SOCIO-DEMOGRAPHIC CORRELATES OF CARDIOVASCULAR DISEASES AND PREVENTIVE STRATEGIES AMONG RETIREES IN ENUGU STATE, NIGERIA

BY

UGBELU, JACINTA EJIAKA
PG/Ph.D/14/68019

DEPARTMENT OF HUMAN KINETICS AND HEALTH EDUCATION
UNIVERSITY OF NIGERIA, NSUKKA

DECEMBER, 2019

UNIVERSITY OF NIGERIA NSUKKA
SCHOOL OF POSTGRADUATE STUDIES
APPLICATION FOR APPROVAL OF TITLE OF THESIS

NAME OF STUDENT	UGBELU Jacinta Ejiaka
REGISTRATION NUMBER	PG/Ph.D/14/68019
DEPARTMENT	Human Kinetics and Health Education
FACULTY	Education
DEGREE IN VIEW	Ph.D.
EXPECTED YEAR OF GRADUATION	2019
PROPOSED TITLE OF THESIS	Socio-demographic correlates of cardiovascular diseases and Preventive strategies among retirees in Enugu state Nigeria

SYNOPSIS

INTRODUCTION

Cardiovascular diseases (CVDs) constitute a major public health problem and impose a huge burden in terms of mortality, morbidity and disability worldwide. CVDs are the top killer diseases in the world affecting diverse populations in both developed and developing countries. Furthermore, CVDs are the leading cause of death among people aged 60 years and above including retirees. It was reported that about 17.5 million people died from CVDs in 2012 globally. It was projected that about 23.6 million will die from CVDs by 2030. It was also reported that more than 75 per cent of these deaths occurred in low and middle income countries (LMIC) including Nigeria. The situation is severe in Nigeria with CVDs mortality of 269 per 100,000 persons compared to 110 and 125 per 100,000 persons in Japan and Taiwan respectively. Empirical evidence shows that prevalence of CVDs mortality in Enugu State was 18.8 per cent. Literature indicated that CVDs are triggered by some lifestyle risk factors and that these risk factors are more prevalent among older adults including retirees. The risk factors for CVDs include cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet. Exposure of the retirees to these risk factors for a prolonged period may result in metabolic risk factors such as hypertension, diabetes and obesity with associated poor health outcomes. Apart from these risk factors, socio-demographic characteristics could be associated with CVDs among retirees in Enugu State. Literature also indicated that CVDs are preventable through adequate preventive strategies. Thus, the aim of this study was to determine the socio-demographic correlates of (CVDs) and formulate preventive strategies for retirees in Enugu State. Specifically, the study sought to determine: (i) proportion of retirees suffering from CVDs, (ii) proportion of retirees exposed to risk factors for CVDs, (iii) relationship between age and CVDs, (iv) relationship gender and CVDs, (v) relationship between level of education and CVDs, (vi) relationship between level of income and CVDs, (vii) relationship between gender and CVDs and (viii) formulate appropriate preventive CVDs strategies for retirees in Enugu State.

METHODOLOGY

The study adopted the correlational research design. The population of the study was 8,947 retirees who are registered with Enugu State Pension Board. The study sample consisted of 1,002 which is made of 972 retirees and 30 experts. The sample was selected using multi-stage sampling procedure. From the sample, 54 retirees were selected using convenience sampling technique to generate qualitative data via the focus group discussion (FGD). The group comprised six retirees from each of the sampled pension

zones consisting of 3 males and 3 females. A tot of nine focus groups were used for the study. Purposive sampling was used to draw a sample of 30 experts for assessment of the appropriateness of the CVDS preventive strategies for retirees in Enugu State. The experts were sampled from the Department of Human Kinetics and Health Education, University of Nigeria Nsukka, District Hospital Nsukka (General Hospital, Nsukka), and Enugu State University Teaching Hospital (ESUTH), Parklane Enugu. Ten experts were sampled from each of the institutions. The experts possessed a doctorate degree (Ph.D) in a health–related discipline and a minimum of three years' work experience either as a lecturer or healthcare professional. Three instruments were used for data collection. The instruments are Socio-demographic Correlates of Cardiovascular Diseases Questionnaire (SCCVDQ) adapted from standard instruments; Cardiovascular Disease Focus Group Discussion Guide (CVDFGDG) and Cardiovascular Disease Preventive Strategies Questionnaire (CVDPSQ) developed by the researcher. The instruments were validated by seven experts. Five experts were selected from the Department of Human Kinetics and Health Education, and two from the Measurement and Evaluation unit of Department of Science Education, all from University of Nigeria, Nsukka. The split half method was used to establish the reliability of SCCVDQ, while Spearman Brown Correlation Formula was used to determine reliability co-efficient. Frequencies, percentages and phi-coefficient was used to answer the research questions while logistic regression was used to test the hypotheses at .05 level significance.

RESULTS

Moderate proportion (42.6%) of retirees suffer from cardiovascular diseases (CVD), and moderate proportion (39.4%) of retirees were exposed to risk factors for cardiovascular diseases. There was a positive relationship between age and CVDs ($\boldsymbol{\varphi}$ =.16, P =.19), gender and CVDs and CVDs ($\boldsymbol{\varphi}$ =.28, P = .38) among retirees in Enugu State, There was a negative relationship between level of education and CVDs ($\boldsymbol{\varphi}$ = - .01, P = .40), and level of income and CVDs ($\boldsymbol{\varphi}$ = -.01, P = .40) among retirees in Enugu State.. There was a positive relationship between place of residence and CVDs ($\boldsymbol{\varphi}$ =.29, P =.23) among retirees in Enugu State. Preventive strategies adjudged appropriate for prevention of CVDS include reduction in dietary salt intake to control hypertension, regular checking of blood pressure and blood sugar, lifestyle modifications such as physical activity, alcohol moderation, quitting cigarette smoking, eating healthy diet and adhering strictly to medical treatment among others. There was a significant relationship between age and CVDs (P =.000) gender and CVDs (P = .005) among retirees in Enugu State. There was no significant relationship between level of education and CVDs (p = .49), level of income and CVDs (p = .43). There was significant relationship between place of residence and CVDs (P = .000) among retirees.in Enugu State. Focus group discussion indicated that older adults including retirees are more vulnerable to CVDs such as heart attack, stroke, heart failure and peripheral arterial diseases than younger individuals. Focus group discussion further indicated that level of education and level of income are not associated with cardiovascular diseases.

Ugbelu, Jacinta Ejiaka (Student)	Date:	Prof. O. C. Ene (Supervisor)	Date
Prof. J. E. Umeifekwem (Head of Department)	Date:	Assoc. Prof. F.O. Ezeudu (Faculty Rep; SPGS)	Date

Title Page

Socio-demographic Correlates of Cardiovascular Diseases and Preventive Strategies among Retirees in Enugu State, Nigeria

By

Ugbelu, Jacinta Ejiaka
PG/Ph.D/14/68019

A Thesis Submitted to the Department of Human Kinetics and Health Education, Faculty of Education, University of Nigeria, Nsukka, in Fulfilment of the Requirement for the Award of Doctor of Philosophy Degree (Ph. D) in Public Health Education

December, 2019

Approval Page

This thesis has been approved for the Department of Human kinetics and Health Education, Faculty of Education, University of Nigeria, Nsukka

Prof. O.C. Ene **Supervisor**	**Assoc. Prof. C. N. Ogbuji** **Internal Examiner**
External Examiner	**Prof. J. E. Umeifekwem** **Head of Department**

Prof. D.U. Ngwoke
Dean Faculty of Education

Certification

Ugbelu, Jacinta Ejiaka, a postgraduate student of the Department of Human Kinetics and Health Education with the registration number PG/Ph.D/14/68019, has satisfactorily completed the requirements for the award of degree of Doctor of Philosophy(Ph.D) in Public Health Education. The work embodied in this thesis report is original and has not been submitted in part or full for any diploma or degree of this or any other university.

_____

Ugbelu, Jacinta Ejiaka
(Candidate)

Date ……

Dedication

This work is dedicated to Almighty God.

Acknowledgements

The researcher is very grateful to the Almighty God for making it possible to embark on this study amid various challenges. Special thank goes to the supervisor, Prof. O.C. Ene for his support and encouragement. Immense appreciation goes to Dr. (Mrs) D.I. Ugwu and Dr. (Mrs). P. C. Ofili who were the content and design readers during the proposal.

The researcher also appreciates the lecturers in the Department of Human Kinetics and Health Education such as Dr. G. C. Nji, Dr. C. C. Igbokwe, Dr.(Mrs) E. N Nwagu, Dr. D. O. Dike, Dr. J. I. Ofuebe, Dr (Mrs). C. N. Iweama., Dr. P. C. I. Imoke, for their efforts in validating the instruments for collection of data. The researcher's gratitude goes to Prof. J. E. Umeifekwem (HOD), Prof. O. A. Umeakuka, Dr C. U. Ugwu, Dr. D. U. Chukwudo. and other academic and non-academic staff of Department of Human Kinetics and Health Education, University of Nigeria, Nsukka for their various contributions for the success of the study.

The researcher deeply appreciates the Faculty Post-Graduate (PG) Representative Assoc. Prof. F. O. Ezeudu, Assoc. Prof. C. N. Ogbuji, Assoc. Prof. Mbagwu and Dr. (Mrs). Ngwoke for their contributions during the seminar presentation. The researcher sincerely thanks Dr. O. S. Agbaje for his academic advice and for assisting the researcher with some materials used or this study. The Departmental PG co-ordinator Dr. T. E. Iwuagwa is highly appreciated for his in-depth contributions.

The researcher sincerely thanks Chairman of Enugu State Pension Board Mr Udeani, chairmen of all the pension zones and retirees that responded to the instrument. Similarly, appreciation goes to the Chairman Medical Advisory Committee (C-MAC), ESUT Teaching Hospital, Parklane Enugu, the Medical Director District Hospital Nsukka and other experts that validated and responded to the preventive strategies questionnaire. The contributions made by these people facilitated the development of the final copy of the instrument. All the research assistants that helped in the administration of the instruments were hereby appreciated.

Finally, the researcher's sincere gratitude goes to my husband for his moral and financial support. The assistance and contributions of my children are highly appreciated. The researcher highly appreciates her friends, colleagues and relations for their numerous moral supports.

Ugbelu, Jacinta, E.

(Researcher)

Table of Contents

List of Tables

List of Figures

Abstract

Cardiovascular diseases (CVDs) constitute major public health problem and impose a huge burden in terms of mortality, morbidity and disability worldwide. CVDs are among top killer diseases in the world affecting diverse populations in both developed and developing countries. The purpose of the study was to investigate the socio-demographic correlates of cardiovascular diseases (CVDs) and preventive strategies among retirees in Enugu State. Eight specific objectives, with corresponding research questions and five null hypotheses guided the study. Correlational research design was used for the study. The population for the study comprised 8,947 retirees in Enugu State. The sample size was 1002 respondents, comprising 972 retirees, and 30 health experts from the Department of Human Kinetics and Health Education; District Hospital, Nsukka; and Enugu State University Teaching Hospital, Enugu. The sample was selected through multi-stage sampling procedure. Three instruments were used for data collection and they are: Socio-demographic Correlates of Cardiovascular Diseases Questionnaire (SCCVDQ), Cardiovascular Diseases Focus Group Discussion Guide (CVDFGDG) and Cardiovascular Disease Preventive Strategies Questionnaire (CVDPSQ) which were validated by experts from Departments of Human kinetics and Health Education; and Science Education of University of Nigeria, Nsukka. Research questions 1, 2 and 8 were analysed using frequencies and percentages. Research question 3-7 were analysed using Phi-coefficient. Logistic regression analysis was used to test hypotheses 1-5 at 0.05 level of significance. The major findings of the study were as follows: moderate proportion (42.6%) of retirees suffered from CVDs, moderate proportion (39.4%) of retirees were exposed to CVD risk factors. Socio-demographic variable of the age ((φ =.16) and the gender (φ = .28) had positive relationship with CVDs, the level of education (φ = -.28) and the level of income (φ = - .01) had negative relationship with CVDs, while the place of residence (φ= .29) had positive relationship with CVDs. Also, findings indicated that age ($p < .05$) and gender ($p < .05$) were significantly associated with CVDs, level of education ($p > .05$) and level of income ($p > .05$) were not significantly associated with CVDs while place of residence ($p < .05$) was significantly associated with CVDs The data generated from the focus groups were summarized and the information obtained were used to complement the quantitative data. Based on the major findings, preventive strategies were formulated and validated. Most of the items of CVDs preventive strategies such as regular checking of blood pressure and blood sugar, daily intake of fruit and vegetables were considered appropriate by the experts for inclusion in the cardiovascular disease preventive strategies. Based on these findings, the researcher recommended among others that retirees should adopt the preventive strategies developed to curtail exposure to CVD risk factors and subsequent development of CVDs; regular health screening of the retirees during their verification exercises or monthly meetings by the health workers to identify those at risk of CVDs and suggest adequate intervention.

CHAPTER ONE

Introduction

Background to the Study

Cardiovascular diseases (CVDs) constitute a major public health problem and impose a huge burden in terms of mortality, mobidity and disability worldwide. CVDs are aonng the top killer diseases in the world affecting diverse populations in both developed and developing countries. World Health Organization (WHO, 2017) reported that 17.7 million people died from CVDs in 2015, representing 31 per cent of all global deaths. Out of these deaths, 7.4 million were due to coronary heart disease while 6.7 million were due to cerebrovascular disease. This is a serious health problem that need general public sensitization campaign and intervention strategies to curtail CVD mortality. The scourge of cardiovascular diseases cut across developed and developing countries. World Health Organization (WHO. 2013) reported that CVDs are responsible for 4 million deaths yearly in Europe close to half of all deaths in Europe. Similarly, CVDs are currently the leading cause of death in the United States especially among people older than 60 years (New York State Department of Health, 2012). Not only that CVDs are the leading cause of deaths among the elderly, it is the commonest cause of morbidity rendering the elders disabled. If CVDs cause such morbidity and mortality in developed continents like Europe and America, it may be worse in sub-Saharan Africa including Nigeria.

Cardiovascular diseases are serious health problems in sub-Saharan Africa. WHO (2015) indicated that three in every ten deaths due to CVDs occurred among those aged 65 years and above and majority of these deaths occurred in low amd middle income countries. Clermerjer, Chow, Maron, Woo and Aristey (2012) projected that by 2020, CVDs will be the major cause of morbidity and mortality in most developing nations. This according to Clermerger et al could be attributed to poor medical care interventions, shortage of qualified health personnel and adoption of unhealthy lifestyles. Nigeria as one of the countries in this region may not be exempted from cardiovascular diseases.

The prevalence of Cardiovascular diseases is increasing in Nigeria. This assertion was supported WHO (2014) reported that CVDs mortality rate in Nigeria was 267/100,000 population or persons. Ajuluchukwu (2016) asserted that CVDs have exceeded infectious diseases as major cause of deaths in Nigerian adults. High prevalence rate of CVDs in Nigeria poses great burden to families and healthcare system. Enugu State as one of the states in Nigeria

is not exempted from menance of CVDs. Ajuluchukwu (2016) noted that cardiovascular mortality in Enugu State was 18.8 per cent. Ezeala-Adikaibe et al. (2014) indicated that CVD is one of the common non-communicable diseases in Enugu State. Oguanobi et al. (2014) noted that CVDs were major causes of morbidity and mortality in Enugu State. This implies that CVDs are on a steady increase in the State and if adequate preventive measures are not taken many lives may be lost prematurely due to cardiovascular diseases. CVDs have been defined variously in literature.

Cardiovascular diseases (CVDs) are general terms that describe diseases of the heart and blood vessels. Romanoski et al. (2010) referred to CVD as a broad term used to describe a range of diseases that affect the heart and circulatory system. Adele, Ronel, Carla and Aletta (2016) defined CVDs as the development of pathology that occur in the vascular system. In this study, CVDs are defined as a group of disorders or conditions that affect the structures and functions of the heart and blood vessels. The heart is a major organ of the body (sometimes referred to as engine of the body) which pumps blood while blood vessels circulate the pumped blood round the body. Thus, any factor or situation that prevents the heart from pumping blood or the vessels from circulating blood efficiently may lead to different types of cardiovascular diseases.

Different types of CVDs may occur due to aging. Yazdnyar (2010) listed common CVDs in the elderly to include: Coronary heart disease (CHD), myocardial infarction (MI) or heart attack, heart failure (HF), cerebrovascular disease (CBVD) and Peripheral arterial disease (PAD). Jackson and Wenger (2011) outlined the CVDs prevalent in the elderly to include VHD, CHD, cardiac arrhythmias, and heart failure. This study will examine CVDs listed by Yazdnyar (2010) because they are more comprehensive ane these include CHD, CBVD, PAD, HF and MI.

Coronary heart diseases (CHD) has been identified as the leading cause of deaths among older adults. Maduka (2016) described CHD as a group of diseases of the heart that may occur due to reduced blood supply to the cells and tissues of the heart, as a result of narrowing of the coronary arteries CHD is a disease in which waxy substances called plague builds up inside the coronary arteries and blocking blood supply to the heart (National Heart, Lung and Blood Institute, 2016). In this study, CHD is defined as the hardening of the coronary arteries that supply blood to the heart which is caused by prolonged fat deposits in the arteries impeding blood supply to the heart. The hardening and narrowing of the coronary arteries is caused by the deposits of fatty materials and cholesterol inside the lumen of the arteries. These deposits called

plaques or atheroma cause the inner surface of the arteries supplying the heart to become irregular and lumen narrowed or blocked, thereby restricting the normal flow of blood (Maduka, 2016). This process of plaque deposition is called atherosclerosis. If the plaque accumulates for a long time, it can rupture leading to formation of blood clots. When the formed blood clot blocks blood supply to the heart, it results to CHD.

Cerebrovascular disease (CBVD) also called cardiovascular accident (CVA) is a serious medical condition that requires immediate medical interventions. American Association of Neurological Surgeons (2017) described CBVD as all disorders in which an area of the brain is temporarily or permanently affected by ischemia or bleeding and one or more cerebral blood vessel are involved in the pathological process. is defined as the sudden death of brain cells in a localized area due to inadequate blood flow (Farlex, 2012). Cerebrovascular disease in this study refers to interruption of blood supply to the brain caused by atherosclerotic process which results to stroke. Stroke not only kills, but renders many people incapacitated and unproductive. Common signs and symptoms of CBVD are numbness, weakness or paralysis of the face, arm or leg especially on one side of the body; visual problems in one or both eyes such as double vision, sudden dimness or loss of visions; confusion, trouble in speaking or understanding; trouble in walking, dizziness, loss of balance, sudden falls, severe headache, deviation of the mouth to one side and coma (Okoye, 2006). When these signs and symptoms are ignored, it may lead to paralysis or death.

Peripheral arterial disease (PAD) or peripheral vascular disease (PAD) occurs when there is a blockage in the arteries that supply the extremities especially the legs and arms. Schirmang, Ahn and Murphy (2009) defined PAD as a term used to describe the impairement of blood flow to the extremities usually as a result of atherosclerotic occlusive disease. Peripheral arterial disease is defined as a slowly progressive atheroclerotic disease usally characterized by occlusion of lower limbs arteries, ultimately causing acute or chronic limb pain (Murso & Hiatt, 2006). In this study, peripheral artery disease refers to the build-up of plagues in the peripheral arteries which impedes blood supply to the upper and lower extremities. PAD may present as pains, numbness and heaviness of the legs, sores or wounds on the toes, feet or legs that heal slowly, poorly or not at all pale or bluish colour of the legs or toes (Violi, Basili, Berger & Hiatt, 2012). When PAD is left untreated, sores or wounds may develop on the toes, feet or legs. There may be delayed wound healing unless the root cause (PAD) is diagnosed and treated. PAD may

become complicated leading to gangrene and amputation. This indicates that when blood supply to the legs is blocked due to build-up of plaques (atheroma, atherosclerosis), the leg may become gangrenous and if care is not taken, the individual may lose the leg or toe through amputation.

Heart failure (HF) also called congestive heart failure (CHF) is one of the most common heart problems affecting the elderly population. Heart failure is a chronic, progressive condition in which the heart muscles are unable to pump enough blood through the heart to meet the body's need for blood and oxygen (American Heart Association [AHA], 2017). In this study, heart failure refers to the inefficient pumping action of the heart leading to poor circulation of blood and subsequent fluid accumulation in the body tissues. McMurray and Preffer (2005) noted that when the heart cannot pump blood efficiently, blood continues to accumulate in the heart thus, heart in its effort to push the blood forward with much pressure may fail. Signs and symptoms of heart failure usually develop rapidly. Micheal and Smith (2005) outlined signs and symptoms of heart failure to include severe shortness of breath, wheezing, cough with pink frothy sputum, pale skin and sweating, prolonged chest pain, anxiety, coughing up of blood, tiredness, palpitations, loss of appetite, nausea, swelling of the feet and ankles.

Myocardial infarction (MI) often referred to as heart attack occurs when blood clot blocks the coronary artery supplying blood to the heart. Maziar and Eric (2017) described MI as the irreversible death of heart muscles secondary to prolonged lack of oxygen supply to the heart. MI is defined as the irreversible damage of myocardial tissue caused by prolonged ischemia or hypoxia (Mallinson, 2010). Myocardial infarction in this study refers to acute or sudden crushing heart pains resulting from lack of oxygen supply to the heart. This can affect any age but more prevalent in the elderly. Symptoms of MI usually develop suddenly and include severe crushing pains in the chest that may radiate to the neck and left arm, restlessness and shortness of breath. Risk factors for MI are tobacco smoking, diabetes, hypertension and obesity (Buse et al., 2007). These risk factors when unmodified result in blockage of the coronary arteries that supply the heart with blood and oxygen leading to sudden death. These CVDs are associated with many factors known as risk factors.

Risk factors are attributes or characteristics that increase a person's chances of contracting a disease or suffering a health problem. A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury (Parks, 2010). In this study, risk factor is defined as an attribute, behaviour or exposure that has the

potential to increase the retirees' chance of developing a cardiovascular disease. Risk factors for CVDs are grouped differently. World Heart Federation {WHF} (2016) grouped risk factors for CVDs into modifiable and non-modifiable risk factors. Modifiable risk factors include tobacco use, harmful use of alcohol, high cholesterol, overweight/obesity, physical inactivity, hypertension and type2 diabetes (T2DM), while non-modifiable risk factors include age, gender, family history and ethnicity. Carlson, Wandell, Leernder, Hellenius and De-faire (2013) classified CVD risk factors into lifestyle and metabolic.

Lifestyle risk factors include tobacco use, alcohol abuse, unhealthy diet and physical inactivity while metabolic risk factors include hypertension, diabetes and obesity. If lifestyle risk factors are not prevented or modified, it may result to metabolic risk factors. The lifestyle and metabolic risk factors are referred to as modifiable risk factors because they can be controlled or prevented. World Health Organization (2010) indicated that a large percentage of CVDs are preventable through reduction of risk factors. Ejim et al. (2011) reported that CVD risk factors are high among elderly population in Enugu State. Carlson's classification of the risk factors was adopted for this study as it contains modifiable risk factors. This is because only the modifiable risk factors can be controlled or prevented. Furthermore, this study tends to determine preventive strategies for the CVDs including its risk factors. Therefore, risk factors of interest in this study included tobacco use, harmful use of alcohol, unhealthy diet, obesity, physical inactivity, hypertension and diabetes mellitus.

Tobacco use is a principal contributor to the onset of CVDs. Tobacco use is referred to as the practice of using tobacco for its perceived physical and psychological benefits such as mental alertness, relaxation and weight control (Mosby, 2008). In this study, tobacco use is defined as habitual use of tobacco products for the perceived satisfaction regardless of the adverse effect on the health. Tobacco can be used in smokeless and smoking forms. Cigarette smoking is the most common form of tobacco use and the most dangerous to health. Tobacco use is associated with a condition known as tobacco use disorder. Krisha (2008) described tobacco use disorder as the use of tobacco products which harm a person's health and social functioning or when a person becomes dependent on tobacco. Tobacco contains toxic chemicals such as nicotine and carbon-monoxide which constrict blood vessels. The constricted blood vessels impede blood circulation to different parts of the body. If blood flow to the brain, heart or legs is impeded it results to CVDs such as CHD, CBVD and PAD.

Harmful use of alcohol is a risk factor for multiple health problems including CVDs. When alcohol is taken to the extent that an individual's health is impaired, it is referred to as alcohol abuse. Alcohol abuse is defined as consuming more than fourteen standard alcohol drinks per week for men and more than seven standard drinks per week for women (Fine, Philogene, Gramling, Coups, & Sinha, 2004). In this study, alcohol abuse refers to a condition of excessive intake of alcohol which interferes with the individual's social relationship as well as predisposes person to CVDs. Jaubert et al. (2014) stated that alcohol abuse among older people is associated with an increased risk of hypertension which damages the heart muscle and increases the risk of stroke. Damage to the muscles of the heart affects the pumping ability of the heart resulting in cardiac congestion, weakening of the heart and eventual heart failure.

Unhealthy diet is another risk factor for hypertension, diabetes and obesity. Marcy (2011) referred to unhealthy diet as the diet that fails to provide the body with the correct amount and types of nutrients for maximum health. Bloomfield et al. (2015) described unhealthy diet as the western pattern diet which is typically eaten by Americans and is increasingly adopted by people in the developing countries due to high poverty level. Unhealthy diet in this study is referred to as any diet that fails to provide the necessary nutrients and at the time predispose retirees to CVDs. High amount of dietary salt intake increases fluid retention in the body, which in turn makes the blood volume to rise causing hypertension. Also, frequent consumption of processed foods, high in fats and sugar leads to formation and deposition of fats on the lumen of blood vessels causing hypertension which can result to CVDs. Unhealthy diet if unmodified may result to overweight/obesity.

Overweight is a precursor of obesity. Overweight or obesity is a major modifiable risk factor for CVDs. Obesity is defined as body mass index (BMI) more than or equal to 30kg/m2 (WHO/ International Association for the study of Obesity/ International ObesityTask Force, 2013). Obesity is defined as the abnormal or excessive fats accumulation that may impair health (WHO, 2015). Overweight/obesity in this study is defined as medical problem in which excess fats accumulate in the body to the extent that it impairs normal body functions or have negative effect on the health of the individuals. The fat deposits on the lumen of blood vessels leads to the narrowing of the lumen of blood vessels, formation of blood clots, and thus increase the chances of high blood pressure and type 11 diabetes which can result to CVDs such as heart attack and stroke and heart failure. Obesity may result from unhealthy diet as well as physical inactivity.

Physical inactivity (lack of physical activity or sedentary lifestyle) is one of the leading risk factors for CVDs. Physical inactivity is defined as less than five times of 30 minutes of moderate activity per week or less than three times 20 minutes of vigorous activity per week (Shanti, Pekka & Bo, 2011). World Health Organization (2010) described physical inactivity among older adults as an activity less than 150 minutes of moderate intensity activity per week and muscle strengthening activity twice weekly. In this study, physical inactivity is defined as a condition of insufficient or non-participation in any form of physical activity. Physical activity assists in weight loss, improves endothelial function, which enhances vaso dilatation and blood flow in the blood vessels, improved blood pressure and lipid profile. In contrast, physical inactivity increases the risk of developing hypertension which may results to CVDs such as CBVD, MI and CHD.

Hypertension is a major risk factor for CVDs among the elderly. MacGill (2016) defined hypertension as blood pressure higher than 140/90mmHg (Millimeter of mercury). Hypertension is defined as blood pressure higher than 140/90mmHg or on treatment to lower blood pressure (Go et al. 2013). Aronow et al. (2011) asserted that hypertension is common problem in elderly persons (i.e persons aged > 60 years) reaching a prevalence as high as 60-80 per cent. In this study, hypertension is defined as blood pressure persistently above 140/90mmHg. Hypertension is often referred to as a silent killer because most of the symptoms are not detected early or people suffering it may not understand the warning signs and symptoms. The individual may experience terrible headache, insomnia, dizziness, blurred vision or total blackout, slurred speech and numbness of the limbs (Okoye, 2006). In some cases, these signs may not manifest overtly until complications such as stroke, heart attack, or even death results. Besides hypertension, another serious risk factor that may result to CVD is diabetes mellitus.

Diabetes mellitus- DM (hyperglycemia or raised sugar level) is one of the major risk factors for CVDs especially among the elderly. DM isa metabolic condition whereby fasting blood sugar is more than 70-110mg/l (1.26g/l) or glycaemia after loading of 75g (Farida, Said & Souad, 2015). Diabetes mellitus is described as a group of metabolic diseases in which glucose is persistently high in the blood (WHO, 2013). WHO further explained that DM results from insufficient insulin to metabolize sugar produced in the body leading to the accumulation of excess glucose on the body tissues and organs. When deposited on the blood vessels, it narrows the lumen blocking blood supply to the heart and other organs which can result to CVDs. In this

study DM is defined as metabolic disorder characterized by high blood glucose levels over a prolonged period due to absolute or relative insulin insufficiency arising from pancreatic problems or defective action of the insulin. Lack of early detection and care for diadetes results in severe complications, including heart attacks, stokes, renal failure, amputtions and blindness. Diabetes and other risk factors increase chances of developing CVDs among elderly populations including the retirees in Enugu State.

Retirees are persons who have worked and withdrawn from civil service. A retiree is defined as one who has retired from active working life (Houghton, 2013). Retirees are those who in different establishments served their fatherland when they were strong and young and are meant to rest after service (Anike, 2011). In this study, a retiree is an individual who has worked in Enugu State civil service and disengaged from service at the statutory retirement age of 60 years or after 35 years of service. Retirement age differs from country to country and even between states and federal workers of the same country. Olawale, 2017 indicated that the retirement age of tertiary institution at 70 years for academic staff and 65 years for non-academic staff. The 65-70 years is applied to those in higher institutions while 60 years or 35 years of services are for civil servants working in state ministries. Reason for choosing retirees for this study is because studies (Yazdnyar, 2010; Roger et al, 2012) have proved that such age groups are prone to CVDs.

Certain factors have been identified in literature to be associated with CVDs among older adults including retirees. Such factors include socio-demographic factors. Socio-demographic factors are personal characteristics capable of influencing an individual's health positively or negatively which include gender, age, level of education, employment status, profession and total number of persons living in the house (Toan, 2012). Onwuasigwe (2010) referred to socio-demographic factors as personal attributes such as level of education, level of income, age, gender, ethnic group, occupation, language and place of living. In this study, socio-demographic factors were defined as personal attributes of the retirees that are capable of predisposing them to CVDs. Socio-demographic factors outlined by Onwuasigwe (2010) were adopted for this study. They included gender, age, level of income, place of residence and level of education. Language and ethnicity are excluded as Enugu State retirees are mostly ibos speaking same language.

Gender is one of the socio-demographic factors that may be associated with CVDs. Nwafor and Alikor (2016) reported that CVDs are associated with sex and that females suffer

CVDs more than males. In contrast, Agbana, Fasoro, Owosen, Ajewole and Kunle-Olowu (2017) posited that men are at a greater risk of CVDs. On the contrary, CVDs affect as many women as well as men since the risk factor for CVDs are similar for men and women (WHO, 2010). This study was then set out to determine if gender is associated with CVDs among retirees in Enugu State.

Age is another variable that may be associated with CVDs. Ojikutu (2009) reported that the highest cardiovascular death (CV) was recorded among those in the 60-70 years' age bracket. Samide, Anarifi, Akins and Coram (2014) stated that CVDs are associated with old age and that old age accounted for 50 per cent of CVDs.This indicates that there is an increasing trend in CVDs as the individual ages. Since age is correlated with CVDs as stated above, this study was set to ascertain if age is associated with CVDs among retirees in Enugu State. Age group in this study was categorized into: 55-74 years and75 years and above. This is because some civil servants retire with years of service and may disengage from service before the age of 60 years.

It has been observed that one's level of income determines lifestyles and resources for health services. Rouban et al. (2016) stated that lower economic status was associated with coronary heart disease. Also, Zelden et al. (2016) noted that a lower economic situation was associated with crornary heart diseases. Though the respondents are retirees, their pensions still vary. The study will therefore consider income levels under low income and high income. Those that receive monthly pension of #20,000-#40,000 are grouped as low income level while those that receive #41,000 and above are grouped as high income level. Level of income of retirees may be determined by the level of education which is another factor of interest in this study.

One's level of education may influence the use of healthcare, understanding of health risk behaviors and its consequences, and better understanding of preventive practices. Cal, He, Song and Cui (2013) reported a low prevalence of CVDs in individuals with higher educational background. Institute for Public Health (2008) noted that lower education is associated with poorer health. Levels of education considered in this study are primary and secondary which are regarded as low education level while tertiary is regarded as high education level. This study sought to find out if level of education of retirees in Enugu State is associated with CVDs.

Place of residence of an individual has been linked with cardiovascular diseases. Essien, Andy, Ansa, Out, and Udoh (2014) reported that coronary heart disease was predominantly among urban residents and people of high social class. However, Tang, Zhou, Luo, Xie, Huo and

Guo (2014) stated that living in urban was associated with lower risk of CVDs especially cerebrovascular disease. Place of residence was considered in this study as urban and rural areas. This study aimed at ascertaining if there are relationships between socio-demographic factors and CVDs among retirees.

When a casual or reciprocal association or connection exists between two factors or events, it is termed correlate. Nwoke and Okafor (2014) described correlate as a casual, complementary, parallel or reciprocal relationship between two comparable entities. Collins (2012) described correlate as when one thing is associated with another or the two things are closely connected. This implies that onset of CVDs may be associated with socio-demographic variables. Therefore, the study sought to examine the relationships between socio-demographic factors and CVDs among retirees in Enugu State. Also, examining socio-demographic correlates of CVDs among retirees in Enugu State may provide insight for determining valid preventive strategies or interventions.

Prevention is an action geared at stopping a problem from developing among individuals or groups. Institute for Work and Health (2015) described prevention as a wide range of activities aimed at reducing risks or threat to health. Prevention is the management of those factors that could lead to disease so as to stop the occurrence of the disease (Jonas, 2005). In this study, prevention is defined as systematic and well organized programmes adopted by health educators and healthcare providers to prevent exposure of retirees to CVDs. Prevention can be carried out through well-designed strategies.

A strategy can be seen as a carefully designed plan of actions to achieve a particular objective. Strategy is a process by which long term objectives could be achieved (David, 2011). Catherine and Awgu (2010) defined strategy as careful plan or method designed to achieve a long term objective. The researcher defined strategy as carefully designed actions intended to avoid exposure of retirees to CVDs. Therefore, preventive strategies involve careful plan of actions for minimizing exposure to CVDs among the elderly in Enugu State. Nathan (2015) outlined three types of preventive strategies which include primordial, primary and secondary. The study adopted the preventive strategies outlined by Nathan (2015).

Primordial prevention is aimed at stopping or forstalling the risk factors for CVDs. Primordial prevention is defined as activities that prevent the penetration of disease risk factor into population (Ursoni, 2012). Primordial prevention is described as actions or measures that

inhibit the emergency and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living that are known to increase risk of the disease (Beaglehole, Bonika & Kjellgtom, 2006). In this study primordial prevention refers to all necessary activities and actions organized by health educators and other health workers to avoid development of CVD risk factors. These may include programmes on lifestyle or behavioural modifications such as abstinence from tobacco use and harmful alcohol use; consumption of healthy diet and physical activity participation.

Primary prevention is concerned with avoiding the development of CVDs in an individual with the risk factors. Eileen, Kathy, Mercy and Shiriki (2012) described primary prevention as actions geared towards avoiding a first occurrence of CVD among individuals with risk factors through smoking cessation, management of blood pressure, lipids, glucose and weight control; and dietary and physical activity counselling. WHO (2015) defined primary prevention as actions aimed at avoiding the clinical manifestation of diseases. In this study, primary prevention refers to actions taken to avoid clinical manifestation of CVD among retirees in Enugu State. This involves modification of unhealthy lifestyles and effective control of metabolic risk factors such as hypertension, obesity and diabetes.

Secondary prevention focuses on management of those with clinical manifestation of CVDs. Nathan (2015) described secondary prevention as actions that focus on those with manifestations of disease but where aggressive control of risk factors can have a major impact in preventing recurrence of the disease. Smith et al. (2006) described secondary prevention as an intensive and comprehensive management of those with established CVD and it is associated with improved survival and a reduction in recurrent events. Secondary prevention in this study involves action aimed at avoiding reccurrence of cardiovascular diseases among retirees in Enugu State. For instance, detection of signs of CHD after first attack and prompt implementation of interventions aimed at preventing reccurence. Thus, in this study, primordial, primary and secondary preventive strategies were determined to hinder development of CVD risk factors and manage those with the CVDs among retirees in Enugu State. The study was anchored on two models.

. The two models of anchor in this study include health belief model (HBM) and information-motivation-behavioural skill (IMB) model. Health belief model (HBM) was propounded by Rosenstock, Berker, and Strecher (1950). The model assumes that people must

feel susceptible to a disease in order to be motivated to prevent it. The primary tenets include perceived susceptibility, perceived severity, perceived benefits, barriers to action, cue to action and self-efficacy. Information-motivation-behavioural (IMB) skill model was propounded by Fish and Fisher (1992). The three key constructs of the model are information, motivation and behavioural skills. Specifically, retirees must have relevant and adequate information for the prevention of CVDs and must bo motivated to apply them for modification of lifestyles. The study was conducted among retirees in Enugu State.

Enugu State is located in the South-eastern zone of Nigeria. It is made up of 17 Local Government Areas (LGAs), some of which are in urban and some in rural areas. Each of the LGAs has health facilities where older adults can access health services as well as health information on CVDs. Evidence suggests that prevalence of chronic diseases such as CVDs increase with age, Studies (Rouban et al. 2016; Zelden et al. 2016) have linked these CVDs among elderly populations to certain socio-demographic factors. There seems to be a dearth of studies that explain relationship between socio-demographic factors and CVDs among retirees in Enugu State. Furthermore, there is paucity of data on preventive strategies for CVDs among retirees in Enugu State. This is the gap that this study sought to fill.

Statement of the Problem

Retirees should enjoy good health after withdrawal from labour force. Retirees are expected to avoid unhealthy lifestyles such as tobacco use, harmful use of alcohol, unhealthy diet, and physical inactivity which are risk factors for cardiovascular diseases.

Regrettably, studies have shown that the prevalent of CVDs are high in Nigerian older adults including retirees in Enugu State. This may be due to the exposure of the retriees to unhealthy lifestyles during the period of their active service. Retirees may have engaged or still engage in unhealthy lifestyles such as tobacco use, physical inactivity, harmful use of alcohol and unhealthy diet, which are risk factors for CVDs. These unhealthy lifestyles predispose retirees to metabolic risk factors such as hypertension, diabetes and obesity which result to CVDs among the retirees in Enugu State.

