



**St. Paul's Hospital
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SCHOOL OF NURSING

**CARDIOVASCULAR RISK STATUS AND ASSOCIATED
FACTORS AMONG PUBLIC COMMUNITY 40-74 AGED.**

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**A Research Proposal Submitted to St. Paul's Hospital
Millennium Medical College School of Nursing Department Of
Medical Surgical Nursing; For Partial Fulfilment Of The
Requirements For The Degree Of Masters Science In
Cardiovascular Nursing.**

ADDIS ABABA; ETHIOPIA

August, 2024.

Cardiovascular Risk Status and Associated Factors Among public community 40-74 Aged public community at Public Hospital, Addis Ababa; Ethiopia, 2024.

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Abstract

Introduction: Cardiovascular disease (CVDs) are a chronic disease that worsen overtime which affect the heart and blood vessels. It will be essential to establish cost-effective preventive methods through fighting the risk actors that can be modifiable. Also there is limited studies regarding CVD risk Assessment in Addis Ababa, Ethiopia.

Objective: - To assess cardiovascular risk status and associated factors among 40-74 aged public community at public hospital, Addis Ababa, Ethiopia 2024.

Method: - Institution based cross-sectional study design was conducted among randomly selected 408 public community aged between 40-74 at selected public hospital from April 1-30/2024. Three trained BSc nurses were collected the data through kobo toolbox with 5% pretested non laboratory based WHO 10- year cardiovascular risk predicting chart with risk factors; age, sex, smoking status, systolic blood pressure.

The collinearity test was run to check the assumption of the logistic regression for identifying the strong association between independent variable and Hosmer and Lemshow's test was used to check the model fitness. Descriptive statistics including by mean, frequency, and percentages were computed. Binary logistic regression was done to select candidate variable for the multivariable logistic analysis at p-value < 0.25. Multivariate logistics regression analysis was employed to detriment the strength of association using adjusted odds ratio at 95% confidence level and P-value of less than 0.05.

Result: - The prevalence of high 10 year CVD risk was 13.7% (95%CI 10.5,17.2) among the study participants. A high CVD risk level was found to be associated with age 50-59 (AOR 4, 95%CI 1.5 to 10.6) and age \geq 60 (AOR 16.6, 95% CI 4.5 to 61.6), Being male (AOR 2.8, 95% CI 1.02 to 7.7), Abdominal obesity (AOR 2.8, 95% CI 1.08 to 7.27). Overweight (AOR 1.94, 95% CI 0.8 to 4.7) and obese (AOR 6.2 95% CI 1.62 to 23.68), Being nonsmoker with (AOR 0.52, 95% CI 0.02 to 0.14) and High SBP \geq 160(AOR 8.795% CI 2.08 to 37.0).

Conclusion: - Being at high risk for CVD (risk level of \geq 10 %) is significant (13.7%) public health important problem in study area. It is aggravated by age, being male, High SBP, Abdominal obesity and obesity and prevented by non- smoking cigarette.

Keyword: - Addis Ababa, 40-74 years old, Cardiovascular diseases risk, Status, Public community,

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Acronyms

ASCVD	Atherosclerotic Cardiovascular Disease
ALERT	All Africa Leprosy Rehabilitation and Training Centres
BMI	Body Mass Index
CV	Cardiovascular
CVD	Cardiovascular Disease
DM	Diabetes Mellitus
GP	General Population
HDL	High Density Lipoprotein
LDL	Low Density Lipoprotein
NCD	Non Communicable Diseases
PAD	Peripheral Arterial Disease
RDDMH	Ras Desta Dmtew Memorial Hospital
SBP	Systolic Blood Pressure
SPHMMC	Saint Paul Hospital Millennium Medical College
SPSS	Statistical Package for Social Science
US	United States
WHO	World Health Organization
Y12HMC	Yekatit 12 Hospital Medical College

CHAPTER ONE

INTRODUCTION

1.1. Background

Cardiovascular diseases are a group of disease and injuries that affect the heart or blood vessels and it is commonly related with atherosclerosis which is a process formation of fatty deposit composed on fat, calcium and other substances in the inner walls of the arteries causing diminishing blood flow to area of the body(1–4). many types of CVDs are associated with atherosclerosis, such as; ischemic heart disease or coronary artery disease which eventually reduce and block blood flow and decrease oxygen supply to the heart muscle (e.g. heart attack), cerebrovascular disease (e.g. stroke), disease of aorta and artery, including hypertension and peripheral vascular disease and others types of CVDs are; congenital heart disease, rheumatic heart disease, cardiomyopathies and cardiac arrhythmia (1,5) CVDs are a chronic illness that worsen over time and remain asymptomatic for extended periods of time Or symptoms don't appear until a disease is advanced, or abrupt death may occur as the first sign(6,7).

The prevalence of CVDs is still increasing; it was 271 million in 1990 but has reached to 523 million in 2019, And CVDs are remain the primary cause of death, the number of deaths from CVDs reached 18.6 million in 2019 which represents 32% of all deaths, since CVD commonly affect the heart and brain, as a result of heart attack and stroke respectively, 85% were due to heart attack and stroke(5,7,8). In Sub-Saharan Africa CVDs are responsible for 13% of all deaths(5) Ethiopia is one of sub-Saharan Africa country which people are suffering from CVD, there are still evident challenges in addressing the burden of CVDs as high priority for public health in Ethiopia and the cases increased by 100%, from 1.3 million in 1990 to 2.8 million in 2017(9,10) CVD accounts for 9% out of 30% of non-communicable disease death in Ethiopia and In line with a systematic review carried out in Ethiopia, the prevalence of CVD varies between 7.2 and 24%(4).

The diagnosis and treatment modalities of CVD as well as CV risk factor are focused on; early identification of high-risk patients; early detection of subclinical cardiovascular disease markers; improvement of treatment algorithms for various clinical syndromes; assessment of residual risk and follow-up optimisation; and prevention of recurrences(11). In addition to this, Cardiovascular disease is diagnosed using a variety of diagnostic procedures for heart disease include: chest X-ray, blood tests, Electrocardiogram (ECG or EKG), Holter monitoring.,

Echocardiogram, Exercise tests or stress tests, Cardiac catheterization, Heart (cardiac) CT scan and Heart (cardiac) magnetic resonance imaging (MRI) scan(12).

A cardiovascular disease risk can be predicted by different risk assessment models, WHO develop both laboratory and non-laboratory based a risk predicting chart to estimate 10 year risk of fatal or non-fatal major cardiovascular events for each of the 21 WHO epidemiological sub-regions(13,14).

Due to increases the burden of CVD trends across the world, Ethiopia is now forced to face with non-communicable disease in addition to communicable disease, and there is also a scarcity of study that addresses the cardiovascular risk status and associated factors among public communities in Ethiopia. This study will address CV risk status and associated factors among 40-74 aged public community at public hospitals.

1.2. Statement of the problem

Cardiovascular diseases risk refers to the chance that an individual will experience an acute coronary or stroke event within a specified time period(15).

According to north Indian study showed that 44% of subjects are at high (>10%) risk of CVD in the next 10 years duration(16). A study done in Malaysia showed that the proportion of high 10-year cardiovascular disease risk ($\geq 20\%$) was 7.7%(17).The finding that done in Iraq was revealed 19.2%, of the study population were in >20% of the ten year CVD risk(18). The research conducted in Nigeria showed There were 76.9%, 8.5%, and 14.6% of responders had a low, moderate, and high chance of getting a CVD within 10 years, respectively(19). According to the Kenyan study, 7.7% study participant were classified as having a 10% to 20% risk of a cardiovascular event over the following ten years. 1.7% were predicted to have a "high" risk ($\geq 20\%$)(20). A study conducted among hypertensive patient in Ethiopia showed that the prevalence of a high predicted CVD risk was 28.2%, from this, 88% were had >120 systolic blood pressure and 56% were male (21). Another study done in Ethiopia showed that 14.6% have a moderate (10%–20%) 10-year cardiovascular risk(22).

