AND LIMITATION OF THE STUDY

Strengths of the study

This study tried to address sedentary behavior and central obesity, which are important risk factors of non-communicable disease that is a growing concern of public health importance in developing countries like Ethiopia. Conducting face validity on a sample of office workers before using ISAT questionnaire and computing TEM of WC could also be taken as the strength of the study.

Limitations of the study

The study could have the following limitations that could possibly affect its generalizability. The first one is that the use of subjective method of assessment of sedentary behavior alone. This could result in overestimation of time spent sedentary in different settings. The other limitation emanates from the cross-sectional nature of the study design. Hence, temporal relationship between sedentary behavior and central obesity could not be identified on this study. This is because reverse causality between sedentary behaviors and central obesity might be possible. Although face validity of the tools was conducted, the ISAT questionnaire was not validated in Ethiopia. There could also be a potential for recall and social desirability bias in the frequency of dietary habits, physical activity and sedentary behaviors. The food frequency questionnaire did not account for portion size estimation. Other factors which can affect excess body weight like genetic factor and underlying health conditions were not addressed in this study. Finally, workers with jobs like porters or cleaners and workers from private offices were not included in this study.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The findings of this study revealed that the magnitude of central obesity is substantially high among office workers in Addis Ababa. Workers who spent more time sitting at work are more likely to have central obesity, while time spent sedentary watching televisions and during other leisure activities are also important contributors to central obesity.

Migration from rural areas to Addis Ababa and use of car as a predominant mode of travel and inadequate TPA were also found to be significantly associated with central obesity.

Recommendations

- For the Federal Ministry of Health, Ethiopia: Consider the development of strategies to enhance physical activity at the workplace or any work place health promotion program.
- For Addis Ababa city administration health office and the media: Aware public servants on the growing evidences on sedentary behaviors, central obesity, possible related health risks and promote office workers plan and get involved in physical activity programs.
- For Addis Ababa city administration Youth and Sport office: Host various sport competitions for office workers in collaboration with nearby schools for playfield facilities.
- For the public servant: Active participation in mass sports or tournaments make strategies such as walking parts of their travel to reduce their sedentary behaviors.
- For researchers: Conduct Longitudinal studies showing the casual effect of sedentary behaviors accompanied with objective measurement of physical activity and estimated caloric intakes of diet could signify the validity of the study.

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10. ANNEXES

Annex I: Conceptual framework

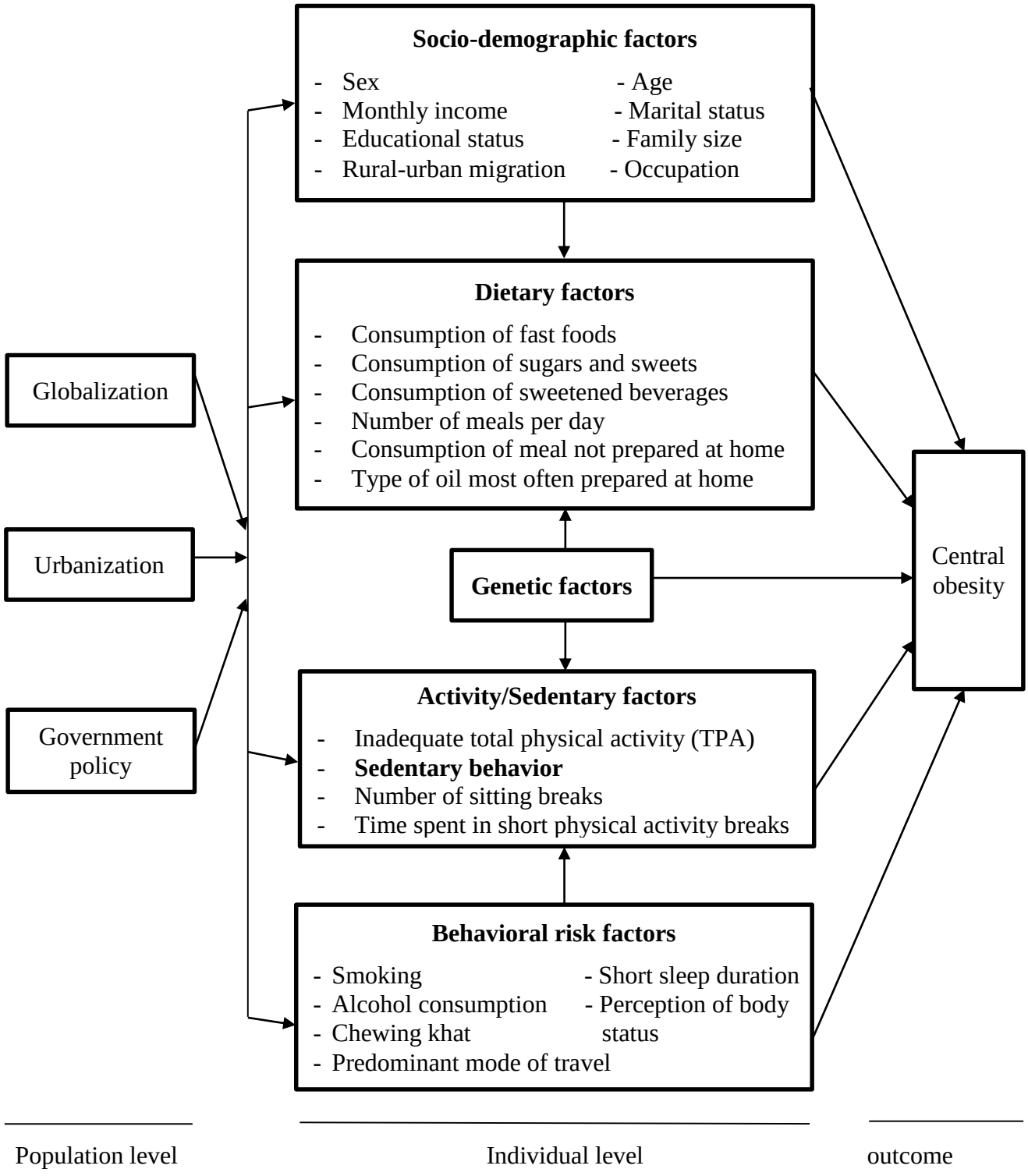

Figure 8.1. Conceptual framework for determinants of central obesity (based on different literatures)

Annex II: English version questionnaire

1. Information Sheet

Greeting,

How are you? I am_____. I am here on the behalf of Fitsum Yifrashewa, a student of Addis Ababa University, Collage of Health Science, and School of Public Health, who is conducting a research obtaining permission from the school. The aim of the study is to assess the domains of sedentary behavior and its association with central obesity among adults working in public offices of Addis Ababa, Ethiopia. Therefore, this study will have a great contribution in the control and prevention of obesity and related chronic diseases among office workers in Addis Ababa. Besides, I believe this study will provide baseline information to attract governmental, non-governmental organizations and stakeholders to play their role to control these problems.

You are selected by multistage random sampling technique to participate in this study because you are currently working in one of those selected offices for the purpose of this study. 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, please feel free to drop it any time you want. Your name will not be written in this form and no one will have access to the non-coded data except the principal investigator. All information you provide will be kept strictly confidential. it will never be used for other purpose it is not intended for.

During the study, you will be interviewed about your personal characteristics, dietary information, eating habit, health related behaviors, physical activity and sedentary behavior. Your waste circumference will also be measured using a non-stretching fixed length measuring tape wrapped around the waist with light cloth. Since waist circumference is affected by abdominal content, please come with an empty stomach for the due measurement to be taken tomorrow morning. The interview will take about 30 minutes. Remember, your willingness and active participation is very important for the success of this study.

The research was reviewed and approved by the ethical review board of college of health sciences, Addis Ababa University. If you want to know more information about the research and its undertakings, you can contact the principal investigator through the following address: Name of the principal investigator: Fitsum Yifrashewa

Email: fitsumyifra@gmail.com Mobile: +251 9 20 39 74 07

2. Informed Consent Form

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

(A) Yes… (1) ..... If "Yes", proceed to the questionnaire

(B) No.… (2) ..... If "No", skip to next participant after writing the reasons of refusal.

Having the above information, I invite you to participate in the study, with honor. I, the under signed, will like to confirm that, as I give consent to participate in the study, it is with clear understanding and recognition of:

1. The objective of the study, and
2. My right to resign from the study during any stage of the study.

I confirm my agreement with my signature after the detailed objective of the study has been explained to me in the language I understand well.