Studies showed that CVDs constitute serious public health problem in Nigeria. Furthermore, studies indicated that association exists between socio-demographic factors and onset of CVDs among elderly populations. Studies have shown that CVDs are preventable with lifestyle modifications. However, there seems to be dearth of studies on appropriate preventive

strategies for retirees to curb the menance of CVDs Enugu State. Therefore, this study sought to determine socio-demographic correlates of CVDs and determine preventive strategies for CVDs among retirees in Enugu State.

Purpose of the Study

The purpose of the study was to investigate socio-demographic correlates of CVDs and determine preventive strategies for retirees in Enugu State. Specifically, this study sought to determine the:

1. proportion of retirees that are suffering CVDs in Enugu State;
2. proportion of retirees exposed to risk factors for CVDs in Enugu State;
3. relationship between the age of the retirees and CVDs in Enugu State;
4. relationship between the gender of the retirees and CVDs in Enugu State;
5. relationship between the level of education of the retirees and CVDs in Enugu State:
6. relationship between the level of income of the retirees and CVDs in Enugu State;
7. relationship between the place of residence of the retirees and CVDs in Enugu State; and
8. determine appropriate CVD preventive strategies for retirees in Enugu State.

Research Questions

The following research questions were posed to guide the study.

1. What is the proportion of retirees that suffered CVDs in Enugu State?
2. What is the proportion of retirees exposed to risk factors for CVDs among retirees in Enugu State?
3. What is the relationship between the age of the retirees and CVDs in Enugu State?
4. What is the relationship between the gender of the retirees and CVDs in Enugu State?
5. What is the relationship between the level of education of the retirees and CVDs in Enugu State?
6. What is the relationship between the level of income of the retirees and CVDs in Enugu State?
7. What is the relationship between the place of residence of the retirees and CVDs in Enugu State?
8. What are the appropriate CVD preventive strategies for retirees in Enugu State?

Hypotheses

The following null hypotheses were postulated to guide the study and tested at 0.5 level of significance.

1. There is no significant relationship between the age of the retirees and CVDs in Enugu State.
2. There is no significant relationship between the gender of the retirees and CVDs in Enugu State.
3. There is no significant relationship between the level of education of the retirees and CVDs in Enugu State.
4. There is no significant relationship between the level of income of the retirees and CVDs in Enugu State.
5. There is no significant relationship between the place of residence of the retirees and CVDs in Enugu State.

Significance of the Study

The study generated findings on the proportion of retirees who suffered CVDs and associated risk factors. Also the study generated data on socio-demographic factors associated with CVDs among retirees in Enugu State. The study also yielded information on preventive strategies for retirees in Enugu State. The findings of the study would be of immense benefit to health educators, retirees, civil servants, community leaders, Enugu State Government, social workers, Ministries of Health, Information, Education, Agriculture and Rural Development, Works, Finance and non-governmental organizations (NGOs).

Specifically, the findings identified that moderate proportion of retirees suffered from CVDs in Enugu State.The finding would be of benefit to NGOs, and State Ministry of Health and Finance who will ensure that health facilities, equipment and human resources are adequate to tackle the challenges of CVDs among retirees in Enugu State. The result would be of immense benefit to retirees who will endeavour to modify their lifestyles to avert CVDs.

Also, the findings revealed that moderate proportion of retirees were exposed to risk factors for CVDs. These risk factors include cigarette smoking, alcohol abuse, physical inactivity, unhealthy diet, hypertension and diabetes. The result would be of benefit to health educators and other healthcare providers who can embark on health education programme and

mobile healthcare services to screen retirees for CVD risk factors, and sensitize them on the need for modification of lifestyles to avoid development of CVDs.

In addition, findings on relationship between age and CVDs showed that there was a positive relationship between age and CVDs.The result would be beneficial to health educators and health professionals who will embark on awareness and enlightenment programme for the elderly to encourage healthy lifestyles such as eating healthy food, quitting cigarette smoking, drinking alcohol responsibly and engaging in physical activities. The Ministry of Works would utilize the information in road constructions to create pedestrian ways to encourage walking exercises and parks for other physical activities especially for the ageing retirees.

Furthermore, findings on the relationship between gender and CVDs was positive. The result would be of immense benefit to social workers who will utilize the information to educate female retirees on the need to provide healthy diets for the family. The finding would also be of benfit to Ministry of Agriculture who would subsidize agricultural products and seedlings to enable retirees have small farms for farm work, for green leafy vegetables and for physical activities.

Also, findings on the relationship between level of income and CVDs was negative. However, there were positive relationship between level of income and myocardial infarction, cerebrovascular disease and peripheral arterial disease. The result would be of benefit to the Ministry of finance who would utilize the information to increase the pensions and gratuity of retirees, and to pay them promptly to enable retirees take care of their health needs and other family responsibilities. State government would utilize the information to establish health insurance scheme for workers and retirees to subsidize cost of treatment. Health educators would utilize the information to educate retirees to utilize the limited financial resources in order of importance especially consumption of healthy diets.

The finding of the study shows that the relationship between level of education and CVDs was negative. However, there were positive relationship between level of education and coronary heart disease, cerebrovascular disease and heart failure. This would be of benefit to Ministry of education and non-governmental organizations to utilize the information and provide free education at all levels to all the citizens. Knowledge gained through education can enable the retirees to avoid unhealthy lifestyles which predispose to CVDs at old age. Also educational

institutions may use this finding to incorporate positive lifestyles in school curriculum to educate the populace about positive lifestyles at all levels of education.

The finding of the study shows that relationship between place of residence and CVDs was positive. The result is beneficial to Ministry of Health and health educators to reach out to retirees anywhere whether urban or rural through adequate enlightenment campaign and providing healthcare services where those with risk factors can be identified early and managed appropriately. In addiction health educators and social workers can reach older adults including retirees in the rural areas through mobile healthcare services.

In addition, findings on preventive strategies for CVDs preventive strategies are appropriate for prevention of CVDs. The result would be of immense benefit to Ministry of Health and governmental organizations to embark on effective awareness programme and sensitization of the entire public on healthy lifestyles that will enable them prevent CVDs in Enugu State. The Ministry of Information may utilize the information to implement advocacy programmes that focus on health promotion among older adults including retirees and awareness campaigns on adoption of preventive strategies among retirees.

Scope of the Study

This study was delimited to retirees who registered with the Enugu State Pension Board. Retirees from federal government and private establishments were deliberately excluded from the study because their retirement age, salary grade and even retirement benefits are different from those of the state retirees. The study determined the relationship between socio-demographic variables such as age, gender, level of education, level of income, place of residence and cardiovascular diseases among retirees in Enugu State. The study was delimited to two models such as health belief model and information-motivation-behavioural skill model which are relevant to the study. The study was also delimited to experts with knowledge in health education and health profession. Based on baseline data from the study, the researcher determined CVDs preventive strategies for the retirees in Enugu State.

CHAPTER TWO

Review of Related Literature

Literature on cardiovascular diseases (CVDs) in general is relatively available. Also, a considerable number of literatures on socio-demographic correlates of CVDs are available. However, literature on preventive strategies for CVDs among retitrees are limited. This chapter presents review of related literature under the following sub-headings:

Conceptual Framework

Cardiovascular diseases (CVDs).

Risk factors for cardiovascular diseases.

Retirees.

Socio-demographic correlates of CVDs.

Preventive strategies for CVDs.

Theoretical Framework

Health belief model (HBM).

Information-motivation-behavioural skills model (IMB).

Empirical Studies

cardiovascular diseases (CVDs).

Risk factors for cardiovascular diseases.

Socio-demographic correlates of CVDs.

Preventive strategies for CVDs**.**

Summary of Literature Review

Conceptual Framework

This section examined the concepts of CVDs and types of CVDs such as coronary heart disease, cerebrovascular disease, heart attack, heart failure and peripheral arterial disease. This section also examined the risk factors for CVDs, correlates of CVDs, assessment of CVDsand preventive strategies for CVDs.

Concept of Cardiovascular diseases (CVDs).

Cardiovascular diseases refer to diseases affecting the heart, blood vessels, or both. Romanski (2010) referred to CVDs as a broad term used to describe a range of diseases that affect the heart and circulating system. Yazdnyar (2010) listed common CVDs in the elderly to

include: coronary heart disease (CHD), myocardial infarction (MI) or heart attack, heart failure (HF), cerebrovascular disease (CBVD), and peripherar arterial disease (PAD). Jackson and Wenger (2011) outlined the CVDs affecting the elderly as CHD, cardiac arrhythmias, and heart failure. This study will focus on common CVDs among the elderly such as CHD, CBVD, PAD, heart failure and MI. CHD, CBVD and PAD are referred to as atherosclerotic diseases.

Coronary heart disease (CHD) also known as coronary artery disease or ischeamic heart disease is one of the atherosclerotic CVDs. Coronary heart disease will be adopted for the study. Maduka (2016) described CHD as a group of diseases of the heart that occur due to reduced blood supply to the cells and tissues of the heart as a result of narrowing of the coronary arteries. This is the most serious of the CVDs. Go et al. (2013) and Wong (2014) indicated that CHD is the most common type of CVDs.This may be because heart is the engine of the body that supply blood and nutrients to other parts of the body therefore if the heart is diseased, definitely other parts of the body will suffer. Coronary heart disease was responsible for 62.587 million disability adjusted live years globally (Sutchifle, 2013). Darwin, Gregory and Army (2013) reported that CVDs was the leading cause of death globally among men and women. CHD disease is caused by hardening and narrowing of the coronary arteries due to accumulated deposits of fatty materials and cholesterol inside the lumen of the arteries. These deposits called plaques or atheroma cause the inner surface of the arteries supplying the heart to become irregular and lumen narrowed or blocked, thereby restricting the normal flow of blood. This process of plaque deposition is called atherosclerosis.

The atherosclerosis may result from obesity, hypercholestrolaemia and diabetes. Jackson and Werger (2011) outlined risk factors for CHD in the elderly as diabetes, hypertension, tobacco smoking, obesity and physical inactivity. If the plaque accumulates for a long time, it can rupture leading to formation of blood clots. When the formed blood clot blocks blood supply to the heart, it results to CHD. Coronary heart disease can lead to sudden death because the symptoms may not be life- threatening as and can be ignored. Common signs and symptoms of CHD include chest pain which may radiate to the arm, back, neck, jaw or shoulder, shortness of breath and heartburn (Kontas, Direcks & Krik, 2010). Coronary heart disease is associated with some risk factors. Mehta, Wel and Wenger (2014) identified risk factors for CHD to include hypertension, tobacco use, diabetes, obesity, high blood cholesterol, poor diet and excessive

alcohol consumption. Since CHD does not present life-threatening symptoms, everybody should endeavor to prevent the risk factors to prevent sudden death.

Cerebrovascular disease (CBVD) is one of the atherosclerotic diseases of the circulatory system. CBVD is caused by interruption of blood supply to the brain due to atherosceloerotic deposits. Okoye (2006) posited that without blood and oxygen supply to the brain, brain cells die within few minutes resulting to CBVD. Depending on the region of the brain affected loss of blood supply may cause paralysis of the limbs, speech impairment, loss of memory and reasoning ability, coma or death. CBVD is the 2nd most common cause of death in the world and 6th most common cause of disability (Ward, Toledaw, Shaddick, Davies & Elliott, 2012). Micheal and Smith (2005) identified three main causes of CBVD as cerebral thrombosis, cerebral embolism and cerebral heamorrhage. Cerebral thrombosis occurs when a blood clot is formed in the cerebral artery thereby blocking blood supply to the brain. The clot may result from atheroma deposits on the walls of the cerebral artery. Cerebral embolism occurs when a fragment of blood clot is formed in another part of the body travels in the blood and blocks blood vessel supplying blood to the brain. Cerebral heamorrhage results rupture of blood vessels supplying the brain and blood flows into the brain. The rupture may be caused by accumulation of atheroma impeding blood flow. When the atheromatic deposits accumulate for a long period, it may cause blockage of cerebral arteries which may lead to formation of blood clots. The formed clot can as well block blood flow in the brain. Risk factors associated with CBVD are tobacco use, harmful use of alcohol, unhealthy diet and physical inactivity.

Warning symptoms are exactly the same for full stroke but can disappear within minutes to few hours. Most times, such symptoms occur but because they disappear within minutes to few hours, people ignore such sensitive signals until real stroke strikes. The brief signals are referred to as transiet ischeamic attack (TIA) or mini-stroke. Warning signs of CBVD include sudden dimness or loss of vision, slurred speech, severe headache, unexplained dizziness, nausea, vomiting and convulsion. Sacco et al. (2013) indicated that if blood flow is quickly restored, brain tissues can easily recover leaving no sequelae. When the warning signs are ignored for a long period, the signs worsen increasing in intensity until actual stroke.

Peripheral arterial disease (PAD) or peripheral vascular disease (PVD) is one of atherosclerotic circulatory diseases. Schirmang, Ahn and Murphy (2009) defined PAD as a term used to describe the impairement of blood flow to the extremities usually as a result of

atherosclerotic occlusive disease. Peripheral arterial disease is defined as a slowly progressive atheroclerotic disease usally characterized by occlusion of lower limbs arteries, ultimately causing acute or chronic limb pain (Murso & Hiatt, 2006) Peripheral artery disease is more common in certain age groups and people already with some risk factors. Rooke et al. (2013) indicated that PAD is common among people aged 65 years and above regardless of risk factor status, people between the age of 50 and 69 who have risk factor (particularly diabetes or smoking), age less than 50 years with diabetes, smoking, hypertension or hypercholesteroleamia. Peripheral artery disease may present some signs and symptoms. Fowkes, Rudan and Rudan (2013) outlined signs and symptoms of PAD as pains, numbness or heaviness in the legs, wounds in the toes, feet or legs that heal slowly, poorly or not at all, bluish coloration of the legs. If left untreated, sores or wounds may develop on the toes, feet or legs. There may be delayed wound healing unless the root cause (PAD) is diagnosed and treated. Peripheral artery disease may become complicated leading to gangrene and amputation. This indicates that when blood supply to the legs is blocked due to build-up of plaques (atheroma, a atherosclerosis), the leg may become gangrenous and if care is not taken, the individual may lose the leg or toe through amputation. Another serious CVD among the aged is heart failure.

Heart failure (HF) also called congestive heart failure (CHF) is one of the most common heart problems affecting the elderly. HF is chronic, progressive conditions in which the heart muscles are unable to pump enough blood through to meet the body's need for blood and oxygen (American Heart Association, 2017). HF can be described as a condition in which the heart is unable to pump blood at an adequate rate or in adequate volume (Mann & Chakinala, 2012). The most common contributory factors of HF in the elderly are CHD, hypertension, MI and VHD (McMurray & Preffer, 2005). When the heart cannot pump blood efficiently, blood continues to accumulate in the heart; the heart in effort to push the blood forward with much pressure may fail. Heart failure can be acute or chronic. Acute heart failure is the sudden deteroriation in the pumping action of the heart usually leading to the accumulation of fluids in the lungs while chronic heart failure is long standing insufficient pumping action of the heart leading to poor circulation of blood and accumulation of fluid in the tissues (Micheals & Smith, 2005). Heart in its effort to pump the accumulated blood become weakened and gradually fails to pump at all resulting to heart failure. McDough, (2011) outlined signs and symptoms of heart failure to include severe shortness of breath, tiredness, palpitation, loss of appetite, nausea,

vomiting, swollen legs, feet and generalized oedema. As the oedema progresses, fluid retention may cause congestion in the liver and kidney resulting in liver and kidney failure which eventually leads to death.

Myocardial infarction (MI) often referred to as heart attack occurs when blood clot blocks the coronary artery supplying blood to the heart. Maziar and Eric (2017) described MI as the irreversible death of heart muscles secondary to prolonged lack of oxygen supply to the heart. MI is defined as the irreversible damage of myocardial tissue caused by prolonged ischemia or hypoxia (Mallinson, 2010). When the coronary artery supplying blood to the heart is blocked by a thrombus, it leads to decrease in the oxygen supply to the heart resulting in death of cardiac tissues referred to as heart attack. This can affect any age but more prevalence in the elderly including retirees with accompanying poor outcome. Macus, Cohen and Varosf (2007) stated that symptoms of MI usually develop suddenly and include severe crushing pains in the chest that may radiate to the neck, left arm, back, abdomen, restlessness and shortness of breath. Other symptoms include excessive sweating, weakness, nausea, vomiting, restlessness, palpitation and sudden death (Mallinson, 2010). Risk factors for MI are tobacco smoking, diabetes, hypertension, dyslipidaemia and obesity (Buse et al. 2007). These risk factors when left uncontrolled result in blockage of the coronary arteries supplying the heart with blood and oxygen leading to sudden death. World Health Organization (2010) reported that about 12.2 per cent of world deaths were due to heart attack. These, CVDs are triggered by many risk factors which the retired civil servants may have been exposed.

Risk factors of cardiovascular diseases.

Risk factors are attributes or characteristics that increase a person's chances of contracting a disease or suffering a health disorder. Parks (2010) defined a risk factor as an attribute, characteristic or exposure of an individual that is significantly associated with the development of a disease. Risk factors can be genetic, physiological, behavioral and socio-economic characteristics of individuals that place them in a cohort of population that is more likely to develop a particular health problem or disease than the rest of the population (Ilo, 2011). World Health Organization (2016) referred to risk factors as any attribute, characteristic or exposure of an individual that increase the likelihood of developing a disease or injury. This means that risk factors are not diagnostic or absolutely implies that the individual will develop the disease. Some of these risk factors are modifiable while others are non-modifiable. World

Health Organization (2009) classified risk factors for CVDs into behavioral (lifestyle), metabolic and other risk factors. The behavioral risk factors include tobacco use, physical inactivity, unhealthy diet and harmful use of alcohol. The lifestyle factors if not controlled may result to metabolic risk factors. The metabolic risk factors include hypertension, diabetes and obesity. Olarinde, Adeleke, Olutoyin and Oluwale (2013) identified cardiovascular disease risk factors (CVDRFs) among the elderly to include hypertension, diabetes, obesity, physical inactivity, high alcohol consumption, dyslipidaemia and cigarette smoking. The behavioral and metabolic risk factors can co-exist in an individual and act together to increase the individual risk of developing CVD. The behavoural and metabolic risk factors are referred to as modifiable risk factors. World Heart Federation- WHF (2016) classified CVD risk factors into modifiable and non- modifiable. Modifiable CVD risk factors include tobacco use, alcohol consumption, unhealthy diet, physical inactivity, hypertension, diabetes; obesity and high cholesterol while non-modifiable include age, gender, family history and ethnicity. This study considered only the modifiable CVD risk factors such as the tobacco use, alcohol consumption, unhealthy diet, physical inactivity, hypertension, diabetes and obesity. This is because modifiable CVD risk factors can be prevented and the study focused on formulating CVD preventive strategies.

Tobacco use is an avoidable and modifiable risk factor and a principal contributor to the onset of CVDs. Tobacco can be consumed in different ways but the most dangerous form is cigarette smoking. Diniz and Tavares (2013) reported that over 15 per cent of elderly smoke cigarette. Mons et al. (2015) and Jha et al. (2013) asserted that cigarette smoking is particularly dangerous for elderly who are at heightened risk for various health conditions such as respiratory diseases and cancer. Marinno, Laks, Sergio and Evandio (2010) stated that cigarette smoking is a major public health problem also among the elderly. Marinno further indicated that risk of death among older smokers is higher than among their non-smoking counterparts, and that morbidity and mortality from caner, stroke, CVDs and respiratory diseases are also among elderly smokers. Mons et al. (2015) concluded that smoking is a strong independent risk factor of cardiovascular events and mortality even at older age. National Heart, lung and Blood institute (2015) noted that tobacco smoking increases the chances of heart disease, stroke, atherosclerosis and PAD. Tobacco smoking refers to current smoking of any tobacco daily at least once a day (daily smokers) or smoked but not every day (occasional smokers) (WHO, 2011). Apart from the manufactured cigarettes that represent the major form of smoked tobacco; other forms of tobacco

include: buds (a type of filter less hand-rolled cigarette) cigars, hookahs which can be smoked in pipes, inhaled as snuff or chewed (WHO, 2008). In any form that tobacco is being consumed, it exposes the individual to health hazards.

When an individual continues to smoke tobacco on daily basis, it increases the chance of developing heart diseases, lung and liver diseases. Cigarette smokers are 2-4 times more likely to develop CHD than non smokers, then the risk for stroke is doubled and the risk for PAD is more than ten times higher than that of non-smokers (Luepker & Lando, 2005). This is because tobacco contains a lot of chemicals which are very toxic to the body. Prominent among these chemicals is the nicotine and carbon monoxide. Nicotine and carbon monoxide cause generalized constriction of blood vessels (vasoconstriction) which can lead to CVDs (Okoye, 2006). Also, nicotine causes degeneration and hardening of the blood vessels making it difficult for blood to pass through. Vasoconstriction and hardening of blood vessels result in narrowing of blood vessels supplying blood to different parts of the body. These increase the chance of blood clots formation which can result to stroke if it blocks blood supply to the brain. Tobacco smoking is a major risk factor for heart attack, CHD, PVD, CBVD and hypertension (Shah & Cole, 2010). Tobacco smoking is very hazardous to health affecting all the smokers irrespective of the numbers of cigarette smoked. Center for disease control and prevention (2010) posited that even people who smoked fewer than five cigarettes a day can have early signs of cardiovascular disease.

Apart from actual tobacco smoking, another form of tobacco smoking is second-hand smoking, environmental or passive smoking. This form is as hazardous to health as the actual smoking. Risks to health from tobacco use results not only from direct smoking but also from exposure to second-hand smoke (WHO, 2010). Second hand smoking is the combination of smoke from the burning end of cigarette and the smoke exhaled by the smokers (United States Department of Health and Human Services, 2010). Non smokers who are exposed to passive smoking at home or work increase their risk of developing heart diseases and stroke by 25-30 per cent and 20-30 per cent respectively (United States Department of Health and Human Services, 2014). This implies that non-smokers who stay in the midst of smokers are exposed to equal risk as applied to smokers. Since smokers and non-smokers are at equal risk of CVDs, polices and interventions should be geared toward prevention of tobacco use, promotion of smoke free environments and smoking cessation at all ages of life including old age.

Harmful use of alcohol is a risk factor for multiple health problems. Shanti, Pekka and Bo (2011) noted that harmful use of alcohol is a risk factor for multiple adverse health and social out comes, including hypertension, acute myocardial infarction, cardiomyopathy, cardiac arrhythmia, cirrhosis of liver, pancreatitis, neuropathy, encephalopathy, sexually transmitted diseases, unintended pregnancy, fetal alcohol spectrum disorders, sudden infant death syndrome, violence, suicide and unintentional injuries (e.g. motor vehicle crashes). Koltuniuk and Resineuk (2016) indicated that about 10 per cent of those aged 65 years and older consume excess amount of alcohol. Jaubert et al. (2014) stated that alcohol abuse among older people is associated with an increase risk of hypertension. Alcohol use becomes harmful when it is consumed excessively over a long period or too much on a single occasion (bringe drinking) Juabert et al (2014). Excessive consumption of alcohol to the extent that it causes both health and social problems is referred to as alcoholism or alcohol use disorder. American Psychiatrist Association (2013) noted that alcoholism affects all part of the body but particularly the brain, heart, liver, pancreas and immune system. World Health Organization (2010) reported that harmful use of alcohol damages the heart muscles, increases the risk of stroke and promotes cardiac arrhythmia. Damaged heart muscles cannot pump efficiently resulting in cardiac congestion, weakening of the heart and eventual heart failure.

Health problems caused by alcohol consumption depend on both the level and pattern of alcohol consumption. Rehm (2010) noted that drinking at low levels without episodes of heavy drinking may be associated with a reduced risk of multiple cardiovascular out comes (overall mortality from CVDS, incidence of and mortality from coronary heart diseases and stroke) in some segments of the population. However, these effects tend to disappear if the pattern of drinking are characterized by heavy episodic drinking (Roerecke & Rehm, 2010). Heavy episodic drinking among the elderly may be due to certain reasons. National council on Alcoholism and drug dependence (2015) asserted that reasons why elders abuse alcohol in later life include children growing and leaving the home, retirement and moving to smaller home, friends grow fewer and further apart, physical health fails and a partner of many years gets ill or dies. Roger and Wiese (2011) stated that one in six older adults self-report heavy drinking. Excessive or heavy drinking of alcohol among the elders damages the heart muscles promoting CVDS such as heart failure, coronary heart disease and cerebrovascular disease.

Unhealthy diet is one of the major risk factor for some modifiable risk factors such as diabetes, hypertension and obesity. Tokarz, Stawarska, and Kokzewska (2007) reported that approximately 90 per cent of people aged over 60 years are characterized by improper eating habits. Tokarz, et al. further indicated that the most common nutritional mistakes among the elderly are not taking varied diet, eating small amount of fruits and vegetable and also food containing milk and its product. The unhealthy diet is rich in red meat, dairy products, processed and artificially sweetened foods, and salt, with minimal intake of fruits, vegetables, fish, legumes and whole grains (WHO, 2013). There is evidence that high consumption of sugar is associated with high blood pressure, unfavorable blood lipids and DM (Temorenga, Howatson, Jones & Mann 2014). Unhealthy diet is a precursor of obesity and hypertension. This unhealthy diet leads to accumulation of excess fat which can lead to obesity. The amount of dietary salt intake is determinant of blood pressure and overall cardiovascular risk (WHO, 2010).

A healthy diet is one that contains the right balance of food for optimum health. A healthy diet can contribute to a healthy body weight, desirable lipid profile and desirable blood pressure (Strazullo, Elia, Kandala, & Cappauccio, 2009). Adequate consumption of fruits and vegetables reduces the risk of CVDs (Kotsaves, Wood, De-baker, Pyorala & Keil, 2010). For diet to be healthy, it should be low in fats, salt and sugar while vegetables, fruits and fibers should be high. A modest reduction in salt intake has a significant effect on blood pressure in individuals with either normal or raised blood pressure (He & McGregor, 2009). It is indicated that decreasing dietary salt intake from the current global levels of 9-12 grams/day to the recommended level of 5grams/day would have a major impact on blood pressure and CVD (Brown, Tzoulaki, Candeias, & Elliott, 2007). Thus for a diet to be healthy, it must have a serving of fruits and vegetables. One may decide to use fruits and vegetables as food or use it as appetizer or desert. The fruits and vegetables will aid in bowel movement, to build up immunity for strong healthy bones especially at old age. Overweight/obesity is a growing public health problem and one of the modifiable risk factor for CVDs. Matus-Vliegen (2012) noted that the prevalence of obesity is rising progressively, even among older age groups. Overweight and obesity in the elderly may be linked to ageing process. Ageing is associated with significant changes in body composition and metabolism (villareal, Apovian, & Kushner, 2005). In elderly, due to fragility, there is loss of skeletal muscle leading to decline in basal metabolic rate. The decreased basal metabolic rate together with decreased physical activity as well as decreased

energy expenditure results to obesity in the elderly (Chau, Cho, & Jani (2008). Obesity results from uncontrolled weight (overweight) which is referred to as accumulation of fatty materials that is not healthy for body functioning. Obesity is a medical condition in which the excess body fats accumulated to the extent that it may have negative effect on the health (World Health Organization, 2015).

As the elders or retirees become inactive probably due to certain diseases associated with old age, obesity tend to increase which may lead to certain medical complications. Medical complications resulting from obesity are hypertension, diabetes, and dyslipideamia which can result to stroke. Bokuru, Hamaguchi and Iyima (2008). Obesity in the elderly increases the risk of heart failure (Bill, Horwich, & Fanarow, 2011). World Health Organization (2010) noted that obesity is strongly related to cardiovascular risk factors such as raised blood pressure, type 2 diabetes and dyslipidaemia. Risk of cardiovascular diseases and other risk factors increase steadily with an increasing body mass index (BMI). Overweight/obesity is determined by BMI. Body mass index is a person's weight in kilograms divided by the square of the person's height in meters. BMI=body weight (Kg) divided by height in meters squared (M^2 = kg/M^2). World Health Organization (2014) classified overweight and obesity based on BMI thus: BMI 25kg/m-29.9kg/m is overweight, BMI 30kg/m-34kg/m is class I obesity, BMI 35kg/m-40kg/m is class II obesity, BMI 40kg/m and above is class III obesity. Obesity can also be determined by waist circumference (WC) measurement. McCower and Blackburn (2005) indicated that waist circumference greater than 102cm for men and 88cm for women is termed abdominal obesity.

BMI has served as the classical proxy for general overweight and obesity (Finucane 2011), while WC show stronger association with CVD and CVD risk factors or improve the identification of subjects with overweight and obesity (Cal, Lu, Zhang, & Wang 2013). The greater the BMI or WC, the higher the risks associated with it. Obesity increases the risk of other risk factors such as hypertension and diabetes which can results to serious CVDs in the elderly including retirees in Enugu State. Obesity can result from physical inactivity.

Physical inactivity also referred to as sedentary lifestyle is one of the leading risk factors of CVDs. Halla, et al. (2012) reported that approximately, one third of adults worldwide are inactive and older adults are at particular risk of inactivity. Biermat and Tomaszewski (2011) stated that people in age group over 65 years are characterized by low levels of physical activity. Whelam and savva (2013) stated that WHO recommended that older adults should engage in 150

minutes of at least moderate intensity activity per week and muscle strengthening activity twice weekly to accumulate related health benefits of being active. Therefore, physical inactivity in an elderly is an activity level below or insufficient to meet the present WHO recommendations. Sun, Normah, and Whale (2013) reported that the proportion of older adults who are sufficiently active (ie meeting WHO guidelines) ranges between 20-50 per cent using self reporting data and 2-12 per cent using objective data. This implies that majority of the elderly are physically inactive and this predispose to many health problems.

Physical inactivity among the elderly can result to numerous health problems including CVDs. Knight (2012) outlined the health problems associated with physical inactivity among the elderly to include CVDs, hypertension, type 2 diabetes, dyslipidaemia, neurological disorders, osteoporosis (resulting to falls and fractures), overweight/ obesity and sarcopenia. Physical inactivity increases the risk of many adverse health conditions such as CVDs, type 2 diabetes, breast and colon cancers, and shortens life expectancy (Lee, Shirom, Lobello, Puska, & Blair 2012). People (including elders) who are physically inactive have 20 to 30 per cent increase risk of all cause-mortality compared to those who engage in at least 30 minutes of moderate physical activity most days of the week (WHO, 2010). Being inactive among the elderly may be due to chronic health problems or due to aging process.

Physical inactivity may be attributed to diminished structural and functioning abilities among the elderly. Dipietuo and Katzmavyk (2007) confirmed that decline in physical activity among older adults was partially due to the ageing process where structural and functional changes in the CV, muscular and skeletal systems impact the ability to be active. DiexRoux, Evenson and Mcigian (2007), Boehmar, Hoehner, Dahapande, Brennan and Brownson (2007) indicated that more footpaths and easy access on foot to shops, recreational areas, neighborhood attractiveness and safely are all associated with greater physical activity. Elderly, who are physically active, enjoy some health benefits. Ratey and Loehr (2011) indicated that being physically active throughout lifespan can help maintain health and reduce the decline in physical function while also imparting important cognitive and psychological benefits to the aging adults. Zhou et al. (2014) noted that the cumulative CVD mortality of the elderly who exercised regularly was significantly lower than those without long term physical activity. This is because physical activity improves blood circulation, muscle and joints movement, reduces obesity and improves general wellbeing. For older adults, especially the unhealthy elders, it is necessary to

consult a cardiologist or physician to ascertain the suitable physical activity to avoid more damage to the organs already compromised by chronic health problems common in the elderly. These lifestyle risk factors if not adequately controlled can result to metabolic risk factors such as hypertension, diabetes and obesity.

Hypertension (HTN) also known as high blood pressure (HBP) is described as a long term medical condition in which the blood pressure in the arteries is persistently elevated. Nwankwo, Yoon, Burt and Gu (2011) indicated that HTN increases with age and that the elderly tend to have the highest prevalence within a particular population reaching as high as 60-80 per cent in the developed nations. Aronow et al. (2011) asserted that hypertension is a common problem in the elderly persons. HTN is a widely recognized major risk factor for CVDs such as stroke, MI, congestive heart failure as well as chronic kidney disease among men and women making it the leading cause of morbidity and mortality among the elderly (Murtner el al. (2014). Lackland and Weber (2015) posited that long term high blood pressure is a major risk factor for CHD, stroke, heart failure, PAD and chronic kidney disease. This may be attributed to ageing process which is characterized by decrease in the elasticity of the blood vessels and increase in the stiffness of the coronary arteries which increases blood pressure. It may partly be due to unhealthy lifestyles such as cigarette smoking, unhealthy diet and physical inactivity common among the elderly.

Hypertension can be mild or severe. When blood pressure is 140/90-159/-99mmHg it is referred to as mild or stage I HTN while 169/100mmhg-170/100-109mmHg or higher it is referred to as severe or stage II HTN (Go et al. 2013). The higher the blood pressure, the greater the damages on the major organs in the body and may result to CVDs or even sudden death. Generally, HTN does not cause symptoms but if the blood pressure is very high, symptoms may include headache, dizziness, vertigo, tinnitus, blurred vision and fainting (Fisher & Williams, 2005). These symptoms develop gradually and worsen as the blood pressure increases. In some cases, these symptoms may not manifest overtly until organ damage occur resulting in complications such as kidney failure, stroke, blindness, heart attack or even deaths. In 2014, approximately one billion adults (22%) of the world population had hypertension (WHO, 2015). It is one of the most significant causes of premature deaths worldwide (WHO, 2012). Hypertension affects both the high income, middle/low income countries. The prevalence of HTN is highest in Africa (30% for both sexes) and lowest in America (18% for both sexes),

(Kearney et al, 2004). In Nigeria, HTN is also high. Adedoyi, Mbada, and Balogun (2008) indicated that the prevalence of HTN in urban community in Nigeria was high (36.6%). Hypertension can be classified into primary, secondary or malignant depending on the cause.

Primary hypertension is also referred to as essential or idiopathic. This is hypertension without any known cause. In primary hypertension, the exact cause remains unknown but may be attributed to certain lifestyles/environmental factors (Kelly, Alber, Sarah, & David, 2010). About 90-95per cent cases of hypertension are primary, and are referred to as hypertension due to nonspecific lifestyles and genetic factors (Pouter, Prabhakaran, & Cailified, 2015). Center for Disease control {CDC} (2015) identified the risk factors for primary HTN as excess salt intake, excess body weight, smoking and alcohol. These risk factors cause narrowing of blood vessels which impedes blood supply to the heart and other organs leading to CVDs. Secondary hypertension is the type caused by other disorders or disease conditions in the body. Secondary HTN constitute the remaining 5-10 per cent of hypertensive cases and is described as hypertension due to an identifiable cause such as chronic kidney disease, endocrine disorder, obesity, alcoholism, certain drugs and herbal medicine (Eoin, Beevers, & Gregory, 2007). This type of HTN is a sequel to the other disease conditions and can be controlled or treated when those disease conditions are appropriately handled.

Malignant hypertension is an uncontrolled extreme rise in blood pressure that jeopardizes the life of an individual. Kelly, Albert, Sarah, and David (2010) referred to it as an uncontrolled, extreme rise in blood pressure to a very high level that puts the person at immediate risk of stroke or heart failure. Rodriguez, Kumar, and Decoino (2010) referred to it as hypertensive crisis and defined it as severely elevated blood pressure equal or greater than 180/110mmHg. In this situation, there is serious organs damage and most affected are the brain, kidney, heart and lungs (Perez & Musini, 2008). This is a medical emergency that require urgent and direct intervention to stop the on-going organ damage. About 90 per cent of senior citizens eventually develop HTN despite having a normal blood pressure at age 55 (Aronow et al. 2011; American Heart Association, 2011). Thus, this single risk factor must be prevented in the retirees to ensure that they remain healthy throughout life to enjoy the benefits of services rendered to the state.

Diabetes mellitus (DM) commonly referred to as diabetes is a significant risk factor for CVDs among the elderly Sinclair et al. (2012) reported that about 20 per cent of old people have been diagnosed of DM and a similar proportion have undiagnosed DM worldwide. Among adults

aged 65 years or older in the United States, the combined diagnosed and undiagnosed DM ranges from 50 to 80 per cent depending on which measures of hyperglycemia are used (Centre for Disease Control and Prevention and National diabetes, 2013). Gauriguates, Whiting and Hambleton (2014) reported that individuals aged 60-79 years in Africa accounted for 18.8 per cent of DM and predicted that the diabetes peak in Africa is expected to be in the oldest individual by 2035. Patients with Dm are at very high risk of developing CVDs and associated morbidity and mortality and this increase dramatically with age (Krkman el al, 2012). Sloan, Bethel, and Ruiz (2008) noted that DM prevalence, its co-morbidity and mortality are higher in the elderly than in younger people. DM is a glucose metabolic disorder (GMD) due to problem in either insulin secretion or non utilization of the insulin by the body tissues. American Diabetes Association (2008) indicated that GMD results from defect in insulin secretion by the pancreas, insulin resistance or both. There are two different types of DM that affect the elderly.

DM common in the elderly is type 2 diabetes. Farida, Said and Sauad (2015) identified two types of DM in the elderly- type I DM and type 2 DM. Type I DM are common in the younger people but it can linger into adulthood and old age. Most older people over the age of 60 years suffer from type 2 DM. Type 2 DM in the elderly is attributed to several mechanisms including genetic background, long life expectancy leading to a decrease in insulin secretion and environmental factors (physical inactivity and poor) responsible for central obesity (Tyrovalas et al, 2015). Insulin secretion is impaired in old age possibly because of a decrease in pancreatic mass (Halter, 2011). Other individuals with type 2 DM tend to be overweight with resultant fat deposits in the walls of the blood vessels which results to CVDs. DM in the older adults may not present with overt signs and symptoms.

Signs and symptoms of DM in elderly are quite rare and mostly diagnosed through laboratory screening. Jain and Paranjap (2013) indicated that diagnosis of DM in the elderly can only be achieved through laboratory test of blood glucose level especially in obese people or those with family history of DM. Most of the elders with DM may present signs and symptoms such as poor vision, poor wound healing, polydipsia and polyuria. When these signs are ignored and the DM left uncontrolled, it results to life threatening complications. Farida, Said and Souad (2015) outlined complications of DM in the elderly to include neuropathy, nephropathy, heart and vascular problems and/or recurrent urinary infections or skin problems. The heart and vascular problems leads to heart attack, CHD and CBVD which are serious CVDs among the

elderly including retirees in Enugu State. Diabetes mellitis and other risk factors increase chances of developing CVDs among elderly populations including retirees in Enugu State.

Retirees

Retriree can be referred to as someone who has served in the office for the stipulated number of years and finally disengaged from active service. Retiree is defined as one who has retired from active working life (Haughton, 2013). Retirees are those who in different establishments served their fatherland when they were strong and young and are meant to rest after service (Anike, 2011). The process of withdrawing or stopping active services is called retirement. Ottawa (2018) defined retirement as a period when an individual stop working at one's occupation, withdrawn from one's position or from active working life. There are different types of retirement. Nwajagu (2007) identified three ways of retirement to include voluntary, statutory and compulsory retirement. This study is focused only on statutory retirement. Nwajagu, described statutory retirement as retirement on attaining the age of 60 years chronologically or on 35 years in the service. This statutory retirement attracts payment of gratuity and pension. The period of this retirement is referred to as retirement age. Retirement age is the point where a person stops employment completely (Haughton, 2016). The statutory retirement age differs from country to country and even between state and federal workers of the same country. The statutory retirement age varies between countries but generally, it is between the age of 50 and 70 years old (WHO, 2011). In Nigeria, retirement age varies from disciplines to ministries and even in instutions.