Cardiovascular diseases are the result of a combination of risk factors, which are defined as “any attribute, characteristic, or exposure of an individual that increases the likelihood of developing a disease or injury(23,24). Although the risk factors associated with CVDs are well-known(25) and commonly divided into non-modifiable and modifiable risk factor, 90% of CVDs are believed related to those factors(26); such as, age, gender, and genetic background are listed to non-modifiable risk factors; whereas; smoking, physical inactivity, unhealthy diets, high blood pressure, type 2 diabetes mellitus (DM), dyslipidaemia, obesity, and harmful alcohol use are included into modifiable and it is responsible for almost 70% of cardiovascular disease events and deaths(11,27). Risk factors for cardiovascular diseases are becoming more common; according to recent cohort studies, only 2%–7% of the general population are free of risk factors, while over 70% of people who are at risk have several risk factors(28).

cardiovascular diseases will occur from being at risk (29). As CVD becoming prevalent , the high burden of mortality and morbidity in low- and middle-income countries turning up worsen(30,31). Each year, 15 million people worldwide suffer strokes as a result of them five million die, and more than five million become permanently disabled (32). Almost half of the 600,000 strokes and 1.5 million heart attacks that happen in the US each year targeted men and women with normal or even low cholesterol levels, (33). Because of competing health

priorities, CVDs place a significant financial strain on low- and middle-income countries, which have limited resources for managing them(34). According to estimates, NCDs caused 43% of deaths in Ethiopia in 2019, with this CVDs, accounting for more than 16% of deaths(22).

WHO developed prevention Guidelines and the 10-year laboratory and non-laboratory risk prediction charts to estimate 10 year risk of fatal or non-fatal major cardiovascular event for each of the 21 WHO epidemiology sub-regions to the prevention of disability and early mortality from acquiring CVD(14,35). Ministry of health in Ethiopia developed the strategic plan for prevention and control of non-communicable disease, to reduce the burden and prevalence of common risk factor of NCDs by promoting healthy lifestyles it will give a chance to reduce the burden of CVDs(36).

However, the main focus of the country's health system is still on maternal and child health programs and infectious disease control. The population's limited service availability, lack of resources, and competition for health resources are gaps that need to be solved in order to address NCDs(37). Even though Previously two studies in Addis Ababa and Bahir Dar, show that the risk status of individual, they do not exclude individuals that had a previous history of cardiovascular disease, beside this; There is a scarcity of studies regarding CVD risk status. So, the current study was planned to conduct using A cardiovascular disease risk assessment which is cost effective and is an accurate estimator of the risk of developing cardiovascular disease over the following 10 years, depending on factors such as age, sex, blood pressure and smoking status(13,38).

1.3. Significance of the study

Assessing CVD risk status among public community provide significant contribution to reduce the burden of CVD. In the other hand high CVD risk level can lead to mortality and morbidity. In addition to this CVD affect the public community due to modifiable and non-modifiable risk factors. So, Assessment of cardiovascular disease risk provides helps to fight the modifiable risk factors through identify asymptomatic individuals.

CVD is preventable disease, Early assessment of individual's risk status will be beneficial to understand the level of CV risk status and its associated factors among public communities, and it enables policy maker to develop effective Cardiovascular risk prevention strategies, method instead of interventional strategies. This study helps for health care professionals to focus on cardiovascular risk assessment. And it gives a recommendation to the respective body on how to prevent the CVD from the community and the study will also give a baseline information for further study on this area.

CHAPTER TWO

LITERATURE REVIEW

2.1. Overview of cardiovascular disease risk

The cross sectional study done in Thailand showed that 83% of the participants had a low CV risk score while 17% had a high CV risk scores(39). The cross-sectional study conducted in china among older adult's revealed that 21.4% had low CV risk, 31.5% had moderate CV risk, 47% had high and very high CV risk(40). A population based cohort study done in china shows that 10.3% of participants had a high risk of cardiovascular disease(41). A community based cross sectional study done in Indonesia among adults 40 years of age 29.2% had high CV risk(42).According to the community CVD screening strategy done in India the 18.4% are at high risk(43). A cross sectional study conducted in Nigeria among aged 40 years above There were 76.9%, 8.5%, and 14.6% of responders had a low, moderate, and high chance of getting a CVD within 10 years, respectively(19). A cross sectional study done Kenya among aged 40 years above 94.5% were predicted to have low risk (<10%) ,7.7% study participant were classified as having a 10% to 20% risk of a cardiovascular event over the following ten years and 1.7% were predicted to have a "high" risk ($\geq 20\%$)(20). A community based cross sectional study done in our country Bahir Dar, northwest Ethiopia showed that 61% have a low(<5%), 24.4% have mild (5to<10%) and 14.6% have a moderate (10%–20%) 10-year cardiovascular risk(22). An institution based cross sectional study conducted in Addis Ababa, Ethiopia among hypertensive patient, the prevalence of high(>10%) predicted 10-year CVD risk level was 28.2% and 71.8% had a low (<10%) predicted CV risk level(21)

2.2. Non modifiable risk factors

A study conducted in Japan showed that, 90% of CVDs are resulted from both non-modifiable and modifiable risk factors(26).The risk factors of CVD are that are listed in into non-modifiable such as Age, As we age Arteries may become less flexible, gender, women heart disease symptoms can be less recognizable than men and genetic background/family history, when close relatives have a history of heart disease, the risk of CVD will be higher(44).

Age

A systematic review among pacific countries results show age is the most common non-modifiable risk factor and ageing increases the heart's and blood vessels' rigidity and fibrosis, which increases the risk of CVDs(3).

A Special Report From the American Heart Association and American College of Cardiology, age is associated with increased chances of myocardial infarction and atherosclerotic cardiovascular disease events(45). Based on the American Heart Association (AHA); when age increases the incidence of CVD will be increase (46,47). The global burden of disease in Ethiopia data show the prevalence rate of cardiovascular diseases has increased with age over 35 years(10). Although the risk of CVD increases with age beyond the age of 55 for men and 65 for women, it does not mean that the risk starts at that point instead of that plaque accumulation which is a major risk factor for CVD starts in Childhood(48).

Gender

International journal of environmental research and public health showed that men have significantly higher rates of cardiovascular disease (CVD) than women do. This reveals the reason why CVD has historically been viewed as a "man's problem."(49). The misconception that women are more "protected" than males against cardiovascular disease causes women to underestimate their risk of developing the cardiovascular disease but Coronary heart disease (CHD) accounts for one-third of all female deaths and is the main cause of mortality both in men and women.(50). It has also been demonstrated that the prevalence of CVD, including atherosclerosis, stroke, and myocardial infarction, rises with age in both men and women(46). In general, men are more likely than women to experience a heart attack, although this gender gap begins to narrow after women reach menopause. Because of a decrease in oestrogen levels, women's risk increases until it equals that of men's (48).

family history

Based on Journal of cardiology, family History is one of the most prevalent genetic disorders in the general population(51) It seems that up to 50% of CVD cases are heritable(52). Cardiovascular disease in the parents is a well-known risk factor for cardiovascular (CV) events in the children with an overall prevalence of 1:31 and is more common among those with Atherosclerotic Cardiovascular Disease (ASCVD)(51,53). According to reports, the development of CVD is significantly influenced by the Apo lipoprotein A (Apo A) and Apo family genes, which produce important regulators of plasma lipids. In the same way, a higher risk of CVD in the general population has been associated with the hepatic lipase C gene, which is the primary regulator of plasma High density lipoprotein (HDL) concentration, and the Low density lipoprotein (LDL) receptor gene, which is involved in LDL and triglyceride metabolism(54). Research has indicated that family history data is beneficial for assessing the risk of CVD. But "family history" is one of those binary characteristics that is hard to measure

both qualitatively and quantitatively(52). Population based study conducted in America shows that Family history of premature CVD was strongly correlate with the presence of increased Lipoprotein (a) in people with LDL-c \geq 160 mg/dl(55).

2.3. Modifiable risk factors

A prospective cohort study done in 21 high income, middle income and low income countries showed that Modifiable risk factors which are hypertension, DM and obesity were associated with cardiovascular disease and it is accounted for almost 70% of cardiovascular disease events and death(56). WHO explain Increased blood pressure cause strain in heart and arteries, persistently high blood sugar harms blood vessels and the cardiovascular system and obesity strains the heart(7,57).