Participant's signature: _____ Date: ____/DD/ ___/MM/ _____/YY/

Name of the data collector: _____

Signature: _____ Date: ____/DD/ ___/MM/ _____/YY/

Questionnaire ID: | | | | |

Date of interview: ____/DD/ ___/MM/ _____/YY/

Starting time: _____/Hr/_____/Min/ Time completed: _____/Hr/_____/Min/

Result of data collected

A. Completed

B Partially completed

C. Not completed

D. Refused

Checked by supervisor: Name _____Signature_____

Remark: For any inconvenience and problem related to questionnaire, please contact principal investigator using the following address.

Name of principal investigator: Fitsum Yifrashewa

Email: fitsumyifra@gmail.com

Mobile: +251 9 20 39 74 07

Section I: Socio-Demographic Characteristics Questionnaire ID ☐☐☐☐

Interviewers, please read the following questions carefully to the participant and encircle the possible response provided, or write the response in the space provided.

City: Addis Ababa Sub-city Yeka District: ☐☐ Office_____

Name of the data collector _____

No	Questions	Response	Skip
101	Sex (record as observed)	Male …….....……1 Female …….....…..…2	
102	How old are you? (In completed years)	Years: ☐☐	
103	In total, how many years have you spent working at office in full-time employment?	Years: ☐☐ . ☐☐ (If there is additional number of months, write in decimal form)	
104	What is your religion?	Orthodox …… 1 Muslim ……...… 2 Catholic ……..…. 3 Protestant ……4 Others_____ 5 (Specify)	
105	What it the highest educational level you achieved?	Diploma ……. 1 Degree …….....…. 2 Masters ……..... 3 PHD and more…….…..... 4	
106	What is your marital status?	Never married…….....…. 1 Currently married……..... 2 Cohabitating…….....3 Divorced/ separated.....…..... 4 Widowed…….……..... 5	
107	What is your monthly income? (including allowances, if any)	Ethiopian birr: ☐☐ , ☐☐☐	
108	How much is your household family size including you?	Number of family members: ☐☐	
109	Have you ever lived in a place other than Addis Ababa? (not including stay in a university)	Yes.....1 No..... ....0 → 201	
110	Just before you moved here, what type of place did you live in?	Urban……....1 Rural ……2	

Section II: Dietary pattern

The next questions ask about your dietary practice. please think of the food you usually eat in a within the last month. Interviewer, please write the usual frequency of consumption within the respective number of column.

No.	***Questions***	**Response**								
	Within the last month, how often did you consume food type?	(0) Never	(1) Less than once a month	(2) Once a month	(3) 2-3 times a month	(4) Once a week	(5) 2 - 4 times per week	(6) 5-6 times per week	(7) Once a day	(8) 2 & more times a day
201	Fruits									
202	Vegetables									
203	Bread and cereals									
204	Meat									
205	Eggs									
206	Legumes such as beans, peas, lentils and nuts									
207	Milk, cheese, yogurt?									
208	Sugar and sweets such as honey, chocolates, candies, cookies and cakes									
209	Sweetened beverages (juice and soft drink)									
210	Fast foods such as chips, sandwiches, doughnuts, pasty, burger, pizza, fried foods or ice cream									
211	butter or fat									

Section III: Dietary Habit

Please think of your eating habit in a typical day and week within the last month. interviewer, please encircle the response that shows the usual frequency of the respective question.

No	Questions	Response	Skip
301	In a typical day, how many times do you usually eat meal? By meal, I mean breakfast, lunch, and dinner or snack.	<1 meal a day..... 0 1 meal a day.....1 2 meals a day.....2 3 meals a day.....3 >3 meals a day.....4	
302	In a typical week, how often do you eat breakfast?	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Often (5-6 times) ..... ….... 3 Daily (7 times and more) 4	
303	In a typical week, how often do you eat lunch?	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Often (5-6 times) ..... ….... 3 Daily (7 times and more) 4	
304	Do you usually eat snack?	No.....0 Yes.....1	→ 306
305	In a typical day, how often do you eat snack?	Number of snack: ☐	
306	In a typical week, how often do you eat dinner?	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Often (5-6 times) ..... 3 Daily (7 times and more) 4	
307	In a typical week, how often do you eat during bed time?	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Often (5-6 times) ..... 3 Daily (7 times and more) 4	
308	On average, how many meals per week do you eat that were NOT prepared at home? By meal, I mean breakfast, lunch and dinner.	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Often (5-6 times) ..... ….... 3 Daily (7 times and more) 4	

309	In a typical week, how often do you use lunch box to fetch home-made meal?	Never.....0 Rarely (once or twice) .....1 Sometimes (3-4 times) .....2 Daily (5 times) 3	
310	What type of oil or fat is most often used for meal preparation in your household?	Palm oil (i.e. served by the Gov't (e.g. Hayat/Avena/Medina/etc.) ..... 1 Seed oil (sunflower/nigger/etc.) ..... 2 Butter or ghee..... 3 Margarine..... 4 Olive oil..... 5 Other _____6 (Specify) None in particular.....7 none used.....8 don't know.....77	

Section IV: Behavioral risk factors

Now, I am going to ask you some questions about various health behaviors. These include things like sleep duration, smoking, drinking alcohol, chewing khat, and weight perception and control. Let's start with sleep duration.

No.	Questions	Response	Skip
401	In a typical day, how long did you spend sleeping at night? remark: interviewer, please subtract bed time from wake-up time.	Hrs: Mins ☐☐ ☐☐ Hrs : Mins	
402	Do you currently smoke cigarettes?	Yes …..… 1 No……..... 0 →	*404*
403	In the last 24 hours, how many cigarettes did you smoke?	Number of cigarettes: ☐☐	
404	Do you currently smoke or use any other type of tobacco?	Yes ….....….1 No…..... 0 →	*406*
405	What (other) type of tobacco do you currently smoke or use? (encircle or record all mentioned)	Pipe..... A Chewing tobacco..... B Snuff/Suret..... C Shisha..... D Gaya..... E Other_____ F	

		(Specify)	
406	Have you ever taken a drink that contains alcohol (tella/teji/ areke/beer/wine, etc...)?	Yes...…..... 1 No...…….... 0 → *408*	
407	During the last 30 days, how many days did you take a drink that contains alcohol?	Days..... ☐☐	
408	Have you ever chewed chat?	Yes...…..... 1 No...…….... 0 → *410*	
409	During the last 30 days how many days did you chew chat?	Days..... ☐☐	
410	How do you perceive your childhood body status?	Thin/below normal.....…..... 1 Healthy/normal .....….....….... 2 Fat/over normal.....….....….... 3 Very fat/obese.....…..... 4 Don' know……..... 77	
411	How do you perceive your current body status?	Thin/below normal.....…..... 1 Healthy/normal .....….....….... 2 Fat/over normal.....….....….... 3 Very fat/obese.....…..... 4 Don' remember...…….... 77	
412	What is your preference about your body weight?	To lose weight…….....……1 To maintain weight….....….....2 To weight gain...…..,….....…….3	
413	Within the last year, which weight control practice did you try to lose, maintain or gain weight? (encircle or record all mentioned)	Exercise such as gym or aerobics.. A Races such as the great run..... B Vehecle free weekend walk.....C Dietary modification..... D Skipping meal..... E Eating more to gain wight.....F Other_____ G Specify) None used..... H	
414	Which one do you predominantly use to travel from home to work place?	Walking..... 1 Bicycle.....…..... 2 Public transport (taxi/higer/bus/train) ...3 Public service.....…..... 4 Contract taxi/school bus.....…..... 5 Private car..... 6	

Section V: Global Physical Activity Questionnaire

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores and seeking jobs. in answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

No.	Question	Response	Skip
	Work		
501 (P1)	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging etc.] for at least 10 minutes continuously?	Yes ….....1 No.....0 →	504
502 (P2)	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days: ☐	
503 (P3) (A-B)	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes	
504 (P4)	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 .....0 →	507
505 (P5)	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ☐	
506 (P6) (A-B)	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes	

Travel to and from places

The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places; for work, shopping, market, place of worship. etc. [Insert other examples if needed]

507 (P7)	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	Yes.....…1 No.....0 → 510	
508 (P8)	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: ☐	
509 (P9) (A-B)	How much time do you spend walking or bicycling for travel on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes	

The next questions exclude the work and transport activities that you have already mentioned.
now I would like to ask you about sports, fitness and recreational activities (leisure)..