The retirement age for public officers is 60 years or after 35 years in public service whichever is ealier, judiciary officers 70 years, academic and non academic staff of university 70 years and 65 years respectively (Olawale, 2017). The 65-70 years is applied to those in higher institutions while 60 years or 35 years of service are for civil servants working in the state and federal ministries. From the foregoing, it can be understood that retirement comes at old age. Old age comprising of later part of life with diminishing functioning due to degenerative changes. The old age can be used interchangeably with seniors, senior citizens, older adults, elderly or pensioners (American Psychology Association, 2009). These elders are faced with different challenges of life on retirement. Some of these challenges are financial, health and social problems. Health problems may be due to lifestyles lived in younger age which makes them more susceptible to disease, sydromes and sickness than adults. Some of the of these elders

who retiree from active service may be battling with one chronic health problem or multiple disease conditions.

This problem may be compounded by financial and social problems such as non-payment of the pension and loss of loved ones (spouse). Higg and Gilleard (2015), stated that the period in age of active retirement is an arena of inactive, unhealthy, unproductive and ultimately unsuccessful ageing. Prominent among the health problems of the retirees that make them inactive, unhealthy and unproductive are cardiovascular disease risk factors such as hypertension, diabetes and obesity. Chenm, Zong, and Wei (2015) reported that 42 per cent of population over 65 years suffers hypertension. Silas, Bibiloui, Dei, and Ramos (2014) reported that about 38.8 per cent in the group 60-65 years were diagnosed with diabetes. These risk factors likely increase the chance of developing CVDs among this category of people. Ojo and Mohammed (2013) indicated that advanced age has been established as a risk factor for CVDs. Apart from risk factors, other factors may be associated with CVDs occurrence among the older adults including retirees. These factors can be referred to as socio-demographic factors. This study was set to determine factors associated with development of CVDs among retirees and formulate preventive strategies for retirees in Enugu State.

Socio-demographic correlates of CVDs.

Socio-demographic factors such as age, gender, level of education, level of income and location have been identified as correlates of CVDs among older adults. This section examines the social and demographic factors exclusively. Social factors can be referred to as those things that directly influence or affect lifestyles. Marmot, Friel, Bell, Houweling and Taylor (2008) defined social factors as the circumstances in which people are born, grow, live, work and age, and system put in place to deal with illness. Edward et al. (2016) listed the social factors and outcomes for CVDs to include socio-economic position, social support including social networks, culture and language, access to medical care and residential environment.

Certain demographic factors are associated with CVDs among the elderly including the retirees. These factors can be personal, environmental or genetic characteristics of an individual which may be related to CVDs. Demographic variables are personal characteristics such as gender, age, occupation, family history and behavioural factors (Onwasigwe, 2010). World Health Organization (2010) identified level of education, income, age and gender as determinants of CVDs and these factors have been linked with the occurrence of CVDs among

elderly in various studies in different locations. Ghazali et al (2014) noted that age, gender, occupation and level of education are associated with multiple risk factors among Malaysian adults. This study is set to find out if CVDs among the elderly, particularly the retirees in Enugu state are associated with the demographic variables such as age, gender level of education, level of income, marital status and place of residence.

Age is another factor likely to be associated with onset of CVDs. Advanced age is associated with higher CVDs and CVD mortality (Wald, Simmond, & Morris, 2011). Similarly, (Ghazali et al. 2014) indicated that older age was associated with multiple risk factors in both men and women which predispose them to CVDs. This may be due to certain physiological and structural disposition of the body organs at the old age especially the heart and the blood vessels. Normal ageing is associated with a decreased functioning of the body organs including the heart and blood vessels. The decreased functioning of the organs together with unhealthy lifestyles culminates to multiple risk factors such as hypertension, high level of cholesterol, obesity and diabetes which are common among the elderly. The prevalence of hypertension rises rapidly and steadily with ageing (Gu, Burnt, Paulise-Ram, Voon, & Gillum, 2008). Multiple risk factors for CVDs (diabetes, hypertension, dyslipidaemia and obesity) increase with age (Selvarajah, et al, 2013; Mohamud & Ismail, 2011 & Jan, Mohamed & Mitra, 2013). As these multiple risk factors increase with ageing, they continue to cause damage on the heart and blood vessels resulting to CVDs. Thus, the observation from previous studies in different locations indicate that CVDs are associated with age, therefore this study will investigate how age is associated with CVDs among retirees in Enugu State. Another demographic factor to be studied is gender

. Gender may be a strong demographic factor associated with CVDs. Finegold, Asaria and Tranus (2012) noted that men are at greater risk of CVDs than a pre-menopausal woman. Although CVDs has sometimes been considered to be predominantly affecting men, it is the leading cause of death among both men and women globally (Blauwet and Redberg, 2007; Jackson, 2008). These statements depict that both gender is associated with CVDs but men suffer it more. However, women start to suffer CVDs when menopause has started. The reason most often cited for the gender difference is a protective effect of oestrogen in the development of CVDs. Oestrogen is female reproductive hormone that tends to reduce the level of cholesterol and blood pressure in the menopausal age which increase cardiovascular diseases. From menopause upwards, women tend to have high level of cholesterol and blood pressure than men.

The difference may also be linked to substance use disorder (smoking and alcohol) which is more common among men than women. Pilote et al. (2007) noted that the prevalence of smoking is lower in women than men which decreased CVDs and CVD mortality rates among women. It has been noted that males are predisposed to CVDs than women, this study then determined the association of gender with onset of CVDs among the retirees in Enugu state. Level of education is another factor of interest to be determined in this study

Education is a key determinant of one's employment and income potentials of the individual. One's level of education might increase his or her knowledge and improve decision making in issues related to health. This is because education is a major source of knowledge and empowerment that breaks ignorance. The educational attainment of the elderly may differ which may have effect on the occurrence of cardiovascular diseases. Educational level is related to substance use disorder, unhealthy diet and physical inactivity which are strong predisposing factors for cardiovascular diseases. Institute for public Health (2008) indicated that low level of education is associated with hypercholesterolemia, abdominal obesity and hypertension. Cal, He, Song, and Cui (2013) reported a low prevalence of CVDs in individuals with higher educational background. With higher education, an individual may understand the risks of unhealthy lifestyles, the benefits of accessing health facilities and abiding by the health instructions. This is because education is known to influence health positively through promotion of healthy lifestyles.

With higher education, an individual may learn from media advertisement and publications that unhealthy lifestyles such as smoking, alcohol abuse and unhealthy diet are dangerous to health and may try to modify such risky lifestyles. Contrarily, low level of education may be associated with poor understanding of health information, non utilization of health facilities, unhealthy lifestyles and unhealthy diet, and may not see the need to modify such unhealthy lifestyles. The unhealthy lifestyles together with other risk factors correlate to cause CVDs in the elderly. It is therefore necessary to find out how level of education of retirees in Enugu state is associated with cardiovascular diseases. Level of education of the retirees may determine their level income on retirement.

Individuals' level of income may determine the lifestyles, diet and resources for medical services. Income refers to the total money an individual gets to cater for family needs and other expenses. Charlotte et al. (2009) indicated that poverty has been considered one of the major

determinants of CVD risk factors worldwide. This may be that the poor elder cannot afford healthy diet to prevent CVD risk factors and when the problem arises, the poor as well cannot afford to pay the exorbitant medical bills. WHO (2015) stated that over three quarter of CVD death caused by CVD risk factors take place in low and middle income countries (LMICs). LMICs are known for low earnings, inadequate number of health personnel and health facilities to cater for the general public (retirees inclusive). Poor elders may not have enough money to eat healthy diet which may lead to development of metabolic risk factors such as hypertension, diabetes and hypercholesterolaemia. Even the poor with family risk factors such as diabetes, hypercholesterolemia may not have the resources to control them which can lead to CVDs. This may be attributed to poor access to health care services, poor dietary habits, substance use disorder and poor compliance to medications due to poverty. Therefore, this study will examine the relationship between place of residence of retirees and cardiovascular diseases.

Place of residence may be one of the factors associated with CVDs. Location can be categorized into urban and rural setting. Each of the settings may have different implication for CVD risk factors. Tang et al. (2014) stated that living in urban was associated with lower risk of CVDs especially cerebrovascular disease. CVD mortality of residents in rural areas of China was significantly higher than those in urban and suburban ones (Cheng, Rosenberg, Wag, Yangan, & Li, 2011). Cheng et al. attributed that to health systems in rural areas which may not be well equipped with both material and personnel resources, and that the available health facilities are not located within the rural communities for CV risk assessment, early diagnosis and management of the CVD risk factors. Contrarily, (Indrayam, 2005) reported that CVDs was high among urban dwellers compared to rural dwellers in India. This might be that certain CVD risk factors such as obesity, physical inactivity, smoking and alcohol abuse are more prevalent in the urban areas which can predispose to CVDs. Malan, Wissing and Seeds (2008) indicated that people who spent a longer period of their life in the urban areas were more likely to be hypertensive and women in particular were more likely to smoke. This may be attributed to the type of lifestyles such as physical inactivity due to mechanization and dependent on cars, smoking and unhealthy diet associated with urban communities. The knowledge of location as a variable associated with CVDs will help to direct appropriate preventive measures to stop the scourge of CVDs among the elderly. This study examined how location is associated with development of CVDs among the retirees in Enugu state and formulated preventive strategies.

Preventive strategies for CVDs.

Preventive strategies refer to careful plans or methods for avoiding CVD risk factors among the elderly. Lloyd-Jones et al. (2010) stated that achieving CVD risk prevention and ultimately reducing death and disability from CVDs require specific strategies for lifestyle changes and adherence to medical therapies across all racial ethnic populations (Including elderly). Edward et al. (2016) indicated that changes in health-related behaviours can prevent CVD risk factors. Eileen, Kathy and Berra (2012) outlined strategies to prevent CVD risk factors to include smoking cessation, improve physical activity and eating heart- healthy diet, controlling hypertension and diabetes. The lifestyle changes and behaviours to prevent CVD risks among retirees in Enugu State include smoking cessation, improving physical activity, eating heart healthy diet, weight control, controlling hypertension and diabetes. The strategies will be discussed under primordial, primary and secondary.

Primordial prevention is referred to as activities that inhibit the penetration of CVD risk factors into the population. WHO (2010) stated that this involves a combination of population wide prevention and individual healthcare intervention strategies. Mendis and Fuster (2009) indicated that this requires a multi-sectoral approach involving health, finance, education, transport, agriculture, food, trade, environment and urban planning sector. These sectors can collaborate with the government to provide sensitive campaign and awareness programme that can reach the general public. The awareness is to assist the public to adopt healthy lifestyles such as avoiding tobacco, drinking responsibly, engaging in physical activity and eating healthy diet.

Primary prevention is aimed at avoiding disease or injury before it occurs. Katz and Ather (2009) described primary prevention as methods to avoid occurrence of disease either through eliminating disease agents or increasing resistance to disease. Hachinski (2010) noted primary prevention will prevent development of atherosclerosis in people with risk factors. Primary prevention is targeted at those that already have the risk factors to avoid developing cardiovascular diseases. This can be achieved through health education of elders having the risk factors on the need to access and utilize healthcare services where they can be advised on modification of lifestyles. This entails quitting tobacco use, avoiding alcohol abuse andsedentary lifestyle and eating healthy diet.

Secondary prevention aims to reduce the impact of a disease or injury that has occurred. Nathan (2015) described secondary prevention as action that focused on those who have already

developed metabolic risk factors but where aggressive control of risk factors can have major impact in preventing cardiovascular diseases. This involves controlling hypertension and diabetes with died and medications. Secondary prevention will entail health educating the retirees on the need to adhere to dietary regimen such as avoiding highly processed food. sugary food (ice cream and other junk foods), reducing salt intake, reducing intake of meat, egg, butter, increasing intake of fruits and vegetables, adherence to their drugs and clinic appointments. Generally, strategies to address lifestyle modifications and metabolism risk factors are discussed below:

Preventing or quitting cigarette smoking is an important strategy to prevent CVDs such as heart attacks, heart failure, strokes and peripheral artery disease. Shanti, Pekka, and Bo (2011) affirmed that smoking cessation and avoidance of second-hand smoke prevents CVD risk and thereby help to prevent CVDs. World Health Organization (2011) outlined the WHO framework convention on Tobacco control (FCTC) guidelines to quit or reduce cigarette smoking to include increasing tobacco taxes and prices, creating completely smoke-free environments in indoor workplaces, public places and transportation, warning the population about the dangers of cigarette smoking, banning tobacco advertising, promotion and sponsorship, creating strong national tobacco control programmes as a mechanism to exert governmental leadership to tobacco control and protecting public health policies from commercial and other invested interests of the tobacco industry. Strategies to be employed among retirees in Enugu State to quit cigarette smoking include counseling and creating awareness on the adverse effect of cigarette smoking. The retirees will be urged to avoid environmental exposure and other smokeless tobacco as is as dangerous to health as the actual smoking. Another strategy to be considered in CVD risk prevention among the retirees is physical activity

Preventing harmful use of alcohol is one of the key strategies to avoid CVD risk factors. WHO (2010) outlined the strategy to reduce harmful use of alcohol to include excise taxes on alcoholic beverages, regulation of physical availability of alcoholic beverages including restrictions outlet density, time and place of sales, public health oriented licensing systems and government monopolies of retail sales, drunk-driven countermeasures such as lowered blood alcohol concentration and zero tolerance for random breath testing and sobriety check points, legal based comprehensive restrictions on bans on advertising and promotion of alcoholic beverages, and treatment of alcohol use disorders and brief interventions for hazardous and

harmful drinking. Bergeron (2008) asserted that France practiced strict restriction of alcohol advertising and marketing among their populace. In this study, strategies to prevent harmful use of alcohol will include suggestion for government ban on advertisement and marketing of alcoholic beverages, placing of ban on sale of illicit gin (kai-kai, ton) in the public places through community vigilante, health education to create awareness on adverse effect of harmful use of alcohol and referring those with alcohol use disorder to healthcare providers.

Physical activity can play a significant role in controlling overweight and obesity. Kelly and Kelly (2006) indicated that the amount and intensity of exercise was significant in terms of HDL, and triglyceride levels, as well as favourable changes in the size of lipoproteins among individuals aged 45 and 65 years. Dumurgier, Elbaz and Ducimeriere (2009) noted that people who exercise regularly such as walking, climbing stairs and playing sports were at a 39 per cent lower risk for CHD deaths than the less active people. Nelson, Rejesk, Blair, Duncan and Judge (2007) asserted that all healthy adults aged 18 to 65 years need moderate-intensity aerobic physical activity for a minimum of 20 minutes in three days each week. Physical activity strategies to be employed to prevent CVD risk among retirees in Enugu State include assessing the retirees to ascertain the type of exercise suitable for each retiree, encouraging the fit retirees to engage in moderate physical activity for 30 minutes on five days a week while the sick retirees with multiple risk factors such as hypertension, diabetes will be referred to physician to ascertain the exercise suitable before commencing any physical activity. Physical activity will increase energy expenditure thereby reducing overweight and obesity.

Overweight and obesity is a major public health concern among the elderly. This condition in the elderly may be attributed to imbalance in energy intake and energy expenditure since the retirees are not actively employed. It may be due to old age problems such as arthritis and other chronic illness which compels them to be staying at home leading to increased weight gain and subsequent obesity. Maruthur, Wang and Apple (2009) stated that 5 per cent weight loss is associated with 12 to 14 per cent reduction in 10-years risk of Coronary heart disease. Villareal, Apovain and Kushner (2005) recommended weight loss in the elderly who are obsessed (BMI greater on equal to 30kg/m) combined with weight-related problems or functional limitations. Villareal, et al. recommended lifestyle intervention consisting of energy-restricted diet, behavioural modifications and multi component exercise programme 3 times a week for reducing weight in the obsessed elderly. Strategies to reduce weight among the retirees in Enugu

State will include assessment of the BMI and waist circumference, encouraging physical exercise and counselling on healthy diet.

Healthy diet is one of the significant strategies to reduce CVD risk factors. West, Elaine, Bursac and Felise (2008) stated that changes in dietary behaviour which include reduction in calories, saturated fats and sodium among high-risk individuals including elderly have been prospectively associated with a 58 per cent reduction in diabetes and a 42 per cent reduction in hypertension. Kotseva (2010) recommended that adequate intake of fruits and vegetables reduce the risk of CVDs among the elderly. Strategies to be employed among retiree in Enugu State to facilitate healthy diet includes encouraging the retirees to consume diet rich in fruits and vegetables, whole gain high fiber foods, fish especially only fish at least twice a week, to reduce intake of saturated fats, trans-fat and cholesterol foods, limit intake of beverages and food with added sugar, prepare food with little salt and to avoid additional salt on already prepared food. Healthy diets will help to reduce hypertension, diabetes and hypercholesteroleamia.

Controlling hypertension is an important strategy to prevent cardiovascular diseases. Sverkey et al. (2005) and Appel, Stegmay and Fevent (2005) indicated that dietary pattern change, sodium restriction and weight reduction may be particularly important for blood pressure control in black Americas and other minority populations, elders inclusive. Lin, Appel, Craddick, Chen, and Champni (2007) and Funk et al. (2008) noted that nutrition counselling and exercise are effective in lowering blood pressure and that salt restriction yields the greatest benefits in lowering blood pressure in hypertensive black Americans. These strategies applied to black Americans to lower blood pressure can be applied among retirees in Enugu State to reduce or control high blood pressure. These strategies include encouraging lifestyle change such as weight control, increased physical activity, moderate alcohol consumption, sodium restriction, eating of food rich in fruits and vegetables and discouraging intake of fats, trans-fats and processed food, checking of blood pressure, keeping clinic appointment and adherence to drug regimen. Another risk factor that can be control or prevent through lifestyle changes is diabetes mellitus especially type 2 diabetes.

Preventing or controlling diabetes mellitus is vital for prevention of heart affects, strokes and other complications of diabetes. Knowler (2009) indicated that lifestyle intervention proved especially effective in preventing diabetes among older adults with persistent effect for up to 10 years. Rejesk (2012) affirmed that weight loss and improved fitness lowered the risk for loss of

mobility in middle aged and older adults with diabetes. This implies that diabetes can be prevented or reduced through weight loss, physical exercise and reduction in intake of processed high sugar diet. Strategies to prevent or control diabetes among retirees in Enugu State include regular checking of blood glucose level in the health facility, adhering to the dietary regimen, physical exercise, avoidance of processed sugary food, sugary drinks and adherence to the medications as prescribed.

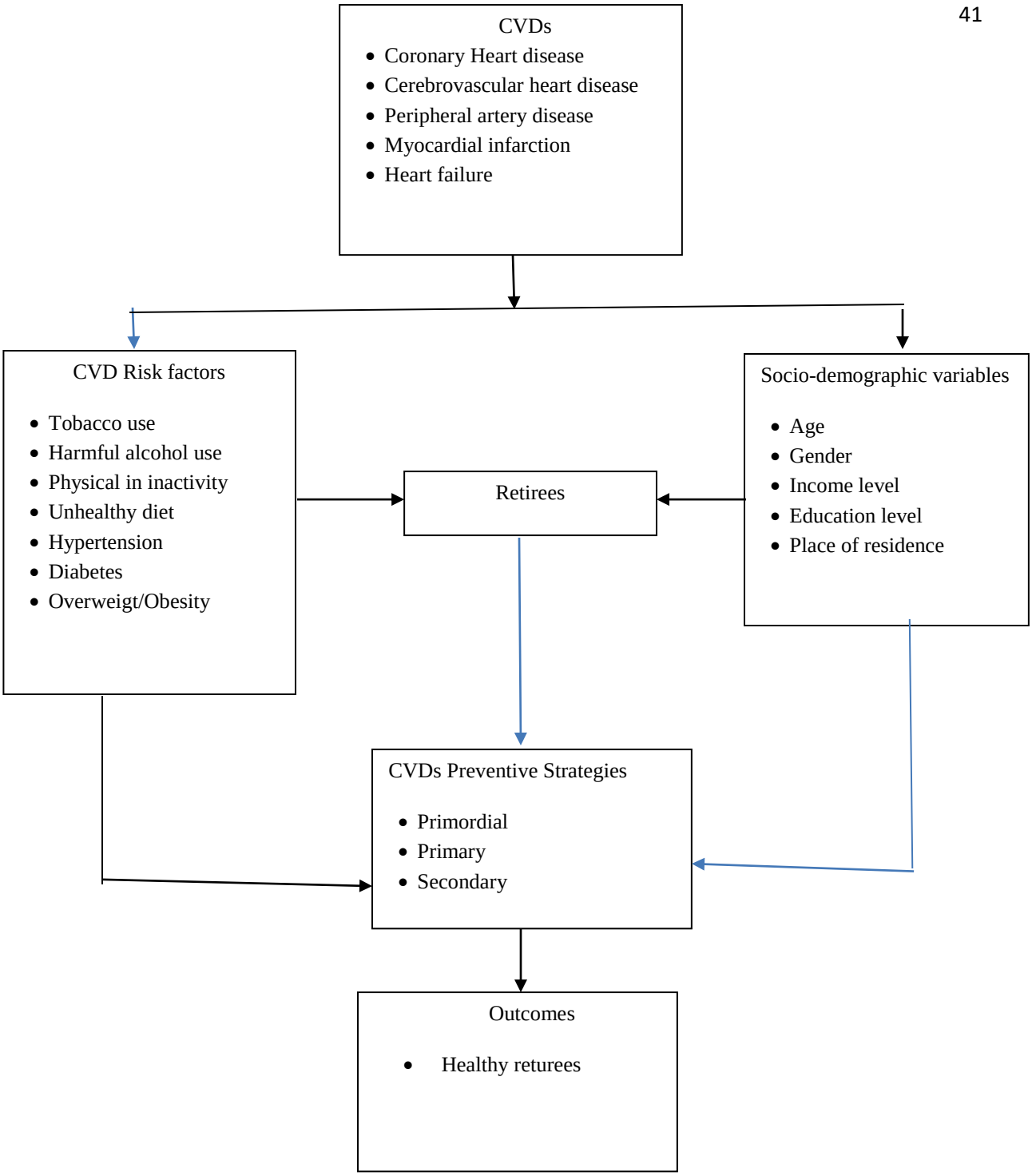

Fig. 1: Schematic representation of conceptual framework.

The above diagram represents the conceptual framework. It indicates how CVDs are associated with socio-demographic variables and risk factors (such as cigarette smoking, alcohol abuse, unhealthy diet, physical inactivity, obesity, hypertension and diabetes) among retirees. The schema also shows preventive strategies that can be applied to prevent the CVDs resulting in healthy outcomes.

Theoretical Framework

Theories are set of ideas that are intended to explain reasons behind alternations in individual's behavioural patterns. Theories play essential role in designing health promotion programmes for solving health and behavioural problems. Noar (2005) indicated that behavioural theories are among the useful tools utilized by health education practitioners which helped to understand health behaviours as well as basis for which prevention aimed at increasing health behaviour can be developed. The present study was anchored on two models. These models are Health Belief Model (HBM) and Information, Motivation and Behavioural (IMB) skill model.

Health belief model (HBM)

Health belief model (HBM) was developed by Rosenstock, Berker and Stecher (1950). The model is used to predict preventive health behaviours and also the behavioural response to treatment in disease conditions. The model can be used to guide health promotion and disease prevention programmes. The model focused on individual beliefs about health conditions which can predict the individual health related behaviours. Thalacker (2011) outlined the primary concepts of HBM to include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy.

Perceived susceptibility refers to a person's opinion of the chances of getting a certain disease or condition. For an example, if the retirees anticipate the likelihood of developing CVD risk factors, the individual would adopt positive lifestyles to prevent the CVD risk factors. Also, if the retiree already with the risk factor perceived that the chances of getting CVD is high, the person will do anything possible to slow down the progression of the disease.

Perceived severity implies a person's opinion of the seriousness of certain disease or condition. This includes the manifestations, complications and consequences. An individual will alter health related behaviours according to the perceived severity of the disease to their health. For instance, if a retiree who indulges in unhealthy lifestyles such as tobacco, physical inactivity, harmful alcohol consumption, unhealthy diet perceived that these risk factors can result to CVDs, and that the manifestations, complication and consequences of the condition are very serious and endangers their health, such retiree will practice healthy lifestyle and dietary modifications.

Perceived benefit refers to belief that the person is concerned on the effectiveness of the measure to reduce the risk, the progress of the disease or seriousness of the impact. This explains

that when threat to health is perceived, the person's ability to adopt a positive behaviour depends on the person's perception of the benefits of the required actions to reduce or prevent the disease. This implies that if retirees perceived the susceptibility to and severity of CVD risk factors and that it threatens life, his action to adopt positive lifestyle will be influenced by beliefs of the benefits to be derived from the adoption of positive heart healthy lifestyles to reduce CVD risk factors.

Perceived barrier refers to belief about the problem to be encountered in attempting to change behaviour. These barriers are impediments (obstacles) to adoption of the recommended lifestyle modifications. These barriers can be cost of treatment, pain and therapy. The individual has to balance benefit of the recommended action and the barrier to action. For instance, if a retiree perceived that lifestyle modifications (eating healthy diet, exercising regularly, quitting smoking) will prevent development of metabolic risk factors even though it may be expensive and boring, the retiree may not hesitate to adopt positive lifestyles. This is because the benefits to be derived (being healthy) outweighs the barriers (cost) to be encountered while adopting the positive lifestyles.

The model also incorporated cues to action as one of the elements in eliciting patterns of behaviour change. This refers to strategies either internal or external which can activate a person's readiness to act and exhibit an observable behaviour. Strategies that can stimulate retirees to modify lifestyle can be communicated through health education, mass media, one-on-one counselling and rural outreach health programmes.

Self-efficacy is a new concept in HBM. This refers to a person's confidence to successfully perform the recommended actions. In this study, self-efficacy implies retirees' ability to practice and maintain the healthy lifestyles against the habitual unhealthy behaviours. This involves continuous sensitization and encouragement that will enable the retirees to continue practicing positive lifestyle regardless of the barriers.

In summary, retirees will act to avoid CVDs if they believe that they are vulnerable, that CVDs are serious health conditions, and that their benefits of action (lifestyle modifications) outweigh the perceived barrier (cost and modification). Information from health educators can be cues to adoption of healthy lifestyles and should develop self confidence in maintaining such lifestyles at all situations to keep healthy even at old age.

Information-motivation-behavioural(IMB) skill model

This model was propounded by Fisher and Fisher (1992). The three key constructs of this model are information, motivation and behavioural skills. The authors posit that performing a health behavior is a function of the extent to which someone was well informed about the behavior, motivated to perform the behaviour and has the requisite skills to execute the behavior and has the ability do so across various situations. The first construct of this model is information. Information refers to accurate knowledge an individual has that can help to guide some behaviours. Fisher, fisher, William and Malloy (1994) stated that preventive information is directly related to preventive behaviours. According to the authors the more relevant information an individual has the greater the likelihood of indulging in preventive behaviours. This can be applied in this study where information can be directed to retirees to enable them engage healthy lifestyles such as avoiding cigarette smoking, harmful use of alcohol, physical activity and eating healthy to prevent CVD risk factors and subsequently prevent CVDs. With accurate information, retirees can be motivated to act.

Motivation is the second construct of the IMB model. This comprised of personal and social motivation. Personal motivation refers to personal beliefs and attitudes to practice preventive behaviours while social motivation refers to individual's perception of social support from significant others to indulge in preventive behaviours (Fisher & Fisher, 1994). With personal and social motivation, retirees who have been engaging in unhealthy lifestyles such as cigarette smoking, harmful use of alcohol, physical inactivity and unhealthy eating can be motivated to quit such unhealthy behaviours to prevent CVDs. When retirees are motivated, it is necessary to acquire behavioural skill to maintain the preventive behavior. Behavioural skills is the last construct of IMB skill model. This is composed of objective ability and self-efficacy. Objective ability refers to the ability refers to the ability of the individual to perform necessary preventive health behavior while self-efficacy is the confidence that the individual has the ability to perform a given health behavior at every situation. Applied in this study, when retirees acquire behavioural skills it implies that retirees have the ability to continue on the modified health behaviours at every situation without digressing. This is suitable in the secondary preventive strategy for retirees already with CVDs to prevent reoccurrence of CVD events. In summary, accurate information will motivate retirees to adopt and maintain behavioural skills to prevent cardiovascular diseases.

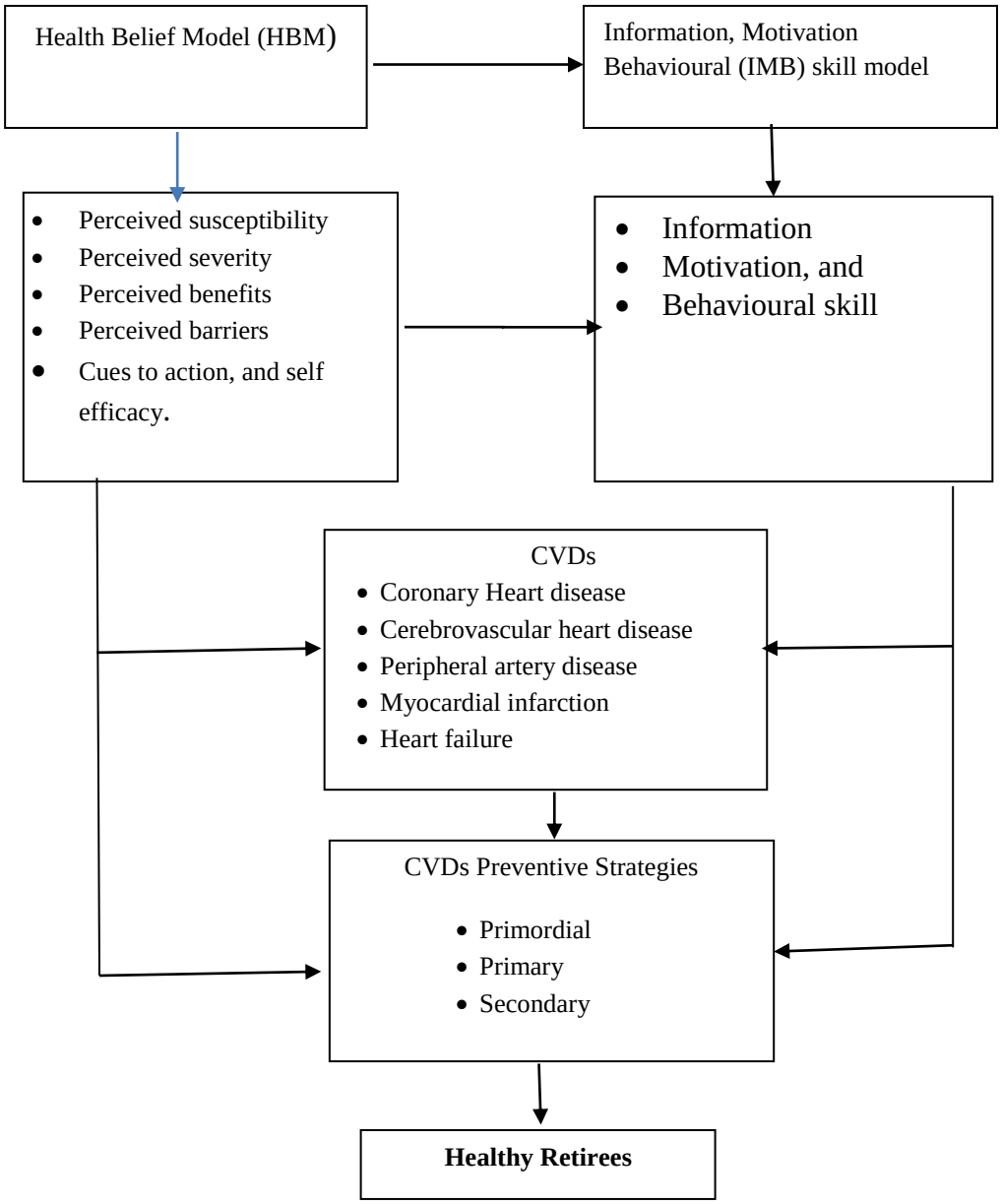

Figure 2: Schematic representation of theoretical framework

The above diagram shows how the models are applied in this study. HBM emphasizes that acceptance of preventive strategies against CVDs depends on the retirees' perceived susceptibility and severity which can stimulate the retiree to take action and maintain it considering the benefits regardless of the barriers. Information, motivation and behavioural skill model explains that with accurate information, retirees will be motivated to prevent CVDs and to sustain the acquired behavioural skills throughout life to be healthy retirees.

Empirical Studies

This section contains reviewed studies on cardiovascular diseases (CVDs) risk factors for CVDs, socio-demographic correlates and preventive strategies for CVDs.

Studies on cardiovascular diseases.

Ojikutu (2009) conducted study on the prevalence of CVD in Lagos state, Nigeria. The aim of the study was to examine the prevalence of CVDs among residents of Lagos State, Nigeria. The study adopted an expo-facto design. The population for the study was all the deaths registered in twenty-four Local Government Areas (LGAs) in the state. Simple random sampling technique was used to select four LGAs. The total deaths of 6,269 registered in the LGAs formed the subjects for the study. Descriptive analysis using frequencies and percentages was used to analyze data.

The findings of the study showed that there was general increase in death rates due to CVD over the five-year period (2000-2004). The findings also showed the following: that Proportional Mortality Ratio (PMR) for CVD was elevated in men (PMR=10,398) while there was deficit in female deaths (PMR=98), the highest CV death rate was recorded among those in the 60-70 years age bracket, the PMR in that group was also highest (PMR=139) among the various age groups, data on seven occupational categories showed elevated mortality with workers in private sector (PMR=135), civil servants (PMR=132) recording the highest in that order while highly significant deficit was recorded among students (PMR=76).The present study is different from the above study because it utilized correlational research design which differs from expo-facto design used in the above study.Also, the present study focused on the different types of cardiovascular diseases while the above study examined deaths from CVDs.

Onwuchekwa and Asekomeh (2009) carried out a study on causes and mortality rate of heart failure in a Nigerian teaching hospital. The objective of the study was to determine the causes and mortality rate of congestive cardiac failure (CCF) in the University of Port Harcourt Teaching Hospital (UPTH), south-south Nigeria, over a five-year period from January 2001 to December 2005. The study was a retrospective research design. Data were collected from 423 patient folders from the admission and discharge registers of the medical wards of UPTH as well as case notes from the medical records department. The 423 patient's folders were used as the population for the study. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 10 and result presented in frequencies and percentages. The findings showed that

242 patients were males while 181 were females. The findings also revealed that the commonest causes of CCF were hypertension (56.3%) and cardiomyopathy (12.3%). Findings of the study also indicated that chronic renal failure, rheumatic heart disease and Ischeamic heart disease accounted for 7.8 per cent, 4.3 per cent and 0.2 per cent of CCF respectively. Also, the findings showed that 18 patients died of various complications of CCF with mortality rate of 4.3 per cent.

Onwuchekwa and Asekomeh (2009) concluded that the burden of CCF in Niger Delta wss mainly attributed to hypertension and recommended that efforts should be geared towards hypertension awareness, detection, treatment and prevention in the region. This study is related to the present study because both studies examined causes or risk factors for CVDs. However, Onwuchekwa and Asekomeh's study focused on CCF while the present study examined five forms of CVDs. Furthermore, the reviewed study used retrospective research design and collected data via patient hospital records, the present study employed a correlational design and collected data via questionnaire and focus group discussion (FGDs).

Ogenyo, Olabu, Ongera, and Sinkeet (2010) conducted a study on pattern of acute myocardial infarction (Ml) in Kenya. The study adopted a retrospective research design. Data were collected from patients care notes and information obtained were diagnosis, age, gender, risk factors and outcome. About 120 case notes were used. The 120 case notes represented 120 patients. The case notes formed the population and sample for the study. Data were analyzed by SPSS version 13.0 and result presented frequencies and percentages.

Finding of the study also identified common risk factors thus hypertension 35 per cent, diabetic mellitus 20.8 per cent, smoking and infection 12.5 per cent each and alcohol 10.8 per cent and indicated that majority 50.8 per cent the patients recovered, 44.2 per cent developed congestive cardiac failure and only 5 per cent died. Ogengo et al. (2010) recommended control measures targeting the risk factors for MI. This study was related to the present study because both studies examined the relationship between age, gender and CVDs, Also, both studies identified common risk factors such as hypertension, diabetes mellitus, cigarette smoking and alcohol use. However, the reviewed study focused on MI while the present study examined five different types of CVDs.

Earl (2011) conducted a study on trends in the risk of coronary heart disease (CHD) among adults with diagnosed diabetes in United States. The objective was to examine the trend in the estimated 10-year risk for developing CHD among adults with diagnosed diabetes in U.S.

Descriptive survey research design was used. Multistage and stratified sampling were used to select a sample size of 1,977 for the study. The instruments for data collection were interview, questionnaire, physical examinations and laboratory examinations. Percentages were used to analyze the data.

The findings showed that there were significant improvements in HbAic concentrations, systolic blood pressure, and the ratio of total cholesterol to HDL cholesterol. The study also showed that the estimated 10-year risk of CHD decreased significantly from (21.1%) between 1999-2000 to (16.4%) between 2007-2008 and that the risk decreased significantly among men, women, whites, African Americans and Mexican Americans. It was concluded that the estimated 10-year risk for CHD among adults with diabetes has improved significantly from 1999-2000 to 2007-2008. Earl (2011) then recommended that sustained efforts in improving risk factors should be beneficial to improve the cardiovascular health of people with diabetes. This tudy is related to the present study because both studies utilised descriptive survey research design and multistage sampling technique. The reviewed study is different from the presnt study because it focused only on coronary heart disease while the present study examined other types of CVDs including coronary heart disease.

Daviglus et al. (2012) conducted a study on prevalence of major cardiovascular risk factors and CVDs among Hispanic/Latino individuals of diverse background in the United States (US). The aim of the study was to describe the prevalence of major CVD risk factors and CVDs (coronary heart disease (CHD) and stroke) among US Hispanic//Latino individuals of different backgrounds, examine relationship of socio-economic status (SES) and acculturation with CVD risk profile and assess cross-sectional association of CVD risk factors with CVDs. The design of the study was cohort study design. Population for the study was 15,079 persons aged 18 – 74 years. Method of data collection was through questionnaire, physical measurement, interview and biomedical measurement. Data were analyzed using statistical tools for social sciences and results presented in frequencies and percentages. Logistic regression analysis was used to examine the associations of CVD risk factors with CHD and stroke prevalence.