Hypertension

According to the 2017 American College of Cardiology /American Heart Association Blood pressure guideline, hypertension was linked to 32.5% of CVD events in Black people and A significant percentage of Coronary heart disease, heart failure, and stroke were linked to hypertension and its causal risk were 25% for coronary heart disease and 50% for stroke(58). A scorecard project conducted in Ethiopia showed that, population-attributable risk factors for CVD which is high blood pressure (BP) is associated with the strongest evidence for causation and it has a high prevalence of exposure and The most common CVD risk factor in Ethiopia was discovered to be increased blood pressure(59).

Diabetes mellitus

One of the main factors that led to the development of ischemic heart disease was an altered metabolism of carbohydrates. Since then, diabetes has consistently been linked to increased cardiovascular morbidity and mortality, which cannot be explained to common risk factors like smoking or high cholesterol or hyperglycaemia(60). People with type 2 DM have a higher mortality risk from cardiovascular disease than people without the condition, regardless of their sex or race(61). Approximately 30% of persons with Type 2 DM in record had a diagnosis of CVD in 2019.(62). cardiovascular risk (CVR) factors in diabetic patients significantly influence the overall risk that increase the chance of getting CVD (63). The predicted risk of CVD was two to four times higher than the non-diabetic(64).

Body Mass Index

It is generally accepted that obesity increases the risk of developing high blood pressure (HBP) or hypertension, atherosclerosis, insulin resistance, dyslipidaemia, and other conditions in adults. Obesity is also an independent risk factor for cardiovascular disease(65). According to cohort analysis done in United Kingdom, there is a correlation between a greater body mass index (BMI) and cardiovascular diseases(66). A study in china also shows that abdominal obesity is strongly associated with CVD disease(67). The study done in northwest Ethiopia revealed that abdominal obesity had a significant association with CVD risk(22).

2.4. Behavioural factors

Smoking

Smoking is the most common cause of diseases that can be readily preventable, the inhaled chemicals from smoking damage the heart and blood vessels which increases the risk of atherosclerosis, or build-up of plaque in the arteries and PAD is another condition for which smoking increases the risk, it is caused by plaque accumulation in the arteries supplying blood to the arms, legs, head, and internal organs. Heart attacks, strokes, and coronary heart disease are all more common in those with PAD(68). A large prospective Australian study shows that Currently smoking increases the risk of almost all CVD and it also doubles the risk of heart failure, cerebrovascular disease, and myocardial infarction. It also increases the risk of almost all CVD subtypes and In the US, smoking is a known risk factor for Atherosclerotic cardiovascular disease and accounts for 20% of CVD deaths (69,70).

Physical inactivity

A study done in low and middle income countries shows physical inactivity is an established risk factor for multiple non communicable disease and premature mortality(71). A circulation study in sedentary behaviour, exercise and cardiovascular health revealed that, Exercise helps normalise high blood pressure, boost the synthesis of endothelial nitric oxide, decrease blood viscosity, improve insulin sensitivity, alleviate plasma dyslipidaemia, and enhance leptin sensitivity, all of which help to protect the heart and blood vessels. physical inactivity associated with higher risk of developing cardiovascular disease(72). An estimation of worldwide epidemiologic burden of physical inactivity showed that, Physical inactivity on ischemic heart disease is remain constant at 7% until reaching middle age and then progressively rises to above 11% in line with ageing(73). A study done in china revealed that

the level of moderate to vigorous physical activity was higher, the incidence risk of each CVD subtype outcome will be decreased(74). And an individual who do not gain suggested requirements of aerobic exercise or 75 minutes of vigorous exercise and two sessions of resistance exercise per week has a risk for cardiovascular disease(75). A study done in low and middle income countries showed that, Physical inactivity is linked to 7.2% and 7.6% of deaths worldwide from all causes and cardiovascular disease, respectively(71).

Unhealthy diet

A cross-sectional examination done in Australia define Unhealthy diet as high in salt, harmful fats, and added sugar and energy and it is the major risk factors for cardiovascular diseases (76). An ongoing large scale epidemiological cohort study Consumption of plant based vegetables and fruits will improve high level of LDL cholesterol, high glucose and BMI which has significance association with decrement of cardiovascular disease mortality, in contrast too much amount of sugar consumption will lead to cardiovascular risk(75,77). A systematic review and Meta-analysis of prospective cohort study shows that linear relationship between adherence to the unhealthy plant based dietary index and an increased risk of CVD. According to research done on the French NutriNet-Santé cohort, eating more ultra-processed food was linked to an increased risk of cardiovascular disease for each 10% rise in take(78).

Alcohol consumption

A mendilian randomization study show that higher alcohol consumption directly associated with increased risk of stroke and peripheral arterial disease, Increased amount of alcohol intake leads to higher risk of cardiovascular disease and premature death(79)Hypertension and heart failure are a result of chronic alcohol use(80).

Khat chewing

A Study done in Yemen indicates that chewing khat and cathinone have an adverse effect on the cardiovascular system. Patients who chew khat and present with acute coronary syndrome are more likely to experience hypertension, acute cardiovascular events, and cardiovascular consequences(81).

2.2. Sociodemographic characteristics

Residency type

A pooled analysis of Peruvian demographic health surveys including subjected aged between 40-74 years, showed that rurality was a factor that was independently associated with lower predicted CV risk(82).

A community based cross sectional study conducted in southern Ethiopia, showed that Living in an urban area had a positive association with the number of main modifiable CVD risk factors(83)

Occupation

A retrospective study in a large population-based French cohort study indicate that cardiovascular risk is independently increased by unemployment. Over time, bad work environments and low social status may compound the effects of unemployment increasing the risk of cardiovascular disease They also suggest that overexposure to common risk factors is one possibilities, among others, by which long-term unemployment increases the prevalence of cardiovascular events(84). A community based cross sectional study conducted in southern Ethiopia, showed that whereas farming had a negative correlation(83).

Marital status

A systematic review and meta-analysis study revealed that Individuals who were single (never married, divorced, or widowed) had a greater risk of cardiovascular mortality and morbidity, Divorce was linked to higher risks of coronary heart disease in both men and women, and stroke was more common in widowers and When compared to married participants, the death rate for single men and women who had a myocardial infarction was higher(85).

Educational level

The American heart association socioeconomic status and cardiovascular challenges and intervention study showed that people with lower levels of education typically have more cardiovascular disease risk factors(86). The prospective epidemiologic study done in 20 low and middle income countries showed that people with a lower level of education in low-income and middle-income countries had higher risk of cardiovascular disease than those with higher level of education(87).

2.5. conceptual framework

This conceptual framework shows the relationship between CV risk status and Non-modifiable, Modifiable and behavioural risk factor.