510 (P10)	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 ….....…0 → 513	
511 (P11)	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days: ☐	
512 (P12) (A-B)	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes	
513 (P13)	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, volleyball] for at least 10 minutes continuously?	Yes.....…1 No.....…...0 → 516	
514 (P14)	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days: ☐	
515 P15 (A-B)	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes	

Sedentary behavior

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

516 P16 (A-B)	How much time do you usually spend sitting or reclining on a typical day?	Hrs: Min: ☐☐ ☐☐ Hours : Minutes

Part VI: Information on domains of sedentary behavior

Below are questions that ask about your sedentary behavior. As you respond these questions, please think of a typical weekdays' and weekends' sitting in the last week.
Please estimate how many hours and minutes you spend SITTING EACH DAY in the following situations: (Please write your answer).

No	Questions	A. On A WEEK Day		B. On A WEEKEND Day	
		Hours	Minutes	Hours	Minutes
601	While at work				
602	While traveling to and from places				
603	While using a computer at home				
604	While watching television				
605	In your leisure time, not including television (e.g., visiting friends, movies, dining out, while reading)				

Part VII: Workplace Sitting Breaks Questionnaire (SITBRQ)

Please encircle the correct answer to the following questions.

701	During a typical work day how many breaks from sitting (such as standing up, or stretching or taking a short walk) during one hour of sitting would you typically take at work?	6 or more	5	4	3	2	1	0
702	What is the total time you spend in short physical activity breaks during a typical day at work?	(6) 60 minutes or more	(5) 30-59 min	(4) 20-29 min	(3) 10-19 min	(2) 5-9 min	(1) less than 5 min	(0) n/a

Section VIII: Anthropometric measurement

Next, I am going to measure your waste circumference. It will be measured at the midpoint between the lower margin of the least palpable rib and the top of the most palpable part of the hip bone using non-stretchable fixed tension tape wrapped around your waste, ensuring it is adjusted without compressing the skin. While taking the measurement, you will stand relaxed with feet close together, arms at the side and body weight evenly distributed and wearing little clothing. The measurements will be taken at the end of a normal expiration.

No	Waist circumference	In centimeters (cm)
801	Reading 1	☐☐☐.☐
802	Reading 2	☐☐☐.☐
NB	Measurer, if the difference between the two measurement readings exceeds 1 centimeter, please repeat the measurements until it becomes within 1 centimeter range.	

Thank you!

Annex III: Amharic version questionnaire

1. የመረጃ ቅጽ

ጤና ይስጥልኝ!

እኔ _____ እባላለሁ፡፡ የመጣውት የአዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል ተማሪ የሆነውን ፍፁም ይፍራሸዋን በመወከል ሲሆን ከት/ት ክፍሉ ፈቃድ በማግኘት ጥናት በማድረግ ላይ ነው፡፡ የጥናቱ ዓላማ በአዲስ አበባ የመንግስት ቢሮዎች ውስጥ የሚሰሩ የቢሮ ሰራተኞች የሚቀመጡበት ጊዜና የሆድ ስብ ክምችት ያላቸውን ግንኙነት ለማጥናት ነው፡፡ በመሆኑም ይህ ጥናት እነዚህ ችግሮች በተለይም ደግሞ የሆድ ስብ ክምችት ከመጠን በላይ መጨመር ጋር ተያያዘው የሚመጡ የጤና እክሎችን በመቆጣጠርና በመከላከል ረገድ ትልቅ ሚና ይኖረዋል:: በተጨማሪም ይህ ጥናት የተለያዩ መንግስታዊ፣ መንግስታዊ ያልሆኑ ድርጅቶች እና አጋር ድርጅቶች በእነዚህ የጤና ችግሮች ዙርያ እንዲሰሩና የበኩላቸውን ሚና እንዲጫወቱ መነሻ ይሆናል የሚል ፅኑ እምነት አለኝ::

እርስዎ በዚህ ጥናት ላይ እንዲሳተፉ የተመረጡት በየደረጃው በተደረገ የአጋጣሚ የናሙና አወሳሰድ ስሌት መሰረት ሲሆን ለዚህ ጥናት ዓላማ ሲባል ከተመረጡት መስሪያ ቤቶች በአንዱ ውስጥ የሚሰሩ ስለሆነ ነው፡፡ የእርስዎ ተሳትፎ በፈቃደኝነት ላይ የተመሰረተ ሲሆን መልስ ለመስጠት የማይፈልጉበት ጥያቄ ካለ ለመመለስ አይገደዱም፡፡ በቃለ-መጠይቁ ወቅት ያልተምችዎት ነገር ካለ በማንኛውም ሰዓት ጥያቄውን የማቋረጥ መብትዎ የተጠበቀ ነው፡፡ የእርስዎ ስም ከቃለ-መጠይቁ ጋር የማይያያዝ ሲሆን ከዋና አጥኚው በስተቀር ማንም ቃለ መጠይቁን ሊያገኘው አይችልም፡፡ የመረጃው ሚሰጥራዊነት የሚጠበቅ ሲሆን ከታሰበለት ዓላማ ውጪ ለሌላ ምክንያት አይውልም፡፡

በጥናቱ ጊዜ ለምናጠናው ጥናት የተወሰኑ ጥያቄዎችን የምጠይቅዎት ሲሆን በዚህ መጠይቅ መሰረታዊ የግል መረጃ፣ የምግብ መረጃ፣ የአመጋገብ ልምድ፣ ከጤና ጋር ተዛማጅ የሆኑ ባህሪያት፣ አካላዊ እንቅስቃሴ እና የመቀመጥ ባህሪ የሚዳሰሱ ይሆናል፡፡ በተጨማሪም የእርስዎን የወገብ ዙሪያ በማይለጠጥና ወጥ ርዝመት ባለው የመለኪያ ሜትር የሚለካውን ወገበዎ ክፍል በስስ ልብስ ላይ የወገበዎን ዙሪያ የምንለካ ይሆናል፡፡ ሆድ ዕቃ ውስጥ ያለ ነገር የወገብ ዙሪያ ልኬት ላይ ተፅዕኖ ስለሚኖረው እባክዎ ነገ ጠዋት ለምንወስደው ልኬት ሲመጡ ቁርስ ሳይበሉ ይምጡ፡፡ ቃለ-መጠይቁ 30 ደቂቃ

ያህል የሚወስድ ይሆናል። ያስታውሱ፣ የእርስዎ ፈቃደኝነት እና ንቁ ተሳትፎ ለዚህ ጥናት ሰኬት በጣም አስፈላጊ ነው።

ጥናቱ በአዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ኮሌጅ የስነ ምግበር ኮሚቴ ታይቶ የፀደቀ ሲሆን ሰለጥናቱ ተጨማሪ መረጃ ማወቅ ከፈለጉ ዋና አጥኚውን በሚከተሉት አድራሻዎች ማግኘት ይችላሉ።

የዋና አጥኚው ስም፡ ፍፁም ይፍራሸዋ
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2. የስምምነት ማረጋገጫ ቅጽ

የተሰጠዎትን መረጃ መሰረት በማድረግ በዚህ ጥናት ውስጥ ለመሳተፍ ፈቃደኛ ነዎት?
(ሀ) አዎ ..... (1) .... መልሱ "አዎ" ከሆነ ቃለ-መጠይቁን ይቀጥሉ
(ለ) አይደለሁም. (2) ... መልሱ "አይደለሁም" ከሆነ ያልተሳተፉበትን ምክንያት ይፃፉና ወደሚቀጥለው ተሳታፊ ይለፉ _____
_____

ከላይ የተተቀሰውን መረጃ ግንዛቤ ውስጥ በማስገባት በጥናቱ ላይ እንዲሳተፉ በአክብሮት እጋብዛለሁ።
እኔ ከዚህ በታች ፊርማዬ የተቀመጠው በጥናቱ በፍቃደኝነት እንደምሳተፍ የሚከተሉትን ግንዛቤ ውስጥ በማስገባት ነው:

1. የጥናቱ ዓላማ
2. በማንኛውም ሁኔታ ቃለ-መጠይቁን የማቋረጥ መብቴ የተጠበቀ መሆኑ

ዝርዝር የጥናቱ ዓላማ በደንብ ሚገባኝ ቋንቋ ከተገለፀልኝ በኋላ በጥናቱ ለመሳተፍ ፍቃደኛ መሆኔን በፊርማዬ አረጋግጣለሁ:

የተሳታፊው ፊርማ፡ _____ እለት፡ _____/ቀን/ _____/ወር/ _____/ዓ. ም/
የመረጃ ሰብሳቢው ስም፡ _____
ፊርማ፡ _____ እለት፡ ___/ቀን/ _____/ወር/_____/ዓ. ም/

የቃለ መጠይቁ መለያ ቁጥር፡ ☐☐☐☐

ቃለ መጠይቁ የተደረገበት እለት፡ _____/ቀን/ _____/ወር/ _____/ዓ. ም/

የተጀመረበት ጊዜ፡ _____/ሰዓት/ ከ_____/ደቂቃ/

ያለቀበት ጊዜ፡ _____/ሰዓት/ ከ_____/ደቂቃ/

የቃለ መጠይቁ ውጤት

ሀ. ሙሉ በሙሉ የተሞላ

ለ. በከፊል የተሞላ

ሐ. ምንም ያልተሞላ

መ. ፍቃደኛ ያልሆኑ

በተቆጣጣሪዎች ተረጋግጧል፡፡ ስም፡ _____ ፊርማ: _____

ማሳሰቢያ፡ ያልገባዎት ነገር ወይም ከጥያቄው ጋር በተያያዘ ችግር ካለ ዋና አጥኚውን በሚከተለው አድራሻ ማግኘት ይችላሉ፡፡

የዋና አጥኚው ስም፡ ፍፁም ይፍራሸዋ

ኢ-ሜይል፡ fitsumyira@gmail.Com

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ክፍል አንድ: መሠረታዊ መረጃዎችን የተመለከቱ ጥያቄዎች

የሚከተሉትን ጥያቄዎች ለተሳታፊው በጥንቃቄ ካነበቡ በኋላ ለእያንዳንዱ የተሰጠውን መልስ በማክበብ ወይም በተሰጠው የመልስ መስጫ ቦታ መልሱን በመሙላት ይመልሱ፡፡

ከተማ፡ አዲስ አበባ ክፍለ ከተማ፡ የካ ወረዳ፡ ☐☐ የመስሪያ ቤቱ ስም_____

ተ.ቁ	ጥያቄዎች	መልስ	ወደ ሌላ ጥያቄ ይለፉ
101	ፆታ (የሚመለከቱትን ይመዝግቡ)	ወንድ ..... 1 ሴት..... 2	
102	እድሜዎ ስንት ነው? (በተጠናቀቀ ዓመት)	የተጠናቀቀ ዓመት፡ ☐☐	
103	በጠቅላላው፣ በሙሉ ጊዜ ቅጥር በመስራት ምን ያህል ዓመት በስራ አሳለፉ?	የተጠናቀቀ ዓመት፡ ☐☐	

104	ሃይማኖትዎ ምንድን ነው?	ኦርቶዶክስ ..... 1 ሙስሊም ..... 2 ካቶሊክ ..... 3 ፕሮቴስታንት ..... 4 ሌላ (ይገለፅ) _____ 5 ምላሽ ካልተሰጠ 88	
105	ያሳኩት ትልቁ የትምህርት ደረጃ ምነድን ነው?	ዲፕሎማ..... 1 ዲግሪ ..... 2 ማስተርስ ..... 3 ፒ.ኤች. ዲና ከዛ በላይ .... 4 ምላሽ ካልተሰጠ 88	
106	የትዳር ሁኔታ	ምንም ያላገባ/ች ..... 1 ያገባ/ች..... 2 አብረው የሚኖሩ..... 3 የተለያየ/ች/የተፋታ/ች..... 4 በሞት የተለዩ..... 5 ምላሽ ካልተሰጠ 88	
107	ወርሃዊ ገቢዎ ምን ያህል ነው?	የኢት. ብር፡ ☐☐ ☐☐☐	
108	እርስዎን ጨምሮ ያለዎት የቤተሰብ ብዛት ምን ያህል ነው?	የቤተሰብ ብዛት፡ ☐☐	
109	ከአዲስ አበባ ውጪ ሌላ ቦታ ቀጣይነት ባለው ሁኔታ ኖረው ያውቃለ? (የዩኒቨርስቲ ቆይታን ሳያጠቃልል)	አዎ.....1 አላውቅም.....0 → 201	
110	እዚህ ከመምጣትዎ በፊት ይኖሩበት የነበረው ቦታ ምን ዓይነት ነበር?	ከተማ.....1 ገጠር.....2	

ክፍል ሁለት፡ የምግብ መረጃ

የሚቀጥሉት ጥያቄዎች የእርስዎን የአመጋገብ ሁኔታ የሚጠይቁ ይሆናል፡፡ እባክዎ ባለፈው አንድ ወር ውስጥ በተለምዶ ምን እንደሚመገቡ ያስቡ፡፡ ጠያቂ፣ እባክዎ የተለመደ የአመጋገብ ድግግሞሽ የሚያሳየውን ቁጥር በሰንጠረዡ ውስጥ ይፃፉ

ተ.ቁ	ጥያቄ	ምላሽ								
	ባለፈው ወር ውስጥ በተለምዶ <u>የምግብ ዓይነት</u> በየምን ያህል ጊዜ ተመግበዋል?	(0) በልቼ አላውቅም	(1) በወር ከአንድ ጊዜ በታች	(2) በወር አንድ ጊዜ	(3) በወር ከ2-3 ጊዜ	(4) በሳምንት አንድ ጊዜ	(5) በሳምንት ከ2-4 ጊዜ	(6) በሳምንት ከ5-6 ጊዜ	(7) በቀን አንድ ጊዜ	(8) በቀን 2 ጊዜ እና ከዛ በላይ
201	ፍራፍሬ									
202	አትክልት									
203	ዳቦ እና የእህል ውጤቶች									
204	ስጋ									
205	እንቁላል									
206	ባቄላ ፣ አተር፣ምስር ወይም ለውዝ									
207	ወተት፣ አይብ እና እርጎ									
208	ስኳር አዘል እና ጣፋጭ ምግቦች እንደ ኬክ፣አይስ ክሬም ቸኮሌት፣ ከረሜላ፣ኩኪስ									
209	ስኳር አዘል እና ጣፋጭ መጠጦችን ለምሳሌ ለስላሳ መጠጦችና የታሸጉ የፍራፍሬ ጭማቂዎችን									
210	ፈጣን ምግቦች (እንደ በርገር፣ ቺፕስ፣ ፒዛ፣ ሳንድዊች፣ ፓስቲ፣ ዶናት፣ አይስ ክሬም ወይም የተጠበሱ ምግቦች)									

ተ.ቁ	ጥያቄ	ምላሽ								
	ባለፈው ወር ውስጥ በተለምዶ <u>የምግብ ዓይነት</u> በየምን ያህል ጊዜ ተመግበዋል?	(0) በልቼ አላውቅም	(1) በወር ከአንድ ጊዜ በታች	(2) በወር አንድ ጊዜ	(3) በወር ከ2-3 ጊዜ	(4) በሳምንት አንድ ጊዜ	(5) በሳምንት ከ2-4 ጊዜ	(6) በሳምንት ከ5-6 ጊዜ	(7) በቀን አንድ ጊዜ	(8) በቀን 2 ጊዜ እና ከዛ በላይ
211	ቅቤ ወይም ሬሜማ									

ክፍል ሶስት፡ የአመጋገብ ልምድ

ባለፈው ወር ውስጥ በአንድ በተወሰነ ሳምንት ስለነበረዎት የአመጋገብ ሁኔታ ያስቡ፡፡ ጠያቂ፣ እባክዎ የተለመደ የአመጋገብ ድግግሞሽ የሚያሳየውን ቁጥር ያክብቡ፡፡