Findings indicated that the prevalence of CVD risk factors varied by Hispanin/Latino background: obesity and current smoking rates were highest among Puerto Rican participants (for men, 40% and 37.7%; for women 51.4% and 31.7% respectively), Findings also showed that large proportion of participants (80% of men, 71% of women) had at least one risk factor. Age

and sex-adjusted peculiar of 3 or more risk factors was highest in Puert Rican participants (25.0%) and significantlty higher ($p < .001$) among the participants with less education (16.6%), those who were US- born (18.5%), those who had lived in the US 10 years or longer (15.7%), and those who preferred English (17.9%).

Overall, self-reported CHD and stroke prevalence were low (4.2% and 2.0% in men, 2.4% and 1.2 % in women respectively). In addition, the findings showed that hypertension and smoking were directly associated with CHD in both sexes as were hypercholesterolemia and obesity in women and diabetes in men. For stroke, association was positive with hypertension in both sexes, diabetic men and smoking in women. Daviglus et al. (2012) concluded that among US Hispanic/Latino adults of diverse backgrounds, a sizeable proportion of men and women had adversr major risk factors, prevalence of adverse CVD risk profiles were higher among the participants with Puerto Rican background, lower SES and higher levels of acculturation. The reviewed study is related to the present study because both studies determined risk factors for CVDs and CVDs. However, the reviewed study examined the prevalence of only CHD and stroke while the present study examined 5 diferrent types of CVDs including CHD and stroke.

Owusu and Boakye (2013) conducted a retrospective study on prevalence and etiology of heart failure in patients seen at a Teaching Hospital in Ghana. The aim of the study was to determine the prevalence and etiology of heart failure among patients attending a cardiac clinic in the Department of Medicine, Komfe Anokye Teaching Hospital (KATH), Kumasi, Ghana. Medical records of 524 patients were selected from the cardiac unit. The demographic, clinical and chest x-ray of the patients were examined. Data were analyzed using statistical package for social sciences (SPSS) version 11 using frequency and percentages.

The findings of the study revealed that among 524 patients, 398 had heart failure giving rise to a prevalence of (96%) and that heart failure patients were aged between 13.97 years with the rise age of 56. 5 (±19) year. The findings also showed that more females 213 (53.6%) had heart failure than male 185 (4647). The findings further indicated that etiologies of heart failure disease as the following: hypertension 90 (23%), cardiomyopathy 58 (15%), ischeamic heart disease 10 (23%) and degenerative valvuler disease 31 (7. 8%). This study is different from the present study because it employed retrospective research design and collected data through patient's folders while the present study employed correlational research design and collected

data through questionnaire and focus group discussion. Also, the reviewed study focused on heart failure while the present study examined five types of CVDs including heart failure,

Essien, Andy, Ansa, Otu and Udoh (2014) conducted a study on coronary heart disease (CHD) and the profile of cardiovascular risk factors in South-South Nigeria.The study adopted a retrospective research design. The aim of the study was to examine the autopsy reports of 747 coroner cases and 41 consecutivie clinically diagnosed cases of ischaemic heart disease seen in South-South Nigeria. Population for the study was 747 autopsy reports of coronary artery disease deaths (coroner cases) and 41 consecutive clinically diagnosed cases of ischemic heart disease in South-South Nigeria. Both the clinical and autopsy study was carried out in University of Calabar Teaching Hospital (UCTH) over a fifteen-year period from January 1992 to December 2007 and University of Uyo Teaching Hospital (UUTH) over a seven-year period from January 2001 to December 2007. The 747 coroner autopsies and 41 patients were the population for the study. The autopsy result of coroner cases was reviewed while records of clinical in patients were reviewed. Data were analyzed using percentages and mean.

The findings of the study revealed that coronary artery disease was dangerous in 13 (1.6%) of 747 autopsies and they were predominantly males, urban residents and of high social class with combination of CVD risk factors of hypertension, alcohol use, diabetes mellitus, cigarette smoking, poor physical activities and obesity. The findings further revealed that 30 (71.4%) of the clinical participants had serum cholesterol estimated 19mmol/l for myocardial infarction and 11mmol/l for angina pectoris which was higher than the mean total cholesterol for locality of 3.1mmol/l. Essien et al.(2014) concluded that coronary heart disease and its risk factors were contributing to mortality and morbidity rate in South-South Nigeria. These risk factors include hypertension, alcohol use, diabetes mellitus, cigarette smoking, and physical inactivity. This study is related to the present study becaucse both studies examined the socio-demographic factors and risk factors for CVDs.

Najlaa and Faruk (2014) carried out a study on prevalence of cardiovascular diseases and associated risk factors among adult, population in the Gulf Region. The retrospective research design was adopted for the study. The aim of the study was to analyze the epidemiological data on coronary heart disease, strokes, and the associated risk factors among adult population in the Gulf countries. Data collection was through systematic reviews of publish articles between 1990

and 2014. A total of 62 relevant studies were viewed. The 62 studies reviewed was the population. The result was analyzed using descriptive analysis using percentages.

The findings of the study showed that the prevalence of CHD was 5.5 per cent in Saudi Arabia, annual incidence of strokes ranged from 27.6-57 per 100,000 in the Gulf countries, hypertension and diabetes being the most common risk factors among strokes and ACS Patients. The findings also showed that the prevalence of overweight and obesity ranged from 31.2 per cent -43.3 per cent and 22 per cent- 341 per cent in males and from 28 per cent-343 per cent and 26.1 per cent-44 per cent in females; respectively. In males, the prevalence was from 2 per cent and 6per cent-53.2 per cent, physical inactivity prevalence was from 24.3 per cent and 56.7 per cent-98.1 per cent in males and females. More males (13.4%-37.4%) than females (0.5%-20.7%) were current smokers and data also indicated that poor dietary habits with high consumption of snacks, fatty foods, sugar and fast food.

Najlaa and Faruk (2014) recommended for effective preventive strategies and education programmes to reduce the risk of CVD mortality and morbidity in the gulf region in the coming years. This study is related to the present study because both studies identified risk factors for CVDs. However, the reviewed study is different from the present study because it adopted retrospective research design while the present study adopted a correlational research design.

Oguanobi et al. (2014) conducted a study on pattern of cardiovascular disease amongst medical admissions in a teaching hospital in southeastern Nigeria. The study adopted a retrospective research design. The study was aimed at determining the frequency and pattern of CVD in the medical wards as well as the intensive care unit of the university of Nigeria Teaching Hospital (UNTH) Enugu. Data were collected from the ward admission and discharge registers and data extracted include age, sex, date of admission and diagnosis. Data were analyzed using SPSS in Chicago 11 version 16.0 means and standard deviation. Comparison of continuous variables between the groups (male and female) was analyzed with t-test while discrete variables between groups where compared with chi-square and fisher's exact test.

Finding of the study showed that a total of 6,182 patients was admitted over the period of the study and cardiovascular disorders were documented in 1,261 (20.46%) patients. Findings of the study also showed that prevalence of cardiovascular disorders was found to be significantly higher among the females than males; 693 (24.9%) were between 41-70 years with the females being relatively younger than the males (53.34% and 56.42%) respectively. Furthermore, the

findings showed a pattern of CVDs thus: hypertension and its complications (86.36%), rheumatic heart disease (4.52%), dilated cardiomyopathy (3.09%) and alcoholic heart muscle disease (0.958%). Oguanobi et al. (2014) concluded that CVDs were major causes of morbidity in the environment and recommended that early detection, improved outpatient care as well as inclusion of management at the community level to reduce complications and the need for hospital admissions. This study is related to the present study because both studies examined types of CVDs. However, the reviewed study utilized retrospective design while the present study utilised correlational research design.

Osuji, Onwubuya, Ahaneku, and Omejua (2014) conducted a study in pattern of cardiovascular admission at Nnamdi Azikiwe University Teaching Hospital Nnewi, South, East Nigeria. Retrospective research design was adopted for the study. The objective of the study was to determine the pattern of cardiovascular admissions at Nnamdi Azikiwe University Teaching Hospital Nnewi. Data were collected by retrieving patients' folders, bio-data final diagnosis and final outcome were entered into a pre-coded spreadsheet. About 537 patients' folders were used which formed the population for the study. Data was analyzed with the aid of the statistical package for social sciences (SPSS Inc. Chicago, 4 version 13) and results presented in frequencies and percentages.

Findings of the study showed that out of 537 patients that were admitted into the study, 322 (6o%) were male and 215 (40%) were females giving a male/female ratio of 1.5: 1P < 0.000001, 359 (67.5%) was discharged, 170 (32%) (92 males and 78 female P< 0.014) died and 8 (0.5%) were discharged against medical advice of which two were patients with cerebrovascular disease (CBVD). The majority of the deaths 105 (61.8%) were patients with CBVD. The findings further revealed that 33 of the subjects were single, 406 were married, 94 windowed (11 males and 83 females) and 4 were divorced. Also, the findings indicated that 251 (46.7%) were admitted for CBVD, and 166 (30.9%) for heart failure.

Osuji el al. (2014) concluded that cardiovascular disease contributed significantly to medical admissions, the elderly accounting for a significant proportion and recommended for intensification of primary preventive strategies for CVDS. This study is similar to the present study because the reviewed study recommended for preventive strategies while the the present study formulated preventive strategies. However, the reviewed study identified only CBVD and

heart failure among the population while the present study examined five forms of CVDs including CBVD and heart failure.

Samide, Anarifi, Akins, and Coram (2014) conducted a study on patterns of CVD mortality in Ghana, a 5year review. The aim of the study was to review autopsy cases at korle-Bu Teaching Hospital (KBTH) Accra-Ghana from 2006 to 2010. Data was collected from all CV deaths diagnosed at autopsy within the study period. A total of 19,289 cases were reviewed and the number represent the population. The 19, 289 were analyzed with percentages and frequencies. Chi-square was used to show the association between sex, age and CVD deaths.

The findings showed that CVD constituted about 22.2 per cent of all causes of death from autopsy. The findings also showed that old age accounted for about 50 per cent of CVD. Also the finding showed that men's had higher proportion of CVD death compared to females (chi=27.284, P= 000). Samide et al. (2014) concluded that further studies are needed to primarily help in formulating strategies/policies for prevention of CVD. The reviewed study was different from present study because it reviewed deaths from CVDs while the present study focused on the living to identify socio-demographic correlates of CVDs. Also, the reviewed study analyzed the hypotheses using chi-square while the present study analyzed the hypotheses using binary logistic regression analysis.

Tang et al. (2014) conducted a study on risk factors for cerebrovascular disease (CBVD) mortality among the elderly in Beijing: a competing risk analysis. The study used cross-sectional research design. The objective was to examine the association of combined lifestyle factors and physical conditions with cerebrovascular disease mortality, after accounting for competing risk events, including death from CVDs, cancer and other diseases. Simple random sampling was used to select 2010 subjects aged over 55 years. Method of data collection was interview using Beijing Longitudinal study of Ageing (BLSA). Multivariate regression analysis was used to analyze the data.

The findings of the study revealed that elderly females were at a lower risk of death from cerebrovascular disease than elderly males; and that hypertension and overweight or obesity was associated with high CBVD mortality risk. Findings also indicated that CBVD was lower in married group than those without spouse, and the mortality was lowest in nutrition sufficient group than among frequent consumption of meat group. Also, the findings of the study showed that living in the urban was associated with lower CBVD mortality risk. Tang, et al. (2014)

concluded that CBVD was associated with gender, age, blood pressure, residence, BMI, nutrition and the result of self-rated health assessment in the elderly in Beijing, China. This study is different from the present study because it adopted cross-sectional research design while the present study adopted correlational research design. Also, the reviewed study collected data through interview while the present study collected data through questionnaire and focus group discussion.

Sanya et al. (2015) carried a survey study on prevalence of stroke in three semi-urban communities in middle belt region of Nigeria. The aim of the study was to determine the stroke prevalence in a semi urban community in middle-belt region of Nigeria. A total of 12, 992 residents were screened and probable stroke cases were identified by trained health care workers. Instrument for data collection was questionnaire.

Findings of the study showed that prevalence of stroke was 1.31/1000 population and that the prevalence was higher among males then females 1.54 vs 1.08/1000 with a ratio 14:1. Findings further revealed that 16 (94.1%) had one or more risk factors for stroke and that uncontrolled systemic hypertension (82. 48) was the commonest risk factor for stroke followed by transient ischeamic attack (TIA) (41.2%). Sanya et al. (2015) concluded that stroke condition is prevalence in the study environment especially in older adults and men. The above study focused on prevalence of stroke while the present study examineded stroke as well as other four forms of CVDs

Anu, Vinod, Kuryan, and Jose (2016) conducted a cross-sectional study on prevalence of coronary heart disease in rural and urban vellore. The aim of the study was to determine the prevalence and risk factors for CHD, in Vellore Tamil Modu and to compare the current prevalence with prevalence of CHD in the same areas in 1991-1994. Multistage sampling was used to select a sample of adults aged 30-64 years. WHO STEPS instrument and rose angina questionnaire was used to collected data. Data was analyzed using frequencies and percentages.

Findings of the study showed that prevalence of CHD was 3.4 per cent among rural men, 7.4 per cent among rural women, 7.3 per cent among urban men, and 13.4 per cnt among urban women. The findings also indicated that age adjusted prevalence in rural women tripled and in urban women doubled, with only a slight increase among males, between 1991-1994 and 2010 - 2012. Anu et al (2016) concluded that there was large increase in the prevalence of CHD, and suggests the need for further confirmatory studies and interventions for prevention in both rural

and urban areas. The reviewd study is related to the present study because both studies utilizied multistage sampling procedure for selection of sample. Also, the reviewed study is related to the present study because both studies employed frequencies and percentages for the analysis of data.

Nwafor and Alikor (2016) carried out a retrospective study on pattern of cardiovascular disease admission in the medical wards of the University of Port Harcourt Teaching Hospital. Data were collected from the ward admission and discharge registers, details obtained include age, sex, diagnosis, outcome and comorbidities. A total of 1,989 patients were admitted into the medical wards over the period of the study. Patients with CVDs were 529 constituting 31.6 per cent of the total admission. Data were analyzed using SPSS version 17.0 and results presented as simple frequencies and tables.

Findings showed that out of 629 that had CVDs, 346 (55%) were females with males constituting 283 (44.99%). Result further revealed that ages ranged from 20-94 years with a means of 65.04 for males and 55.12 for females. Also, the finding of the study indicated that the pattern of CVDs were heart failure (43.1%), CBVD (24.3%), acute myocardial infarction (1.6%), uncontrolled hypertension (14.8%) diabetes and its complications (15.6%), asymptomatic bradycardia (0.3%), acute pericarditis (0.2%) and ventricular tachycardia (0.2%). The findings of the study also showed that out of 629 cases, 536 (85.2%) were discharged home, 13 (21%) signed against medical advice, for 3 patients (0.5%) outcome was unknown while about 72 died giving a case fatality rate of 12.2 per cent. Nwafor and Alikor (2016) concluded that prevalence or CVDs at UPTH was high and that heart failure and CBVD were the major causes of CVD admission, and suggested that more efforts at primary prevention and CVD risk factor control will be more rewarding. This study is in contrast with the present study which employed field based study as against hospital based (collecting data from registers).

Paquissi, Cuvinje, and curvinye (2016) carried out a cross-sectional study on prevalence of peripheral Arterial disease (PAD) among adults' patients attending outpatient clinic at a general hospital in south Angola. The aim of the study was to evaluate the prevalence of PAD in patients attending an outpatient clinic at a general hospital in Huambo, south Angola. A sample of 115 patients aged 40 years and above were selected using simple random sampling. Instrument for data collection was questionnaire.

The findings of the study showed that out of 115 patients, (62.60%) were women and prevalence of PAD was 42.6 per cent. The findings also revealed that among patients with PAD, (95:92%) had mild disease and (4.08%) had moderate to severe disease. Also, the findings identified age (> 60 years) as the main risk factor for PAD and that the prevalence was slightly higher in men and hypertension subjects. Paquissi et al. (2016) concluded that prevalence of PAD was (42.6%) and recommended for more studies with representative sample to clarity PAD prevalence and associated risk factors. The present study is related to the reviewed study because both studies used questionnaire as a method of data collection.

Rouba et al. (2016) carried a cross-sectional study to determine the prevalence and correlates of coronary heart disease (CHD): first population-based study in Lebanon. Multistage sampling technique was used to withdraw a sample size of 1,200 of individuals' age 40 years and above. Questionnaire was used to collect data. Data were analyzed using multivariate analysis.

Findings indicated that 13.4 per cent of the Lebanon population aged 40 years and above suffers from CHD. Findings also revealed that CHD was associated with old age, male sex, lower economic status, hypertension and diabetes, while smoking and waist circumference did not seen to have an independent effect on CHD. Rouba et al. (2016) suggested data targeted interventions aimed to reduce these classic risk factors should be conducted to decrease the burden of CHD, especially in economically disadvantaged people. This is related to the present study because both utilized multistage sampling technique to with the sample for their studies.

Zeldan et al. (2016) carried out a cross-sectional study on prevalence and correlates of coronary heart disease in Lebanon. The purpose of the study was to provide the first national population-based prevalence of CHD and to describe the profile of Lebanese adults with prevalent of CHD. Multistage cluster sample was used to select adults age 40 years and older. Questionnaire was used to collect data. Data were analyzed using SPSS version 11 and data were presented in frequencies and percentages.

Findings of the study showed that 13.4 per cent of the Lebanese population aged > 40 years suffer from a prevalent CHD and CHD seemed to appear more prematurely than in developed countries, and males seemed to be subject to CHD than females until a certain age. The findings also showed that CHD was associated with older age, male sex, a lower economic situation, hypertension, having a family history of premature CVDs, and suffering from diabetes. Again, the findings indicated that smoking and waist circumference did not seem to have an

independent effect on CHD, but rather an effect medicated by biological risk factors. Zeldan et al. (2016) concluded that the relevance of the classic risk factor of CHD and their applicability to the Lebanese population, thus allowing for preventive strategies. Result of the above study was presented in frequencies and percentages while some results of the present study was also presented in frequencies and percentages.

Agbana, Fasoro, Owosen, Ajewole, and Kunle-Olowu (2017) carried out a case control study on cardiovascular diseases (CVDs). The aim was to determine the prevalence of CVDs among Agro-Allied company workers in Nigeria. Simple random sampling was used to select a sample of 528 workers. Data were collected using an interview assisted questionnaire. Statistical package for the social sciences (SPSS) version 10 was used to analyzed the data. Descriptive statistics were presented with aid of tables, in frequencies, percentages and means. Binary logistic regression and chi-square test were used to test the hypotheses. Out of the 526 questionnaire administered, 523 were retrieved giving response rate of 99.10 per cent. 13 of these were discarded for incomplete information on key variable, the remaining 510 were used for data analysis.

Findings of the study showed that mean age was 34 years. Respondents were mostly males (90.6%) female (9.4%) 332 (65.1%) were married and 424 (83.1%) were the Yoruba ethnicity. The findings further revealed that majority of the respondent (67.3%) were Christians and (83.7%) had secondary education and above. Agbana et al. (2017 concluded that age, marital status, salary grade and religion were statistically associated with CVD status ($P< 0.05$) and that being an office worker, earning the lowest income, being less than 50 years of age were significant predictors of CVD risk factors ($P<0.05$). Agbana et al. (2017) recommended for educational and behavioural intervention to encourage adoption of healthy lifestyle to reduce cardiovascular risk factors among workers. This study is diferrent from the present study because it was carried out among serving staff while the present study was conducted among retirees. However, this study is related to the present study as both studies used binary logistic regression analysis to test the hypotheses.

Hagos, Fekadu, Allision, Wondafrash, and Workicho (2017) conducted a cross-sectional study on the prevalence of peripheral Arterial Diseases (PAD), and associated factors among adults in Jimna town, south-west Ethiopia. Simple random sampling was used to select a sample of 178 individuals aged 40 years and above. Descriptive statistics and chi-square or fisher's exact

test were for data analysis and interpretation while univariate and multivariate regression models were used to estimate prediction of PAD.

Findings of the study showed that the overall prevalence of PAD was (10.4%). The findings also identified traditional risk factor of PAD as following, hypertension, diabetes mellitus and current smoking accounting for (29.5%, 6.8% and 12.5%) of PAD respectively. The findings further revealed that female sex, current smoking and diabetic mellitus were significantly associated with increased risk of PAD. This is diferrent from the present study because it employed univariate and multivariate regression models to test hypotheses while present study utilized logistic regression models to test hypotheses.

Nohairs et al. (2017) conducted a cross-sectional study on risk profile of coronary heart disease (CHD) among the staff members of Qossion University, Saudi Arabia. The objective was to estimate the risk profile or CHD among the staff members of Qassion University and to assess their knowledge in a screening campaign in Qassion region, Saudi Arabic. Sample size of 233 staff were selected through simple random sampling technique. Data were collected through questionnaire and were analyzed using SPSS version 18.

The findings of the study found that 30 per cent of the participants have one or more risk factors for CHD, namely. Obesity, 20.6 per cent, Diabetes 10.33 per cent, Hypertension 124 per cent, and Smoking 11.6 per cent. About 54 per cent of the participants have a family history of at least one chronic disease risk factor for CHD. Nohairs et al. (2017) recommended increase health education or promotion programme as an important intervention to reduce the occurrence of severity of CHD risk factors and to improve the quality of the life of the staff member of Qussion University. This is related to the present study because both studies identied CHD is one of the CVDs among the studied populations.

Saidu (2018) conducted a retrospective study on cardiovascular disease (CVD) admissions in medical wards of Tertiary Hospital in North-Western Nigerian Murtala Muhammed Specialist Hospital (MMSH) Kano, North-West Nigeria. The aim of the study was to determine the prevalence and trend of CVDs in a teriary hospital. Data were collected from admissions and discharge records and relevant information extracted were age, sex, diagnosis, duration of hospital stay and outcome. Data were analyzed using SPSS Version 21.0 continuous variables presented as means, standard deviation, while qualitative variables, were expressed of

proportions and percentages while hypotheses, were tested using chi-square. Out of 4902 patients admitted during the period of study 2526 (62.3%) were admitted for CVDs.

Findings of the study showed that 1047 (48.4%) were males and 1119 (51.6%) were females and age range was 14-105 years. The findings of the study also revealed that CVDs accounted for up to 2144 (43.7%) while other non-communicable diseases and communicable diseases accounted for 1140 (46.3%), and that stroke, congestive heart failure and hypertension were the most prevalent accounting for (54.6%, 26.6% and 15.7%) respectively. The findings finally revealed that 1412 (65.2%) were discharged, 714 (32.9%) died, 26 (1.2%) were discharged against medical advice and 14 (0.7%), were referred to other health facilities, and out of 714 that died, majority 47 (65.9%) were patients with stroke. The study concluded that CVD contributed significantly to medical admissions with elderly accounting for significant proportion, and recommended for primary preventive measures for CVD. This is diferrent from the present study because it tested hypotheses using chi-square while the present study tested hypotheses using binary logistic regression analysis.

Studies on risk factors of cardiovascular diseases.

Belue et al. (2009) conducted a study on overview of cardiovascular risk factor burden in sub-Sahara Africa countries: a socio-cultural perspective. The design of the study was retrospective. The purpose of the study was to explore the socio-cultural context of CVD risk prevention and treatment in Sub-Sahara Africa (SSA). Population for the study was all the countries in Sub-Sahara Africa region. Method of data collection was review of African Journals Online (medicine, Pubmed and Psycinfo) using combinations of key country/geographic terms, disease and risk factor specific terms such as “diabetes and Congo”, “Nigeria and Hypertension”. Data were analyzed using percentages.

The findings of the study revealed that the epidemics of CVD in SSA was driven by multiple risk factors working collectively and that lifestyle factors such as diet, exercise and smoking contributed to the increasing rate of CVDs. Also structural and system level issues such as lack of infrastructures for health care, urbanization, poverty and lack of government programmes drive this epidemic and hampers proper preventive, surveillance and treatment efforts. Belue et al. (2009) recommended that an African-centred cultural framework and PEN-3 (perception, enablers and nurtures) model can be used to explore future directions and in SSA. This study is related to the present study because both studies examined the social correlates of

CVDs However, the reviewed study used retrospective design and collected data via review of records while the present study employed correlational design and collected data via questionnaire and focus group discussion.

Ford et al. (2010) conducted a standardized survey study on American women's awareness of CVD risk factors and barriers to heart health in America. The aim of the study was to assess contemporary awareness of CVD risk and barriers to preventive actions including lifestyles interventions and stress, and management in a nationally representative sample of women. The sample for the study was 2300 women selected using simple random sampling technique. Data were analyzed using percentages.

The findings of the study indicated that a significantly high population of women was aware that CVD is the leading cause of death in 2009 (54%) compared with 1997 (30%). Also, the result showed that only (53%) of women said that they would call 911 if they thought they were having symptoms of a heart attack. The findings of the study also indicated common barriers to preventive behavior include family/caretaking responsibilities (57%) and confusion about media messages (42%). Finally, the findings revealed that community-level changes that would be helpful in increasing awareness about CVD risk were access to healthy foods (91%), public recreation facilities (80%) and nutrition information in restaurants (79%).

Ford et al. (2010) concluded that it is a serious issue that about half of the studied women could not have considered calling 911 on experiencing symptoms of heart attack and were unaware that heart diseases is a leading cause of death among women. This study is different from the present study because the reviewed study focused on females while the present study covered both males and females. The reviewed study was related to the present study because both studies employed simple random sampling for selection of sample.

Ejim et al. (2011) conducted a cross-sectional population based survey in Imezi-Owa, a rural community in southeast Nigeria to estimate the prevalence of major CV risk factors in both men and women aged 40-70 years. A total of 858 individuals made up of 247 (28-8%) male, and 611 (71-2%) female, were randomly selection. Data were collected using questionnaires, physical measurement and blood tests. Statistical analysis was done using the personal computer (PC) analytical software, statistical package for social sciences (SPSS Inc. Chicago Version 17). Results were expressed as either mean values (standard deviation) or proportions.

Findings revealed that the prevalence of risk factors among the 858 subjects was as follows: hypertension 298 (4.4%), generalized obesity 257 (30%), and abnormal obesity 266 (31%). Findings also showed that prevalence of hypertension was higher in men while the others were higher in women. Ejim et al. (2011) concluded that prevalence of CVD risk factors was higher in subjects aged 65 to 70 years. The reviewed study is different from the present study because the study was only on rural community while the present study covered both rural and urban communities. Also, the reviewed study is diferrent from the present study because it collected data via questionnaire and physical examination while the present study collected data through questionnaire and focus group discussion.

Rajnish, Bharti, Shiri, Ulhas, and Rajeey (2012) conducted a cross-sectional survey to determine the prevalence of CVD risk factors among rural population of elderly in Wardha District, India. Total population for the study was 19,933 while the sample size was 2,424 elderly people consisting of 51 per cent female and 49% males. Instrument for data collection was WHO-STEPS questionnaire and laboratory assessment of risk factors on those who had two or more of the five measured conventional risk factors. Data collected were analyzed using mean and standard deviation while t-test and Chi square were used to establish the level of significance.

The findings of the study indicated that among the 2424 elderly included in the study (51% women, mean age 67), the prevalence of smokeless tobacco use was 50.8 per cent (95% CI 48.1-52.8; smoking 10.5 per cent; and hypertension 46.3 per cent. only 10.28 per cent of the participants were overweight and 4.1 per cent had central obesity. The findings showed that the prevalence of dyslipidemia in those who underwent blood based test was 40.6 per cent; and hyperglyeamia 4.9 per cent. Rajnish et al. (2012) recommended that strategies to reduce the risk of cardiovascular disease among elderly should be focused on reducing tobacco use and early detection and optional control of hypertension. The reviewed study is related to the present study because both studies were conducted among elderly populations. However, the reviewed study is different from present study because the present study because mean and standard deviation was used for data analysis while present study was analyzed using percentages and phi-coefficient.

Oladipo, Salako, Sadiq, and Falase (2012) conducted a cross-sectional survey on level of knowledge of hypertension and other risk factors for heart diseases among rural Yoruba Nigerian population. Objective of the study was to assess the level of knowledge of hypertension and

other risk factors for heart diseases. The sample size of 2000 subjects was selected using simple random sampling technique. Questionnaire was used for data collection. Mean, standard deviation, frequency and multivariance analysis were used to analyze data collected.

The findings of the study showed that overall knowledge of CVD and its risk factors was poor. Also, the findings indicated that subjects who had more years of formal education or positive family history of CVD and self-reported history of diabetes mellitus were more likely to have a good level of knowledge of hypertension and other cardiovascular risk when adjusted for age, gender and marital status.

Oladipo el al. (2012) concluded that there was a limited knowledge and misconceptions of CVD and its risk factors in the population, and that early detection and prevention practices were significantly lacking due to these gaps in knowledge. The authors then recommended that culturally appropriate public awareness, health education and health education programmes about CVD risk factors and CVDs need to be designed and implemented for the community which can be adopted for other rural population in the country. The reviewed study is diferrent from the present study because it used only questionnaire for data collection while the present study used questionnaire as well as focus group for data collection.

Olarinde, Adeleke, Olutoyin, and Oluwole (2013) carried out a cross-sectional study on prevalence of cardiovascular (CV) risk factors among adults without obvious CVD in a rural community in Ekiti State, Southwest, Nigeria. Objective of the study was to identify and determine the prevalence of traditional CV risk factors according to sex in inhabitants of a rural community in a developing country. Population for the study was one hundred and twenty adults. Data were collected with questionnaire, physical measurements and biomedical examinations. Data were analyzed with statistical package for social sciences version 16.0 software.

The findings of the study indicated that majority of the participants were 60-79 years. Hypertension was (66.4%), diabetes (48%), abnormal obesity (38.49%), smoking (29%), physical inactivity (29.8%), and high alcohol consumption (21%). The findings also revealed that abdominal obesity, alcohol consumption and smoking were statistically significantly associated with sex. Olarinde et al. (2013) concluded that traditional cardiovascular risk factors such as hypertension, obesity, physical inactivity and low density cholesterol had a high prevalence in the rural Nigerian community. Olarinde et al. (2013) warned that the high prevalence of hypertension in such a poor community many result to high risk of future CV

event. The reviewed study is diferrent from the present study because it was conducted in a rural community while the present study was carried out in both rural and urban communities of the Enugu State. Also, the reviewed study collected data through questionnaire, physical measurement and biomedical examinations while the present study collected data through questionnaire and focus group discussion.

Arnah et al. (2013) conducted a cross-sectional study on prevalence of cardiovascular disease (CVD) risk factors in people of Asian India Origin. The objective of the study was to investigate the age and sex variation in the prevalence of CVD risk factors among the people of Asian Indian origin. Six hundred and eight-two adults were the population for the study. Data were collected with questionnaire, physical measurement and laboratory examinations. Data were analyzed using mean, percentages and standard deviation.

The findings revealed significant difference for age in body mass index, blood pressure, cholesterol ratios across the groups. It was also observed that there were significant sex-specific group differences for obesity, high blood pressure and high total cholesterol. Arnah et al. (2013) concluded that age irrespective of sex modulates, CVD risk factors warranted prevention as early as middle age. This is related to the present study because both studies determined the relationship between age, sex and CVDs.

Bixia, Luxia, and Heiyan, (2013) conducted a cross sectional study on clustering of major cardiovascular risk factors and the association with unhealthy lifestyles in the Chinese adult population. The aim of the study was to investigate the clustering of four cardiovascular disease (CVD) risk factor (hypertension, diabetes, dyslipidemia and overweight) and their association with unhealthy lifestyles, habitual drinking, physical inactivity and a low modified dietary approaches to stop hypertension), Multistage stratified sampling method was used to selected a sample of 46, 538 subjects aged 18 years and above. Questionnaire was used for data collection. Data were analyzed using SPSS version 11 while logistic regression analysis was used to determine the association.

The findings indicated that among the 46.683 participants, only 31.1 per cent were free of any pre-defined CVD risk factor and 20.292 subjects had clustering of CVD risk factor and 83.5 per cent were younger than 65 years old, adjusted prevalence of CVD risk factor clustering was 36.2 per cent, and the prevalence was higher among male (37.9% Vs 34.5%.). Also habitual drinking and physical inactivity were positively associated with clustering of CVD risk factors

(OR= 1.60, 95% CL= 1.40 -1.85) (OR-1.20 95% CL=1.20 95% CI = 1.11-1.30) respectively. The findings finally indicated that lifestyle factors were more prominent among participants with low socioeconomic status. Bixia et al. (2013) concluded that clustering of CVD risk factors was common in china and recommended that lifestyle modification might be an effective strategy to control CVD risk factors. The above study is diferrent from the present study because it determined only the biologic risk factors while the present study determined both the biologic and lifestyle risk factors.

Akintude, Solawu, and Opadijo (2014) carried out a cross-sectional study on prevalence of traditional cardiovascular disease risk factors among staff of Ladoke Akintola University of Technology (LAUTECH) Ogbomoso, Nigeria. The aim of the study was to describe the frequency of occurrence of traditional cardiovascular risk factors among selected university workers in Ladoke Akintola University of Technology (LAUTECH) Nigeria. Two hundred and six workers were randomly selected and used as sample for the study. Questionnaire, physical measurements and laboratory examination were methods of data collection. Statistical analysis was performed with the aid of statistical package for social sciences (SPSS) version 17. 0 utilizing means, frequencies and percentages.

The findings showed the prevalence of cardiovascular disease risk factors as follow: hypertension 84 (40.8%), visceral obesity 92 (44.7%), generalized obesity 79 (38.3%), low density lipoprotein 113 (54.9%). The findings also showed that about (72.3%) had two or more cardiovascular risk factors clustered together. The findings further indicated that there was very high prevalence of cardiovascular risk factors and its cluster in females than their male counterparts. Akintude, et al. (2014) concluded that there was a very high prevalence of CV risk factors among staff of LAUTECH Ogbomoso, Nigeria. Akintude et al. (2014) therefore recommended for appropriate preventive strategy in terms of education and modification of risk factors to reduce the burden of CV diseases among the population. This is related to the present study because the reviewed study recommended for appropriate preventive strategy and the present study formulated appropriate CVD preventive strategies.

Arul, Pragnesh, Sidakpal, and Levoisier (2015) carried out a prospective study on health literacy and CVD risk factors among the elderly. The aim of the study was to determine the health literacy of elderly patients and to establish the association that exists between health

literacy and CVD risk factors. Population for the study was 150 elderly patients. Data were obtained using questionnaire and biochemical tests.

Findings of the study revealed that the patients were 68.7 per cent female, 67.3 per cent African American, 4.7 per cent smokers and 72.5 per cent overweight. The findings also showed that the cohort had 80 per cent hypertension, 32 per cent diabetes, mean age of 76.6 years, 13.2 years' education, body mass index of 28.9kg /m2, total cholesterol 188mg/dl, HDLC 54.3mg/dl and LDLC 111.8mg/dl. Findings finally indicated that no association was observed between health literacy and all the independent CVDRFS evaluated. Arul et al. (2015) concluded that a majority of the participating elderly patients had a higher level of education and an adequate level of health literacy but a higher level of education not health literacy appears to be predictive of better. This is related to the present study because result of both studies indicated that there was no relationship between level of education and CVDs.

Oguoma et al. (2015) conducted a cross-sectional study on prevalence of CVD risk factors among a Nigerian adult population; relationship with income level and accessibility to CVD risks screening in Delta State, Nigeria. The aim of the study was to assess the prevalence of CVD risk factors and how the difference in prevalence and accessibility to CVD risk screening across income levels and educational backgrounds contributes to disease diagnosis in rural and urban Nigerian adults. Four hundred and twenty-two respondents aged 18 years and above were selected as sample for the study using two stage cluster sampling technique. The instrument for data collection was WHO STEPS questionnaire. Multivariance analysis was used to analyze the data.

The findings of the study revealed that among the participants (149 males and 273 females) had mean age (± standard deviation) of 38.3±20.5 and 42.9 ± 20.7 years respectively. Only BMI ($p = 0.03$) and average income rate ($p = 0.01$) showed significant difference between gender groups. The findings further showed that overall prevalence of pre-diabetes (49%), diabetes (5.4%), hypertension (35.5%), low HDL (17.8%) and central obesity of (52.2%) was recorded. The findings revealed that participants with university and postgraduate education had high access to blood pressure and blood glucose screening compared to other educational groups; and this showed a statistical significance. Oguoma et al. (2015) concluded that a significant number of notable CVD risk factors exist in rural and urban migrants of an adult Nigerian population, that income level did not affect the CVD risk factor prevalence but it affects

accessibility to CVD risk screening. It was suggested that there is need for access to diagnosis of notable risk factors at all levels of the society. This is related to the present study because the reviewed study was conducted among rural and urban adults and the present study also covered both urban and rural retirees in Enugu State.

Zhou et al. (2015) carried out a cohort study on the risk factors of CVD mortality among the elderly in Beijing, 1992-2009. The aim of the study was to determine the associations of combined lifestyles and other factors with CVD mortality among the elderly in Beijing, China. A sample size of 3,257 community dwellers aged 55 years and above was selected using simple random sampling technique. Data were collected through the Beijing Longitudinal Study of Aging (BLSA) and administration of questionnaire. The competing risk model was used to analyze the data.

Findings of the study indicated that living in a suburban area was associated with lower CVD mortality while increasing age, high blood pressure, frequent consumption of meat and physical inactivity were associated with high CVD mortality. The Zhou et al. (2015) recommended instructional foundation for the control and prevention of CVD in Beijing, China. This is related to the present study because both studies indicated that age is associated with CVDs. Also, both studies were conducted among elderly populations and both studies identified high blood pressure, unhealthy diet and physical inactivity as risk factors for CVDs.

Maria, Carmen, Nicola, Jose, and Katherine (2015) conducted a cross-sectional study on prevalence of cardiovascular disease risk factors (CVDRFS) among older Puerto Rican Adults living in Massachusetts. The aim of the study was to compare lifestyle and CVD risk factors in Puerto Rican older adults with normal fasting glucose (NFG), impaired fasting glucose (IFG) or type 2 diabetes (T2D) and investigate the achievement of American Diabetes Association (ADA) treatment goals in those with T2D. Population for the study was 1,287 adults aged 45-75 years. Data were collected using questionnaire, physical measurement and laboratory examinations. Data were analyzed using multivariate logistic regression.

The findings indicated that obesity, hyperglycemia and dyslipideamia were prevalent and increased from NFG to IFG and T2D. The findings also indicated that achievement of ADA goals was poor. Poverty, female sex, current alcohol use, and diabetes or antihypertensive medications use were associated with not meeting goals. Maria et al. (2015) concluded that Puerto Rican adults living in the Boston area showed several metabolic abnormalities and high

CVD risk factors, likely due to pervasive obesity and socio-economic disparities. It was recommended for culturally, sensitive, longitudinal research in Puerto Rican adults. This is related to the present study because both studies identified risk factors for CVDs. However, the reviewed study focused only on diabetes while the present study focused on other risk factors including diabetes.