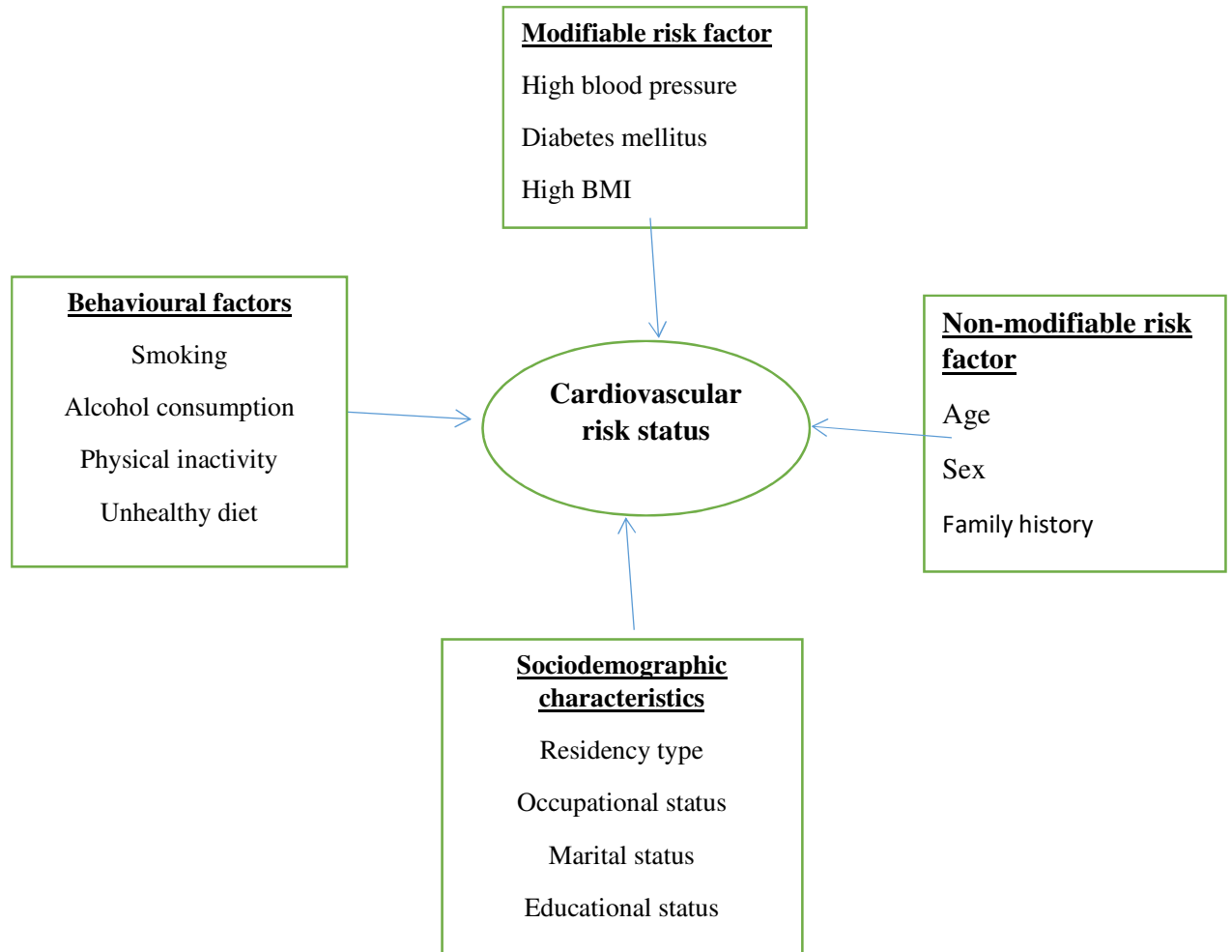


Figure 1:-Conceptual framework on cardiovascular disease risk status and associated risk factors assessment among 40-74 aged public community at public hospital, Addis Ababa, 2024. and It was adopted from different literatures(46,48,52,58,61,65,70,72,80,88,89)

CHAPTER THREE

OBJECTIVE OF THE STUDY

3.1. General objective

To assess cardiovascular risk status and associated risk factors among public community 40-74 aged at selected public hospital, Addis Ababa, Ethiopia, 2024.

3.2. Specific objectives

1. To assess magnitude of cardiovascular risk status among public community 40-74 aged at selected public hospital, Addis Ababa, Ethiopia, 2024.
2. To identify associated risk factors of cardiovascular risk status among public community 40-74 aged at selected public hospital Addis Ababa, Ethiopia, 2024.

CHAPTER FOUR

MATERIALS AND METHODS

4.1. Study area and period

Ethiopia is an East African nation with a population of 108 million. Addis Ababa is the capital city of nations and also the capital of Africa. The capital has a population of 4.8 million, and it's where most of the largest referral hospitals are located- 12 public referral hospital, one military hospitals and many private hospitals are found on Addis Ababa.(90) The study will be conducted at 4 public referral hospitals namely; Saint Paul Hospital Millennium Medical College(SPHMMC), ALERT Specialized Hospital, Ras Desta Damtew Memorial Hospital, Yekatit 12 Specialized Hospital Medical College. they are providing a health care service in different department, they receive patient from different part of Ethiopia. The first one is SPHMMC the college has more than 2800 clinical, academic and administrative and support staffs that provide medical specialty service to patients who are referred from all over the country with a catchment population more than 5 million, teaching medicine and nursing students and doing basic and applied researches. While the inpatient capacity is more than 700 bed, the college sees an average of 1600 emergency and outpatient clients daily. The second hospital is ALERT specialized hospital which established in 1934 to serve persons affected by leprosy. The hospital currently provides a wide range of service in various departments. Daily about 900-1200 patients are treated who come from all over the country(91). The third one is Yekatit 12 Specialized hospital(Y12HMC) which serving more than 5 million peoples in the catchment area in six major departments and other unit since 1923. The hospital medical use to attend 200-250 patients per day through six units(92). The fourth one is Ras Desta Damtew Memorial Hospital (RDDMH), the hospital has a total of 166 beds with six inpatient wards and 19 outpatient departments. The hospital average patient flow per month is 12000 and It provides medical services for an estimated 4 million people. The study was conducted from April 1, to April 30, 2024.

4.2. Study Design

Institution based cross sectional study design was conducted.

4.3. population

4.3.1. Source of population

Clients whose aged in 40-70 years old at public hospitals in Addis Ababa.

4.3.2. Study population

Clients whose age 40-74 years old at selected public hospital Addis Ababa.

4.3.3. sampling unit: -

Individuals whose age 40-74 years' old who will visit the hospital to attend or visit the patients and available during data collection period.

4.3.4. Inclusion and exclusion criteria

Inclusion criteria

- clients who are 40-70 years' age old.

Exclusion Criteria

- Individuals who had known a cardiovascular disease.
- Any patients.

4.4. Sample size Determination and sampling technique

4.4.1. sample size determination

The sample has been calculated using single population proportion formula, taking 14.6% prevalence of ten year CV risk in North west Bahir Dar, Ethiopia(22). By considering 95% level of confidence, 10% non-response rate and 5% margin of error. The required sample size is calculated using the following formula

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

where n= sample size

p= proportion d= margin of error

$$Z= 1.96 \text{ at } 95\% \text{ confidence interval(CI)} \quad n= (1.96)^2 * 0.14(1-0.14) / 0.05^2$$

$$n= 185 + 10\% \text{ non-response rate}$$

$$n = 203.5 \sim 204$$

To determine the required sample size for both specific objectives by calculated on Epi info version 7.2 software using factors associated with CV risk status among 40-74 aged patient attendant with the following assumptions: 95%CI, 5% margin of error, and a power 80% by taking study finding from Table 1.

Table 1: Sample size calculation by with different variables factors that are associated with CV risk status among 40-74 aged patient attendants at public hospital, Addis Ababa Ethiopia,2024

Variable	CI	P	OR	Ratio	Prev	S. size	Final Sample	p-value	Reference
Cluster of CV risk	95%	80	4.01	1:1	14.6%	106	117	<0.01	(22)
Male	95%	80	4.15	1:1	14.6%	100	110	<0.01	(22)
Abdominal obesity	95%	80	5.80	1:1	14.6%	64	71	0.01	(22)
Unemployed	95%	80	3.24	1:1	70%	174	192	<0.05	(21)
>160 SBP	95%	80	11.33	1:1	71%	80	88	<0.01	(21)

Finally, the required sample size for this particular study is decided by taking the largest sample size, which is **204** and because of factor effect the sample size will be double to represent the source population, so the total sample size was **408**.

4.4.2. Sampling Technique and procedure

Among 12 public hospitals in Addis Ababa 30% were selected by using simple random sampling (lottery) method namely; SPHMMC, ALERT, Y12HMC and RDDMH hospitals. The expected patient attendant number is at least one attendant for one patient, so the average number of patient flow per month in those hospitals which is 106300 will used for proportional allocation to reach the required sample size. Simple random sampling technique was used to collect data from the study participants.