ተ.ቁ	ጥያቄ	ምላሽ	ወደ ሌላ ጥያቄ ይለፉ
301	በአንድ በተወሰነ ቀን ውስጥ በተለምዶ ምን ያህል ጊዜ ይመገባሉ? ማለትም፡ ቁርስ፣ ምሳ እና እራት	በቀን ከአንድ ጊዜ በታች..... 0 በቀን አንድ ጊዜ..... 1 በቀን ሁለት ጊዜ..... 2 በቀን ሦስት ጊዜ..... 3 በቀን ከሦስት ጊዜ በላይ..... 4	
302	በአንድ በተወሰነ ሳምንት ውስጥ በተለምዶ ቁርስ በምን ያህል ጊዜ ይመገባሉ?	በልቼ አላወቅም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 ብዙ ጊዜ (5-6 ጊዜ) ..... 3 በየቀኑ (7 እና ከዛ በላይ)..... 4	
303	በአንድ በተወሰነ ሳምንት ውስጥ በተለምዶ ምሳ በምን ያህል ጊዜ ይመገባሉ?	በልቼ አላወቅም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 ብዙ ጊዜ (5-6 ጊዜ) ..... 3 በየቀኑ (7 እና ከዛ በላይ) 4	
304	በአንድ በተወሰነ ሳምንት ውስጥ በተለምዶ መክሰስ ይመገባሉ?	በልቼ አላወቅም..... 0 → 306 አዎ.....1	
305	በአንድ በተወሰነ ቀን ውስጥ በተለምዶ መክሰስ ምን ያህል ጊዜ ይመገባሉ?	የመክሰስ በዛት፡ ☐	
306	በአንድ በተወሰነ ቀን ውስጥ በተለምዶ እራት ምን ያህል ጊዜ ይመገባሉ?	በልቼ አላወቅም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 ብዙ ጊዜ (5-6 ጊዜ) ..... 3 በየቀኑ (7 እና ከዛ በላይ)..... 4	

407	በተለምዶ በመኝታ ሰዓት ምን ያህል ጊዜ ይመገባሉ?	በልቼ አላወቅም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 ብዙ ጊዜ (5-6 ጊዜ) ..... 3 በየቀኑ (7 እና ከዛ በላይ) 4	
308	በአማካኝ በአንድ በተወሰነ ሳምንት ውስጥ በመኖሪያ ቤትዎ ያልተዘጋጀ ምግብ ምን ያህል ጊዜ ይመገባሉ?	በልቼ አላወቅም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 ብዙ ጊዜ (5-6 ጊዜ) ..... 3 በየቀኑ (7 እና ከዛ በላይ) 4	
309	በአንድ በተወሰነ ሳምንት ውስጥ በተለምዶ የቤት ምግብ ለመውሰድ የምሳ ዕቃ ምን ያህል ጊዜ ይጠቀማሉ?	አልጠቀምም..... 0 አልፎ አልፎ (1-2 ጊዜ) ..... 1 አንዳንድ ጊዜ (ከ3-4 ጊዜ) ..... 2 በየቀኑ (5 ጊዜ) 3	
310	በቤትዎ ምግብ ለማብሰል ብዙ ጊዜ የሚጠቀሙት የዘይት ዓይነት ምንድን ነው?	የአትክልት ዘይት (የሚቀልጥ እንደ ሀያት/መዲና/አሸና/ወዘተ) .....1 የእህል ዘይት (ሱፍ/ኑግ/ወዘተ) ... 2 የወተት ቅቤ..... 3 የአትክልት ቅቤ.....4 የወይራ ዘይት..... 5 ሌላ (ይገለፅ)_____ 6 በተለየ የምጠቀመው የለም.....7 ምንም አልጠቀምም.....8 አላውም.....77	

ክፍል ሶስት: ከጤና ጋር ተዛማጅ የሆኑ ባህሪያት

አሁን የተለያዩ ከጤና ጋር የተያያዙ ጥቂት ጥያቄዎችን እጠይቅዎታለው፡፡ እነዚህም የእንቅልፍ መጠን፣ ማጨስ፣ አልኮል መጠጣት፣ ጫት መቃም እንዲሁም የክብደት እይታና ቁጥጥርን የተመለከቱ ሲሆን ከእንቅልፍ መጠን እንጀምራለን

ተ. ቁ.	ጥያቄ	ምላሽ	ወደ ሌላ ጥቄ ይለፉ
401	በአንድ የተወሰነ ቀን ውስጥ ማታ እንቅልፍ በመተኛት ምን ያህል ሰዓት ያሳልፋሉ? ማሳሰቢያ፡ ጠያቂ፣ እባክዎ ከመንቂያ ጊዜ ላይ የተኙበትን ጊዜ ይቀንሱ	ሰዓት: ደቂቃ ☐☐ : ☐☐ ሰዓት ደቂቃ	

402	በአሁኑ ጊዜ ሲጋራ ያጨሳሉ?	አዎ..... 1 አላጨስም..... 2 →	404
403	ባለፉት 24 ሰዓት ውስጥ ምን ያህል ሲጋራ ያጨሳሉ?	የሲጋዎቹ ቁጥር: ☐☐	
404	በአሁኑ ጊዜ ሌላ ማኝኛውም የትምባሆ አይነት ያጨሳሉ ወይም ይጠቀማሉ?	አዎ..... 1 አላውቅም..... 2 →	406
405	ምን (ሌላ) ማኝኛውን የትምባሆ አይነት ያጨሳሉ ወይም ይጠቀማሉ? የተጠቀሰውን ሁሉ ያክብቡ (ይመዝግቡ)	ፒፓ.....A የሚታኙኝክ ትንባሆ..... B ሱረት (ባፍንጫ የሚሳብ) ..... C ሺሻ..... D ጋያ..... E ሌላ (ይገለፅ)_____ F	
406	አልኮል በውስጡ የያዘ መጠጥ ወስደው ያውቃሉ (ምሳሌ፡- ጠላ/ጠጅ/ አረቂ/ቢራ/ወይን, ወዘተ...)?	አዎ..... 1 አላውቅም..... 2 →	408
407	ባለፉት 30 ቀናት ውስጥ ምን ያህል ቀናት አልኮል በውስጡ የያዘ መጠጥ ወስደው ያውቃሉ?	የተጠጣበት ቀን ብዛት፡ ☐☐	
408	ጫት ቅመው ያውቃሉ?	አዎ..... 1 አላውቅም..... 2 →	410
409	ባለፉት 30 ቀናት ውስጥ ምን ያህል ቀናት ጫት ቅመው ያውቃሉ?	የተቃመበት ቀን ብዛት፡ ☐☐	
410	በልጅነትዎ የነበረዎትን የሰውነት ክብደት ሁኔታ እንዴት ያስታውሱታል?	ቀጭን (ዝቅተኛ ክብደት) .... 1 ጤነኛ (መካከለኛ ክብደት..... 2 ወፍራም (ከፍተኛ ክብደት) ... 3 በጣም ወፍራም/ከፍተኛ ክብደት) .4 አላስታውስም..... 77	
411	አሁን ያለዎትን የሰውነት ክብደት ሁኔታ እንዴት ያዩታል?	ቀጭን (ዝቅተኛ ክብደት) ..... 1 ጤነኛ (መካከለኛ ክብደት..... 2 ወፍራም (ከፍተኛ ክብደት) .... 3 በጣም ወፍራም/ከፍተኛ ክብደት). 4	

412	ስለ ሰውነትዎ ክብደት ያለዎት ምርጫ ምንድን ነው?	ክብደት ለመቀነስ.....1 ያለውን ለማስጠበቅ.....2 ክብደት ለመጨመር.....3	
413	ባለፈው አንድ አመት ውስጥ ውፍረት ለመቀነስ፣ ያለውን ለማስጠበቅ ወይም ለመጨመር የትኛውን ውፍረት የመቆጣጠር ዘዴ ይጠቀማሉ? (ከአንድ በላይ ምላሽ ይቻላል)	የአካል እንቅስቃሴ (ጂም/የትንፋሽ).ሀ እንደ ታላቁ ሩጫ ያሉ ክስተቶች...ለ ከተሸከርካሪ ነፃ የእግር ጉዞ.....ሐ የአመጋገብ ለውጥ..... መ ምግብ መዝለል..... ሠ ክብደት ለመጨመር ብዙ መመገብ.ረ ሌላ (ይገለፅ)_____ ሸ ምንም አልጠቀምም..... ቀ	