Aleksandra and Joanna (2016) conducted a cross-sectional survey on prevalence of CVD risk factors among Polish surgical patients over 65 years in Rocklaw, Poland. The aim of the study was to compare the prevalence of CVD risk factors between patients aged over 65 years and patients of other age groups in surgical wards. Population for the study was four hundred and twenty (420) patients aged between 18-84 years. Instrument for data collection were researcher-designed questionnaire and standardized questionnaires such as International Physical Activity Questionnaires (IPAQ). Fagerstrom Test for Nicotine Dependence, Michigan Alcoholism Screening Test (MAST), Finish Diabetes Risk Score (FINDRISC), Inventory to Measure Coping strategies with Stress (Mini-Cope) and Systematic Coronary Risk Evaluation (SCORE). The data were analyzed using t-test, Chi square, Fisher's exact test, Mann-Whitney U-test and analysis of variance.

The findings of the study indicated that prevalence of abdominal obesity (83.3%), overweight and obesity (68%), hypertension (65.1%), and low level of physical activity (29.1%) were the most common CVD risk factors among patients over 65 years old, abdominal obesity (36.2%), overweight and obesity (36.1%) and current smoking were most common CVD risk factors among patients up to the age of 35. Findings also showed that in the age group over 65, the least prevalent risk factors for CVD were diabetes mellitus (14.8%), abuse of alcohol (11.4%) and smoking (7.8%). Findings of the study further indicated that in the age group less than 35 years, that there is no reported case of hypercholesterolemia and a leaser number of patients suffered from diabetes and hypertension. Aleksandra and Joanna (2016) concluded that distribution of the major risk factors for CVD is quite high in the adult population, especially in the age group over 65 years which can result in serious problems of health and increased rates of chronic diseases, especially CVDs. This is related to the present study because both studies were conducted among elderly populations and identified diabetes, abuse of alcohol, hypertension, obesity and smoking as risk factors for CVDs.

Adeseye, Temitope, and Oladimeji (2016) conducted a study on knowledge of heart disease risk factors among workers in a Nigerian university: A call for concern at Ladoke Akintola University of Technology, Ogbomoso, Nigeria. The purpose of the study was to determine the knowledge of workers in a Nigerian university on risk factors for CVDs. Cross-sectional descriptive survey was used. 206 adult staff (including academic and non-academic staff) was selected as sample for the study using simple random sampling techniques. The instrument for the study was Heart Disease Fact Questionnaire (HDFQ). Statistical Package for Social Science (SPSS) using means and standard deviation for quantitative variables, frequency and percentage for qualitative variables was adopted for data analysis. Differences between continuous variables were tested using Analysis for Variance (ANOVA) while Pearson and chi-square test were used to test for the relationship between continuous and nominal variables.

The findings of the study showed that only 41 (19.9%) of the participants were assessed to have good knowledge of heart disease risk factors. The findings also indicated that majority of the participants 101 (49%) had poor knowledge while 64 (31.2%) had fair knowledge of heart disease risk factors. The findings also showed that there was no significant difference between prevalence of CVD risk factors between those with good, fair or low level of knowledge. In addition, the findings indicated that most of the participants did have a good knowledge about risk factors, perception, treatment and association with diabetes as it relates to heart diseases. Adeseye et al. (2016) concluded that knowledge of heart disease risk factor is low among university workers in Nigeria. It was recommended that effective education on heart disease risk factors and appropriate preventive strategies are indeed important to reduce CVD burden in Nigerian university communities. This is diferrent from the present study because the present study employed correlation research design while the reviewed study used cross-sectional research design.

Yang et al. (2016) conducted a cross-sectional study on prevalence of CVD risk factor clustering in Chinese adults. Aim of the study was to provide the latest nationwide estimate on the prevalence of main CVD risk factors. Multi-stage probability sampling was used to select a sample of 17,708 adults aged 45 years and older. Physical measurements and biochemical tests were used to collect data. Percentages were used to analyze the data.

The findings showed that overall; the prevalence of subjects having 1, 2, 3, or 4 of the 5 risk factors were (30.5%, 29.8%, 19.7% and 7.4%) respectively. The findings also indicated that

the prevalence of being dyslipidemia, hypertension, and diabetes, current smoking and overweight or obese were (62.6%, 39.9%, 18.7%, 27.5%, and 32.6%) respectively. Yang et al. (2016) concluded that clustering of CVD risk factors was a high health burden in the middle aged and elderly population. This is related to the present study because both studies selected their sample using multi-stage sampling tecniques. However, the reviewed study is different from the present study because the reviewed study used cross-sectional research design while the presemt study adopted correlational research design.

Sumitra, Angur. Tera, Rodrigo, and Surya (2017) conducted a case control study on coronary artery disease risk factors among females in a tertiary cardiac centre in Nepal. Purposive sampling was used for the selection of cases and controls. Case were selected from outpatient departments and impatient wards and induced female's patients age < 75 years with diagnosis of CAD. Data were collected through anthropometric and laboratory as well as semi-structured interview. Variables were assessed using frequency tables and Pearson's chi-square tests for two independent proportions. Binary logistic regression was used to investigate the potential predictors of CAD.

The findings indicated that CAD was significantly associated with ethnicity, ever smoked, harmful use of alcohol, moderate physical activity, family history, total cholesterol and hypertension. Findings also showed that alcohol intake (P< 0.01), diabetes (P<0.01), BMI = 275kgm2 (P< 0.01) as significant predictors of CAD. Sumitra el al. (2017) concluded that diabetes, drinking alcohol, IDL-C and generalized obesity were significant predictors of CAD, and suggested that further research in women in developing countries will be a key to control the risk factor of CAD giving the rising level of risk factor and morbidity rates within the region. This is diferrent from the present study because the reviewed study collected data through anthropometric and laboratory measurements as well as structured interview while the present study collected data through questionnaire and focus group discussion. Also, the present study adopted correlational research design while the reviewed study was an experimental study.

Ezzi et al. (2018) conducted a cross-sectional study on clustering of CVD risk factor among manufacturing employee, in Sousse, Tunsia. The objective of the study was to estimate the prevalence of multiple risk factor for CVD, among manufacturing employees in Sousse, Tunsia and to determine factors associated with the clustering. A total of 2113 employees were used for the study. Nil sampling. Questionnaire was used to collect data. Statistical analysis was

performed using statistical package for social sciences (SPPS) version 10. Data were presented as frequency, means and standard deviation. The chi-square test was used to compare different cluster with the categorical variables.

The findings showed that the participants consisted of 1342 (63.5%) men and 775 (36.5%) women and the mean age was 36-79 years. The findings also showed the prevalence of risk factors as follows physical inactivity (59%) unhealthy diet (49.99), smoking (34%), high body mass index (23.7%) and hypertension (19.8%), The proportions of respondents with 0123 or >4 risks were (11.54%, 29.68%, 34.03%, 19.12%, and 25.63%) respectively. Ezzi et al. (2018) concluded that screening and targeted health promotion initiatives should be launched in works site targeting modifiable factors to avert the excessive risk for CVD. This is different from the present study because it was carried out among manufacturing employees while the present study was carried out among among retirees. However, both studies are related because risk factors for CVDs such as physical inactivity, unhealthy diet, smoking and hypertension were identified among the study populations by the two studies. However, the reviewed study was different from the present study it was conducted among working staff while the present study was conducted among retired staff.

Studies on socio-demographic correlates of CVDs.

Njeleka et al. (2009) conducted a study on gender related difference in the prevalence of CVD risk factors and their correlates in urban Tanzania. The objective of the study was to examine the prevalence of CVD risk factors and their correlates among adults in Temeke, Dares Salaami, Tanzania. The design of the study was cross-sectional research design. Simple random sampling technique was used to select a sample size of 209 aged between 44 and 66 years old. A structured questionnaire was used to collect data. Blood samples were collected and analyzed to measure lipid profile and fasting glucose levels. Data were analyzed using Statistical Analysis System (SAS) software version 9.1.

The findings of the study indicated that women had 4.3 times greater odds of obesity (95%), 14.2-fold increase odds for abdominal adiposity (95%) and 2.8 times greater odds of high waist hip ratio (95%) compared to male counterparts, including abdominal obesity, low HDL-cholesterol and high fasting blood glucose components. The findings of the study also showed that female participants had (50%) lower odds of having hypertension compared to men (95%). Also, among men, BMI and waist circumference were significantly correlated with blood

pressure and fasting glucose while in contrast only blood pressure was positively associated with BMI and waist circumference in women. Njeleka et al. concluded that the prevalence of CVD risk factors was high in the population. It was recommended that health promotion, primary prevention and health screening strategies are needed to reduce the burden of CVD in Tanzania. This is related to the present study because the reviewed study recommended for primary preventive strategies while the present study formulated preventive strategies. The reviewed study is different from the present study because it focused only on gender while the presnt study determined the association between other socio-demographic factors including gender. Also, the reviewed data collected data through bio-medical tests and questionnaire while the present study collected data through questionnaire and focus group discussion.

Rakale, Jinnan, and Sharon (2012) carried of a self-report study on social determinants of cardiovascular disease risk factor among rural and urban black and white men. The purpose of the study was to assess the effects of specified social determinants of health on cardiovascular disease (CVD) clinical risk factors in black and white men residing in rural and urban Georgia. Simple random sampling of telephone survey was used to select 548 subjects aged 18-90 years. The instruments used for data collection were based on a modified version of validated behavioural risk factors surveillance survey and other validated instruments. Data were derived from a random telephone survey. Data were analyzed using SPSS and result presented in frequencies and percentages while logistic regression models was used to determine the association.

Findings of the study showed that lower education, unemployment, lower income and higher general stress were significantly related to the presence of two or more CVD clinical risk factors. Findings also indicated that rural men were nearly twice as likely to have two or more CVD risk factors compared to their urban men ($P< 0.01$) and that urban black men were found to be 2.6 times as likely to have more than two CVD risk factor ($P<0.02$). Rakale et al (2012) concluded that social determinants are associated with CVD risk factor differences between black and white men and between rural and urban residents. It was suggested that policymakers and the health care industry should address these social determinants of health as they try to improve the health of the people they serve. This is related to the present study because both studies used logistic regression to test the association between CVDs and place of residence. The different in the between the reviewed study and present study is that the reviewed study used

simple random sampling through telephone survey while the present study used multi-stage sampling to withdraw the sample.

Prasanna et al. (2013) conducted a study on socio-demographic and behaviovral risk factors in patients with cardiovascular disease visiting rural hospital in south India. Aim of the study was to identify socio-demographic and behavioural risk factors associated with CVDs. Cross-sectional design was used for the study. A sample of 91 patients were selected using simple random procedure. Questionnaire was used for collection of data. Data were analyzed using statistical packages for social sciences and result presented in percentages.

Findings of the study revealed that among 91 CVD patients, 56 were male and 35 were females, average age of the male and female patients were 60 and 58 years respectively and that majority of the patients were from lower socio economic and educational status. The findings further revealed that risk factors that have major influence for CVD in the study were high BMI (45.15%), Smoking habits (30.56%) alcohol consumption habits (38-46%), lack of physical activity (60.44%), less fruit consumption (42.85%) and low vegetable consumption habits (30.77%). Prasanna et al. (2013) concluded that various socio economic and behavioural risk factors such as poor socio-economic states, increase age, smoking and alcohol consumption habit, high BML, diabetes, lack of physical activity and inadequate fruit and vegetable consumption were significantly associated in patients with CVDs. This is related to the present study because both studies identified alcohol abuse, smoking, physical inactivity and unhealthy diet as risk factors for CVDs. Also, both studies indicated that increasing age is associated with CVDs. The reviewed study is different from the present study because it was carried on patients already diagnosed of CVDs in the hospital while the present study was a field work carried on retirees not diagnosed of CVDs.

Hosey, Samo, Gregg, Padden, and Bibb (2014) carried a cross-sectional study on socio-economic and demographic predictors of selected cardiovascular risk factors among adults living in pohnpei, federated states of Micronesia. The aim of the study was to examine the association of socio- economic position and demographic characteristics in determining CVD risk factors among adults living in pohnpei, federated states of Micronesia. Sample of 1638 adults (642 men, 966 women, 25- year) were selected using multistage sampling technique. WHO STEP instrument was used for data collection. Logistic regression analyzes was used to analyze the data.

Findings of the study showed that higher education (> 13 years) was associated with lower odd for daily tobacco use (OR = 0.46, 95%, CL = 0.29-0.75, P= 0.004) and low physical activity (OR = 0.55, 95% CL 0.34-0.97, P-0.027). Findings also showed that men had over three times the odd of daily tobacco use than women (CR =3.18 95% CL=2.29-4-43, p< 0.001). Again, the result indicated that income >$10,000 was associated with over twice the odds of high blood pressure (OR = 2.24, 95% CI=1.43-3.51, P=0.003, versus lower income < $5000), and that men had over twice the odds of higher BP (OR=2.01,95%CI =1.43-2.83, P=<0.001) than women. Hosey et al (2014) concluded that there was association between socio-economic position and selected CVD risk factors, which varied by risk factor sex and age characteristics. This is related to the present study because both studies used multistage sampling procedure to select sample for the study. The reviewed study is different from the present study because it was carried among adults 25 years and above while the present study was carried among retirees 55 years and above. Also, the reviewed study utilized only questionnaire for data collection while the present study utilized questionnaire and focus group discussion for data collection.

Ghazali et al. (2015) conducted a cross-sectional population based study on socio-demographic factors associated with multiple cardiovascular risk factors among Malaysian adults. The purpose of the study was to determine the prevalence and socio-demographic correlates of multiple risk factors for CVDs among Malaysian adults. Sample size of 2572 subjects was drawn using multistage cluster sampling technique. Method of data collection were questionnaire, physical examination and biomedical measurement. Data were analyzed using multivariance logistic regression analysis.

The findings of the study showed that (68.4%) of the respondents had at least three risk factors. The result also indicated that among men, older age and Indian ethnicity were independently associated with having >3CVD risk factors; while among women old age and low education were more likely to have the >3CVD risk factors. Ghazali et al. (2015) concluded that the prevalence of CVD risk factors clustering among Malaysian adults are high, raising concerns that CVD incidence will rise steeply in the near future if no immediate preventive measures are not taken. It was recommended that current national health education and promotion programmes pertaining to noticeable risk factors can further be improved by taking into account the socio-demographic variations in CVD risk factors clustering. This is related to the present study because both studies utilized multistage sampling technique to draw sample for their

studies. The reviewed study is different from the present study because it used questionnaire, physical measurement and biomedical tests for data collection while the present study used questionnaire and focus group discussion for data collection.

Rahmen, Nakamura, Seino, and Kizuki (2015) carried out a study in socio-demographic factors and risk of developing cardiovascular disease in Bangladesh. The design was a retrospective design. The purpose of the study was to examine risk factors for stroke or myocardial infarction according to 10-year prediction, among hypertensive patients and by a sociodemographic risk differences. Data were obtained from 2011 Bangladesh Demographic Health Survey on 1620 hypertensive patients. Data were analyzed using an adjusted logistic regression model.

Findings of the study indicated that a total of (21/8%) of hypertension adults were at high risk of CVDs. The findings further showed that living in a female headed household, having an urban residence, being overweight/obese, old age and regional variations are factors associated with higher risk of CVD among hypertensive patients. This is diferrent from the present study because it focused on myocardial infarction and stroke while the present study focused on other forms of CVDs including myocardial infarction and stroke.

Adele, Ronel, Carla, and Alett (2016) conducted a correlational study on the relationship between cardiovascular risk factors and knowledge of cardiovascular disease in African men in the North-West Province. Correlational research design was adopted for the study. The objective of the study was to investigate the possible relationships between CV risk factors and CVD knowledge in a group of African men. Population for the study were 118 African men aged 19-65 years. Questionnaire was used for collection of data. Data were analyzed with statistical version 12 (statsoft, Fulsa, ok, USA).

Findings of the study showed that the mean CVD knowledge score was 75 per cent and that participants mean blood pressure was 140/92mmhg, falling with hypertensive ranges. Also the findings showed that their fasting blood glucose of 5-8±2.0 mmoll exceeded the normal cut off value of 5.6mmo11. Again, the findings showed that there was a lack of association between CV risk factors and CVD knowledge. Adele et al. (2016) concluded that there was no significant correlation between their CV risk factors and CVD knowledge This is related to the present study as both studies adopted correlational research design. The reviewed study is different from the present study as it determined the relationship between CVD risk factors and knowledge of

CVDs while the present study determined the relationship between socio-demographic correlates and CVDs. Again, the reviewed study was conducted only on men aged 19-65 years while the present study was conducted among men and women aged 55 years and above.

Eyitayo et al. (2017) conducted a cross sectional study on Behavioral and socio-demographic predictors of cardiovascular rissk among adolescents in Ekiti state in southwest Nigeria. The aim of the study was to determine the prevalence of cardiovascular risk factors and identify its socio-demographic and behavioural predictors among adolescents. A total of 800 in-school adolescents (aged 10-19 years) were selected from secondary schools across the state using multistage sampling technique. Modified WHO step instrument was used for data collection. Statistical package for social science version 20 was used for statistical analysis. Chi-square and multiple logistic regression were used to access the association and level of significance was set at $P< 0.05$.

The findings of the study showed that 10.6 per cent of the respondent were hypertensive, 7.1 per cent were overweight/obesed, 9.7 per cent had impaired fasting glucose, while about 36.4 per cent had at least one cardiovascular disease risk factor. Place of residence (urban = 4.7, 95% CI -3.3 -6.7), intake of snacks/fast food were the significant predictors of cardiovascular risk. Eyitayo et al. (2017) concluded that more than a third of adolescents had at least one cardiovascular risk factor while levels of physical activity, intake of snacks/fast food and place of residence were its independent predictors. This reviewed study is diferrent from the present study because the reviewed study used chi-square and multiple regression analysis to test association while the present study used only logistic regression to test hypotheses. Also, the reviewed study was carried out among adolescents aged 10-19 years while the present study was carried among retirees aged 55 years and above.

Studies on CVDs preventive strategies.

Ann et al. (2011) carried out a study on prevention of CVD in a rural region of India and strategies to address the unmet need. Aim of the study was to determine levels of CVD prevention and to model the potential impact of improved prevention strategies for large rural India region. The design of the study was a cross-sectional research design. Stratified random sampling was used to draw a sample of 1079 adults, 30 years and older. Data were analyzed using means and percentages.

The findings of the study indicated that among 13. 5 per cent with existing CVD, 49.3 per cent were on blood pressure lowering medication, 24.6 per cent had increased exercise and 26. 9 per cent attempted to quit smoking. Ann et al. (2011) concluded that there were serious deficiencies in CVD prevention in rural areas of India. It was suggested that addressing these with simple confirmed drug treatments could produce a large reduction in the future cardiovascular burden in India. This is related to the present study because it was carried out on prevention of CVDs while the present study formulated preventive strategies to cutail CVDs. The different between the two studies was that the reviewed study was a cross-sectional design and utilized stratified random sampling technique to select the sample while the present study was a correlational design and utilized multi-stage sampling techniques to select the samples.

Hendricks et al. (2011) conducted a study on cardiovascular disease prevention in rural Nigeria in the contest of a community based health insurance scheme: Quality in preventing cardiovascular care Kwara- 1 (QUICK-1). The aim of the study was to assess the feasibility of CVD prevention care in rural Nigeria, according to international guidance in the contest of a community based health insurance scheme. The design of the study was descriptive survey. Purposive sampling technique was used to select only 300 patients at risk of development of CVD. Questionnaire was used as method of data collection. Multivariate regression analysis was used to analyze the data.

The findings of the study revealed that by removing the barrier of patient out of pocket expenditure through an insurance program, the project can evaluate health effects of the interventions in the programme and identify limiting factors for implementation of CVD prevention care. Hendricks et al. (2011) recommended that the result of QUICK-1 can be used by policy makers and professional who aim to implement CVD prevention programmes in setting with limited resources. This is diferrent from the present study because the reviewed study determined CVD prevention in a rural community while the present study formulated preventive strategies for both rural and urban communities. Also, the reviwed study adopted purposive sampling technique while the present study adopted multi-stage sampling technique to select the samples. Again, the reviewed study used only questionnaire for data collection while the present study used both questionnaire and focus group discussion ffor data collection.

Jousilahti et al. (2015) carried out a study in primary prevention and risk factor reduction in coronary heart disease (CHD) mortality among aged men and women in Eastern Finland over

40 years. The objective of the study was to estimate how much changes in the main risk factors of CVD (smoking prevalence, severe cholesterol, blood pressure) can explain the reduction in CHD mortality observed among working aged men and women in eastern Finland. Observation design was used for the study. Sample for the study was 34525 men and women aged 30-59 years. Data were collected from nine consecutive population based risk factor surveys conducted every five years since 1972. Data on observed mortality were obtained from the National Causes of Death Register. Percentages were used to analyze the data.

Findings of the study revealed that during the 40 years' study period, levels of the three major CV risk factors decreased except for a small increase in serum cholesterol levels between 2007 and 2012. The findings also showed that from years 1969-1972 to 2012, CHD mortality decreased by (82%) from 643 to 118 deaths per 100,000 people and (84%) from 114 to 17 among men and women aged 35-64 years respectively. The finding showed that last ten years of the study, about two-thirds (69% in men and 66% in women) of the reduction could be explained by changes in the three main risk factors and the remaining third by other factors. Jousilahti et al. (2015) concluded that reductions in disease burden and mortality due to CHD can be achieved through the use of population based primary prevention programmes. Secondary prevention among high risk individuals and treatment of acute events of CHD was recommended to confer additional benefits. This is in contrast with present study because the reviewed study focused only on primary prevention of coronary heart disease while the present study formulated primordial, primary and secondary preventive strategies for diferrent types of CVDs including coronary heart disease. Also, the reviewed study was a hospital based study that collected data through registers while the present study was a field study that collected data from respondents (retirees).

Allenby et al. (2016) conducted a study on the quality of CVD prevention in rural primary care in Australia. The objective of the study was to measure the differences in the recording of risk factors of CVD and lifestyle advice between those at high risk of CVD and those diagnosed with CVD, and to identify the practice characteristics associated with such recording in rural primary care. Cross-sectional research design was adopted for the study. Two stage sampling techniques were used to select 282 participants. Data collection were through medical records auditing and questionnaire. Data were analyzed in frequencies and percentages. Logistic regression analysis was used to test the associations.

The findings of the study revealed that 282 records were audited with 142 being high risk and 140 diagnosed with CVD. The results also showed that measures recorded significantly less in high-risk group were: blood pressure (94%, versus 99%), physical activity (24% versus 56%), dietary advice (34% versus 51%) and physical activity advice (34% versus 56%). The findings went further to indicate that recording of risk factors was positively associated with the practice involvement in quality improvement (<0.001), continuing education (<0.001) and the greater percentage of general practitioners ($p<0.05$) and practice nurses ($p<0.001$). Allenby et al. (2016) concluded that there is a sustainable room for enhanced CVD prevention through rural primary care in Australia, particularly for high-risk patients. It was recommended that improved monitoring and management of risk factors and provision of lifestyle advice to reduce the development and progress of CVDs. This is diferrent from the present study because the present study applied multistage sampling techniques to withdraw sample while the reviewed study applied two stage sampling techniques to withdraw sample for the study. However, both studies are related as logistic regression analysis was used to test association in both studies.

Summary of Literature Review

The reviewed literature presented major concepts in the study. These include cardiovascular diseases (CVDs), risk factors of cardiovascular diseases, socio-demographic factors associated with CVDs and preventive strategies. Literature indicated that CVDs are serious public health problems which cause mortality, morbidity and disability especially among older adults. Common CVDs among elderly include coronary heart disease (CHD), cerebrovascular disease (CBVD), myocardial infarction (MI), heart failure (HF) and peripheral artery disease (PAD). Literature indicated that MI (heart attack) and CBVD are the most common CVDs among the elderly. Both conditions usually lead to sudden death or the victim may survive with disability. Literature also revealed that peripheral artery disease if not detected early may lead to gangrenous foot and possible amputation of the foot.

Literature revealed that lifestyle factors predispose elders to CVDs. These include tobacco use, alcohol abuse, unhealthy diet and physical inactivity. These lifestyle factors if not modified result to metabolic risk factors such as hypertension, diabetes and obesity. The combined effects of lifestyle and metabolic risk factors result to CVDs such as CHD, CBVD, MI, HF and PAD among the retirees. The review also identified some socio-demographic variables associated with CVDs. These variables include age, gender, level of education, level of

income and place of residence. Literature indicated that advanced age is associated with CVDs. Similarly, level of income and place of residence have relationship with CVDs. Literature reviewed also indicated that people with low income and low level of education suffer CVDs more than those with high income and high level of education. Additionally, literature indicated that urban residents suffer CVDs more than rural residents due physical inactivity and unhealthy diet practices.

Furthermore, literature revealed that CVDs can be prevented with well-planned preventive strategies. Three levels of preventive strategies which include primordial, primary and secondary have been identified as appropriate for addressing CVDs and its risk factors. Some models were reviewed in the present study. These are thehealth belief model, precaution-adoption process model and information-motivation-behavioural skill model. These models were found to be relevant and were applied in the context of the study.

Empirical studies were reviewed on CVDs and its risk factors, socio-demographic correlates of CVDs and CVD preventive strategies. Most of the studies reviewed used survey research designs. Data collection mostly used were questionnaire, anthropometric measurements and interviews. The present study applied both quantitative and qualitative methods in data collection. The multistage sampling procedure using random sampling, cluster sampling and purposive sampling were employed in most of the studies reviewed. Furthermore, the reviewed studies used univariate and multivariate regression analysis, ANOVA, mean and standard deviation, frequencies and percentages for data analysis. The findings of the reviewed studies showed that CVDs constitute major health problems among the elderly, that the CVDs are associated with socio-demographic factors and that CVDs can be prevented by intensified preventive strategies or interventions.

As evident in literature, CVDs constitute serious health challenges globally. There is a consensus that the risk factors for CVDs are more prevalent among older adults including retirees. Furthermore, empirical evidence suggests that the CVD risk factors are multi-faceted. Nevertheless, there are inconsistencies in the findings on the relationship between socio-demographic factors and onset of CVDs among older adults in diverse regions including Sub-saharan Africa.The inconsistencies in the available though limited data in Nigeria suggests the need to further explore the relationship between socio-demographic factors and CVDs development among older adults including retirees in Enugu State. Furthermore, literature

indicates that significant roles of preventive strategies in CVDs prevention in older adult populations exist. Thus, there is need for formulation of context specific and culturally sensitive CVD preventive strategies for retirees in Enugu State. On this premise, the present study sought to determine the socio-demographic correlates of CVDs and formulate appropriate CVD preventive strategies for retirees in Enugu State. This is the gap which the study sought to fill.

CHAPTER THREE

Methods

This chapter presents the research design, area of the study, population for the study, sample and sampling techniques, instruments for data collection, validity of the instrument, reliability of the instrument, methods of data collection and analysis.

Research Design

The correlational survey research design utilizing mixed-method approach was used for this study. A correlation study seeks to determine the relationship or association that exists between two or more variables. Correlational research design is used when the objective of the study is to establish relationship or association between two or more variables (Nworgu, 2006; Uzoagulu, 2011). Adele, Ronel, Caria, Fourie and Aletta (2016) used the design to determine the relationship between CVD risk factors and knowledge of CVDs in African men in the North-West Province of South Africa. Mixed-method approach is defined as a tool of collecting, analizing, and integrating or mixing quantitative and qualitative data during the research process within a single study to reach a better understanding of the research problem (Bazrafshan, Haghdoost, Rezael & Beigzadeh, 2015). In mixed-method, data are collected separately, analysis are done separately but the findings from the qualitative data are used to complement that from the quantitative data. It provides a more comprehensive and utilization of the data than do separate quantitative and qualitative data collegtion and analysis. Collis et al. (2017) used mixed-method approach in cardiovascular disease risk and prevention amongst Syrian refugees: mixed-methods study of Medecins San Frontieres Programme in Jordan. This suggests that the design and the approach were therefore considered appropriate and used for this study because it indicated how socio-demographic variables associated with cardiovascular diseases can be identified using both quantitative and qualitative data collection methods.

Area of the Study

The area of the study is Enugu State, Nigeria. It is one of the 36 States in Nigeria. It is located in the south eastern geopolitical zone and was created on the 27th of August, 1991. Enugu State has interstate boundaries with Kogi and Benue States by the North, Abia State by the South, Ebonyi State by the East and Anambra State by the West. The State is divided into three

geo-political zones namely: Enugu North senatorial zone, Enugu East senatorial zone and Enugu West senatorial zone. The state has many retirees that worked in different ministries and establishments before retirement. The retirees are grouped into different pension zones. Some of the zones are located in the urban areas while others are located in the rural areas.

In Nigeria including Enugu State, retirees experience challenges such as delay in payment of gratuities, monthly stipends, and lack of access to quality healthcare services. In addition, literature shows that older adults including retirees engage in unhealthy lifestyles such as physical inactivity, alcohol and substance use, poor dietary practices which are risk factors for CVDs. Also, these lifestyle risk factors may result to metabolic risk factors such as hypertension, diabetes mellitus and obesity. Furthermore, personal factors of retirees which include age, gender, place of residence have been implicated in the development of CVDs Therefore, personal factors of retirees in Enugu State may be attributed to CVDs development. However, it is inept to make such conclusions without empirical evidence. Thus, it becomes imperative to examine the relationship between socio-demographic factors and onset of CVDs among retirees and formulate preventive strategies. This informed the choice of Enugu State as the study area.

Population for the Study

The population for the study consisted of all retirees in Enugu State civil service. The population of retirees in Enugu State at the time of the study was 8,947 (Ministry of Finance, Enugu State, 2016, (see Appendix F, p. 159). Also 30 experts from Department of Human Kinetics and Health Education, Health District, Nsukka and Enugu State University Teaching Hospital (ESUTH), Parklane were part of the population for the study.

Sample and Sampling Techniques

The sample for this study consisted of 1,002 respondents. This is made up of 972 retirees for collection of quantitative data and 30 experts that asserted the appropriateness of CVD preventive strategies questionnaire. This is in tandem with the suggestion of Cohen, Manion and Morrison (2011) that if the population for a study is 7,500 and above at 95 per cent confidence level and 3 per cent confidence interval, the sample size for the study should be 934 and above (see Appendix G, p. 160).

Multi-stage sampling procedure was used to draw the sample for the study. The first stage involved the clustering of the pension zones into the three senatorial districts in Enugu State (Enugu East, Enugu North and Enugu West). Pension zones in Enugu East are Abakpa, Agbani, Enugu and Ikem; pension zones in Enugu West are Awgu, Ezeagu, Oji-River and Udi while pension zones in Enugu North include Enugu-Ezike, Nsukka, Ogbede and Umulokpa (see Appendix H, p. 161).

The second stage involved the use of simple random sampling technique of balloting without replacement to select one urban and two rural zones each in the three senatorial districts. Urban zone from Enugu East is Abakpa zone while two rural zones are Agbani and Ikem; urban zone from Enugu West is Oji-River while two rural zones are Awgu and Ezeagu; urban zone from Enugu North is Nsukka, while Ogbede and Enugu Ezike were the rural zones to be sampled in Enugu North (see Appendix I, p. 162). This stage produced a total of three urban zones and six rural zones across the three senatorial districts.

In stage three, proportionate stratified sampling technique was employed to select 972 retirees that were used for study. The sample for each of the pension zones were as follows: Abakpa zone 398, Agbani zone 17, Ikem zone 16, Oji-River zone 48 Awgu zone 22, Ezeagu zone 84, Nsukka zone 316, Enugu-Ezike zone 48, and Ogbede zone 24 giving a total of 974 (see Appendix J, p. 163). Stage four involved convenience sampling technique to select 50 per cent of each gender in each pension zone giving a total of 486 males and 486 females. (see Appendix K, p. 164). Finally, the multi- stage sampling yielded a total of 972 (male = 486, females = 486, urban = 755 and rural =217).

Convenience sampling technique was used to draw a sample of 54 retirees for the focus group discussion. This comprised of six retirees from each of the sample pension zones. Three males and three females formed a focus group. There were six participants in each focus group. Werner and Bower (1988) recommended 6-12 participants in order to make discussion exciting and manageable. These retirees for FGD were sampled from 972 retirees who were the sample for the study

Purposive sampling was used to draw a sample of 30 experts for assessment of the appropriateness of CVDs preventive strategies for retirees in Enugu State. The experts were sampled from the Department of Human Kinetics and Health Education, University of Nigeria, Nsukka District Hospital Nsukka and Enugu State University Teaching Hospital (ESUTH)

Parklane Enugu. 10 experts were sampled from each of institutions. The experts each possessed a doctorate degree (Ph.D) in a health-related discipline and a minimum of three years work experience either as a lecturer or healthcare professional.

Instrument for Data Collection

Three instruments were used for data collection in this study. These include: Socio-demographic Correlates of Cardiovascular Diseases Questionnaire (SCCVDQ), Cardiovascular Diseases Focus Group Discussion Guide (CVDFGDG) and Cardiovascular Disease Preventive Strategies Questionnaire (CVDPSQ). The instrument (SCCVDQ) for baseline data was designed by adapting items from different standardized instruments such as Rose Angina Questionnaire (RAQ) developed by Rahman, Sparrier, Rahman, Choudhury and Leeder (2013), Cardiovascular disease questionnaire-CDQ (2001-02) developed by World Health Organization (2001), Healthy Heart Questionnaire (HHQ), Peripheral Arterial Disease Questionnaire (PADQ) developed by Cloroiu and Levine (2013), and Severe Heart Failure Questionnaire (SHFQ) developed by Gregori (2009) and World Health Oganisation Steps Instrument developed by World Health Organisation (2010a). The modifications of the different standardized instruments were done both in the questions and responses. Some items were discarded to avoid unnecessary repetitions as the different types of cardiovascular diseases have similar signs and symptoms. The instrument consisted of 53 items, which were divided into two sections-A and B. Section A generated informationon characteristics of the retirees and consists of 5 items while Section B which is made up of 48 items generated information on cardiovascular diseases. Section B has a dichotomous response options of “Yes or No” (see Appendix A, p. 149). The respondents were required to tick either ‘yes’ or ‘no’ as it applied to them.

Cardiovascular Disease Focus Group Discussion Guide (CVDFGDG) contained eight open-ended probing questions designed to elicit qualitative information on socio-demographic correlates of CVDs and preventive strategies among retirees as covered by the specific objectives (see Appendix B, p. 152). Williams, Unrau and Grinell Jr (2005) posited that qualitative method provides an in-depth knowledge that allows for a researcher’s understanding of the statistical figures obtained from quantitative approach in a particular context.

The Cardiovascular Disease Preventive Strategies Questionnaire (CVDPSQ) was designed based on the baseline data generated quantitatively and qualitatively using SCCVDQ and FGDG. It comprised two sections, section A containing the preliminary section whije section

B contained the major findings, objectives and preventive strategies. The preliminary section contained explanatory note (preamble) to guide the experts' responses while the second section in a tabular form comprised of the objectives, major findings (baseline data) and CVD preventive strategies. A multiple response option of "Very Appropriate (VAP)", "Appropriate (AP)" and "In Appropriate (INAP)" and "Very Inappropriate (VIAP)" were used (see Appendix C, p. 153). The responses were collapsed into appropriate and inappropriate. Consequently, a preventive strategy with score of 50 per cent and above were considered appropriate while score 49 per cent and below were considerd inappropriate.

Procedure Adopted for Determining Cardiovascular Diseases (CVDs) Preventive Strategies for Retirees in Enugu state, Nigeria

The formulation of CVDs preventive strategies passed through five stages namely: stage one involved outlining the baseline findings, research questions, research objectives and hypotheses, whereas stage two involved developing the CVDPSQ. Stage three involved subjecting the CVDPSQ alongside the research objectives, research questions, hypotheses and major findings of the study to five experts for validation. The experts were drawn from Department of Human kinetics and Health Education, University of Nigeria, Nsukka, District Hospital, Nsukka, and Enugu State University Teaching Hospital (ESUTH), Parklane Enugu. The experts were requested to rate the appropriateness of the preventive strategies by ticking (√) against the items using the response option of "very Appropriate", "Appropriate", "inappropriate" and "very inappropriate". The expert's imputs were used for the modification of the CVDPSQ. Stage four involved the presentation of the copies of the validated CVDPSQ to 30 experts. They were requested to adjudge the degree of appropriateness of the questionnaire by placing a tick (√) against the items using the response options of "very Appropriate", "Appropriate", "Inappropriate", Very Inappropriate". They were also requested to make their inputs. Stage five involved analysis of the data obtained from the experts.

Validation of the instrument.

The face validity of the instruments (SCCVDQ, CVDFGDG and CVDPSQ) were established by giving the copies of the instruments, specific objectives, research questions and hypotheses to seven experts, five from the Department of Human Kinetics and Health education, two experts from Department of Science Education (Measurement and Evaluation Unit),

University of Nigeria, Nsukka, who were requested to determine whether the items are in line with the purpose, objectives, research questions and hypotheses postulated for the study. The experts' corrections, inputs and suggestions were used to improve on the instruments before their use for data collection.

Reliability of the instrument

The reliability of the SCCVDQ was established using the split half method. The researcher administered twenty copies of the instrument to 20 retirees in Ebonyi State who share the same characteristcs with the study population. The items were grouped into even and odd numbered items. The responses of the two groups were analyzed to establish the reliability coefficient of the entire instrument using Kuder Richardson. The reliability coefficient index of .75 was obtained. Thus, the instrument was considered reliable. This is in line with Ellen (2011) assertion that if the reliability index obtained is up to .70 and above, the instrument was considered reliable for the study (see Appendix M, p 178). Reliabilty of the FGD was ensured through proper documentation of the steps and procedure used in data collection using documentary notebook and electronic recording device.

Method of Data Collection

In order to gain access to the respondents, the researcher presented a letter of introduction obtained from the Head, Department of Human Kinetics and Health Education, University of Nigeria Nsukka (see Appendix D, p. 157) to the Chairman of Enugu State pension board and the Director of each health facility. The ethical clearance was obtained and presentd to the Director of each health facility (see Appendix E, p. 158). The researcher briefed nine research assistants (one from each pension zone selected for the study) on the modalities of data collection during a survey. Research assistants were public health nurses'/community healthcare workers with adequate years of work experience. They were also familiar with the study area. This is in line with Mendel's (2005) recommendation that research assistants should be drawn from the area of study. The research assistants were also briefed on the modalities of how to probe using the CVDFGDG. The researcher and research assistants (RAs) administered the instruments on the respondents. The researcher and RAs supervised the respondents while completing the questionnaire. Retirees who could not complete the instruments due to one form of disability or

the other were assisted by the researcher and the assistants. The completed copies of SCCVDQ were retrieved on the spot from tte respondents by the researcher and the research assisstants.