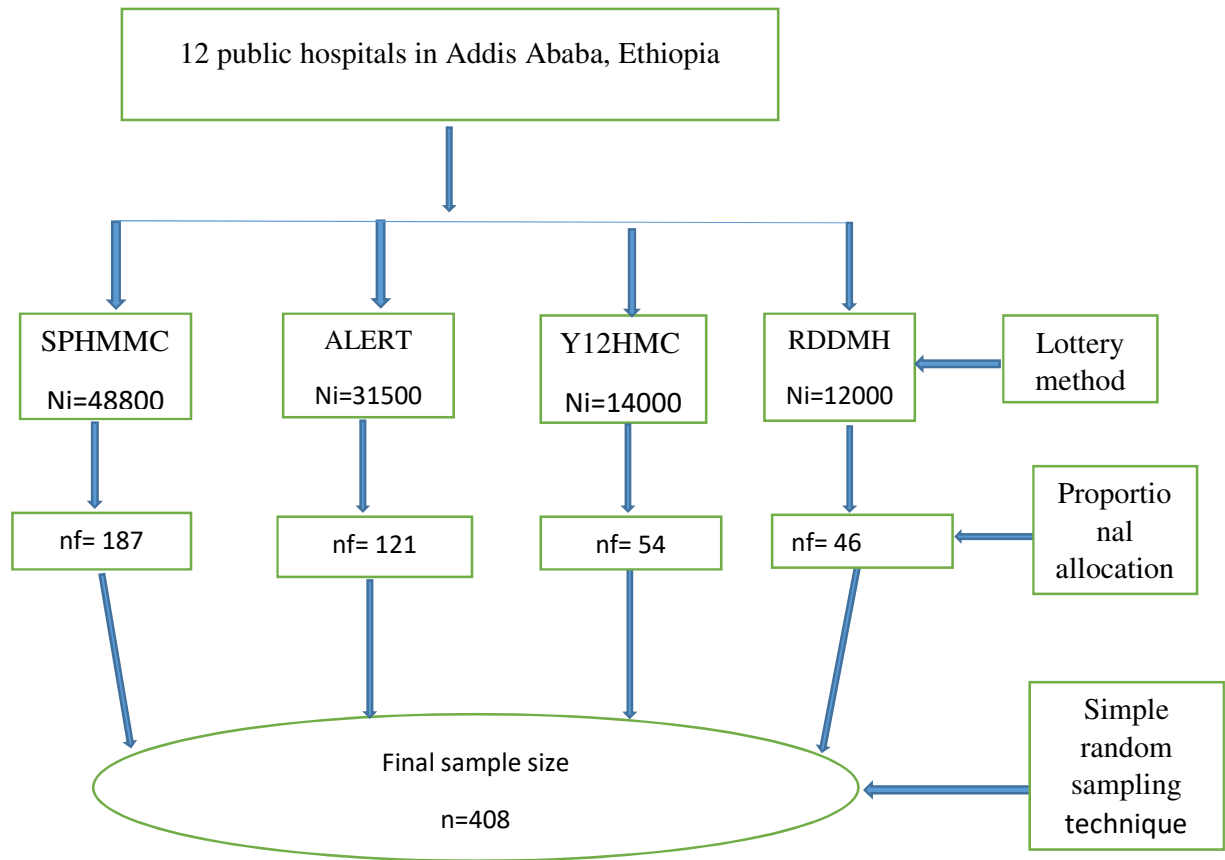


Figure 2:- Schematic presentation of sampling procedure used to select study participant from Public hospitals in Addis Ababa, 2024.

Formula for proportional allocation for each study area $(nf) = \frac{N_i}{N_j} * n$, Where

n_f = Proportional allocated sample size in specific study area

N_i = Total population of specified area

N_j = Total population of all selected area

n = Estimated sample size

4.5. Variable

4.5.1 Dependent variable

- Cardiovascular disease risk status

4.5.2. Independent t variable

- Non modifiable risk factor: - Age, Sex and family history of CVD
- Modifiable risk factor: - HTN, DM and High BMI
- Behavioural factors: - Smoking, khat chewing, unhealthy diet, physical inactivity and alcohol consumption.

- Sociodemographic characteristics: - residency type, occupational status, marital status and educational level.

4.6. Operational definition and definition of terms

- **Ten-year CV risk status**

The chance of developing CVD in the next 10 years is calculate with current CV risk status Based on WHO non-laboratory based a 10-year risk predicting chart and an individuals who score >10% will be define a high CVD risk status and an individual who score <10% will be define low CVD risk status(93).

- **Abdominal obesity:** - Waist-to-hip ratio (WHR) ≥ 0.90 for men and ≥ 0.85 for women. If higher to this value consider Abnormal abdominal obesity if lower to this consider normal abdominal obesity(75).

- **Public community**

An individual 40-74 aged who will come to public hospital from different part of Ethiopia to attend or visit their relatives/patient.

- **Sufficient physical activity:** - a person who meet a minimum of 150 min of moderate –intensity or 75 min of vigorous intensity activity per week and if lower to this considered had risk for CVD(75).
- **Adequate fruit and vegetable intake:**- the consumption of at least five serving of fruit and vegetable per day if less than five considered had risk for CVD(75).

- **Alcohol consumer classification(22).**

Former alcohol consumer: - have consumed alcohol products in the past but not currently

current alcohol consumer: -have consumed alcohol within the past 30 days

Non-consumer: -never consumed alcoholic beverages.

- **Tobacco use classification (22).**

Former tobacco users: - An adult who smoked at least 100 cigarettes on his or her life time but who had quit smoking at the time of interview.

current tobacco users: - An adult who smoked 100 cigarettes on his or her life time and who currently smokes cigarettes.

Non-smokers: - An adult who has never smoked, or who has smoked less than 100 cigarettes in his or her life time.

- **Khat chewer classification(22).**

Former khat chewers: - have chewed khat in the past but not currently.

current khat chewers: -have chewed khat within the past 30 days.

Non-chewers: - never chewed khat.

4.7. Data collection tool and techniques

Data was collected by using a pretested, structured; interview questionnaire prepared in the English language and translated to in Amharic language. The questionnaire has three parts. Part one contain sociodemographic characteristics of the respondent such as age, gender, marital status, educational level and occupational status. The second part include, behavioural characteristics assessment of the respondents such as diet, exercise, smoking status, khat chewing and alcohol consumption. Part three consist anthropometric measurement and clinical characteristics of the respondent such as height, weight, waist to hip ratio, systolic blood pressure, diastolic blood pressure, type of co-morbidity, cluster of risk factor and family history of cardiovascular disease. Physical examination such as height and weight, waist to hip ratio and Blood pressure will be assess as follow, Height were measure with stadiometer and each participant standing with his/her feet together and head held high, after this the nearest centimetre will take. Body weight will measure in kilogram(kg) using a standardize weight scale while the participants wear a light cloth, waist to hip ratio was measured. waist circumference was measured approximately between last palpable rib and the top of the iliac crest. Hip circumference will measure across the widest diameter of the hips over the greater trochanters, using non-stretch linear tape to the nearest centimetre, then divide waist measurement by the hip measurement. Two Blood pressure was taken from brachial artery after participants seated and resting for 5 minutes, after two measurements from the same arm at 5 –minute interval. The average of two measurements were taken to analysis. cardiovascular risk status was assessed by the non-laboratory based WHO 10- year cardiovascular risk predicting chart with current risk factors such as; age, sex, smoking status, systolic blood pressure and body mass index and the WHO CVD risk chart working group have derived, calibrated and validated new WHO risk prediction models to estimate cardiovascular disease risk in 21 global burden of disease regions(94). The rest of the questionnaire part were prepared from previously studied literatures(22,93,95).

Three BSc nurses for data collection data and one BSc nurse for supervision were trained for One-day by the principal investigator about the tools and data collection procedure. Those three BSc nurses were assigned to the selected public hospitals to collect the data. Data collection was conducted from April 1, 2024 to April 30, 2024. The principal investigator and supervisor were controlled the entire data collection procedure every day.

4.8. Data Quality Control and Management

Data quality was ensuring during collection, coding, entry and analysis. Before actual data collection, pre-test was done on 5% of the total respondents one week prior to data collection at Tikur anbesa specialized hospital to test the clarification of the questionnaire. The data collection instrument was assessed for its completeness and accuracy at every shift and day during the data collection period and was ratified accordingly. The study procedures were protecting the participant's privacy by allowing voluntary participation.