ክፍል አምስት፡ የአካል እንቅስቃሴ መጠይቅ

በመቀጠልም በአንድ የተወሰነ ሳምንት ውስጥ የተለያዩ አይነት አካላዊ እንቅስቃሴዎችን በማከናወን የሚያሳልፍልፉን ጊዜ በተመለከተ እጠይቀዎታለሁ፡፡ የአካል ብቃት እንቅስቃሴ እንደማያደረጉ እራስዎን ቢገምቱም እባክዎ ለሚከተሉት ጥያቄዎች መልስ ይስጡ፡፡

በመጀመሪያ ሥራን ለማከናወን የምታጠፋበትን ጊዜ ያሰቡ፡፡ ሥራን ተከፈሎዎት ወይም ያለክፍያ የሚያደርጓቸው እንደ ጥናት /ስልጠና፣ የቤት ውስጥ ሥራዎችን፣ ምግብ/አስቤዛ መግዛት፣ ስራ ፍለጋ ያሉ ስራዎችን ያስቡ፡፡ የሚከተሉትን ጥያቄዎች ሲመልሱ "ከፍተኛ ጫና ያላቸው ጠንካራ እንቅስቃሴዎች" ከባድ አካላዊ ጥረት የሚጠይቁ እና ከፍተኛ የሆነ የአተነፋፈስ ወይም የልብ ምት እና ትንፋሽ መጨመር የሚጠይቁ እንቅስቃሴዎች ሲሆኑ "መካከለኛ-ጫና ያላቸው እንቅስቃሴዎች" መጠነኛ የሆነ የሰውነት እንቅስቃሴ ወይም አነስተኛ የልብ ምት እና ትንፋሽ መጨመር የሚጠይቁ እንቅስቃሴዎች ናቸው፡፡

ኮድ	ጥያቄ	ምላሽ	ወደ ሌላ ጥያቄ ይለፉ
	ስራ		
501 (P1)	ስራዎ ቢያንስ ያለማቋረጥ ለ10 ደቂቃ ከፍተኛ የሆነ የአተነፋፈስ ወይም የልብ ምት መጨመር የሚያስከትሉ "ከፍተኛ ጫና ያላቸው ጠንካራ እንቅስቃሴዎችን [ለምሳሌ፡- ከባድ ሸክም መሸከም ወይም ክብደት ማነሳት፣ እንደ ቁፋሮ ወይም የግንባታ ስራ ወዘተ] ያካትታል?	አዎ.....1 አይደለም... 0 →	504
502 (P2)	በአንድ ሳምንት ውስጥ፣ ለምን ያህል ቀናት "ከፍተኛ ጫና ያላቸው ጠንካራ እንቅስቃሴዎች"ን የሥራዎ አካል ያደርጋሉ?	ቀናት: ☐	
503 (P3) (A-B)	በአንድ ቀን ውስጥ ከፍተኛ ጫና ያላቸው ጠንካራ እስፖርታዊ፣ የአካል ማጎልመሻ ወይም የመዝናኛ እንቅስቃሴዎችን ለማከናወን ምን ያህል ጊዜ ያጠፋሉ?	☐☐ ☐☐ ሰዓት : ደቂቃ	

ኮድ	ጥያቄ	ምላሽ	ወደ ሌላ ጥያቄ ይለፉ
	ስራ		
504 (P4)	መካከለኛ-ጫና ያላቸው አነስተኛ የልብ ምት እና ትንፋሽ መጨመር የሚስከትሉ እስፖርታዊ፣ የአካል ማጎልመሻ ወይም የመዝናኛ እንቅስቃሴዎች ማለትም እንደ ቀላል የእግር ጉዞ [ወይም ቀላል ሽክም መሸከም ያሉ ተግባራትን] ያለማቋረጥ ቢያንስ ለ10 ደቂቃ ያደርጋሉ? [ምሳሌዎችን ያካቱ]	አዎ.....1 አይደለም... 0 →	507
505 (P5)	በአንድ ሳምንት ውስጥ፣ ለምን ያህል ቀናት መካከለኛ-ጫና ያላቸው እንቅስቃሴዎች"ን የሥራዎ አካል ያደርጋሉ?	ቀናት: ☐	
506 (P6) (A-B)	በአንድ ቀን ውስጥ መካከለኛ ጫና ያላቸው እንቅስቃሴዎችን ለማከናወን ምን ያህል ጊዜ ያጠፋሉ?	☐☐ ☐☐ ሰዓት : ደቂቃ	
	ከቦታ ወደ ቦታ መንቀሳቀስ		
የሚቀጥሉት ጥያቄዎች እርስዎ በገለጹት ስራ ላይ ያሉትን አካላዊ እንቅስቃሴዎች አያካትቱም፡፡ አሁን ከቦታ ወደ ቦታ ለመሄድ የሚጠቀሙባቸውን የመጓጓዣ መንገዶች አስመልቶ ለመጠየቅ እፈልጋለሁ. ለምሳሌ ለመስራት፣ ለመገበያየት፣ ገበያ ለማቅረብ፣ አምልኮ ቦታ ለመሄድ [ካስፈለገ ሌሎች ምሳሌዎችን ያስገቡ]			
507 (P7)	ከቦታ ቦታ ለመነቀሳቀስ ያለማቋረጥ ቢያንስ ለ10 ደቂቃ ያህል በእግር ወይም ብስክሌት (የፔዳል ሳይክል) በመጠቀም ይጓዛሉ ወይ?	አዎ.....1 አይደለም... 0 →	510
508 (P8)	በሳምንት ውስጥ ለምን ያህል ቀናት ያለማቋረጥ ቢያንስ ለ10 ደቂቃ ያህል በእግር ወይም በብስክሌት (በፔዳል ሳይክል) በመሄድ ያሳልፋሉ?	ቀናት: ☐	
509 (P9) (A-B)	በአንድ ቀን ውስጥ በእግር ወይም በብስክሌት (በፔዳል ሳይክል) እንቅስቃሴዎችን ለማከናወን ምን ያህል ጊዜ ያጠፋሉ?	☐☐ ☐☐ ሰዓት : ደቂቃ	

የመዝናኛ እንቅስቃሴዎች

የሚቀጥሉት ጥያቄዎች እርስዎ ቀደም ብለው የጠቀሱትን ስራ እና የትራንስፖርት እንቅስቃሴዎችን አያካትቱም:: አሁን ስለ ስፖርት፣ የአካል ብቃት እንቅስቃሴ እና የመዝናኛ እንቅስቃሴዎችን በተመለከተ እጠይቅዎታለሁ፡፡

510 (P10)	[እንደ ሩጫ ወይም እግር ኳስ ያሉ] ከፍተኛ የአተነፋፈስ ወይም የልብ ምት መጨመር የሚያስከትሉ ከፍተኛ ጫና ያላቸው ጠንካራ ስፖርታዊ፣ የአካል ብቃት ወይም የመዝናኛ እንቅስቃሴዎችን ቢያንስ ቀጣይነት ላለው 10 ደቂቃ ያደርጋሉ? [ምሳሌዎችንያካቱ]	አዎ.....1 አይደለም... 0 → 513	
511 (P11)	ብቃት ወይም የመዝናኛ እንቅስቃሴዎችን ለምን ያህል ቀናት በአንድ ሳምንት ውስጥ ከፍተኛ ጫና ያላቸው ስፖርታዊ፣ የአካል ያደርጋሉ?	ቀናት: ☐	
512 (P12) (A-B)	በአንድ ቀን ውስጥ ከፍተኛ ጫና ያላቸው ስፖርታዊ፣ የአካል ብቃት ወይም የመዝናኛ እንቅስቃሴዎችን በማድረግ ምን ያህል ጊዜ ያጠፋሉ?	☐☐ ☐☐ ደቂቃ : ሰዓት	
513 (P13)	[እንደ ቀላል የእግር ጉዞ ብስክሌት መንዳት፣ መዋኘት፣ የእጅ ኳስ መጫወት ያሉ] አነስተኛ የትንፋሽ እና የልብ ምት መጨመር የሚስከትሉ መካከለኛ-ጫና ያላቸው እስፖርታዊ፣ የአካል ማጎልመሻ ወይም የመዝናኛ እንቅስቃሴዎችን ቢያንስ ቀጣይነት ላለው 10 ደቂቃ ያደርጋሉ? [ምሳሌዎችንያካቱ]	አዎ.....1 አይደለም... 0 → 516	
514 (P14)	በአንድ ሳምንት መካከለኛ-ጫና ያላቸው እስፖርታዊ፣ የአካል ማጎልመሻ ወይም የመዝናኛ እንቅስቃሴዎችን ለምን ያህል ቀናት ያደርጋሉ?	ቀናት: ☐	
515 P15 (A-B)	በአንድ የቀን ቀን ውስጥ መካከለኛ-ጫና ያላቸው እስፖርታዊ፣ የአካል ማጎልመሻ ወይም የመዝናኛ እንቅስቃሴዎችን በማድረግ ምን ያህል ጊዜ ያጠፋሉ?	☐☐ ☐☐ ሰዓት : ደቂቃ	
	የመቀመጥ ባህሪ		
የሚቀጥለው ጥያቄ በሥራ ቦታ፣ በቤት ውስጥ፣ ከቦታ ቦታ ለመንቀሳቀስ ወይም ከጓደኞች ጋር ዴስክ ላይ በመቀመጥ፣ በመኪና፣ በአውቶቡስ፣ በባቡር በመንቀሳቀስ፣ በማንበብ፣ ካርታ በመጫወት ወይም ቴሌቪዥን በመመልከት የሚያሳልፉትን ጊዜ ይመለከታል፤ ነገር ግን በእንቅልፍ የሚያሳልፉትን ጊዜ አያካትትም			
516 P16 (A-B)	በአንድ የተወሰነ ቀን ውስጥ ተቀምጠውም ሆነ ሳይተኙ ጋደም ብለው ምን ያህል ጊዜ ያሳልፋሉ? በስራ ላይ፣ በቢሮ ውስጥ፣ በማንበብ፣ በቴሌቪዥን፣ በኮምፕዩተር፣ በቴሌቪዥን፣ ኮምፒተር በመጠቀም፣ እንደ ጥልፍ ስራ፣, እረፍት ወዘተ.	☐☐ ☐☐ ሰዓት : ደቂቃ	