The cardiovascular disease focus Group Discussion (CVDFGD) was carried out at each pension meeting venue. The researcher and RAs agreed with the retirees on the day and time for the discussion. The discussion was conducted with the retirees at the meeting venues on separate days and different times. The discussion was in a friendly way and their consent were obtained before commencing the discussion. A documentary notebook as well as electronic recording devices were used to record the discussions. Copies of CVDPSQ were adminstered by the researcher and three research assistants to the experts. The copies of the CVDPSQ were retrieved from the experts after completion.

Method of Data Analysis

Before commencement of data analyses, completed copies of the SCCVDQ and CVDPSQ were examined for completeness of responses. Only copies of the instruments validly filled by the respondents and experts were used for data analyses. Copies of the questionnaire with incomplete information were discarded. Data analysis was conducted using Statistical Package for the Social Sciences, (version 22). Research questions 1, 2 and 8 were analyzed using frequencies and percentages. These research questions were interpreted using World Health Organization (1997) criterion. Percentages below 40% was interpreted as low proportion, percentages between 40 – 69% was considered moderate while percentage above 70% was interpreted as high proportion. Research questions 3-7 were analyzed using Phi-coefficient. Chen and Popwich (2011) stated that phi-coefficient is used when data is at the nominal level of measurement and that variables to be examined are dichotomous. The correlation coefficients were interpreted using the guidelines recommended by Nwagu and Agbaje (2017). Thus, a correlation coefficient between ± .00 to ± .29 was interpreted as weak relationship, a correlation coefficient between ± .30 to ± .59 was interpreted as moderate relationship and a correlation coefficient between the rane of ± .60 to ± .99 was interpreted as strong relationship. Hypotheses 1-5 were tested using logistic regression. Logistic regression was used to determine the significant effect of each predictor variable on the dependent or outcome variable. Uzoagulu (2011) indicated that logistic regression is applied when the outcome variable is dichotomous or the data generated are at nominal level. All the hypotheses were verified at 0 .05 level of significance ($p < 0.05$).

The qualitative data analysis employed a thematic analysis approach, as described by Braun and Clarke (2006). Thematic analysis is inherently a flexible method, and is applied in identifying key or cogent themes, explicitly describing vast or huge volume of qualitative data and emphasizing similarities and differences in experiences (Braun & Clarke, 2006). The FGD data were transcribed (See Appendix L, p. 166). After transcription, line-by-line coding was performed on a sub-sample of transcripts by the researcher and a research assistant to formulate an initial thematic framework. The codes emerged from the collected data. The codes were subsequently synthesized with the questions from the FGD guide into a coding scheme which was later tranfered to the main transcripts. To ensure reliability of the data, all cases of conflicting interpretations were discussed thoroughly until consensus was reached. This process involved rigorous data treatment and deviant case analysis, in which researcher and the RA actively searched and identified similarilties and differences across details to ensure divergent views were represented. The themes were interpreted within the context of the study. The qualitative data obtained were used to complement the quantitative data in the course of discussion.

Data generated from Cardiovascular Disease Preventive Strategy Questionnaire (CVDPSQ) were analysed using frequencies and percentages. Percentages of 50% and above were considered appropriate while percentages below 50% were considered inappropriate (World Health Organisation, 1997).

CHAPTER FOUR

Results and Discussion

This chapter presents and discusses the findings of the study, which was set out to determine the socio-demographic correlates of cardiovascular diseases and preventive strategies for retirees in Enugu State. Nine hundred and seventy-two copies of Socio-demographic Correlates of Cardiovascular Disease Questionnaire (SCCVDQ) were administered while nine hundred and sixty-one copies were returned, this gave a return rate of 98.86 per cent. Out of the 961 copies returned, 11 copies were discarded due to lack of completeness of information. Thus, 951 copies of the instrument were used for analysis.

The findings from the study are presented in tables according to the research questions and null hypotheses postulated to guide the study.

Research question one.

What is the proportion of retirees who suffered CVDs in Enugu State? Data answering this research question are contained in Table 1.

Table 1

Proportion of Retirees that Suffered CVDs (n = 951)

S/N	Categories of CVDs	Yes f (%)	No f (%)
	whichn of the conditions have you experienced in the past 6 months?		
	Coronary heart disease (CHD)		
7	Repeated or continuous pain or discomfort in the chest	530 (55.7)	421(44.3)
8	Pains when climbing hills, stairs or when in a hurry	466(49.0)	485(51.0)
9	Pains on the chest while walking at ordinary pace	290 (308)	658(69.2)
10	Pains in the chest forced you to stop walking/working	421(443)	530(55.7)
11	Got relieved from pain when standing still	451(47.4)	500(52.6)
12	Relieved from pain after 10minuts or less	330(34.7)	621(65.3)
13	Shortness of breath even when you do not have cold	639(67.2)	312(32.8)
14	Slept on 2 or more pillows to help breathe	441 (46.4)	510 (53.6)
15	A health worker confirmed that you have heart pain	143(15.0)	803(850)
	Cluster %	**43.4**	**56.6**
	Heart attack (Myocardial infarction)		
16	Severe pain across front of chest lasting for about 30 minutes or more	151(16.0)	799 (84.0)
17	Pain for the first time in the past 6 months	158(16.6)	793(83.4)
18	A feeling of weakness, lightheadedness or fainting	398 (41.9)	553 (58.1)
19	A feeling of discomfort in the arms or shoulder	654 (68.8)	297 (31.2)
	Cluster %	**35.8**	**64.2**
	Cerebrovascular Diseases (CBVD)		
20	Experienced confusion or trouble while speaking	161(16.9)	790 (83.1)
21	Experienced sudden numbness or weakness of face, arm or leg especially on one side	561 (59.02)	390 (41.0)
22	Experienced sudden trouble seeing in one or both eyes	670(70.0)	281 (29.0)
23	Had partial stroke	479 (50.4)	472 (49.6)
24	Experienced severe headache without fever	756 (79.5)	195 (20.5)
25	Experienced unexplained dizziness	700 (73.6)	251 (264)
26	Experienced trouble walking or loss or balance	633 (66.6)	318 (33.4)
27	Experienced tingling sensation in fingers or toes	619 (65.1)	332 (34.9)
	Cluster %	**60.1**	**39.7**
	Heart Failure (HF)		
28	Swelling on the ankles or legs	354(37.2)	597(62.8)
29	Swelling made your walking about or climbing stairs difficult	159(16.7)	792 (83.3)
30	Swelling made your sexual activities difficult	102 (10.7)	849 (89.3)
31	Swelling made you eat less of the food you like	105 (11.0)	846 (89.0)
32	Swelling made you fell worried or depressed	235(24.7)	716 (75.3)
33	Pain in the heart when engaged in recreational activities such as brisk walking or cycling	203 (21.3)	348 (78.7)
34	Repeatedly admitted to hospital because of the heart problem	303 (31.9)	648 (68.1)
35	Feeling tired or fatigued unnecessarily	529(55.6)	422 (44.4)
	Cluster %	**26.1**	**73.9**
	Peripheral Arterial Disease (PAD)		
36	Pains or discomfort in your legs when you walk	661 (69.5)	290 (30.5)
37	Pains even at rest	561 (540)	390 (41.0)
38	Paleness, blush or discoloured fingers or toes	243 (25.6)	708 (74.4)

39	Any open wound on the legs or feet that is healing slowly	339 (35.6)	612 (64.4)
	Cluster %	**47.4**	**52.6**
	Overall %	**42.6**	**57.4**

Key:
0-39% = low proportion
40-69% = Moderate proportion
70% and above = high Proportion

Results in Table 1 indicates that overall, moderate proportion (42.6%) of retirees suffered from cardiovascular diseases (CVDs) in Enugu State. Table 1 further shows that moderate proportion of retirees suffered CHD (43.4%), PAD (47.4%) and CBVD (60.3%). In addition, low proportion of retirees suffered heart attack (35.8%) and heart failure (26.1%).

Result from FGD indicated that elderly population including retirees are prone to cardiovascular diseases. The result of FGD also indicated that cerebrovascular disease (CBVD) are more prevalent among the retirees. For example, male participant 1from Nsukka zone, male participant 2 from Agbani zone, female participant 4 from Ezeagu zone and other participants from other zones indicated that older adults and elderly including retirees suffer more from cerebrovascular diseases. The reasons such particpants gave was that such diseases are more in aged people due to degenerations of tissues and cells which can result cardiovascular diseases. This in in line with the result in the Table I above. However, some of the FGD participants indicated that heart attack is more common among the retirees. However, male participant 1 from Ezeagu zone, male P 1 from Oji River zone and male P 3 from Ikem zone indicated that retirees suffer from heart attack more than other cardiovascular diseases. Only one male P 2 from Abakpa zone indicated that retirees suffer more from peripheral arterial disease (leg problems). which predispose them to physical inactivity.

Research question two.

What is the proportion of retirees Exposed to risk factors for CVDs? Data answering this research question are contained in Table 2.

Table 2

Proportion of Retirees Exposed to Risk Factors for CVDs (n = 951)

S/N	Categories of Risk Factors	Yes f (%)	N0 f (%)
	Cigarette smoking		
40	Ever smoked any tobacco products such as cigarettes, pipes or hand-rolled cigarettes	393 (41.3.)	558(58.7)
41	Stopped smoking	447(68.0)	304(32.0)
	Cluster %	**36.6**	**45.4**
	Alcohol use		
42	Use excessive alcoholic beverages such as beer, wine, spirit, ton or kai-kai	643 (67.6)	308(32.4)
43	Adviced to reduce alcohol intake by healthcare provider	282(29.7)	669(70.3)
	Cluster %	**48.6**	**51.3**
	Unhealthy diet		
44	Eat fruits daily	122 (12.8)	829 (87.2)
45	Eat food prepared with vegetable daily	175 (17.4)	776 (81.6)
46	Adviced by healthcare provider to reduce salt intake to control hypertension	346 (36.4)	605 (63.6)
	Cluster %	**22.5**	**77.45**
	Physical inactivity		
47	Engaged in moderate regular exercises such as cycling, brisk walking or jogging	286 (28.2)	683 (71.8)
48	Often watching television, listen to 553 radio or crake jokes	581 (391)	398 (41.9)
49	Adivced by healthcare provider to reduce weight to control high blood	265 (27.9)	680 (72..1)
	Cluster %	**38.1**	**61.9**
	Hypertension		
50	Diagnosed of high blood pressure by a doctor or health worker	619 (65.1)	332 (34.9)
51	Check your blood pressure	334 (35.1)	617 (64.9)
52	Currently receiving treatment for high blood pressure from a doctor or other health worker	240 (25.02)	711 (74.8)
	Cluster %	**41.8**	**58.2**
	Diabetes mellitus		
53	Diagnosed of high blood sugar or diabetes mellitus by a doctor or other health worker.	339 (35.6)	612 (64.9)
54	Check your blood sugar regularly.	291 (30.6)	660 (69.4)
55	Currently receiving treatment for diabetes from a doctor or other health worker.	274 (28.8)	677 (71.2)
	Cluster %	**31.6**	**68.5**
	Overall %	**39.4**	**60.6**

Key:

0-39% = Low proportion

40-69% = moderate proportion

70% and above = high proportion.

Table 2 above shows that overall, moderate proportion (39.4%) of retirees were exposed to risk factors for CVDs. The table further indicates that moderate proportion (41.3%) of retirees smoked tobacco products/cigarettes, used alcohol (67.6%). Also, the Table reveals that high proportion (77.45%) engaged in unhealthy dietary practices, (61.9%) of retirees engaged in physical inactivity. Additonally, the Table shows that high proportion (65.1%)of retirees were diagnosed by a doctor or health worker of hypertension while low proportion (35.5%) of retirees were diagnosed of diabetes by a doctor or health worker in the past 6 months. The Table further indicates that low proportion of retirees ate fruits (12.8%) and vegetables (18.4%) daily. The Table also shows that low proportion (35.1%) check blood pressure regularly, received treatment for hypertension from doctors or other health worker (25%) checked blood sugar regularly (30.6%), and received treatment for diabetes from a doctor or other health worker (28.8%).

The result of the FGD showed that retirees were exposed to various CVDs risk factors. This in in line with the results in Table 2. Participants affirmed that CVDs have some causes (risk factors) which predispose to CVDs. However, majority of the participants said that CVDs are caused by overthinking, stress, over-labour, family problems, lack of rest and over suffering which can result to hypertension and subsequent development of CVDs. Few of the FGD participants indicated that CVDs are caused by hypertension and diabetes. For instance, male P 3 from Nsukka zone, male P 2and 3 from Agbani zone indicated that CVDs are caused by hypertension and diabetes. Majority of the participants (female P 4 from Enugu-Ezike, male P 3 from Abakpa zone and female P 6 from Awgu zone indicated that CVDs are caused by over thinking, over labour and stress. One male P 3 from Agbani zone said that CVDs are caused by diabetes. One male participant 3 from Oji-River indicated that CVDs are hereditry while another male participant 3 from Enugu-Ezike zone said that CVDs can be projected through diabolic means (poision). Nevertheless, all the participants accepted that unhealthy lifestyles such as cigarette smoking, alcohol abuse, unhealthy diet and physical inactivity can cause CVDs.

Research question three.

What is the relationship between the age of the retirees and CVDs in Enugu State? Data answering this research question are contained in Table 3.

Table 3

Relationship Between the Age of the Retirees and CVDs in Enugu State (n=951)

S/N	Categories of CVD	Phi cofficient (φ)	p-value	Decision
1	Coronary heart disease	.23	.000	WR
2	Myocardial infarction	.18	.000	WR
3	Cerebrovascular disease	.13	.000	WR
4	Heart failure	.22	.000	WR
5	Peripheral arterial disease	.05	.095	.WR
	Cluster Value	**.16**	**.19**	**WR**

Key:
± .00-.29 = Weak Relationship (WR)
±.30- .59 = Moderate Relationship (MR).
±. 60 -.99 = Strong Relationship. (SR)

Table 3 shows the cluster correlation coefficient values and corresponding p-value **(φ** =.16,*P* =-.19) which falls between ±.00-.29 and indicates a positive relationship between age and CVDs among retirees in Enugu State. The table further shows the correlation values and corresponding p-values for coronary heart disease **(φ** = .23,*P* = .000); myocardial infarction **(φ** =.18, *P* =.000), cerebrovascular disease **(φ** = 13, *P* =.000), heart failure **(φ** =.22, *P* = .000) and peripheral arterial disease **(φ** = .05, *P* = -19). These values fall between ± .00-.29 implying that there was a weak positive relationship between age and CVDs among retirees in Enugu State.

Result of the FGD indicated that CVDs are associated with age of the retirees. This is in line with the results of Table 3 above. Some of the participants indicated that any age group can suffer from CVDs but is more in elderly including the retirees. Some of the participants were specific to indicate that people from 50 years and above suffer from CVDs more than any other age groups. Two participants maintained that elderly from 70 years and above suffer more from CVDs. Only one participant said that people as from 40 years old can suffer from CVDs.

Research question four.

What is the relationship between the gender of the retirees and CVDs in Enugu State? Data answering this research question are contained in Table 4.

Table 4

Relationship Between the Gender of the Retirees and CVDs in Enugu State (n = 951)

S/N	Categories of CVDs	Phi-coefficient φ	P-Value	Decisions
1	Coronary heart disease	.23	.000	WR
2	Myocardil infarction	.01	.754	WR
3	Cerebrovascular disease	.29	.375	WR
4	Heart faifure	.86	.008	SR
5	Periperal arterial disease	.01	.770	WR
	Cluster value	**.28**	**.380**	**WR**

Key:
$\pm$.00 -.29 = Weak Relationship (WR)
$\pm$ .30- .59 = Moderate Relationship (MR)
$\pm$ .60 - .99 = Strong Relationship. (SR)

Table 4 shows the phi coefficient value and their corresponding *p*-value ($\boldsymbol{\varphi}$ =.28, *P* =.38) indicating positive relationship between gender and CVDs among retirees in Enugu State. The table further shows the phi coefficient values and their p-values for coronary heart disease ($\boldsymbol{\varphi}$ =.23), myocardial infarction ($\boldsymbol{\varphi}$ **=.01,** p **= .754**), cerebrovascular disease ($\boldsymbol{\varphi} = .\mathbf{29}, \boldsymbol{p} = .\mathbf{375}$),) and peripheral arterial disease ($\boldsymbol{\varphi}$ **= .01,** p **= .770**). The correlation values fall between ($\pm$ .00 -.29) indicating a weak positive relationship between gender and CVDs among retirees in Enugu State. Further more, the table indicates that correlation coefficient value and p-value for heart failure ($\boldsymbol{\varphi}$ = .86, p = .008) which indicates a strong positive relationship between gender and heart failure among retirees.

Result of the FGD revealed that males suffer CVDs more than females. This is in support of the result of Table 4 above. Majority of the participants indicated that males suffer CVDs more than their female counterpart. Few of the participants revealed that female suffer

CVDs than the males. However, some participants maintained that males and females suffer CVDs equally.

Research question five.

What is the relationship between the level of education of the retirees and CVDs in Enugu State? Data answering the research question are contained in Table 5.

Table 5

Relationship Between the Level of Education of the and CVDs in Enugu State (n = 951)

S/N	Categories of CVDs	Phi-coefficient φ	P-Value	Decisions
1	Coronary heart disease	.10	.01	WR
2	Myocardil infarction	-.05	.13	WR
3	Cerebrovascular disease	.07	.04	WR
4	Heart faifure	.02	.65	WR
5	Periperal arterial disease	-.01	.82	WR
	Cluster value	**-.28**	**.40**	**WR**

Key:
±.00-.29 = Weak Relationship (WR)
± .30- .59 = Moderate Relationship (MR)
± .60 - .99 = Strong Relationship (SR)

Data in Table 5 show the relationship between level of education and CVDs among retirees in Enugu State. The Table shows that overall, there was a negatiive relationship (φ = -.03, p = .40) between level of education and CVDs among retirees. Specifically, there were positive relationships between level of education and coronary heart disease (φ =.10, p = .01) cerebrovascular disease (φ = .07, p = .04) and heart failure (φ = .02, p = .65) among retirees in Enugu State. However, there were weak negative relationships between level of education and myocardial infarction (φ = -.05, p = .13), and peripheral arterial disease (φ = -.01, p = .82) among retirees in Enugu State.

Results from the FGD showed that CVDs are not associated with the level of education of the retirees. This supports the results of Table 5 above. Majority of the respondents revealed that diseases including CVDs have nothing to do with level of education. They went further to say that CVDs can affect any body irrespective of one's level of education. However, some of the respondents indicated that retirees with low level of education (primary and secondary education) suffer CVDs more than retirees with high level of education (tertiary education). Few

of the participants maintained that retirees with high level of education suffer CVDs more than those with low level of education.

Research question six.

What is the relationship between the level of income of the retirees and CVDs in Enugu State? Data answering this research question are contained in Table 6.

Table 6

Relationship Between the Level of Income of the retirees and CVDs in Enugu State (n = 951)

S/N	Categories of CVDs	Phi-coefficient φ	P-value	Decision
1	Coronary heart disease	-.06	.06	WR
2	Myocardil infarction	.02	.63	WR
3	Cerebrovascular disease	.06	.07	WR
4	Heart faifure	-.02	.45	WR
5	Periperal arterial disease	.05	.15	WR
	Cluster value	**-.01**	**.83**	**WR**

Key:
±.00 -.29 = Weak Relationship (WR)
±.30- .59 = Moderate Relationship (MR)
± .60 - .99 = Strong Relationship (SR)

Data in Table 6 shows phi-correlation between level of income and CVDs among retirees in Enugu State. The table shows that overall there was a negative relationship (φ = -.01, p = .40) between level of income and CVDs among retirees in Enugu State. Specifically, there were weak positive relationships between level of income and myocardial infarction (φ = .02, p = .63), cerebrovascular disease (φ. = .06, p = .07), and peripheral arterial disease (φ =.05, p = .15) among retirees in Enugu State. However, there were weak negative relationships between level of income and coronary heart disease (φ = -.06, p = .06) and heart failure (φ = -.02, p = .45) among retirees in Enugu State.

The results of the FGD revealed that CVDs are associated with the level income of the retirees. This is in contrast with the result of Table 6 above. Majority of the participants indicated that retirees with low income suffer from CVDs more than those with high income. Few respondents revealed that retirees with high income suffer from CVDs more than those with low income. Only one female participant maintained that diseases do not respect riches or poverty, therefore both rich and poor suffer from cardiovascular diseases.

Research question seven.

What is the relationship between the place of residence of the retirees and CVDs in Enugu State? Data answering this question are contained in Table 7.

Table 7

Relationship Between the Place of Residence of the retirees and CVDs (n = 951)

S/N	Categories of CVDs	Phi-coefficient (φ)	P-Value	Decisions
1	Coronary heart disease	.23	.000	WR
2	Heart attack	.06	.109	WR
3	Cerebrovascular disease	.13	.000	WR
4	Heart failure	.86	.008	SR
5	Peripheral arterial disease	.18	.000	WR
	Cluster	**.29**	**.023**	**WR**

Key:
± .00-.29 = Weak Relationship (WR)
±.30- .59 = Moderate Relationship (MR)
±.60 - .99 = Strong Relationship (SR)

Table 7 shows the phi-coefficient and the corresponding p-values (φ = .29, p = .23) indicating that there was a positive relationship between place of residence and CVDs among retirees in Enugu State. However, the the phi-coefficient and the corresponding p-values (φ = .29, p = .23) indicates there there was a weak positive relationship between place of residence and CVDs among retirees in Enugu State. The Table further indicates that there was a strong positive relationship (φ =.86, p =.008) between place of residence and heart failure. However, there was weak positive relationship between coronary heart disease (φ = .23, p= .000), myocardial infarction (φ = .06, p = .109), cerebrovascular disease (φ = .13, p = .000), periphereal arterial disease (φ = .18, p = .000) and place of residence.

The FGD results showed that CVDs are associated with the place of residence of the retirees. This in line with the result of Table 7 above. Few of the participants indicated that those in the rural areas suffer CVDs more than those in the urban areas. However, majority of the

participants maintained that retirees living in the urban areas suffer CVDs more than those residing in the rural areas.

Research question eight.

What are the CVD Preventive Strategies for Retirees in Enugu State? Data answering the research question are contained in Table 8, 9 and 10.

Table 8

Reponses of Experts on CVDs Primordial Strategies for Retirees in Enugu State (N = 29)

S/N	Preventive Strategies	App f %	Inapp f %
	Cigarette Smoking		
1	Banning of cigarette smoking by State Ministry of Health.	28 (96.6)	1 (3.4)
2	Awareness on dangers of cigarette smoking State Ministry of information.	29 (100.0)	0 (0.0)
3	Use of newsletters, posters containing graphic images on the effects of cigarette smoking by State Ministry of Information	29 (100.0)	0 (0.0)
4	Mobile health workers and social workers tracing retirees who are smokers and counseling them to quit	27 (93.1)	2 (6.9)
5	Restriction on tobacco advertising and promotions	28 (96.5)	1 (3.4)
6	Rehabilitating and integrating retirees who quited smoking through tobacco ceasation programmes by health workersl	29 (100.0)	0 (0.0)
7	Creating, implementing and protecting strong national tobacco control policy/programme as mechanism to exert governmental leadership in tobacco control	29 (100.0)	0 (0.0)
	Cluster %	**98.0**	**1.95**
	Alcohol Abuse		
8	Creating awareness on dangers of alcohol abuse	29 (100)	0 (0.0)
9	Early identification of retirees who are at risk and counseling them to reduce intake social and health workers.	29 (100.0)	0 (0.0)
10	Identification of retirees with alcohol abuse disorders by health workers for prompt treatment, rehabilitation and integration	28 (96.5)	1 (3.4)
11	Follow-up and possible referral to rehabilitation centre	29 (100.0)	0 (0.0)
12	Government increasing excise duties on alcoholic beverages to discourage or minimize purchase rate and consumption by retirees.	27 (93.1)	2 (6.9)
13	Regulating availability of alcohol beverages by government and community leaders	28 (97.6)	1 (3.4)
14	Restriction on time and places of sales of alcoholic beverages by the government, community leaders and youths	29 (100.0)	0 (0.0)
15	Government banning the advertisement and promotion of alcoholic beverages	28 (96.6)	1 (3.4)
	Cluster %	**97.9**	**2.1**
	Physical Inactivity		
16	Promotion of transport policies that may priorities walking and cycling	26 (89.6)	3 (10.3)
17	Construction of urban designs with pedestrian ways to encourage safe active counseling among retirees.	29 (100.0)	0 (0.0)
18	Awareness through mass media of the importance of physical activity in preventing CVDs among retirees	29 (100.0)	0 (0.0)
19	Community based programmes to encourage the retirees engage in physical activity such as cycling brisk walking and flexibility training	28 (96.6)	1 (3.4)
20	Encouraging at least 30 minutes of moderate physical activity in 3-5 days a week among the retirees	29 (100.0)	0 (0.0)
	Cluster %	**97.2**	**2.7**
	Unhealthy Diet		
21	Encouraging retirees to have small garden/farm to ensure consumption of fleshy vegetables and fruits.	29 (100.0)	0 (0.0)
22	Intake of high fibre/whole grains food such as corn, bean, millet to prevent heart disease.	29 (100.0)	0 (0.0)

23	Intake of fish especially oily fish at least twice aweek to prevent CVDs	28	(96.5)	1	(3.4)
24	Reduced intake of beverages and carbonated drinks but more intake of clean water among retirees to prevent diabetes mellitus.	29	(100.0)	0	(0.0)
25	Reduction in dietary salt intake and sugary items to reduce hypertension and diabetes mellitus	28	(96.5)	1	(3.4)
26	Avoidance of fat rich food such as butter and processed meat to prevent hypertension	29	(100.0)	0	(0.0)
	Cluster %		**98.8**		**1.1**
	Overall %		**99.2**		**1.8**

Key:
App = Appropriate (50% and above)
Inapp = Inappropriate (49% and below)

Table 8 shows an overall, that the primodial preventive strategies were considered appropriate (99.2%). The table further shows that all the cluster percentage responses on the primordial preventive strategies ranging from (97.3%-98. 8%) which are above 50%. This implies that these primordial preventive strategies were adjudged appropriate by the experts.

Table 9.

Responses of Experts on CVDs Primary Preventive Strategies for Retirees in Enugu State (n = 29)

S/N	Preventive Strategies	App f %	Inapp f %
	Hypertension		
27	Lifestyle modifications such as physical activity, alcohol moderation, quitting cigarette smoking eating healthy diet to control hypertension among retirees	29 (100.0)	0 (0.0)
28	Regular checking of retirees blood pressure by health workers during monthly meetings or verification exercise,	29 (100.0)	0 (0.0)
29	Health care workers to educate the retirees on signs and symptoms of high blood pressure for early detection and management	29 (100.0)	0 (0.0)
30	Health care workers encouraging retirees to adhere strictly to medical prescriptions, treatment and management regimen	29 (100.0)	0 (0.0)
31	Retires who are hypertensive should be screened for CVDs by cardiologist	28 (96.6)	1 (3.4)
	Cluster %	**99.3**	**0.6**
	Diabetes Mellitus		
32	Regular checking of retirees blood glucose by health workers on each hospital visit to detect diabetes	29 (100.0)	0 (0.0)
33	Lifestyle modification such as physical activity, weight control, blood pressure control and eating healthy diet	29 (100.0)	0 (0.0)
34	Health workers should encourage retirees to adhere strictly to medical prescriptions, treatment and management regimen	28 (96.6)	1 (3.4)
35	Health care workers should educate the retirees on the signs and symptoms	29 (100.0)	0 (0.0)

	of diabetes mellitus to prevent CVDs		
	Cluster %	**99.1**	**0.8**
	Overall cluster%	**99.2**	**0.7**

Key:
App = Appropriate (50% and above)
Inapp = Inappropriate (49% and below)

Table 9 indicates that an overall cluster of (99.2%) which is above 50% standard cut-off. This implies that the primary preventive strategies were considered appropriate by the experts. The table also shows that cluster percentages for hypertension (99.3%) and diabetes mellitus (99.1%). Thus, the items were adjudged appropriate for primary prevention of CVD's.

Table 10
Responses of Experts on CVDs Secondary Preventive Strategies for Retirees in Enugu State (n =29)

S/N	Preventive Strategies	App		Inapp	
		f	%	f	%
36	Health care workers should individualize preventive strategies based on clinical profile of each retiree	29	(100.0)	0	(0.0)
37	Healthcare workers should encourage retirees lifestyle modifications such as smoking cessation, improved physical activity, healthy diet and alcohol intake moderation	29	(100.0)	0	(0.0)
38	Retirees should consult cardiologists regularly to assers the state of heart and other vital organs to prevent heart attack	28	(96.6)	1	(3.4)
39	Retirees should undergo physical exercise training to assess endurance and safety prior to physical exercise programme	28	(96.5)	1	(3.4)
40	Enugu state government should design and effectively implement health insurance scheme for retirees	29	(100.0)	0	(0.0)
41	Enugu state government should pay retirees pensions and gratuity promptly to tackle them health challenges	29	(100.0)	0	(0.0)
42	Primary health care facilities should be equipped with qualified personnel to care for retirees with CVDs	29	(100.0)	0	(0.0)
43	Ambulance services should be provided in primary healthcare facilities to convey retirees to hospitals before complications	29	(100.0)	0	(0.0)
44	Enugu State Government should take proper care of retirees as done in advanced countries	29	(100.0)	0	(0.0)
	Cluster %		**99.2**		**0.8**

Key:
App = Appropriate (50% and above)
Inapp = Inappropriate (49% and below)

Table 10 shows the overall cluster of (99.2%) for secondary preventive strategies. This implies that the secondary preventive strategies for CVDs were considered appropriate by the experts.

The result of the FGD indicated that CVDs can be prevented. One participant said that CVDs can only be prevented through God's intervention. Another participant said that CVDs can be prevented through government intervention. For instance, male P 1 from Agbani zone and male P 2 from Abakpa zone indicated that CVDs can be prevented through government and God's interventions Another participant indicated that government should create awarensess about the CVDs to the general public. Few of the participants indicated that CVDs can be prevented through the adoption of healthy lifestyles such as quiting cigarette smoking, reducing alcohol intake, regular exercise, reducing stress and eating healthy diet.

Hypothesis one.

There is no significant relationship between the age of the retirees and CVDs in Enugu State. Data testing this hypothesis are contained in Table 11

Table 11
Summary of Logistic Regression Analysis of Relationship Between the Age of the retirees and CVDs in Enugu State (n = 951)

						95% C.I for Exp(B)		
Variable	**B**	**SE**	**Wald**	**df**	**p-value**	**OR**	**Lower**	**Upper**
55-74ysr (Ref)		.			.			
75yrs and above	1.05	272	14.208	1	.000	2.786	1.635	4.747
Constant	1.934	.124	241.899	1	.000	6.919		

Cox and Snell $R^2 = 0.17$
Nagelkerke $R^2 = 0.37$
OR= Odd Ratio
Ref = Reference category
Significant =: $p < .05$
$x^2\ (1) = .671$

Results in Table 11 show that the model on relationship between the age of the retirees and CVDs was significant, x^2 (1)= 671, *P*= .000, with a small effect (variance) in the CVDs explained by the model (Cox and snell R^2= .017; and Nagelkerke R^2 = .037). This implies that age only explained between 1.7% and 3.7% variation or change in the dependent variable

(CVDs). According to the table, advanced age is a risk factor for CVDs (OR = 2.786, CI = 1.635-4.747, *p* = -ooo). This implies that retirees aged 75years and above are twice more likely to suffer CVDs compared with those aged 55 years to 74 years.

Hypothesis two.

There is no significant relationship between the gender of the retirees and CVDs in Enugu State. Data testing this hypothesis are contained in Table 12.

Table 12

Summary of Logistic Regression AnalysisTesting the Relationship Between the Gender of the retirees and CVDs in Enugu State (n = 951)

							95% C.1 for Exp (B)	
Variable	**B**	**SE**	**Wald**	**df**	**p-value**	**OR**	**Lower**	**Upper**
Female(ref)	.							
Male	583	.225	6.698	1	.010	1.792	1.152	2.789
Constant	1.971	.141	.194.284	1	.000	7.175	-	-

Cox and Snell R^2 = .007
Nagelkerke R^2 = 0.15
$x^2(1)$ = .780,
Significan p = <.05
Ref = Reference category
OR= Odds Ratio.

Result in Table 12 shows that the model on relationship between the gender of the retirees and CVDs was significant, x^2 (1)=.780, *P* = .005, with a small effect (variance) in CVDs explained by the model (Cox and Snell R^2 = .007; Nagelkerke R^2 =.015). This implies that gender only explained between 0.7% and 1.5% variation or change in the dependent variable (CVDs). The table shows that male retirees (OR= 1.792, CI: 1.15-2.789, *P* =.010) are more likely to suffer CVDs than female retirees.

Hypothesis three.

There is no significant relationship between the level of education of the retirees and CVDs in Enugu State. Data testifying this hypothesis are contained in Table 13.

Table 13

Summary of Logistic Regression Analysis Testing the Relationship Betwwen the Level of Education of the retirees CVDs in Enugu State (n = 951)

							95% C1 for Exp (B)	
Variable	**B**	**S.E**	**Wald**	**df**	**p-value**	**OR**	**Lower**	**Upper**
Low education level (ref)								
High education level	_.150	.221	.463	1	.49	.861	.558	1.326
Constant	2.045	.180	128.577	1	.00	7.726	-	-

Reference group= tertiary education

Cox and Snell R^2 =.103
Nagelkerke R^2 =.107
x^2 (1) = 2.130
Sig = p <.05
OR =Odd ratio

Results in Table 13 show that model on relationship between the level of education of the retirees and CVDs was not significant, x^2= (1) =7.742, *P* =.49, with a small effect (variance) in CVDs explained by the model (Cox and Smell R^2 = .103, Nagelkerke R^2= .107). This implies that level of education only explained between 10.3% and 10.7% variation or change in the dependent variable CVDs. According to the table, having a high educational level is a protective factor against the development of CVDs.This implies that retirees with high education level (OR = -861, CI: -558 – 1-326, *P* = -49) are less likely to suffer CVDs compared with retirees with low education level.

Hypothesis four.

There is no significant relationship between the level of income of the retirees and CVDs in Enugu State. Data testifying this hypothesis are contained in Table 14.

Table 14

Summary of Logistic Regression AnalysisTesting the Relationship Between the Level of Income of the retirees and CVDs in Enugu State (n = 951)

							95% C1 for Exp (B)	
Variable	**B**	**S.E**	**Wald**	**df**	**p-value**	**OR**	**Lower**	**Upper**
₦ 20,000- ₦40,000 (Ref)								
₦ 41.000 and above	-.235	.209	.618	1	.439	.791	.440	1.420
Constant	1.994	.145	189.356	1	.000	7.342	-	-

Cox and Snell R^2 = .01
Nagelkerke R^2 = .02
x^2 = 2.930, Significant: p = < .05
Ref = Reference category
OR = Odd Ratio

Result in Table 14 shows that the model on the relationship between the level of income of the retirees and CVDs was not significant x^2(1) = 2.930, *P* = .43, with a small effect (variance) in CVDs explained by the model (Cox and snell R^2=.004j Nagelkerke R^2 =.009. This implies that level of income only explained between 0.4% and 0.9% variation or change in the dependent variable (CVDs). However, retirees with monthly pension of #41,000 and above (OR = -791, CI: -440 – 1-420, *p* = -439) are less likely to develop CVDs compared to retirees with

monthly pension of #20,000 to #40,000. Thus, high is a protective factor against development of CVDs.

Hypothesis five.

There is no significant relationship between the place of residence of the retirees and CVDs in Enugu State. Data testifying this hypothesis are contained in Table 15.

Table 15

Summary of Logistic Regression AnalysisTesting the Relationship between the Place of Residence of the retirees and CVDs in Enugu State (n = 951)

							95% C1 for Exp (B)	
Variable	**B**	**S.E**	**Wald**	**df**	**p-value**	**OR**	**Lower**	**Upper**
Urban (Ref)	.				.	.	.	.
Rural	1407	.225	38.924	1	.000	.245	157	381
Constant	2.708	.152	316.259	1	.000	15.000	-	-

Ref = Reference category
Cox and Snell R^2 = .38
Nagelkerke R^2 =.082
X^2 = 1.230
Significant: p < .05

Result in Table 15 shows that the model on relationship between the place of residence of the retirees and CVDs was significant, x^2 (1) =1.230, *p*=.000, with a small effect (variance) in CVDs explained by the model (Cox and Snell R^2 = .38, Nagelkerke R^2 = .082). This implies that place of residence explained between 38% and 8.2% variation or change in the dependent variable (CVDs). The table further shows that retirees residing in rural areas (OR =.245, CI= .157-.381**.** *p* =.0005) are less likely to suffer CVDs compared to retirees residing in the urban areas.

Summary of Major Findings

Based on the analysis of the data, the major findings of the study are hereby summarized below:

1. Overall, moderate proportion (42.6%)of retirees suffered from CVDs. However, high proportion (60.1%) suffered from cerebrovascular diseases (Table 1). Also, findings from FGD conducted revealed that cerebrovascular diseases were the most common CVDs among retirees in Enugu State.

2. Overall, moderate proportion (39.4%) of retirees were exposed to risk factors for CVDs. However high proportion (67.6%, 77.5% and 61.9%)) were exposed to risk factors of alcohol abuse, unhealthy dietary practices and physical inactivity respectively (Table 2). Findings from FGD conducted indicated that majority of retirees engage in physical inactivity, eat unhealthy diet and suffered from hypertension.
3. There was a positive relationship (overall, φ = .16, *p*=.19) between the age of the retirees and CVDs in Enugu State (Table 3).
4. There was a positive relationship (overall, φ= 28, p = .38) between the gender of the retirees and CVDs in Enugu State. However, there was a strong positive relationship($\boldsymbol{\varphi}$ = .86, *p* = .008) between gender and heart failure (Table 4).
5. There was a negative relationship (overall, φ = -.03 p = .40) between the level of education of the retirees and CVDs in Enugu State (Table 5). However, there were positive relationships between the level of education and coronary heart disease (φ =.10, p = .01), cerebrovascular disease (φ =.07, p = .04) and heart failure (φ = .02, p = .65).
6. There was negative relationship (overall, (φ = -.01, p = .40) between the level of income of the retirees and CVDs in Enugu State. However, there were positive relationship between the level of income and myocardial infarction ((φ = .02 , p = .63), cerebrovascular disease ((φ = .06, p = .07), and peripheral arterial disease ((φ = .05, p = .15) (Table, 6).
7. There was a positive relationship (Overall φ = 0.29, p =.23) between the place of residence of the retirees and CVDs in Enugu State. However, there was a positive relationship ($\boldsymbol{\varphi}$ =.86, *p* =.008) between place of residence and heart failure (Table 7).
8. The formulated cardiovascular preventive strategies were considered appropriate by majority of the experts with overall percentage of (98.5%) (Table 8, 9 and 10).
9. There was a significant relationship (x^2 (1)= 671, *P* = .000) between the age of the retirees and CVDs in Enugu State (Table 11).
10. There was a siginficant relationship (x^2 (1)=.780, *P* = .005) between the gender of the retirees and CVDs in Enugu State (Table 12).
11. There was no significant relationship (x^2= (1) -.7.742, *P* =.49) between the level of education of the retirees and CVDs in Enugu State (Table 13).
12. There was no significant relationship (x^2(1) = 2.930, *P* =.43) between the level of income of the retirees and CVDs in Enugu State (Table14).