4.9. Data Analysis

Data was checked for its completeness every day. The data was collected with kobo toolbox and imported to SPSS version 26 software computer applications for analysis. Continuous variables were summarizing as mean and standard deviation while categorical variables were presented as a frequencies and proportions. Association between each dependent and independent variable was assessed by using binary logistic regression, the result of p-value which is less than <0.25 were transported to multivariate logistic regression. A P-value of <0.05 in the multivariate analysis used as a criterion for the statistically significant association.

The collinearity test was run to check the assumption of the logistic regression for identifying the strong association between independent variable and Hosmer and Lemshow's test was used to check the model fitness. The strength of the association between dependent and independent were measured using the Adjusted Odds ratio with corresponding 95% confidence intervals (CI).

4.10. Ethical and Legal consideration

Ethical clearance and official letter were obtained from Institutional Review Board (IRB) of School of Nursing of St. Paul Hospital Millennium Medical College and Addis Ababa Public Health and Emergency Management Directorate, the participant was asked verbally to participate in the study voluntarily. The person was told that there is no incentive given for participation and the information s/he give were confidential. Confidentiality of the

participant's information were kept by not writing their names in the questionnaire. Involvement of the participants in the study was voluntary after taking signed informed consent. Respondents were having the right not to participate in or with draw from the study at any stage.

4.11. Dissemination of finding

The result of the study was disseminated to St. Paul Hospital Millennium Medical College and Addis Ababa Public Health and Emergency Management Directorate. It will also have disseminated to stakeholders in Addis Ababa. Additional effort will be exerted to publish the finding of this study on local /international journals.

CHAPTER 5

5. Result

5.1. Sociodemographic characteristics of respondents

In total of 408 public communities (228 men and 180 women) from 4 public hospitals voluntarily participated in the study, the response rate was 100%. More than half of participants were between 40-50 years of age, with the mean age participant was 50.3 ranging from 40-79 years and SD of 8.2. Most of the participant were married which is 303(74.3%) and 126(30.9%) were attend secondary school. (table 2)

Table 2:-Social demographic characteristics of study participants at Public Hospital in Addis Ababa Ethiopia,2024.

Variables	Frequency	Percentage
Age		
40-49	209	51.2%
50-59	141	34.6%
60-74	58	14.2
Sex		
Female	180	44.1%
Male	228	55.9%
Marital status		
Single	59	14.5%
Married	303	74.3%
Divorced	32	7.8%
Widowed	14	3.4%
Educational status		
Illiterate	55	13.5%
Primary	109	26.7%
Secondary	126	30.9%
Degree	91	22.3%
Above degree	27	6.6%
Occupational status		

Employed	187	45.8%
Merchant	86	21.1%
Farmer	35	8.6%
House wife	69	16.9%
Retired	18	4.4%
Unemployed	13	3.2%
Residency type		
Rural	55	13.5
Urban	353	86.5

5.2. Behavioural characteristics of respondents

Seventy-three participants (17.9%) had smoking history from this 56(76.8%) were smoked cigarette for more than five years. Half of participant 205(50.2%) drink alcohol, from 124(61.0%) of them were drink alcohol on special occasions. 50(12.3%) Participants were current khat chewer. From total participant 220(53.9%) were do sufficient regular exercise and Only 95(23.3%) were do sufficient resistance exercise. (table 3)

Table 3:- Behavioural risk factors of respondents at public hospitals in Addis Ababa, Ethiopia 2024.

Variables	Frequency	Percentage
Smoking history		
Current smoker	23	5.6%
Former smoker	50	12.3%
Never smoker	335	82.1%
Smoker		
Yes (current & former smoker)	73	17.9
No	335	82.1
Duration of smoking		
≤4 years	17	23.2%
≥5	56	76.8%

History of khat chewing		
Current khat chewer	50	12.3%
Former khat chewer	56	13.7%
Non khat chewer	302	74%
Frequency of khat chewing		
Every day	27	25.4%
1-2 times a week	36	33.9%
3-4 times a week	23	21.6%
On special occasion	20	18.8%
History of alcohol consumer		
Current alcohol consumer	147	36.0%
Former alcohol consumer	56	13.7%
Non-alcohol consumer	205	50.2%
Frequency of alcohol consumption		
Every day	18	9%
1-2 times a week	40	19.7%
3-4 times a week	21	10.3%
On special occasion	124	61.0%
Regular exercise		
<150 minute a week	188	46.1%
≥150 minute a week	220	53.9%
Resistance exercise		
≤1	313	76.7%
≥2	95	23.3%
Fruit consumption combined score		
≤2	324	79.4%
≥3	84	20.6%

5.3. Physical and Clinical risk factors of respondents

Out of all the participants in this study, 245 (60%) were had abnormal waist to hip ratio and 149 (36.5%) are diagnosed for other disease, from this 51(34.2%) are had for hypertension. 37 (8.6%) had > 160mmHg systolic blood pressure. 394(96.6%) had no family history for CVDs. 37(9.1%) were obese and the mean BMI of the study participants was 26.8kg/m². (table 4)

Table 4:-Physical and clinical risk factors of the study participants at public hospital, Addis Ababa, Ethiopia 2024.

Variables	Frequency	percentage
Abdominal Obesity		
Normal	163	40%
Abnormal	245	60%
BMI		
18.5-24.9	204	50.0%
25-29.9	167	40.9%
≥30	37	9.1%
Systolic blood pressure		
≤120	134	32.8%
121-139	148	36.3%
140-159	91	22.3%
≥160	35	8.6%
Diastolic blood pressure		
≤80	179	43.9%
81-90	101	24.8%
≥91	128	31.4%
Diagnosis for other disease		
Yes	149	36.5%
No	259	63.5%
Type of comorbidity		
HTN	51	34.2%
DM	38	25.5%

Renal disease	21	14.1%
Other	39	26.1%
Family history of CVD		
Yes	14	3.4%
No	394	96.6%
Cluster of CVD		
≤ 2	379	92.9%
≥ 3	29	7.1%
Total CV risk status		
Low	352	86.3
High	56	13.7

5.4. Prevalence of CVD risk

The WHO CVD risk (non-laboratory-based) charts were used to predict the total CVD risk level. Based on non-laboratory-based WHO risk chart individuals, a 10-year risk of >10% was used to define a high CVD risk level. As a result, the risk of CVD in this study population 56 individuals had 13.7% (95% CI 10.5, 17.2) CVD risk level.

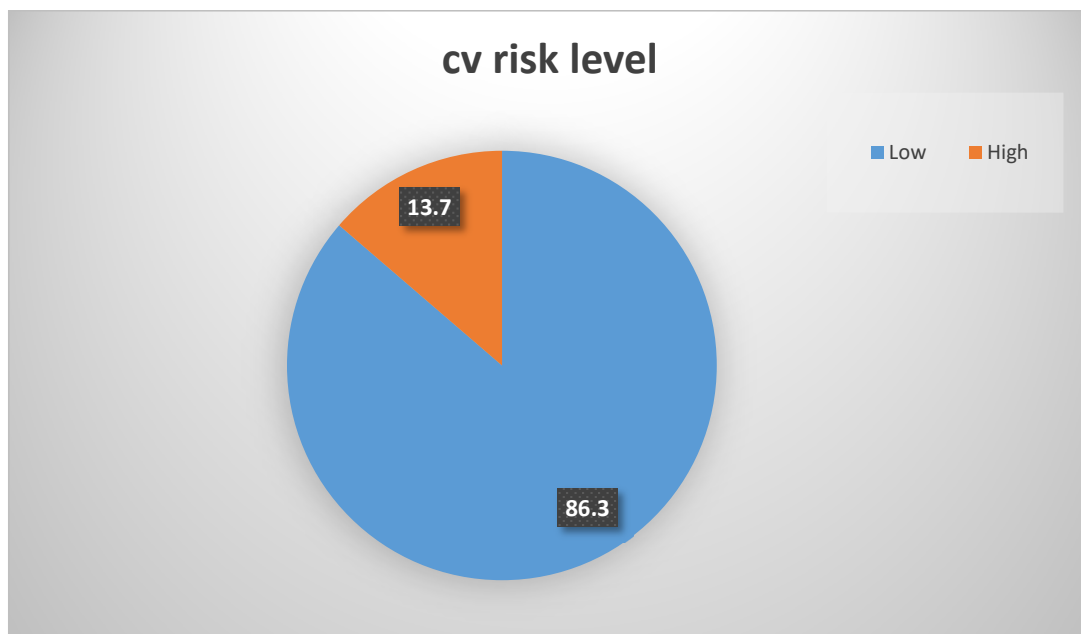


Figure 3:- The prevalence of CVD risk in public hospital Addis Ababa, Ethiopia, 2024.