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ክፍል ስድስት፡ የመቀመጥ ባህሪ ዝርዝር መረጃ

ከዚህ በታች ያሉት ጥያቄዎች ስለ እርስዎ የመቀመጥ ባህሪ የሚጠይቁ ይሆናል፡፡ ለጥያቄዎቹ መልስ ሲሰጡ እባክዎ ከዚህ በፊት በአንድ ሳምንት የስራ ቀናት እና የእረፍት ቀናት ውስጥ የሚቀመጡትን ብቻ ያስቡ፡፡ እባክዎ በሚከተሉት ሁኔታዎች ውስጥ በእያንዳንዱ ቀን ምን ያህል ሰዓት እና ደቂቃ ተቀምጠው እንደሚያሳልፉ ይገምቱ (ጠያቂ፣ እባክዎ በሰንጠረዡ ውስጥ ይፃፉ)

ተ.ቁ	ጥያቄዎች	በስራ ቀን		በእረፍት ቀን	
		ሰዓት	ደቂቃ	ሰዓት	ደቂቃ
601	ስራ ቦታ ላይ ሆነው ምን ያህል ጊዜ ይቀመጣሉ?				
602	ከቦታ ወደ ቦታ ሲጓጓዙ ምን ያህል ጊዜ ይቀመጣሉ?				
603	ቤት ውስጥ ኮምፒዩተር በሚጠቀሙበት ወቅት ምን ያህል ጊዜ ይቀመጣሉ?				
604	ቴሌቪዥን በማየት ምን ያህል ጊዜ ይቀመጣሉ?				
605	ከቴሌቪዥን ውጪ በእረፍት ሰዓት ወቅት (ለምሳሌ፡-ጓደኞትን ለመጠየቅ፣ለፊልም፣ለእራት ወጣ ሲሉ፣ወዘተ.) ምን ያህል ጊዜ ይቀመጣሉ?				

ክፍል ሰባት፡ በስራ ቦታ በሚቀመጡበት ወቅት በየመሀሉ ስላለው የመነሳት እረፈት ሁኔታ የተመለከተ መረጃ

(እባክዎን ለሚከተሉት ጥያቄዎች ትክክለኛ የሚሉትን መልስ ያክብቡ)

701	ስራ ቦታ በቀን ለአንድ ሰዓት በሚቀመጡበት ወቅት ለእረፍት (እንደ መቆም፣ መንጠራራት ወይም ለአጭር እርምጃ) ስንት ጊዜ ይነሳሉ?	6 ወይም ከዛ በላይ	5	4	3	2	1	0
702	በአንድ የስራ ቀን በስራ ቦታ ከሚቀመጡበት ለእረፍት እንቅስቃሴ በመነሳት የሚያሳልፉት ጠቅላላ ጊዜ ምን ያህል ይሆናል?	60 ደቂቃ ወይም ከዛ በላይ	30 - 59 ደቂቃ	20 - 29 ደቂቃ	10 - 19 ደቂቃ	5-9 ደቂቃ	ከ5 ደቂቃ በታች	መልስ የለም

ክፍል ሰምንት: የአንትሮፖሜትሪ ልኬት

በመቀጠል የወገብዎን ዙሪያ የምለካ ይሆናል፡፡ የሚለካውም በታችኛዎ የሚዳሰሰው የጎድን አጥንትና በላይኛው የዳሌ አጥንት ጫፍ መካከል በማይለጠጥ የመለኪያ ሜትር በወገብ ዙሪያ ቆዳን ሳይጫን ይሆናል፡፡ በሚለካበት ወቅት እግርዎትን ገጥመው፣ እጅዎትን በጎን አድርገው እንዲሁም የሰውነትዎን ክብደት በሁሉም አቅጣጫ አኩል በማድረግና ቀለል ያለ ልብስ በመልበስ ዘና ብለው መቆም ይኖርብዎታል፡፡ ወደ ውጪ ተንፍሰው ሲጨርሱ ልኬቶቹ የሚወሰዱ ይሆናል፡፡

ተ.ቁ	የወገብ ዙሪያ ልኬት	በሳንቲ ሜትር (ሳ.ሜ.)
801	የልኬት ንባብ 1	☐☐☐.☐
802	የልኬት ንባብ 2	☐☐☐.☐
803	የሁለቱ ልኬቶች ልዩነት ከ 1 ሳ.ሜ ከበለጠ፣ እባክዎ ልዩነቱ ከ 1 ሳ.ሜ በታች እስኪሆን ድረስ ልኬቶቹን ደግመው ይውሰዱ	

ስለትብብርዎ እናመሰግናለን!

Annex IV: Curriculum vitae of the principal investigator and the advisor

Curriculum Vitae of the Principal Investigator *Last updated*: June 10, 2020

Personal Information

First name: Fitsum *Middle name*: Yifrashewa *Last name*: Eshete

Age: 28 years *Sex*: Male *Nationality*: Ethiopian

Marital status: Unmarried *Place of Birth*: Dera, Ethiopia *Date of Birth*: 18/10/1991

Language: Good at speaking, reading and writing in Amharic and English.

Contact address: E-mail: fitsumyifra@gmail.com Mobile: +251 920 39 74 07

Home Address

City: Addis Ababa, Ethiopia *Sub-city*: Yeka *District*: 11 *House number*: New

I. Academic Qualification

1. Bachelor of Science in Public Health Officer (BSc):

Period of study: September 2010 to July 2014

Program: Public health

Institution: Debre Berhan University, School of Public Health, Debre Berhan, Ethiopia

2. Ethiopian Higher Education Entrance Certificate:

Period of study: September 2008 to July 2010

Program: Preparatory

Institution: Dera Preparatory School, Dera town, Oromia region, Ethiopia

3. Ethiopian General Secondary Education Certificate:

Period of study: September 2006 to August 2008

Program: High School

Institution: Dera Secondary School, Dera town, Oromia region, Ethiopia

II. Work Experience

1. Food-, Health-, Health-Related Institutions' and Industries' Environmental Health Competence Certification and Regulatory Core Process Leader

Duration of employment: October 12, 2015 to October 12, 2018

Institution: Food and Drug Administration (FDA) office, Addis Ababa, Ethiopia.

2. Health Institutions' Competence Certfication and Control Officer:

Duration of employment: October 11, 2014 – October 12, 2015

Institution: Food and Drug Administration (FDA) office, Addis Ababa, Ethiopia.