13. There was a significant relationship (x^2 (1) = 1.230, p =.000) between the place of residence of the retirees and CVDs in Enugu State (Table 15).

Discussion

The findings of the study were discussed under the following headings:

1. Proportion of retirees who suffered cardiovascular diseases(CVDs).
2. Proportion of retirees who were exposed to CVD risk factors.
3. Relationship between socio-demographic variables and CVDs
4. Cardiovascular diseases (CVDs) preventive strategies.

Proportion of retirees who suffered cardiovascular diseases (CVDs).

Findings in Table 1 indicated that the proportion of retirees who suffered from CVDs were moderate (42.6%). The finding was expected and not surprising because evidence suggests that a great number of the elderly including retirees died from cardiovascular diseases (WHO, 2015). The finding is similar with those of Saidu (2018) and Oguanobi et al. (2013) who reported that 43.7 per cent and 40.7 per cent of their respondents suffered from CVDs. The similarity may be due to similar age bracket of the two studies and the present study which were between 55 years and above. However, the proportion of retirees who suffered from CVDs in this study was higher than those of Osuji et al. (2014) and Nwafor et al. (2016) who reported that 31.6 per cent and 15 per cent of their respondents suffered from CVDs. The difference may be attributed to age difference as the present study focused on the retirees (55 years and above) while their studies focused on age group from 18 years and above.

Findings from the focus group discussion (FGD) showed that the retirees indicated that CVDs were more prevalent among the elderly including retirees. Majority of the participants indicated that elderly including retirees suffer CVDs more than any other age group. For example, male participant 1from Nsukka zone, male participant 2 from Agbani zone, female participant 4 from Ezeagu zone and other participants from other zones indicated that older adults and elderly including retirees suffer more from CVDs. The reasons such particpants gave was that such diseases are more in aged people due to degenerations of tissues and cells which can result cardiovascular diseases. Few participants, for instance, male participant 1from Ogbede zone, female participant 5 from Oji-River zone and female participant 4 from Awgu indicated that any age group can suffer from cardiovascular diseasess. Majority of the respondents in FGD

asserted that CBVD was the most common CVD among the retirees. For instance, male participant 2 from Agbani zonefemale participant 4 from Enugu zone, male participant 3 from Abakpa zone and ogbede zone indicated that retirees suffer more from CBVD than other cardiovascular diseases. However, male participant 1 from Ezeagu zone, male P 1 from Oji River zone and male P 3 from Ikem zone indicated that retirees suffer from heart attack than other cardiovascular diseases. Only male P 2 from Abakpa zone indicated that retirees suffer more from peripheral arterial disease (leg problems) which predispose them to physical inactivity.

The finding from the table also showed that the proportion of retirees that suffered CBVD washigh (60.3%). The large number of retirees suffering from CBVD may reflect retirees' exposure to CVD risk factors particularly hypertension and diabetes mellitus. Also, delay in seeking medical treatment most often results in complications with resultant disability and mortality. The finding was expected and therefore not a surprise. This is evidenced by the fact that some retirees complained of inability to fill the instrument due loss of function in their hands. The finding is consistent with that of Najlaa et al. (2015) who reported that 57 per cent of the respondents suffered from CBVD. However, it is at variance with the finding of Sanyo et al. (2015) who reported that only 1.3 per cent of their respondents suffered from CBVD. The disparity may be attributed to the fact that the present study covered both urban and rural areas while Sanyo et al. study covered only three semi-urban communities.

Finding from Table 1 further indicated that the proportion of retirees that suffered from Peripheral Arterial Disease (PAD) was moderate (47%). The finding was surprising and therefore not expected. This is because most of the retirees suffer from bone and joint problems such as arthritis which is age related and may not be PAD. The finding was at variance with that of Comep et al. (2017) and Hagos et al. (2017) who reported that only 3.81 per cent and 10.4 per cent of their respondents suffered from PAD. The disparity can be attributed to the fact that the present study was among retirees aged 55 years and above while Hagos et al. and Comp et al. studies was among adults of lower age from 40 years and above. Another reason for the difference between the findings might be that the sample of present study was high (951) compared with the previous studies whose subjects were only 115 and 178 respectively. Higher sample size tends to produce more robust results. High percentage of PAD among the respondents may be due to their inability to differentiate between age-related arthritis and

peripheral arterial disease. The result also varies with the FGD as only one respondent from FGD said that leg problem (PAD) is the most common CVD among the retirees.

Finding from Table 1 also showed that proportion of retirees that suffered from CHD was moderate (43.4%). The result was a surprise and therefore was not expected. This is because most of the retirees could not differentiate between chest pain associated with CHD and chest pain due to peptic ulcer disease. The finding was in disagreement with the studies of Zeldan et al. (2015) and Anu (2016) who reported that only 13.4 per cent and 3.4 per cent of the respondents suffered from CHD. The disparity may be that the two studies were conducted in other countries that may offer better healthcare services than Enugu State where the present study was conducted. The table further revealed that proportion of retirees that suffered from myocardial infarction (heart attack) was low (35.8%). The finding was expected and therefore not surprising because many cases of heart attack in remote areas are not reported to the hospitals. Even those that died suddenly at home or elsewhere probably due to heart attack were not reported for statistical purposes. The finding was at variance with the study of Essin et al. (2014) who reported that only 1.6 per cent of the respondents suffered from myocardial infarction (MI). The variance may be attributed to location of study. Essin, et al. study was conducted in South-south Nigeria which is more developed in terms of social amenities including health facilities than Enugu State where the present study was conducted. In addition, Essin et al. study was a clinical and autopsy study that covered only cases that presented to the hospital while the present study was a field study (survey) that collected information directly from respondents. Also, Ogengo et al. (2010) indicated that MI is common among older adults in Kenya. Result of the Table 1 further showed that proportion of retirees that suffer heart failure was low (26.13%). The finding was not expected and therefore surprising. The number may be a reflection of poor knowledge or awareness of risk factors for heart failure such as hypertension. Poor knowledge of the symptoms, late presentation to hospital and uncontrolled hypertension may be a contributing factor to heart failure. The finding disagreed with those of Onwuchekwa et al. (2009) who reported that only 4.3 per cent of the subjects suffered from heart failure. The disparity may be attributed to fact the present study was a survey while Onwuchekwa et al. study was a hospital based study that covered only those that presented to the hospital. The study is also at variance with the finding of Owusu (2013) who reported that 76 per cent of the respondents suffered from

heart failure. The difference may be that Onwusu study covered younger age group from 13 years and above while the present study covered retirees aged 55 years and above.

Proportion of retirees exposed to risk factors for CVDs

The findings in Table 2 indicated that overall, proportion of retirees who were exposed to risk factors for CVDs were moderate (39.4%). Also, high proportion (77.5% and 61.9%) were engaged in unhealthy diet and physical inactivity, moderate proportion (41.3%) smoked cigarettes, high proportion abused alcohol and suffered from hypertension (67.6%, 65.1%) respectively. while low proportion (35.5%) suffered from diabetes mellitus. The presence of multiple risk factors among the retirees were expected and therefore not surprising. The finding is in contrast with Ghazali et al. (2014) who reported that 68.4 per cent of their respondents had at least three or more risk factors for cardiovascular diseases. The difference may be attributed to sample of the study which varied. Number of respondents in the present study were 951 while that of Ghazali et al. (2014) were 2,572. The findings also agree with that of Belue et al. (2009) who indicated that lifestyle factors such a diet, exercise and smoking contribute to the increasing rates of CVDs in sub-Sahara Africa. The similarity may be that the studies were carried out in the same region (sub-Sahara Africa).

Majority of the respondents from the FGD maintained that CVDs have some causes. For instance, male P 3 from Nsukka zone, male P 2and 3 from Agbani zone indicated that CVDs are caused by hypertension and diabetes. Majority of the participants (female P 4 from Enugu-Ezike, male P 3 from Abakpa zone and female P 6 from Awgu zone indicated that CVDs are caused by over thinking, over labour and stress). One participant (male P 3 from Oji-River indicated that CVDs are hereditry). One male participant from Enugu-Exike said that CVDs can be projected through diabolic means (poisio). Few of the respondents mentioned unhealthy lifestyes such alcohol abuse, sedentary lifestyles and not eating healthy diets. Imagine one respondent from Nsukka said that he was a chain smoker and did not believe that cigarette smoking predisposes to CVDs but quit because a priest convinced him that cigarette smoking can cause cancer. These portray the ignorance of the retirees on the major risk factors of CVDs which predispose them to cardiovascular diseases. However, after brief eplaination of the risk factors and how they caused CVDs, the participants accepted that CVDs are mostly due to unhealthy lifestyles.

The finding from Table 2 also showed that moderate proportion (41.3%) of retirees smoked cigarette. The result was surprising and not expected. This is because at these age retirees are not expected to still engage in cigarette smoking even if they smoked at adult age, they were expected to have quit the habit because of harmful effect of smoking. Moderate proportion of retirees engaging in smoking of cigarettes may due to habits developed at youthful age which are difficult to quit and because retirees are ignorant of the dangers of smoking. The finding contradicts with that of Yang et al. (2016) and Hagos et al. (2012) who revealed that prevalence of smoking was 27.5 per cent and 12.5 per cent respectively among the elderly. The disparity may be attributed to the fact that the studies were carried in different areas with varied social, health and economic orientation and development. Findings from the same Table 2 indicated that high proportion (67.6%) of retirees engaged in harmful use of alcohol. The finding was surprising and therefore not expected as one expects the retirees to avoid alcoholic beverages or to consume them moderately as the organs responsible for the metabolism of alcohol become weak at old age. Socially, retirees are not buoyant enough to start wasting the limited resources on alcohol since they complained of family responsibilities like house rent, school fees, feeding and non-payment of gratuity. The finding is in disagreement with that of Prasanna et al. (2013) who identified alcohol abuse of 38.46 per cent among the respondents. The discrepancy between this study and the finding of Prasanna et al. (2013) is possibly as a result of socio-cultural difference between India and Enugu State. This contradicts the finding of Olarinde et al. (2013) who reported alcohol consumption as low as (21%) among the elderly. The difference between this finding and the finding of Olarinde et al. (2013) might be that Ekiti State has different socio-cultural and economic background from Enugu State. The finding of this study can be linked to health belief model. If the retirees perceive the severity of CVDs as may be caused by harmful use of alcohol and perceive the benefits of being healthy, retirees will avoid unhealthy lifestyles such as harmful use of alcohol. In FGD conducted participants indicated that alcohol abuse is a risk factor for CVDs especially if the person drinks in empty stomach. However, another participant said that alcohol can cause CVDs especially when the person drinks kai-kai habitually.

The findings from same Table 2 also indicated that high proportion (77.5%) of respondents engaged in healthy diets. This is surprising and therefore not expected as elders are expected to eat heart healthy diet that will help to nourish the body and replace worn out tissues

and cells. Also, the researcher felt that Enugu State always has abundant seasonal fruits, vegetables and variety of foods high in fiber and proteins. Diet expected to be eaten by elderly include high intake of fruits and vegetables, low salt diet, high intake of fish and low intake of red meat. The finding agrees with that of Allenby et al. (2016).and Yang et al. (2016) who reported unhealthy diet of 51 per cent and 62.6 per cent respectively among the subjects. The similarity in these studies might be that the two studies were conducted in Australia and China with different food patterns and cultural perspectives. The finding contradicts with the finding of Ejim et al. (2011) who reported unhealthy diet as low as 8. 1.per cent among the respondents. The difference may be attributed to the fact that Ejim et al. study was conducted among rural community who are known for eating natural foods and green leafy vegetables. Intake of unhealthy diet may be linked to overweight and obesity. This is because when the elderly consume more of carbohydrates, excess sugar after metabolism will be deposited on the adipose tissues and walls of the blood vessels and heart thereby narrowing the blood vessels and subsequent CVDs. Maria (2015) indicated that obesity was high among older adults. Unhealthy diet among the retirees may be linked to low income as retirees complained of non-payment of gratuity and pensions during the FGD sessions. The finding of this study can be linked to precaution and adoption process theory. When the retirees are aware of the dangers of unhealthy diets, they will take precautions to avoid them and adopt the habit of eating healthy diets. Findings from FGD conducted indicated that not eating natural food, fruits and vegetables were associated with CVDs.

Findings for the table also revealed that high proportion (61,9%) of retirees engaged in physical inactivity. The result was surprising and therefore not expected. This is because retirees are expected to engage in regular moderate exercises such as cycling and brisk walking to keep the heart muscles and blood vessels active and healthy to avert CVDs. The finding disagrees with that of Saliu et al. (2014) who reported physical inactivity as low as 24.8 per cent among the respondents. The disparity between the two studies might be that Saliu et al. study was conducted among only rural community who are known for engaging in physical activity such as doing manual farm work, trekking and riding bicycles. The finding was in consonance with Ezzi (2018) who reported that 59 per cent of subjects were physically inactive. The similarity might be that the two studies were carried out among working class and retirees who used to office lifestyles and use of automobiles for movement.

Lack of physical activity among the elderly may be particularly attributed to the ageing process where structural and functional changes in the cardiovascular, muscular and skeletal systems impact the ability to be active and partly that retirees may not have developed the habit of physical activity earlier as they may be ignorant of benefits physical activity, thus may be afraid of engaging in physical activity to avoid compromising the weak heart. The finding of this study can be linked to information, motivation and behavioural skill model. The model posited that adequate information is necessary to motivate an individual to adopt healthy behavior such as physical activity. Finding from FGD conducted, participants asserted that CVDs are due inactive lifestyles among the retirees.

The findings in Table 2 also showed that proportion of retirees who suffered from hypertension was high (41.8%). The result was expected and therefore not surprising because hypertension has been referred to as silent killer without early detectable symptoms. This is consistent with the study of Olarinde et al. (2013) who reported that prevalence of hypertension among their respondents was 66.4 per cent. The similarity may be that the two studies were carried out in developing countries with similar socio-economic characteristics. The finding is also similar to Rajinish et al. (2012) who reported that 46.3 per cent of their subjects suffered from hypertension. The similarity may be that the two studies was conducted among elderly populations. The moderate proportion of retirees suffering from hypertension may be explained by poor awareness of the risk factors, control measures complications' and non-compliance to medical care. This is in contrast to the finding of Saliu et al. (2014) who reported hypertension as low as 22 per cent. The disparity may that the two studies were carried out in different parts of the country with divergent cultures and economic status. Respondents in FGD indicated that hypertension is the major cause of CVDs among the retirees. Data from majority of FGD respondents indicated that CVDs are caused by hypertension triggered by overthinking and overstress. The reasons for overthinking is that they have to think on how to raise money and cater for their family needs such as paying house rents, school fees and other family responsibilities. The finding contradicted with that of Sneow, et al. (2015) who found that hypertension was as high as 74.1 per cent among the elderly. The difference may location of two studies which varies.

The finding from Table 2 also showed that low proportion (35,5%) of retirees suffered from diabetes mellitus. The finding was expected and therefore not a surprise. This is because

diabetes mellitus among the retirees may be attributed to insulin resistance due to pancreatic ilets cell dysfunction with decreased insulin production probably as a result of unhealthy diets and physical inactivity in old age. The finding was in agreement with the study of Arul et al. (2015) who reported that 32 per cent of their respondents suffered from diabetes mellitus. The similarity may due to age as both studies were conducted among elderly populations. The finding is also in contrast with the study of Aleskdandra et al. (2016) who reported DM as low as 14.8 per cent as risk factor for CVDs. The difference might be that Aleksandra study was carried out in Poland which is a developed country with more advanced health technology and economy to handle health challenges than Nigeria where the present study was done. FGD conducted revealed that diabetes mellitus was a risk factor for CVD but contribute to very low population.

Relationship between socio-demographic variable and cardiovascular diseases.

The finding in Table 3 showed a positive relationship between age and CVDs. The results in Table 11 showed that there was a significant relationship between age and CVDs among retirees in Enugu State. The finding was expected and therefore not surprising. This is because most of the studies reviewed indicated that the risk of CVDs rises with advancing age. This is in conformity with the study of Samide (2014), Ogemgo et al. (2015) and Prasanna et al. (2013) who reported that age was significantly associated with the risk level of CVDs. Ogengo et al. (2015) studies went further to state that 60 per cent of those aged 50 years and above had three or more risk factors for CVDs compared to those aged 49 years downwards. These risk factors such as hypertension, unhealthy diet and physical inactivity increase the risk of CVDs. Age being associated with CVDs may be associated with the weakness of organs, reduced functioning of the heart and blood vessels. On the other hand, it may be related to the type of unhealthy lifestyles at earlier years of life which culminate to biologic risk factors such as hypertension and diabetes that result to CVDs at older age.

Findings from FGD conducted indicated that even though that CVDs are more among the retirees including the elderly, it can occur in any age. For instance, “CVD can occur in person at the age of 18years” (P_4 male Nsukka) “It can occur from age 40 years and above (P_5 male Awgu). Majority of the participants indicated that CVDs occur more among those aged 50 years and above. This is in support of the quantitative data which showed that there was a relationship between CVD occurrence and age and risk of CVD increases with age.

The findings in Table 4 showed a positive relationship between gender and proportion of retirees that suffered CVDs. The table further indicated that male retirees are more likely to suffer from CVDs compared to their female counterparts. The findings in Table 12 showed that there was a siginficant relationship between gender and CVDs among retirees in Enugu State. The finding was expected and therefore not surprising as one would expect males to suffer CVDs more than their female counterparts because men are exposed to risk factors for CVDs than women. The finding was consistent with the finding of Osuji et al. (2014) which reported that CVDs was predominantly more among males. The similarity may be because the two studies were carried out in the same zone (South-east) where males are considered to be head of the family and thus expected to bear the family responsibilities. The finding also agrees with those of Rouban et al. (2016) who reported that CVDs are associated with male sex. The preponderance of CVDs among males could be due to over stress and heavy burden being carried by men as head of the family. In the society men are expected to carter for both the immediate and extended family needs such as paying for house rents, school fees, feeding of the family and other family needs/problems.This may trigger the release of adrenalin which causes constriction of blood vessels that can result to hypertension. More CVDs among males may be explained by the higher cardiovascular disease risk factors among males such alcohol abuse, cigarette smoking, physical inactivity and unhealthy diet. Even when males are suffering risk factor like hypertension, men may not report to hospital for medical treatment until CVD develops. The finding is in contrast with the finding of Oguanobi et al. (2014) which reported that CVDs are more among females. The difference might be that Oguanobi et al study was conducted in hospital setting where women and children are known for accessing health care services.

Findings from the FGD revealed that the majority of the participants 90 per cent agreed that gender is associated with CVDs and that males suffer CVDs more than females. Result of the FGD revealed that males suffer CVDs more than females. Majority of the participants indicated that males suffer CVDs more than their female counterpart. Few of the participants revealed that female suffer CVDs than the males. However, some participants maintained that males and females suffer CVDs equally. For instance, in the discussion with the participants, “males suffer more for CVDs because of over stress trying to meet up with family responsibilities. Such responsibilities include paying house rents, school fees, family feeding and others” (P_1 male Nsukka, p1male Abakpa, P2 female Ogbede, P5Ikem and, P_{male} Enugu-Ezike.

However, the minority about (10%) maintained that female also suffer CVDs more than the male counterparts. Two female participants (P_3 and P_6) equivocally said that "females suffer CVDs more especially if the man abandoned the family responsibilities and the woman alone is taking care of the family needs and problems. One female participant (P_1 Awgu) said that male suffer CVD more if the wife is richer than the husband and the wife uses her riches to maltreat the man. The findings from the FGD were in agreement with the quantitative findings and therefore was unexpected. The researcher expected that all the respondents will say that more males suffer CVDs because in cultural setting like Enugu State, men are seen as the head of the family expected to raise more to marry, built house, bear and raise up children, and carte for other family responsibilities. The researcher may expect most of the respondents supporting CVD preponderance among males because of burden of risk factors such as alcohol abuse, cigarette smoking and unhealthy diet are predominantly among males. The researcher may not expect that females do not suffer CVDs but the number may not be high as compared with the male counterparts. This because females are more careful with their health, may not abuse alcohol, smoke cigarette and most of the time report to medical check before CVD develops.

The findings in Table 5 indicated that there was a negative relationship between level of education and CVDs among retirees and findings in Table 13 showed that there was no significant relationship between level of education and CVDs among retirees in Enugu State.The finding was expected and therefore not surprising. This is because disease is not a respecter of qualification or level. It can affect both educated and non-educated. The finding is in consonance with the study of Agbana et al. (2017), Daviglus et al. (2012) who indicated that educational level of respondents were not associated with CVD status. The finding of the study contradicts the findings of Rakale et al. (2012) who reported that CVDs is associated with lower education status. This might be that those with lower education out of ignorance may not access the health facility and lack the knowledge of how to control the risk factors while those with higher education can learn during their course studies and mass media how to control risk factors to prevent CVDs.

There was varied opinions on relationship between CVDs and level of education from FGD conducted. Majority of the respondents maintained that disease can affect anybody whether educated or not. One female participant (f 5) in Enugu-Ezike said that CVDs is more on the illiterates who have no knowledge of CVDs and may not even know what to do when the disease

or its risk factor ensues. The participant went further to argue that educated persons can visit health facility without delay to take care of the health problem. However, majority of the responses of the FGD participants support the quantitative data that level of education is not associated with CVDs. Another participant f, Ikem said it is more among the educated as they are always battling with their academic carrier.

The findings in Table 6 indicated that there was a negative relationship between level of income and CVDs among retirees and the findings in Table 14 showed that there was no significant relationship ($x^2(1) = 2.930$, $P = .43>.05$) between level of income and CVDs among retirees in Enugu State. This is not expected and therefore surprising. This is because retirees in high income level have money to eat healthy diet and assess health facilities for medical treatment while those in low income level neither have money for healthy diet nor for medical treatment. The finding is disagreement with the finding of Prasanna et al. (2013) who reported that CVDs are associated with lower income. Retirees who are not being paid the pensions or gratuity many not have money to eat well which can result to health problems and may not have money to tackle the health problem and it will continue to linger until CVD of develops. More so, it is a general saying that money is life, which implies that an individual who has no money to manage risk factor such as hypertension or diabetes may develop CVD.

Findings from FGD conducted showed varied responses on relationship between level of income and CVDs. For instance, "CVD is more on those that have plenty of money because they are always unsatisfied and will continue to battle in order to acquire more wealth thereby endanger their health while the poor ones are always satisfied with the little money they have" (P_4 f Agbani). CVDs is more among the poor people because they may not have money to eat well or attend to hospital for medical treatment (P_5, male Agbani). Majority of the participants said that CVD can affect anybody whether rich or poor. This is in support of the quantitative data which indicated that there was relationship between level of income and CVDs.

The findings in Table 7 showed there was a positive relationship between place of residence and CVDs. and the findings in Table 15 indicated that there was a significant relationship between place of residence and CVDs among retirees in Enugu State. The finding was expected and therefore not surprising. This is because people in the rural areas are opportuned to eat fruits and vegetables, natural foods and engage in physical activities such as walking exercise, riding bicycles and working in the farms. The finding is consistent with that of

Ogengo et al. (2010) who indicated that place of residence is significantly associated with the occurrence of CVDs. The table further showed that retirees residing in urban areas are more likely to suffer from CVDs than their counterparts residing in rural areas. The finding was expected and therefore not a surprise. This is because rural dwellers are more likely to eat natural foods and engage in physical activity unlike their urban counterparts. The finding was in agreement with the findings of Essien et al. (2014) and Rahman et al. (2015) who reported that CVDs were more among the urban dwellers. This may be attributed to lifestyles in the urban areas which promotes sedentary lifestyles and less dependence on physical activity and manual labour compared to the rural counterparts. It could be explained that the type of unplanned urbanization in the society today promotes unhealthy behaviours which can result to CVDs. Such unexplained urbanization includes unhealthy diet, not providing conducive environment for physical activity, exposure to air pollutant (including to tobacco smoke) and the harmful use of alcohol. The finding contradicts with that of Rakale et al. (2012) who reported that CVDs were more among the rural dwellers. According to Rakale et al. (2015) study, the disparity between the rural and urban residents has been associated with lower socio-economic status, reduced access to health care and lack of preventive services among the rural residents. The finding was in contrast with the finding of Zhou et al. (2014) who reported that CVDs were more among the rural dwellers. According zhou those in the urban areas always had more frequent consumption of soy foods, fruits, vegetables and fish while elderly that lived in the rural areas consumed less of soy foods, fruits vegetables, fish, as well as more frequently consumed meat. Zhou et al. (2014) also noted that apart from dietary factor, high CVD among the rural dwellers may be related to unequipped health system and sparse medical resources.

Findings from FGD conducted revealed that majority of the participants indicated that place of residence actually contributes to CVDs. For instance, “CVDs are more among those living in the town (P_1 Ogbede m, P_3 Nsukka m, P_2 Abakpa m, P_2 Awgu F, P_5 Orji River F). Reasons they gave why CVD is more common among the urban dwellers was that people in the town tend to engage in unhealthy diet (such as junk, carbohydrate, indomie, sedentary lifestyle depending on automobiles for movement, abuse alcohol and cigarette to show affluence while those in the rural areas engage in physical activities (trekking for a long distance) to farms, to attend to social occasions, eat natural food, fruits and vegetable, and may not have enough money to abuse alcohol. However, few FCD participants maintained that CVDs were more

prevalent among the rural dwellers. For instance, in their statement, “CVDs are more among those in the villages because they may not have money to go to hospital or even buy drugs when they became sick until CVDs develops” (P_2 female Awgu, P_1 Ikem f, P_4 Enugu Ezike f).

Cardiovascular diseases (CVDs) Preventive strategies for Retirees

The finding in Tables 8, 9 and 10 showed that the formulated preventive strategies against CVDs were asserted appropriate by majority of experts. These findings were expected and therefore not surprising as prevention of public health problems can be achieved through well packaged and delivered preventive strategies. This supported Najlaa et al. (2015) submission that effective preventive strategies and education programs are crucial to reduce the risk of CVD mortality and morbidity. This is in line with the finding of Ann, et al. (2011) who reported serious deficiencies in CVD prevention and advocated for preventive strategies. The preventive strategies adjudged to be appropriate be the experts were comprehensive enough accommodating primordial, primary and secondary prevention. Primordial prevention is aimed at avoiding penetration of CVD risk factors through lifestyle modifications. Such as guitting cigarette smoking, improving physical activity, moderate intake of alcohol and consumption of healthy diet. This is in line with the finding of Njelekela et al. (2009) who advocated for health promotion, and health screening to reduce the burden of CVDs in Tanzania. This is consistent with the recommendations of Akutude et al. (2014) calling for appropriate preventative strategies in terms of education and modification of risk factors to reduce the burden of CVD among the population. Achieving this primordial prevention can be through the involvement of all sectors including public health educators, community leaders, Ministries of Education, Information, Health, Agriculture and Works. These organizations will utilize acceptable channel of communication to pass the message on modification of lifestyles to the entire public including retirees. This is in conformity with Oladipo et al. (2012) who recommended for culturally appropriate awareness and health education programmes to reduce CVD risk factors.

The items (27-35) on primary prevention was targeted at those with CVD risk factors to avoid developing CVDs. This is in consonance with the recommendation of Osuji et al. (2015) reporting the need for intensification of primary preventive strategies against CVDs. This is in line with the finding of Jousilahti et al. (2015) advocating for primary prevention programmes. This can be achieved with the help of primary healthcare workers and other healthcare workers

who will embark on screening of all patients coming to access the health facilities to detect those with risk factors, manage them to avoid developing CVDs.

The items (36-44) on secondary prevention was targeted at those already having CVDs to avoiding developing complications. This is consistent with the recommendation of Nwafor et al. (2016) who indicated that early detection, appropriate management as well as patient education will go a long way to reduce the morbidity and mortality caused by CVDs. This is also in conformity with the suggestion of Oguamobi et al. (2013) advocating for early detection, improved outpatient care as well as inclusion of appropriate secondary prevention programmes in the patient management especially at the community level to reduce complications.

The result of the FGD indicated that CVDs can be prevented. One participant said that CVDs can only be prevented through God's intervention. Another participant said that CVDs can be prevented through government intervention. The person went further to say that government should endeavour to pay retirees their gratuities and pensions as and when due. Another participant indicated that government should create awarensess about the CVDs to the general public. Few of the participants indicated that CVDs can be prevented through the adoption of healthy lifestyles such as quiting cigarette smoking, reducing alcohol intake, regular exercise, reducing stress and eating healthy diet.

From the forgoing the present prevention strategies followed the public health model to identify that a problem exists, planning and executing, the interventions. The preventive strategies were primordial, primary and secondary. This is in line with Zhou et al. (2015) who recommended for instructional foundation for the control and prevention of CVD in Beijing. The primordial prevention should be included into the school curriculum to discuss and inculcate healthy lifestyles to avoid developing risk factors. This is in conformity with Adeseye et al. (2016) who recommended for effective education on heart disease risk factor and appropriate preventive strategies to reduce CVD burden. The primary secondary prevention should be achieved through the healthcare workers and other organizations listed above.

Implications of the Findings to Public Health and Education.

This section presents the implications of the findings to public health and education based on major findings. The findings of this study revealed that moderate proportion of retirees suffered from CVDs. The implication that the lives of the retirees and general public are at risk

as they can develop CVDs. The findings have implications for planning preventive strategies to avert CVDs through well-organized sensitization programmes via workshops, mass media, seminars, bill boards to address the causes and consequences of CVDs. Also, it has educational implication of including cardiovascular health education (including risk factors, prevention and lifestyle modifications) into academic curriculum at all levels of education. Again, it has implications for all sectors of government such as Agriculture, Environment, Health as the burden of CVDs call for multi-sectoral intervention. Finally, it has implication for health educators to organize sensitization programme to reach the entire public including retirees, creating awareness about the consequences of CVDs and lifestyle modifications to prevent or control CVDs.

The findings of the study indicated that moderate proportion of retirees were exposed to risk factors for CVDs. This implies that exposure of the retirees may have resulted to the moderate proportion that suffered from CVDs. This has implications for the retirees who should make effort to modify their lifestyles such as quitting cigarette smoking, engaging in moderate physical exercises, eating healthy diet and avoiding alcohol abuse. It has implications for government, policy makers, standard organization of Nigeria, National Food and Drug Administration and Control (NAFDAC) to screen certain products imported into the country before distribution and to ban the advertisement of certain subtances, drugs and foods that predispose to CVDs. It has implications for health educators, social workers and psychologists who will identify habitual drinkers and smokers, counsel them, follow them up and possibly refer them to rehabilitation centres. Also it has implications for Ministries of Works to create detestrian ways for walking exercises and parks/gymnasium for other exercises.

The findings of the study showed that age of the retirees has positive relationship with CVDs. The findings have implication for retirees to understand that as they age, there are tendencies of developing CVDs. This means that the state government in ministries of health and information should organize seminars and workshops for retirees on effective ageing education that will assisst live healthy. This implies that retirees need to avoid certain unhealthy lifestyles such as cigarette smoking and abuse of alcohol. Retirees should endeavor to eat healthy diets including fruits and vegetables, and engage in moderate physical exercises which will help to build-up the tissues, strengthen the bones and joints.

The findings of the study showed that the gender of the retirees has positive relationship with CVDs. The findings went further to indicate that men suffer CVDs more than the female counterparts. The findings have implication on fostering gender equality in education and employment so that women will assist their husbands in bearing family responsibilities. It has implication for state government to include women in government so they can take decisions on women affairs and other matters concerning women.

The findings of the study showed that the level of education of the retirees has negative relationship with CVDs. However, there may be retirees that were exposed to CVDs risk factors or developed CVDs out of ignorance or lack of appropriate information. This has implications for retirees because education is power and key to life. With knowledge gained through education retirees can reduce CVDs risk factors and CVDs to remain healthy

The findings of the study showed that level of income has negative relationship with CVDs. Even though the findings indicated that one's income is not associated with CVDs it has implication for Ministry of finance and pension board to increase and pay pensions/gratuity promptly and to create health insurance scheme to tackle the CVDs and its risk factors among the retirees. It also has implications for retirees to engage in some small business ventures or part-time employment to have extra resources for their family.

The findings that the preventive strategies were considered appropriate by the experts have implications to encourage healthcare providers to ensure the adoption of the preventive strategies among the entire public including the retirees. Also, the strategies may assist the healthcare providers to screen patients for CVD risk factors and CVDs for early detection, control and referral. The adoption of the preventive strategies will assist the retirees to modify their lifestyles to enable them live healthy and longer. Finally, the Heath belief model may enlighten the retitrre on severity of CVDs, information, motivation and behavioural skill model may motivate retirees to modify lifestyles while precaution adoption process model may motivate retirees to take precautions to prevent CVDs.

CHAPTER FIVE

Summary, Conclusions and Recommendations

Summary

The purpose of the study was to investigate the socio-demographic correlates of cardiovascular diseases (CVD) and preventive strategies for retirees in Enugu State, Nigeria. To achieve this purpose of the study, eight specific objectives with corresponding eight research questions were formulated. Five null hypotheses were postulated to guide the study. Five demographic variables of age, gender, level education, level of income and place of residence were investigated. Literature pertinent to the study were reviewed under the following headings: conceptual framework, theoretical framework and empirical studies. The correlation research design was adopted for the study. The population of the study comprised 8,947 retirees in Enugu State. The multi-stage sampling procedure was utilized to draw the sample of 972 retirees comprising 476 females and 476 males. Purposive sampling was used to select 30 experts that responded to the cardiovascular disease preventive strategies questionnaire. Thus the sample for the study was 1,002 comprised of 972 retirees and 30 experts.

Three instruments used for data collection were Socio-demographic Correlates of Cardiovascular Diseases Questionnaire (SCCVDQ), Cardiovascular Disease Focus Group Discussion Guide (CVDFGDG) and Cardiovascular Diseases Preventive Strategies questionnaire (CVDPSQ). The SCCVDQ, CVDFFDG and CVDPSQ were validated by seven experts, five from the Department of Human Kinetics and Health Education, two from Department of Science Education (Measurement and Evaluation Unit), University of Nigeria, Nsukka. The SCCDQ and CVDFGDG were used to collect data from retirees. The CVDPSQ were responded to by 30 experts (10 from Department of Human Kinetics and Health education, 10 from District hospital Nsukka and 10 from Enugu State University Teaching Hospital (ESUTH) Enugu (Parklane). Both the quantitative and qualitative data were collected at pension zones with the help of research assistants. Out of 972 copies of SCCVDQ distributed, 951 (97.8%) valid copies were used for analysis.

Data were analyzed using frequencies, percentages and phi-coefficient. All the hypotheses were tested using logistic regression at .05 level of significance. Findings that emanated from the study were summarized below:

Result showed that moderate proportion of retirees (42.6%) suffered from cardiovascular diseases. Moderate proportion (39.4%) of retirees were exposed to risk factors for cardiovascular diseases. There was a positive relationship between the age of the retirees and CVDs in Enugu State. There was a positive relationship between the gender of the retirees and CVDs in Enugu State. There was a negative relationship between the level of education of the retirees and CVDs in Enugu State. There was negative relationship between the level of income of the retirees and CVDs in Enugu State. There was a positive relationship between the place of residence of the retirees and CVDs in Enugu State. The CVDs preventive strategies were considered appropriate by majority of the experts. There was a significant relationship between the age of the retirees and CVDs in Enugu State. There was a asiginficant relationship between the gender of the retirees and CVDs in Enugu State. There was no significant relationship between the level of education of the retirees and CVDs in Enugu State. There was no significant relationship between the level of income of the retirees and CVDs in Enugu State. There was a significant relationship between the place of residence of the retirees and CVDs in Enugu State.

Conclusions

The findings have shown that moderate proportion of retirees in Enugu State, Nigeria suffered from cardiovascular diseases (CVDs), such as coronary heart disease, cerebrovascular diseases, heart failure, and peripheral arterial diseases. Moderate proportion of retirees in Enugu State are exposed to risk factors of CVDs such as unhealthy diet, physical inactivity cigarette smoking and alcohol abuse.

The findings indicated that socio-demographic variables of the age, gender and place of residence of the retirees have positive relationship with cardiovascular diseases while socio-demographic variables of the level of income and the level of education of the retirees have negative relationship with CVDs.

The preventive strategies designed for retirees were adjudged appropriate by majority of the experts. The preventive strategies include modification of lifestyles, regular checking of blood pressure and blood sugar and adherence to hospital treatment. Socio-demographic variables of the age, gender and place of residence of the retirees had significant relationship with cardiovascular diseases while socio-demographic variables of the level of income and the level of education have no significant relationship with cardiovascular diseases.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are hereby presented.

1. Enugu State Government in collaboration with Ministry of Health should adopt the preventive strategies for inclusion and implementation in the health education programme. This can be achieved through employing the train the trainees' workshops by experts to train the health educators on the needs for public wide sensitization to identify those retirees suffering from cardiovascular diseases (CVDs) for counslling and possible referral to cardiologists for expert management.
2. Enugu State Government in collaboration with the Ministry of Information should adopt the preventive strategies and to broadcast the cardiovascular risk factors over the radios and televisions to curtail exposure of the retirees to these risk factors. This can also be achieved through the use of bill boards, role plays and stories to discourage people indulging in unhealthy lifestyles such cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet.
3. Enugu State Pension Board and retirees should adopt the preventive strategies in this study to curtail exposure to CVDs risk factors and subsequent suffering from CVDs. This can be achieved through the publication of these strategies on their notice boards and newsletters highlighting the need to avoid unhealthy lifestyles to prevent CVDs.
4. Regular screening of the retirees during the verification exercises or monthly meetings by health workers to monitor those with risk factors and to refer those suffering from CVDs to cardiologists for expert management.
5. Enugu State Government in collaboration with the Ministry of Finance should endeavour to pay gratuities and pensions to retirees to help them take care of their health and attend

to their family responsibilities. Retirees can be included in the health insurance scheme to reduce the cost of health care services and to encourage retirees to obtain health care services from hospitals. Retirees with disabilities resulting from cardiovascular diseases can be assisted by the State government in collaboration with the Ministry of finance. This assistance can be in form of providing walking gadgents such as clutches and wheel chairs to enable such retirees move round their enviroments.

6 Retirement carrier programme should be conducted for retirees to counsel them on how to increase/manage their resources and health after retirement. This can include encouraging retirees on the importance of eating healthy diet such fruits and vegtables, reduced salt in the food, reduced sugar intake and moderate alcohol intake.

7 The finding that moderate proportion of retirees suffered from CVDs demands that health educators should embark on sensitization and health education of the retirees to reduce the further development of CVDs among the retirees. Health educators can embark on outreach or mobile health care to ensure that retirees are reached even at their homes.