5.4. Factors associated with CVD

The strength of the association between the independent variables and CVD was assessed using bivariate and multivariate logistic regression (table 4). Based on the p value <0.25 of the bivariable analysis, different variables were identified as candidate for the multivariable analysis. These are age, sex, residency, cigarette smoking, resistance exercise, BMI, Waist to Hip Ratio, Systolic blood pressure, Diastolic blood pressure, combined score for fruit and sugar consumption, diagnosis for other disease, type of comorbidity and cluster of risk factor. The result of multivariable analysis however, identified age, sex, smoking status, BMI, Abdominal obesity and Systolic blood pressure as risk factors associated with CVD at p<0.05.

Table 5:- factors associated with cardiovascular disease risk level

Variables	Cardiovascular risk		COR	AOR	P-value
	Low	High	95% CI		
Age of respondent					
40-49	45(11.0%)	13(3.2%)	1	1	
50-59	115(28.2%)	26(6.3%)	2.55(1.38,4.9) *	4.0(1.5,10.6)	
≥60	192(47.0)	17(4.2)	3.26(1.47,7.2) *	16.6(4.5,61.6)	<0.01
Sex					
Female	169(41.4%)	11(2.7%)	1	1	
Male	183(44.8%)	45(11.3%)	3.77(1.89,7.54)*	2.8(1.02,7.77)	0.04
Residency					
Rural	51(12.5%)	4(1%)	1		
Urban	301(73.7%)	52(12.7%)	2.20(0.76,6.35)*	2.98(0.62,14.19)	0.16
Cigarette Smoking					
Yes	35(8.5%)	38(9.3%)	1	1	
No	317(77.7)	18(4.4)	0.05(0.02,0.07)	0.58(0.02,0.14)	<0.01
Exercise score					
≥2	87(21.3%)	8(2%)	1	1	
≤1	265(65%)	48(11.7%)	1.97(0.89,4.32)*	1.33(0.41,4.30)	0.63
BMI					
	26(6.4%)	17(4.1%)			

18.5-24.9	187(45.8%)	28(6.9%)	1	1	
25-29.9	139(34.1%)	11(2.7%)	2.2(1.16,4.20) *	1.94(0.8,4.7)	
≥30			4.65(1.96,11.0)*	6.2(1.62,23.68)	0.008
WtoH Ratio					
Normal	150(36.7%)	13(3.2%)	1	1	
Abnormal	202(49.5%)	43(10.5%)	2.45(1.27,4.73)*	2.8(1.05,7.27)	0.03
SBP					
≤120	16(3.9%)	19(4.6%)	1	1	
121-139	127(31.1%)	7(1.7%)	1.03(0.36,2.94)	1.11(0.29,4.14)	
140-159	140(34.3%)	8(1.7%)	5.78(2.35,14.22)	1.16(0.32,4.26)	
≥160	69(17%)	22(5.4%)	21.5(7.84,59.18)	8.7(2.08,37.0)	<0.01
DBP					
≥91	174(42.6%)	5(1.2%)	1	1	
≤80	92(22.5%)	9(2.2%)	0.05(0.02,0.15)	1.58(0.39,6.36)	
81-90	86(21%)	42(10.3%)	0.2(0.09,0.43)	4.06(1.11,14.86)	0.063
fruit and sugar consumption					
≤2	80(19.6%)	4(1%)	1	1	
≥3	272(66.6%)	52(12.7%)	1.97(0.89,4.32)*	1.97(0.49,7.96)	0.33
Dx for disease					
No	233(57.1%)	26(6.4%)	1	1	
Yes	119(29.2%)	30(7.3%)	2.25(1.27,3.99)*	1.19(0.23,5.96)	0.83
Comorbidity					
No comorbidity	233(57.1%)	26(6.4%)	1	1	
HTN	36(8.8%)	15(3.7%)	3.73(1.80,7.7) *	0.31(0.04,1.99)	
DM	31(7.6%)	7(1.7%)	2.02(0.81,5.0)*	1.26(0.20,8.14)	
Renal diseases	18(4.4%)	3(0.7%)	1.49(0.41,5.4) *	1.45(0.10,20.96)	
Other diseases	34(8.3)	5(1.2%)	1.31(0.47,3.66)*	1.33(0.41,4.30)	0.23
Cluster of Risk Factor					
≥3	7(1.7%)	22(5.4%)	1	1	
≤2	345(84.5%)	34(8.3%)	0.03(0.01,0.07)*	1.38(0.28,6.73)	0.68

*P-value<0.25

The odds of having a high CVD risk level were 4 times more likely among those aged 50-59 as compared with aged 40-49 (AOR 4, 95%CI 1.5 to 10.6) and it were 16 times more likely among those aged ≥ 60 years as compared with aged 40-49 (AOR 16.6, 95% CI 4.5 to 61.6). Males participants had a threefold high CVD risk level as compared with female individuals (AOR 2.8, 95% CI 1.02 to 7.7). Nonsmoker individuals were 42% less likely to have high CVD risk than smokers with (AOR 0.52, 95% CI 0.02 to 0.14). The odd of having high CVD risk were 2 times more likely among overweight individuals than normal weight individuals (AOR 1.94 95% CI 0.8 to 4.7) and 6 times more likely among obese respondents as compared with normal weigh respondents (AOR 6.2 95% CI 1.62 to 23.68). Participants with abdominal obesity are 3 times more likely to have $> 10\%$ a 10 year CVD risk than with non-obese respondent (AOR 2.8 95% CI 1.08 to 7.27). Even though it is more likely having high CVD risk among participants with SBP 121-139 mmHg and SBP 140-159 mmHg, it was 9 times more likely among participants with SBP ≥ 160 mmHg (AOR 8.7 95% CI 2.08 to 37.0).

CHAPTER SIX

6. Discussion

Cardiovascular diseases risk refers to the chance that an individual will experience an acute coronary or stroke event within a specified time period. There are scarcity of studies regarding CVD risk Assessment in Addis Ababa, Ethiopia.

Prevalence of a high 10-year CVDs risk was detected in 13.7% (95% CI 10.5,17.2) of public community in public hospitals in Addis Ababa. It was in line with a study finding from Ethiopia, Bahir Dar, 14.6% (22). Nigeria 14.6% (19) and Thailand 17% (39). This similarity might be all study used the same risk predicting chart WHO non-laboratory-based risk predicting chart.

The current results showed a higher prevalence of CVD risk levels among public community compared with results from a study conducted in Kenya which found prevalence of 7.7%(20). This difference might be due to the difference in sociodemographic characteristics and using different risk prediction the study done in Kenya used A WHO laboratory based risk predicting chart.

In contrast, proportion of high risk level in this study were found lower as compared with the study done among hypertensive patients in Ethiopia Addis Ababa 28.2% (21), Indonesia 29.2%(42) and china 47% (41) had high CV risk level. This difference might be due to the sociocultural characteristics and clinical condition of the study participants. For instance, the study done in Ethiopia, Addis Ababa study participants were hypertensive patient which increase the CV risk level.

This study identified several risk factors that are significantly associated with the CVD risk level in public community those are age, being male, history of cigarette smoking, High SBP, Abdominal obesity and obesity.

Age was identified as one of the strongest factor for high CVD risk level. most cardiovascular risk factors increase with age, resulting in high predicted cardiovascular risk levels. Several studies conducted in various countries showed that as age increases the incidence of CVD will be increases(3,45–47). The global burden of disease in Ethiopia data show the prevalence rate of cardiovascular diseases has increased with age over 35 years(10).