Research experience

- Assessment of the risk of early weaning of breast feeding on exposing under two children to diarrhea in Debre Berhan Town, East Shewa Zone, Ethiopia: Cross sectional study (*for the partial fulfillment of bachelor's degree* in public health)

Merits received

- *Third of all district officers* from Yeka Sub-City Administration FDA office, by 2016.
- *Best officer of the year* from District 11 Administration chief executer, by 2015.
- Ethiopian General Secondary Education Certificate with *very great distinction*.

Membership of Professional Associations: Ethiopian Public Health Association (EPHA)

Trainings taken

- ✓ ***Project management***: *The basics for success*, by University of California, October 2019
- ✓ ***Project management***, by Addis Ababa University School of commerce, October 2019
- ✓ ***eHealth****: more than just an electronic record*, by the University of Sydney, October 2019
- ✓ ***Programming for Infant and Young Child Feeding (IYCF)*** Course, by Cornell University and UNICEF, October 2019
- ✓ ***University Teaching*** authorized by the University of Hong Kong, March 2019
- ✓ ***Writing in the Sciences*** by authorized by Stanford University, February 2019
- ✓ ***Stanford Introduction to Food and Health*** authorized by Stanford University, September 2019
- ✓ ***Nutrition and Lifestyle in Pregnancy*** authorized by Ludwig-Maximilians-Universität München (LMU), August 2018
- ✓ ***Training for Trainers*** *(TOT) on Time management, Performance Measuring Management, Change Army and Cascading* by Addis Ababa city administration Public Service and Human Resource Development Bureau, April 2017

- ✓ 140 hours of Short Term Technical and vocational training on ***Basic computer skill***, by city government of Addis Ababa, Technical and Vocational Training Agency, Geez computer training center, March 2017
- ✓ *The **health regulatory** training package* by Addis Ababa city administration Food, Medicine and Healthcare Administration and control Authority, February 2017
- ✓ *Middle level managerial role* (certified)

Some training topics that I can deliver as a trainer: Time management, performance measuring management, change army and cascading a strategic plan to lower levels.

Skills, interests and hobbies

- ✓ Know how on tatistical packages (STATA, SPSS, EPI INFO, OPEN EPI, WHO-Anthro)
- ✓ IT know how on Microsoft Office Word, PowerPoint, Excel and Access
- ✓ Team leadership, good communication skill, public speech and training
- ✓ Vedio editing (using the shortcut vedio editing software, in particular)
- ✓ Licensed to drive

Future Plans and Interests

- To be an expert on my area of study and a distinguished health researcher
- Giving voluntary health services
- To upgrade my level of education to the next higher level

References:

1. Name: Mr. Tesfaye Gebremedhin
   Position: Head of Yeka sub-city administration, Food and Drug Administration office
   Address: Mobile: +251 9 11 43 52 34

2. Name: Mr. Nigussie Tadesse (RN BScN MacN Assistant Professor)
   Position: Dean, College of Health Science, Debre Berhan University
   Address: E-mail: nigussie.amu@gmail.com or mobile: +251 9 13 74 80 07

3. Dr. Fisiha Tadesse
   Position: Gynecology and obs. Chief Clinical Officer of Debre Berhan Referal Hospital
   Address: +251 9 11 37 75 30

CURRICULUM VITAE OF THE ADVISOR

Solomon Shiferaw (MD MPH PhD)	School of Public Health, Faculty of Medicine. AAU E-mail: soloshi@yahoo com Tel No: +251 911 40 68 45 P.O. Box: (1000) 9086 Addis Ababa, Ethiopia

Nationality - Ethiopian

Date of birth: Nov 29, 1975

Education

- Mar 2012 - Oct 2018: PhD from Maastricht University. The Nethenands.
- Sept 2002 - Jury 2004: Master's Degree in Public Health from Addis Ababa University. Ethiopia.
- Sept 1994 - Jury 2000: Doctor of Medicine from University of Gondar. Ethiopia.

Professional Experience

- Sept 28, 2017 - Present' Associate Professor, School of Public Health, Addis Ababa University
- Jan 2006 – Sept 27, 2017: Assistant Professor in the School of Public Health, Adds Ababa University.
- Current responsibilities: teaching public health nutrition to undergraduate medical students as well as graduate students in Public Health. Advising students of health informatics and MPH on various public health issues. Conducting a research project for PhD training on "The role of Phone-based applications and Client centered communication in improving maternity services"

Publications

1. Designing mHealth for maternity services in primary health facilities in a low-income setting - lessons from a partially successful implementation. **Solomon Shiferaw**, Andualem Workneh, Robel Yirgu, Geert-Jan Dinant and Mark Spigt. BMC Medical Informatics and Decision Making (2018) 18 96. https://doi.org/10.1186/s12911-018-0704-9.
2. Using a mentorship model to localize the Practical Approach to Care Kit (PACK): from South Africa to Ethiopia. Yibeltal Mekonnen, Charlotte Hanlon, Solomon Emyu, Ruth Vania Cornick, Lara Fairall, Daniel Gebremichael, Telahun Teka, **Solomon Shiferaw**, et al. BMJ Glob Health 2018.3: e001108. Doi:10.1136/ bmjgh-2018-001108.
3. Measuring family planning quality and its link with contraceptive use in public facilities in Burkina Faso, Ethiopia, Kenya and Uganda. Timothy Fruehauf, Linnea Zimmerman, Simon Peter Sabina Kubira, Fredrick Makumbi, Peter Gichangi, **Solomon Shiferaw**, Assefa Seme, Georges Guiella and Amy Tsui. Health Policy and Planning, 2018, 1-12. doi: 10.1093/heapol/czy058.
4. ls small play area in schools associated with overweight among students? A comparative cross sectional study in Addis Ababa, Ethiopia? Tsedey Moses, Bereket Gebremichael, **Solomon Shiferaw**, Robel Yirgu. Epidemiology and Health 2018; Volume: 40, Article ID: e2018017, 8 pages. https://doi.org/10.4178/epih.e2018017.
5. Adherence to diabetic self-care practices and its associated factors among patients with type 2 diabetes in Addis Ababa, Ethiopia. Zeleke Banger, **Solomon Shiferaw**, and Eshetu Zerihun Tariku. Patient Prefer Adherence. 2018; 12: 963-970. doi: 10.2147/PPA15156043.
6. Does proximity of women to facilities with better choice of contraceptives affect their contraceptive utilization in rural Ethiopia? **Shiferaw S**, Spigt M, Seme A, Amogne A, Skrovseth S, Desta S, et al. (2017) PLoS ONE 12(11): e0187311. https://doi.org/10.1371/journal.prone.0187311.
7. Underreporting of high risk water and sanitation practices undermines progress on global targets. Sridhar Vedachalam, Luke H. MacDonald, **Solomon Shiferaw**, Assefa Same, Kellogg J. Schwab, On behalf of PMA2020 investigators (2017) PLoS ONE 12(5): e0176272. https://doi.org/10.1371/journal.Pone.0176272.
8. Diarrhea management in children under five in sub-Saharan Africa: does the source of care matter? A Countdown analysis. Liliana Carvajali-Vélez, Agbessi Amouzou, Jamie Perin,

Abdoulaye Maiga, Hayalnesh Tarekegn, Akanni Akinyemi, **Solomon Shiferaw**, Mark Young, Jennifer Bryce and Holly Newby. BMC Public Health 2016. Doi: 10.1186/512889-016-3475-1

9. Overweight and obesity and its sociodemographic correlates among urban Ethiopian women: evidence from the 2011 EDHS. Solomon Abrha, **Solomon Shiferaw** and Kedir Y. Ahmed. BMC Public Health (2016) 16:636 Doi 10.1186/512889-016-3315-3.
10. Prevalence of Rheumatic Heart Disease among school children in Ethiopia: 3 Multisite Echocardiography-based screening. Dejuma Yadeta, Abrha Hailu, **Solomon Shiferaw** et al. lnt J Cardio 2016 Jul 1;221:260 263. doi: 10.1016/j. ijcard2016.06.232.
11. The Effects of a Locally Developed mHeaith Intervention on Delivery and Postnatal Care Utilization; A Prospective Controlled Evaluation among Health Centers in Ethiopia. **Solomon Shiferaw**, Spigt M, Tekie M, Abdullah M, Fantahun M, Dinant G-J (2016) PLoS ONE 11(7): e0158600. doi: 10.1371/journal.pone.0158600.

Reference Persons

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