In this study, high SBP ≥ 160 found to be associated with high CVD risk level. The study was supported by the following three studies the first one is the study done in Addis Ababa, Ethiopia among hypertensive patients. The second one is the study conducted in Hong Kong showed that Each 10 mmHg incremental increase in SBP was associated with 16% higher risk composite of CVDs (96) and the third one is prospective cohort studies that examined the relationship between BP and the risk of CVDs and were mainly conducted in western population(97).

The 10-year CVD risk was more prominent in males as compared with females as to this study. This finding similar with the study done in Addis Ababa Ethiopia (22) And the study done in North West Bahir Dar (23). The similarity might be the study conducted with similar risk predicting chart. And this also supported by International journal of environmental research and public health showed that men have significantly higher rates of cardiovascular disease (CVD) than women do(49). Conversely other study done in India showed that Women were more likely to have CVD than men (101). This difference might be socioeconomic and cultural difference of study population.

This study showed that no history of smoking is protective for CVDs. And it is supported by The review of article which is smoking cessation is strongly recommended to reduce the CVD burden(70). And another a large prospective Australian study shows that smoking increases the risk of almost all types CVD(69).

The current study identified both Abdominal obesity and obesity were associated with high CVDs risk than those with non-obese individuals. The result is similar with the study done in Ethiopia Bahir Dar(22) and in Nigeria(19). Another study done in china also shows that abdominal obesity is strongly associated with CVD disease(67). The similarity might be generally accepted that obesity has been reported to strongly related to major cardiovascular risk factors such as raised blood pressure, type 2 DM and dyslipidaemi (65).

Conclusion and recommendation

Conclusion

Being at risk for high CVD (risk level of >10 %) is significant public health important problem in this study area and it is aggravated by age, being male, High SBP, Abnormal abdominal obesity and obesity. And it is prevented by non- smoking cigarette.

Recommendation

For ministry of health

1. To promote Regular Health Screenings:

- Implement community-wide initiatives for regular screenings for CVR to monitor blood pressure, cholesterol levels, and body mass index (BMI).

For policy makers

2. To promote Public Awareness and Education:

- Increase public awareness about the risk factors of CVD and the importance of a healthy lifestyle through educational workshops, seminars, and media campaigns.
- Collaborate with local healthcare providers to distribute educational materials and conduct community outreach programs.
- for Strengthen anti-smoking campaigns to discourage smoking initiation and support smoking cessation.

For Healthcare Providers:

- Provide counselling about the burden and risk factors of CVDs for their patients.
- Health care provider strengthen regular assess individuals CVD risk level even if they were in resource limited setting by using non laboratory based risk predicting chart because early detection of high-risk individuals can lead to timely interventions

For public community

Counsel older adults to focus on lifestyle changes, healthy eating habits, regular physical activity and preventive measures to manage and reduce their risk of CVD.

For researcher

To do further research in this study topic by using laboratory based risk predicting chart.

Limitation of the study

The study did not incorporate biological samples to determine blood lipid profile and blood glucose level; thus the interpretation of results is limited to interview and physical measurements. Further studies will be important to address these gaps.

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I. Annexe: Information sheet

Annex I: Participants Information Sheet and Consent Form

Participants' information sheet

Dear participants:

My name is Lina Mohammed and I am a cardiovascular nurse student. I am currently doing my research on “cardiovascular risk status and associated risk factors among 40-74 public community at public hospital, Addis Ababa, Ethiopia.” The purpose of this study is to assess the status of cardiovascular risk and associated factors,

The questionnaire is designed to collect data regarding your personal behaviour and sociodemographic characteristics and it is strictly for academic purposes. The collected data will only be used for the purpose of this study. Your correct and genuine response or answer to the questions can make the study achieve its goal. Therefore, you are kindly requested to respond very voluntarily with patience. The questionnaire may take 15 to 20 minutes. We assure you that this study is surely confidential, thus writing your name is not needed. For any question you want to ask us, you can use the contact address here under.

Lina Mohammed

Email: linusaber36@gmail.com

Cell phone +251 911863635

Consent form

Code number _____

I'm clear with that the purpose of this study is to assess cardiovascular risk status and associated factors among 40-74 aged public community. Similarly, I understand that participating in this study is completely voluntarily and my privacy is guaranteed and not exposed to the third party. I promise to answer honestly to all questions and not provide any false information or in any other way purposely mislead the researcher.

Signature of participant _____ Date _____

Name of the data collector who sought the consent _____ Signature _____

Name of the supervisor _____ signature _____

Annex: Questionnaires

Directions: Please indicate your response by circling your choice or by writing the appropriate information in the space provided. You can skip any questions that you feel are not applicable to you.

Thank you!

Part I. Socio-demographic information of the respondents

Code	Questions	Alternatives response
1	Sex	1. Male 2. Female
2	Age	_____ in year
3	Marital status	1. Single 2. Married 3. Divorced 4. Widowed
4	Educational level	1. Illiterate 2. Primary school 3. Secondary school 4. Degree 5. Above degree
5	Occupation status	1. Employed 2. Merchant 3. Farmer 4. House wife 5. Retired 6. Unemployed

1	Cigarette smoker	<ol style="list-style-type: none"> 1. Former smoker 2. Current smoker 3. Non-cigarette smoker
2	Duration of smoking	-----
3	Khat chewing	<ol style="list-style-type: none"> 1. Former khat chewer 2. Current khat chewer 3. Non-khat chewer
4	Alcohol consumer	<ol style="list-style-type: none"> 1. Former consumer 2. Current consumer 3. Non-alcohol consumer
5	Frequency of consumption of alcohol	<ol style="list-style-type: none"> 1. Every day 2. 1-2 times per week 3. 3-4 times per week 4. On special occasion
6	On average, how many minutes do you spend doing aerobic exercise weekly (walking, running, biking or other)	-----
7	On average how many sessions a week do you do resistance or strengthening exercise?	-----
8	How often do you eat 5 or more fruits/vegetables serving per day	<ol style="list-style-type: none"> 1. 0-1 days a week---3 2. 2-3 days a week---2 3. 4-5 days a week—1 4. 6-7 days a week—0

9	How often do you consume sugary food/drinks? Examples are dessert, candy or sweetened drinks (juice, sweetened coffee, soda)	1. 0-1 days a week---0 2. 2-3 days a week---1 3. 4-5 days a week---2 4. 6-7 days a week--3
10	Combined score for the above two question	1. <=2 2. >=3

Part3. Anthropometric measurement and clinical characteristics of respondent


Code	Questions	Alternatives response
1	Waist circumference	-----
2	Hip circumference	
	Waist to hip Ratio result	1. Normal 2. Had abdominal obese
4	Height	-----
5	Weight	-----
	BMI	
6	Systolic blood pressure	-----
7	Diastolic blood pressure	-----
6	Diagnosis for other disease	1. Yes 2. No

8	Type of co-morbidity	<ol style="list-style-type: none"> 1. Hypertension 2. Diabetes mellitus 3. Renal disease 4. HIV
9	Family history of cardiovascular diseases	<ol style="list-style-type: none"> 1. Yes 2. No
10	Cluster of risk factor	<ol style="list-style-type: none"> 1. No risk factor at all 2. 1-2 risk factor 3. > 3 risk factors
	Total CVD risk	

Declaration

I declare that this Research proposal entitled " cardiovascular risk status and associated risk factors among 40-74 aged public community at public hospital Addis Ababa, Ethiopia" is my own work that have not been addressed in the study area as far as my knowledge touched and all the sources I used has been indicated and acknowledged as complete reference.

Name of investigator	Signature	Date
Lina Mohammed	_____	_____
Name of adviser/s		
1. <u>Mr. Tesfaye Girma (MPH in Nutriion, MPH in Epidemiology,Asst prof.</u>	_____	_____
2. <u>Mr.Assefa Abdissa (BSc, MSc in critical care)</u>	_____	_____

Name of invigilators	Signature	Data
1. <u>Michael Tamene</u>		<u>Aug 05/2024</u>