8 The finding that moderate proportion of the retirees were exposed to CVDs risk factors calls for health educators and the State government to educate the general public including the retirees on the need to avoid unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet. Health educators should also include the management of hypertension and diabetes with both diet and drugs.

9 The finding that the age of retirees has positive relationship with CVDs neccssitates that health educators should sensitize Enugu State civil servants on the need to avoid unhealthy lifestyles even before retirement to enhance healthy ageing.

10 The finding that the place of residence of the retriees has positive relationship with CVDs calls for State government in collaboration with the ministry of health to ensure that the retirees receive the necessary health education to enable them live healthy irrespective of where they are living. The State government and the ministry of health should ensure that health facilities in both rural and urban areas are adequately equipped with human and material resources. In addition, health facilities in the rural areas should be provided with standby ambulance cars to convey referred cases to secondary or tertiary health institusions.

Limitations of the Study

1. The use of self-reported questionnaire (self-rated health), that is subjective assessment to identify retirees with CVDs is characterized by some inadequencies such as response and recall biases. Some retirees might have under-reported or exaggerated their CVD experiences. Also, some retirees might have not remembered correctly the actual time or period they had a specific CVD. These biases may undermine data precision and veracity.
2. Only retirees from Enugu State civil service commission were included in the study. Retirees from federal civil service and private establishments/firms were excluded. This also limits the generalizability of the study findings. Despite the limitations, the researcher believed that the result of the study and the preventive strategies are useful for minimizing cardiovascular diseases and inhibiting cardiovascular deaths among retirees in Enugu State.

Suggestions for Further Studies

On the basis of the findings and limitations of the study, the following further studies were suggested**.**

1. The present study can be replicated among all retirees in Enugu State using objective or biomedical assessment.
2. This study can be carried out among retirees in other states in the South-east geopolitical zone to identify prevalence of CVDs and associated risk factors.

.

References

Adegoke, O. A., Adedoyin, R. A., Baogun, M. O., Adebayo, R. A., Biririyu, L. A., & Salawu, A.A. (2010). Prevalence of metabolic syndrome in rural community in Nigeria. *Metabolic Syndrome Related Disorders*, 8(1),59-62.

Adele, B., Ronel, P., Caria, M. T., Fourie, A. & Aletta, E, S. (2016). The relationship between CVD risk factor and knowledge of CVDs in African men in the North-West Province. South Africa. *Health SA Gesondheld*, (21),364-370. Retrieved from https://www.sciencedirect.com

Aeleseye, A.A, Temitope, S., A., & Oladimeji, G.O. (2015). Knowledge of heart disease risk factors among workers in a Nigerian University. A call for Concern. *Nigerian Medical Journal*,.56 (2**),** 91-95. doi:10.4103/0300-1652.150688

Agbana, R.D., Fasoro, A. A, Owosen, S. Ajewole C. C. &Kunle-olowu, A.O. (2017). Cardiovascular Diseases Among Agro-allied company workers in Nigeria: A case control study. *International Journal of Public Health and Epidemiology Research,* 3(1), 20-27. Retrieved from https;//www.premierpublisher.org.

Adedoye, R.A., Mbada, C.E. & Balogun, M.O. (2008). Prevalence and pattern of hypertension in a semi-urban community in Nigeria. *European journal of cardiovascular prevention and rehabilitation*, 15(6),683-687.

Ahaneku, G, I., Osuji, C. U., Anisiuba, B. C., Ikeh, V. O., Oguejiofor, O. C., & Ahaneku, J. E. (2011). Evaluation of blood pressure and indices of obesity in a typical rural community in eastern Nigeria. *Annals of African Medicine*,.10 (2),120-6.

Ajuluchukwu, N. (2016, February 20). *CVD: big threat to MDGs*. vanguard newspaper, Retrieved from news.com/cardiovascular diseases.

Akintunde, A.A. Salamu, A.A. & Opadijo, O. G, (2014). Prevalence of traditional cardiovascular risk factors among staff of Ladoke Akintola University of Technology Ogbonioso, Nigeria. *Nigeria Journal of. Chinical Practice*, 17,790-5.

Aleksandra, K. & Joanna R. (2016). The prevalence of risk factors for cardiovascular diseases among polish surgical patients over 65years. *Clinical interventions in Aging,* 11,631-639.

Allenby, A., Kinsmen, L., Tham, R., Symons, J., Jones, M. & Campbell, S. (2016). The quality of cardiovascular disease prevention in rural primary care. *Australian Journal of Rural Health*,.24,92-98. doi:10.1111/ajr.12224.

American Association of Neurological Surgeons (2017). *Cerebrovascular diseases*. Retrieved from http://www.aans.org.

American College of Cardiology & American Heart Association (2013). *Guideline in the Assessment of cardiovascular Risk.* Retrieved from https://www.cardiosmart.org/heart-conditions/guidelines/risks.

American Diabetes Association (2008). Diagnosis and classification of diabetes mellitus. *Diabetes care*, 1,512-54. Retrieved from http://www.ncbi.n/m.nih.gor.

American Heart Association (2007*). Risk factors and coronary heart disease*. Retrieved from http://www.americanheart.org.

American Heart Association (2009*). Prevention of cardiovascular risk factors*. Retrieved from www.heart.ng/hearting.healthyliving.

American Heart Association (2011*). Scientific sessions* on cardiovascular diseases, 37 (1), 56-58. Retrieved from http://www.ncbi.nih.gov..

American Heart Association (2016). *Cardiovascular diseases*. Retrieved from https://www.heart.org/healthy living.American.

American Heart Association (2017). *What is heart failure?* Retrieved from www.heartfailure.org.american.

American Psychiatrist Association (2013*). Diagnostic and Statistical. Manual of mental disorders*, (5th ed). Washington, D.C, American Psychiatrist Association.

American Psychology Association (2009). *Publication manual of the American Psychological Association*. 6th Ed. Retrieved from https://www.goggle.com.

Anaekwe, C., M. (2007). *Basic Research Methods and Statistics in Education and Social Siences*. (2nd Ed). Onitsha, Nigeria: Sofie publicity and printing limited.

Anike, C., O (2011). *Effects of finance in the quality of life of the retired elderly in Nigeria.* (3rd.ed). Enugu. Sadipo Press Limited.

Anna, W., Jill, P., Anushka, P., Bruice, N., Krishnan, R. & Clara, K. C (2011). Prevention of CVD in a rural region of India and strategies to address the unmet need. *Journal of Clinical Pathology*, 97, 1373-1378.

Anu, M.O., Vinod, J.A., Kuryan, G. & Jacob, V.J. (2016). Prevalence of Coronary Heart Disease in Rural and Urban vollore, A repeat cross-sectional survey. *Indian Heart Journal*, 68(4), 473-479.

Appel, P., Stegmay, B., & Fevent, A. (2005). *Sex differences in stroke epidemiology: A systematic review of stroke*. 40(4), 1082-1090.

Ardell, L., V. (2008). *A life course approach to post-retirement roles and wellbeing.* (4th ed.). China, Allyn and Sacon Press.

Arnah, G., Minakshi, B., Mithun, D., Sanyih, K.B., Riddhi, G., & Sasil, P. (2013). Prevalence of cardiovascular disease risk factors in people of Asian Indian Origin: Age and sex variation. *Journal of Caridovascular Disease. Research*, 1(2), 81-85.

Arnold, A.M, Psaty, B.M., Kuller, L.H., Burke G.I. Manolio, T.A & Fried L. (2005). Incidence of Cardiovascular Disease in older Americans: The Cardiovascular health study. *Journal of Association of MedicalGenaology. Society*, 53, 211-218.

Aronow, W.S., Fleg, J.L., Pipine, C.J., Artinian N.T., Bakris, G. Brown, A.S. & Ferdward, K.C. (2011*). ACC/AHA expert Consensus document on hypertension in the elderly: a report of the American college of cardiology foundation task force circulation.* 723-2434, 2037-2114.

Arul, A., Pragnesh, P., Sidakpal, P, & Leviosier, C. (2015). Health literacy and CVD risk factors among the elderly. *American Journal of. Management Care*, 21 (2), 140-145.

Association of Neurological Surgeons (2017). *Cerebrovascular Diseases*. Retrieved from www.aans.org.

Barneth, I., Van-Shijis, E., Ogitue, D. & Wareeham N.Y (2013). Charges in household, transport and recreational physical activity and television viewing time across the transition to retirement longitudinal evidence from EPIC – Norfolk cohort. *Journal of Epidemiology and Community Health*, 68 (8), 747-753.

Bazrafshan, A., Haghdoost, A. A., Rezael, H. & Beigzadeh, A. (2015). A practical framework for evaluating health services management education programme: The application of the mixed-method sequential explanatory design. *Resource Development Medical Education*. 4(1), 47-54.

Beaglehole, R, Bonita, R. & Kjellstron, O. (2006*). Basic epidemiology*. (2nd Ed.), Geneva, Switzerland.

Beimat, E. & Tomaszewski, P. (2015). Association of socio-economic and demographic factors with physical inactivity of males and females aged 20-69years. *Annals of Agricultural Enviromental Medicine,* 22 (1), 118-123.

Belue, R., Okoror, T., Iwelunnor, J., Taylor, K.D. Degboe, A.N., Agyemang, C., & Ogedegbe G. (2009). An on view of cardiovascular risk burden in sub-Sahara African countries: A socio-cultural perspective. *Biomed central*. 5,10. Doi:10.1186/174-8603-5-10

Bergeron, H. (2008). Qualifying Policy, taking the example of alcohol problem. *Sante publique*. (4), 341-352.

Blauwet, L. A. & Reeberg, R.F. (2007). The role of sex-specific result reporting in cardiovascular disease. *Cardiology in Review*, 15 (6), 275-278.

Bloomfield, H. E., Kane, R., Koellen, E., Gree, S. N., MacDonald, R. & Wilt, T. (2015*). Benefits and harms of the Mediterraen Diet compared to other diets*. Evidenced based synthesis program Reports.

Boehmar, T. K., Hoehner, C.M. Deshpande A. D., Brennan; R. L. K., & Brownson, R.C. (2007). Perceived and observed neighborhood indicators of obesity among urban adults. *International.Journal of Obesity*, 31, 968-77.

Bokuru, H., Yamaguchi, S. & Iyima, K. (2008). Metabolic syndrome is associated with silent ischemic brain lesions. *Stroke*, 39, 1607-1609.

Bonow, R.O., Carabello, B.A. & Kanu, C. (2006). Guidelines for the management of patients with valular heart disease, American College of Cardiology and American Heart Association, *A report of the Acc/AHA Task force on practice guidelines. Circulation* 114, (5), 84-231.

Braun & Clarke (2006). What is thematic analysis? Retrieved from https://sites.google.com.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101.

Brown, I. J., Tzoulaki, I., Candeias, V. & Elliott. P (2007). Salt intakes around the world: Implications for public health. *Internatianl Journal of Epidemiology*. 38 (3), 791-813.

Bill, A. L., Horwich, T. B.& Fanarow, G. C. (2011). Epidemiology and risk profile of heart failure. *National Review of cardiology*, 8, 30-41.

Buse, J.B., Ginsberg, H.N. Bakris, G.L., Clark, N. G., Costu, F., Eckel, R., Fouseca, V. Gerstein, H.C., Grundy, S., Nesto, R., W., Pignone, M. P., Plutzky, J., Porte, D., Redberg, R., Stitzel, K. F & Stone, N. J. (2007). "Primary Prevention of CVDs in people with Diabetes: A scientific Statement from the AHA and American Diabetes Association". *Circulation*, 115 (1), 114-26. Doi:10.1161/circulationaha.106.179294

Bxia, G., Luxia, Z. & Haiyan, W. (2013). Clustering of major cardiovascular risk factors and the association with unhealthy lifestyles in the Chinese adult population. *plos one*. 8 (6), 66780.

Cal, L., He, J., Song, Y., Zhao, K. & Lui, W. (2003). Association of obesity with socio-economic factors and obesity related chronic diseases in rural Southwest China. *Public Health*, 127(3), 247-51.

Cal, L., LW. A., Zhang, Y. & Wang, P. (2013). Waist- to-weight ratio and cardiovascular risk factors among Chinese adults in Beijin. *Plos one* 8, 69289.

Carlsson, A.C., Wandell P.E. Leernder, K. Hellenius, M.L. & De faire, U. (2013). Seven modifiable lifestyle factors predict reduced risk for Ischemic Cardiovascular disease and all-cause mortality regardless of body mass: A cohort study. *International Journal of Cardiolog*, 168 (2), 946-52.

Carrabelo, B. A. & Kanu, C. (2006). Guidelines for the management of patients with valvar heart disease: a report of the American College of Cardiology/American Heart Association Task Force. *Circulation*, 4(5), 84-231.

Catherine, S, & Awgu, S. (2010*). Concise Oxford English Dictionary*. (4th Ed.), Oxford University Press.

Centre for disease control and prevention (2010*). National Health and Nutrition Examination Survey*. Retrieved from http://www.cdc.gov

Centre for Disease control and Prevention (2013*). National Diabetes fact sheet* 2011, 2012. Retrieved from http://www.cdc.gov.

Centre for Disease control and prevention (2015). Retrieved from http://www.cck.gov/heart.htm.

Charlotte, A. J., Aryuna, P. Michelle, C. Ivan, H. O., Ngwgen, J. & Schahaz, D. (2009). CVD risk among the poor and Homeless. *Circulation Cardiology Review*, 5(1), 69-77.

Chau, D., Cho, L. M. & Jani, P. (2008). Individualizing recommendations for weight management in the elderly, *Current Opinion Nutritional Metabolic care*, 102, 919-925.

Chen, H. Zong, Y. & Wei, T. (2015). Prevalence, awareness, medication, control and risk factors association with hypertension in Yunnan ethnic group aged 50 years and above in Rural Chinna: The Yunnan minority study. *Public Health*, 15(1), 383

Chen, P.V. & Popowich, P. M. (2011). *Special Cases of Pearson's R, Thousand Oaks.* SAGE Publications Limited. USA.

Cheng, Y., Rosenberg, M. I., Wang, W., Yangan, L., & Lui, H. (2011). Aging, Health and place in residential care facilities in Benjing, China. *Sociology Scientific Medicine,* 365-372.

Chio, N.G. Kim, J., Marti, C.N., & Chem, G.J. (2014). Late-life depression and cardiovascular disease burden: examination of reciprocal relationship. *American Journal of Gereatriatric Psychiatry*, 22(12), 1522-1529.

Ciorolu, M. & Levine, J.M (2013). *Peripheral arteril disease questionnaire*. Retrieved from https://southmiamicardiology.com/peripheral-arterial-disease-question.

Clark, B.K., Sugigama, T., Healy, G.N., Salmon J., Dunstan, D.W, Show, J.E., Zimmet, P.Z. & Owen N. (2010). Socio-demographic correlates of prolonged television viewing time in Australia men and women. *Journal of physical Activity and Health*., 7 (5), 595-601.

Clemerjier, D. S., Chow, C. K., Marijon, E., Anstey, M. A., & Woo, K. S. (2012). Cardiovascular Diseases in the developing World, Prevalence, Patterns and the Potential of Early Disease Detection. 60(14), 375-380. doi: 10.1016/j.jacc.2012.03.074

Cohen, L., Manion, L. & Morrison, K. (2011). *Research methods in education* (7th ed). USA: Roulledge.

Coleman, H. & Unrau, Y. A. (2005). *Analysing qualitative data*. In R. M Grinnell Jr. & Y. A. Unrau (Eds). Social work research and evaluation. Qualitative and quantitative approaches. (7th eds) (pp. 403-420). Oxford: University press.

Collins, D. R., Jobanputra, K., Frost, T., Muhammed, S., Ward, A., Shafei, A. A., Fardous, T., Gabashmeh, S. & Heneghan, T. (2017). Cardiovascular diseases risk prevention amongst Syrian San Frontieres Programme in Jordan. *Conflict Health*. 11, 14.

Collins, H. (2012*). Oxford Advanced Learners Dictionary of current English*: New York. Oxford University Press.

Dannii, V. & Yeung, X. Z. (2017). *Planning for retirement: longitudinal effect on retirement, resources and post-retirement wellbeing.* Retrieved from https://www.ncbi.min.nih.gov.

Darwin, S., Gregory, R. & Army, V. (2013). *Worldwide cardiovascular quality and outcome.* Retrieved from http://www.heart.data.org.

Davarian S., Crimmins, E., Takahashi, A. & Saito, Y. (2013). Socio-demographic correlates of four indices of blood pressure and hypertension among older persons in Japan. *Gerontology*, 59(5).

David, F. R, (2011). *Strategic management concept and cases.* (13th ed). New York: Pearson Education inc.

Daviglus, M. L., Talavera, G. A., Aviles-Santa, M. L., Allison, A., Cai, J., Criqui, M. I., Gellman, M., Giachello, A. L., Govskova, N. & Kaplan, R. C. (2012). Prevalence of major cardiovascular disease risk factor and CVDs among the Hispanic/Latino backgrounds in the United States. *Journal of American Medical Association*, 7,308(17), 804-5.

DiexRoux, A. V., Evenson, K. R. & MciGian; A. P., (2007). Availability of recreational resources and physical activity in adults. *American Journal of Public Health*, 97, 493-99.

Diniz, M.A. & Tavares, D.M. (2013). Risk factors for Cardiovascular diseases in aged individuals in city in the state of Minas Gerais. *Texto Contexto-Enform,* 22(4), 885-892.

Dipietuo, L. (2007). Physical activity, fitness and ageing in: Borichard C, Blairs S. N. Haskell, W. L. editors. Physical Activity and Health. Champaign IL*: Human Kinetics;* 2 (2), 271-285.

Dumurgier, J., Elbaz, A. & Ducimeriere, P (2009). Slow walking speed and CVdeath in well function older adults. *Biomed Journal,* (10), 339-4460.

Earl, S.F. (2011). Trends in the Risk for coronary Heart disease among adults with diagnosed diabetes in the United States. *Epidemiology Health Service Research. Diabetes Care*, 34.

Edward, P.H. Mahasin, S.M., Donald, A., Irene, V.B., Meryl, S.C., & Salvador, C. (2016). Social Determinants of Risk factors and outcome for CVDs, a scientific statement from the American Heart Association. *Circulation*, (123), 873-898. Retrieved from http://circ.aha.journals.org

Eileen, M. S., Kathy, A. B., Mercy, W. K.& Shirik, K (2012). Behavoural strategies for CV risk reduction in diverse and underserved Racial/Ethnic groups. *American Heart Association Incorporated*, 125, 171-184. Retrieved from http://circ.aha.journals.org.

Ejim, E.C., Okafor, C.I. Emehel, A., Mbah, A.U. Onyia, U., Egwuonwu, T., Akabueze, J. & Onwubere, B. J. (2011). Prevalence of Cardiovascular Risk factors in the Middle-Aged and Elderly Population of a Nigerian Rural Community. *Journal of Tropical Medicine, Doi:10.1155/2011/308687.*

Ellen, A.D. (2011). *Validity and Reliability in social science research. Education Research and perspective,* 38 (1), 2-5.

Eoin, O., Beevers, D. G & Gregory, Y. H. (2007). *Hypertensive crisis*, ABC of hypertension. *Biomed Journal Books*; London.

Essien, O.E, Andy, J., Ausa, V. Otu, A.A., & Udoh, A. (2014). Coronary Artery Disease and the profile of Cardiovascular Risk factors in South Nigeria: *A Clinical and Autopsy Study*. 1(2), 1-10.

Estruch, R. T., Martinez, M. A., Corella, D., Salas, S. L., Riuz, G. V. & Conus, M. I. (2006). Effects of a mediterranean style diet on CV risk factors: a randomized trial. *American Internal Medicine,* 145, 1-11

Eyitayo, E.E., Oluwole, A.B., Olusola, O.O., Adeniran, S.A., Kabir, A.D. & David, D.A. (2017). Behavioural and socio-demographic predictors of cardiovascular risk among adolescents in Nigeria. Retrieved from htts://www.researchgate.net.

Ezeala-Adikaibe, B. A., Aneke, E., Orjioke, C., Ezeala- Adikaibe, P. N., Mbadiwe, N., Chinwe, P. & Okafor, U. (2014). Patterns of medical admissions at Enugu State University Teaching Hospital. *Annals of medical health science research,* 4 (3), 426-431.

Ezzi, O., Jihene, M., Dhekra, C., Animi, S., Nejib, M. & Hassen. G. (2018). Clustering of Cardiovascular Disease Risk Factors among Manufacturing Employees in Sousse, Tunisia. *Journal of Endocrimol Diabetes*, 5 (1), 1-7.

Farida, C., Said, A. & Sauaa, M. (2015). Diabetes mellitus in elderly. *Indian journal of Endocrinology and metabolism*, 19 (6), 744-752.

Farlex Partner Medical Dictionary (2012). Retrieved from http://medicaldictionray. The freedictionary. .

Fine, L. J., Philogene, R. Corp, S. & Sinha, S. (2004). Prevalence of multiple chronic disease risk factors. *American Journal of Preventive Medicine*, 27(2), 18-24.

Fingold, J.A., Asaria, P., & Francis, D.P (2012). Mortality from Ischemic heart disease by country, region and age: Statistics from WHO and United Nations. *International Journal of Cardiology*, 168(2), 934-945.

Finucane, M.M., Daniel, G., Pel, Zzrai, P. M. Cowan, M. J., Paciorek, C. J. & Ambaby, R. (2011). National, regional and global trends in serum cholesterol since 1980: systematic analysis of health examination survey and epidemiological studies with 32 century-hearts and 3.0 million participants. *Lancet*, 377 (9765), 578-86.

Fisher, N. D., & Williams, G. F. (2005). *Hypertensive vascular disease. Principles of Internal Medicine*, (6th Ed.). New York. MaGraw Hill. Pp.1463-81.

Fisher. J, D. & Fisher. W, A. (1992). Changing AIDS- risk behavior. *Psychological Bulletin*, 111(3), 455-474.

Fisher. J, D., Fisher. W, D., William., S. S. & Malloy. T.E. (1994). Emperical tests of an information-motivation-behavioural skills model of AIDs preventive behaviour with gay men and heterosexual university students. *Health Psychol*, 13 (3), 238-250.

Ford, E. S., Ajani, U. A., Croft, J. B., Critchley, J. A., Labarthe, D. R. & Capewell, S. (2013). Twelve-year follow-up of American women's awareness of cardiovascular disease risk and barriers to heart health, *Cardiovascular Quality Outcomes*. *Circulation* 3, 120-127.

Fowkes, F. R., Rudan, D. & Rudan, I. (2013). Comparism of global estimates of prevalence and risk factors of peripheral artery disease; a systematic review and analysis. *Lancet*, (328), 1329-40.

Fowler, B. A., Corbre, S. G., Garrett, J. & Lurie, N. (2007). Risk of cardiovascular events and deaths, does insurance matters? *Journal of Genotologt Internal Medicine*, 22, 502-507.

Funk, K. L., Elmer, P. J., Stevens, V. J., Harsha, D. W., Craddick, S. R. & Appel, L. J. (2008). A trial of lifestyle interventions for blood pressure control: intervention design and rational. *Health Promotion Practice,* 9, 271-280.

Gay, I. R. (1996). *Educational Research, Competencies for Analysis and Application*. 5th Ed, Upper Saddle River, Prentice-Hall Inc. A Simon & Schuster Campany, New- Jessey: 15-140, 144-305, 606-616.

George, D. & Mallery, P. (2011). *Statistical Packages for Social Sciences for windows*, step by step; a simple guide and reference, 18. 0 update, Boston & Beacon.

Ghazali, S.M., Seman, Z., Cheong, K.C. Hock, L.K. Manickam, M., & Yusoff, A. F (2015). socio-demographic factors associated with multiple cardiovascular risk factors among Malaysian Adults. *BioMed Central Public Health,* Retrieved from http://bmcpublichealth.biomedcentral.com.

Gill, G., Mbamyci, J.C., Ramaiya, K. & Teslaye, S. (2009). A Sub-Sahara African perspective of Diabetes. *Diabetogia,* 52 (1), 8-16.

Go A.S, Mozaffarian, D., Roger, V.L., Benjamin, E.J., Berry, J.D. & Borden, W.B. (2013). American Heart Association Statistics Committee and stoke subcommittee, Heart disease and stroke statistics-2013 update, a report from the American Heart Association. *Circulation,* 127, 6-245.

Gu, Q., Burnt, V. L., Paulise-Ram, R. Voon, S. & Gillum, R.F. (2008). High blood pressure and CVD mortality risk among U.S. adults, the third National Health & Nutrition Examination Survey, Mortality following study. *American Epidemiology,* (18), 302-309.

Guariguates, L., Whiting, D. & Hambleton, L. (2014). Global estimates of diabetes Prevalence for 2013 and projections for 2035 for the IDF Diabetes Atlas. *Diabetes Resourses Clinical Practice,* 103, 137-49.

Gregori, D. (2009). The severe heart disease questionnaire. Italian translation and linguistic validation. *Journal of preventive medicine and hygien*e,.49(4), 1-5. Doi: 10.15167/2421-4248

Hachinski, V. (2010). Stroke: Working toward a prioritized world agenda. *International Journal of Stroke,* 5 (4), 238-256.

Hagos, A., Fekachi, S., Allison T., Wondafrash, M., Workicho, A. & Mulatuth, A. (2017). The Prevalence of Peripheral Arterial Disease and Associated Factors among Adults in Jimma Town, South-West Ethiopia: A community Based Survey.*Journal of Clinical Experimental Cardiology*, 8, 534. Retrieved from https://www.omicsonline.org.

Halla, P. C., Anderson, L. B., Bull, F. C., Guthold, R. & Haskell, W. (2012). Global physical activity levels: surveillance progress, pitfalls and prospects. *The lancet*,.280, 247-257.

Halter, J. B. (2011). *Aging and insulin secretion in Hand book of the biology of Aging*. (7th ed). E. J. Masoro., S. N. Austact. Eds. Burtington, M. A., *Elsevier inc*. 373-384.

He, F. J., & McGregor, G. A., (2009). A comprehensive review on salt and health, and current experience of worldwide salt reduction programmes. *Journal of Human Hypertension*, 23, 363-384.

Hendricks, M., Brewster, L., Wit, F., Bolarinwa, O. A., Odusola, A. O. & Schultiz, C. (2011). Cardiovascular disease prevention in rural Nigeria in the context of a community based health insurance scheme: Quality Improvement Cardiovascular Care. *Bio-medical public health,* 11, 186. Retieved from http://www.biomedcentral.com.

Higg, P. & Giilleard, C. (2015). *Rethinking of old age, Theorising the fourth age*. (7), 119-120. .

Hosey, G.M., Samo, M., Gregg, E.W., Padden D. & Bibb. S.G. (2014). Socioeconomic and demographic predictors of selected cardiovascular risk factors among adults living in Polinepe, Federated States of Micronesia. *Biomed central public health*,14,895. Retrieved from https://www.ncbi.nih.gov

Houghton, M. (2013). *The American Heritage Dictionary of the English Language*. (4th Ed.). Houghton Muffin Company. Boston.

Houghton, M.H. (2016). *American Heritage Dictionary of the English Language*. (5th ed). Houghton Muffin Press, Boston.

Ilo, C. M., (2011). *The risk factor concept in cardiovascular diseases*. Retrieved from https://www.risk.org.

Indrayam, A. (2005). Forcasting Vascular Disease Cases and Associated Mortality in India. Background papers, Burden of disease in India. National commission on Macroeconomics and Health. Ministry of Health and family welfare, Government of India. New Delhi.

Institute for Work and Health (2015). Research Excellence Advancing Employees Health. Retrieved from https://www.iwh/primary-secondary prevention.

Institute for public Health (2008). *The third National Health and Morbidity Survey* (NHMS 111). 2006. Kuala Lumpur: Ministry of Malaysia. volume 1, 11.

Jackson, F.C. & Wenger, K.N. (2011), Cardiovascular Disease in the Elderly, Systematic Diseases and the Cardiovascular System. *Cardiology*, 64(8), 697-712. Doi: 10.1016/j.rec.05.003

Jackson, G, (2008). Gender differences in CVD prevention. *Menopause international,* 14(1), 13-17.

Jain, A. & Paranjapes. K. (2013). Prevalence of type 2 diabetes mellitus in elderly in a primary care facility: an ideal facility. *Indian Journal of Endocrinology. Metabolism*, 17 (1), 398-22.

Jan Mohamed, H. J., Mitra, A. K., Z. Ainuddin, L. R., Leng, S. K., & Wan Muda, W. M. (2013). Women are at a higher risk of metabolic syndrome in rural Malaysia. *Women Health.* 53(4), 335-48.

Jani, B & Rajkumar, C. (2006). "Aging and vascular ageing". *Postagradin Medical Journal*, 82 (968), 357-362.

Jaubert, M.P., Jin, Z., Russo, C., Schwartz, J.E., Homma, S. & Tulio, M.R. (2014). Alcohol consumption and ambulatory blood pressure: a community based study in an elderly cohort. *Annals Journal of Hypertension*, 27(5), 688-694.

Jessup, M. Brozena, S., Clark, N.G., Costa, F. & Eckel, R. (2007). Heart failure. *National. England Journal of Medicine*, 18.

Jha, P., Ramasundarchehige, C., Rostron, B., Thun, M., Anderson, R. & Peto, R. (2013). 21st century hazards of smoking and benfits of cessation in United States. *New England Journal of Medicine*, 368 (4), 341-350.

Jonas, M. (2005). *Mosby Dictionary of Complementary and Alternative Medicine*. Elsvier.Retrieved form medical.dictionary.the free dictionary.com.

Jousilahti, P. Laatikainen, T., Peltonen, M. Borodulin, K., Mannisto, S., Julia, A., Solomon, V. & Vartiainen, E. (2015). Primary prevention and risk factors reduction in coronary heart disease mortality among working aged men and women in eastern FinLand over 40 years: Population based observational study. *BioMed Journal*, 352, 1721.

Kaplan, R.C., Aviles-Santa, M.I. & Parrinello, C.M. (2014). Body mass index, Sex, and CVD risk factors among Hispanic/Catino afults, Hispanic Community health study/study of Latinos. *Journal of American Heart Association*, 3 (4), 1-10.

Katz, D., & Ather, A. (2009*). Preventive medicine, Integrative medicine and the Health of the public commissioned for IOM summit on Integrative Medicine and the health of the public.* Retrieved from http://www.iom.edu.

Katzmarzyk, P. T. (2007). Physical activity and fitness with age among sex and ethnic groups in: Bouchard C, Blair S. N, Haskell WC, editors. Physical Activity and Health Campaign, IL*: Human Kinetics*; Pp 37-49.

Kearney, P. M., Whellon, K., Reynold, S. P., Munter, P. K., Whelton, F, & He, J. (2005). Global burden of Hypertension: Analysis of Worldwide Data. *The Lancet*, 365(9455), 217-223.

Kelly, G. A. & Kelly, K.S (2006). Aerobic exercise and lipids and lipoproteins in women: A meta- analysis of randomized controlled trials. *Journal of Men's Health Gender*, 3, 61-70.

Kelly, R. B., Albert, G., Sarah, J. & David, L. B. (2010). *The American Academy of family physicians: Family Health and Medical Guide*. London. Word Publishing Dallas.

Kinra, S. Bowen, U. & Lyngdoh, T. (2010). Early and current socio-economic position and cardiometabolic risk factors in the Indian Migration Study. *European Journal of Preventive cardiology.*1(2), 1-8.

Kinra, S., Bowen, I. J. & Lyngdoh, T. (2012). Sociodemographic patterning of non-communicable disease risk factors in rural India: a cross- sectional study. *Biomedical Journal*, 341, 4974.

Knight, J. A., (2012). Physical inactivity: associated diseases and disorders. *Annals of Clinical & laboratory sciences*, 42 (3). Retrieved from https://www.annclinilabsci.org

Knowler, W. C., Fowler, S. E. & Hamman, R. F. (2009). Diabetes Prevention Program Research Group: 10-year follow-up of diabetes incidence and weight loss in the diabetes prevention program outcome study. *Lancet*, 374, 1677-1686.

Koltuniuk, A. & Resinczuk, J. (2016). The prevalence of risk factors for CVDs among polish Surgical Patients over 65years. *Clinical intervention in Aging*, (11), 631-639.

Kontus, M. C., Direcks, D, B., & Krik, D, J. (2010). Emergency department and office based evaluation of patients with chestpain, Mayo clinic proceedings, 85(3), 284-289.

Kotseva, K., Wood, D., De-Backer, G., Pyorala, K.& Keil, I. U. (2010). Euroaspire study Group, Euroaspire III, management of CV risk factors in a symptomatic high risk patient in general practice, Cross-Sectional survey 12 European countries. *European journal of Cardiovascular Prevention and Behabilitation,* 17, 530-540.

Krisha, M. (2008). Tobacco use disorder. Retrieved from http://www.euoprevheaith.com.

Krkman, M.S., Brisioe, V. J., Clark, D., Florez, H., Hass, L. B., & Swift, C.S. (2012). Diabetes in older adults. *Diabetes care*, 35, 2650-2664.

Kuntz, B. & Lampert, T. (2010). Socioeconomic factors and the distribution of obesity. *Deutsches Arzteblatt*, 107(30), 517-22.

Lackland, D. T. & Weber, M. A. (2015). "Global burden of cardiovascular disease and stroke: hypertension at the core". *The Canadian journal of cardiology*, 31(5), 569-71.

Lee, L. M., Shirom, E. J., Lobelo, F., Puska, P. & Blair, S. N. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet*, 380, 219-229.

Leupker, R.V., & Lando H. A. (2005). *Tobacco use, passive smoking and smoking cessation interventions*, in ND Wong, H, R., Black and D.M., Gardin (eds) prevention cardiology: a practical approach. (2nd ed), Pp 217-50. New yolk McGraw Hill.

Levesque, J. F., Harris, M. F. & Russell. (2013). Patient-centred access to healthcare: conceptualizing access at the interface of health systems and population. *International Journal of Equity Health,* 12, 12-18.

Lin, P. H., Appel, L. J., Craddick, S., Chen, C. & Champni C. (2007). The premier: intervention helps participants follow the Dietary Approaches to stop hypertension: dietary pattern and the current dietary reference Intakes recommendations. *Journal of American Dietetic Association,*107, 1541-1551.

Lloyd-Jones, D., Adam, R., Caretton, M., Dai, S., Desimone, G & Ferguson, T. B. (2010). Heart diseases and stroke statistics, a report from the American Heart Association statistics committees and stroke statistics subcommittees. Circulation, 121, 66. Doi: 10,1161/circulation. AHA. 108. 191201.

Luksiene, D., Tamosiunas, A., Virviciute, B., & Peasey, A. (2015). Anthropometric trends and the risk of cardiovascular disease mortality in a Lithuanian urban population aged 45-64 years. *Scandinavian Journal of Public Health*, 43, 822-889.

MacGrill, M. (2016). Hypertension, Causes, Symptoms and Treatment. Retrieved from https://www.medicalnews.com.

Macus, G. M., Cohen, J. & Varosy, P. O. (2007). The utility of gestures in patients with chest discomfort. *American Journal of Medicine*, 120 (1), 83-9.

Maduka, A. O. (2016). *Heart diseases: Prevention and Management*.1(1), 1-40.

Malan, L.M.N., Wissing, M.P. & Seedat, Y.L. (2008). Coping with urbanization: a cardiometabolic risk. *BioMed Psychology*, 79 (3), 332-328.

Mallinson, J. (2010). Myocardial Infarction: Focu on First Aid. (15), 15.

Mann, D.L. & Chakinala, M. (2012). *Harrison's Principles of Internal Medicine:* Heart Failure and Cor Pulmonale. 18th ed. New York: McGraw-Hill.

Marcy, R. (2011). *What is unhealthy diet*. Retieved from https://www.livestrong.com.

Maria, V. I. Carmen, S. C., Nicola, M. M., Jose, O. M. & Katherine, L. K. (2015). Prevalence of cardiovascular disease risk factor among older Puerto Rican Adults living in Massaclusstts. *Journal of Immigrants Minor Health*, 13(5), 825-833.

Marinno, N., Laks, J., Sergio, L. & Evandio, L. (2010). *Tobacco use among the elderly: a systematic review and meta-analysis.* 5(1), 15.

Marmot, M., Friel, S., Bell, R., Houweling, T. A., Taylor, S. (2008). Commission on social determinants of health. Closing the gap in a generation: health equity through action on social determinants of health. *Lancet*, 372, 1666-1669.

Maruther, N. M., Wong, N. Y., Apple, I. J. (2009). Lifestyle interventions to reduce coronary heart disease risk: results from the premier trial. 119, 2026-2031.

Matus- Vliegen, E. M. H. (2012). Obesity and the elderly. *Journal of Clinical Gastroenterology*, 46 (7), 533-544.

Maziar, Z. A. & Eric, X. Y. (2017). *Myocardial Infarction*. Retrieved from https//.medicine.medscape.com.

McCowen K & Blackburn G. (2005). *Obesity and weight control*, in ND Wong, H. R., Black and J. M. Gardin eds Pp. 235-55. New York. McGraw.

McDongh, T. A (2011). *Oxford textbook of heart failure*. Oxford. Oxford University press.

McMurray, J.J. & Pfeffer, M. A. (2005) "Heart Failure" *Lancet*, 365 (9474), 1877-89.

Mehta, P. K., Wel, J.& Wenger, N. K. (2014). Ischeamic heart disease in women: a focus on risk factors. *Cardiovascular medicine*, 25, 140'157.

Mendel, C.H. (2005). Designing measuring instruments, in R. M. Grinnell, Jr & Y. A. Unrau (Eds.) Social work research and evaluation: Quatitative and qualitative approaches, (7thed), (pp. 133-146), Oxford: University press.

Mendis, S & Fuster, V. (2009). National policies and strategies for non- communicable diseases. *Nature Reviews Cardiology*, 6(11), 723-727.

Mensah, G. A. (2015). Mortality from CVDs in sub-Saharan Africa, a systematic analysis of data from the Global Burden of Diseases. *Cardiovasic Journal Africa*., 26, 6-10.

Micheal, P. & Smith, T. (2005). *Major cardiovascular disorders in Complete Family Health Guide*. London. Dorley Kindersley Limited.

Ministry of Finance (2016). *Enugu State Pension Payment Summary*. Ministry of finance.

Mohamud, W.N., Ismail, A.A., Sharifuddin, A., Ismial, I.S. & Kadir, K. A. (2011). Prevalence of metabolic syndrome and its risk factors in adult Malaysians: result of nationwide survey. *Diabetes Resourses Clinical Practice*, 91(2), 239-45.

Mons, U., Muezzinler, A., Gellert, C., Schottker B., Albert C. C., Boback, M & Brenner, H. (2015). Impact of smoking and smoking causation on CV events and mortality among older adults: meta-analysis of individual participant data from prospective cohort studies of the chance consortium. Doi:10.1136/bmj.h1551.

Mosby Dental Dictionary (2008). *Tobacco use medical dictionary* (2nd Ed.).

Murphy, A. W., Cupple, M. E., Smith, M. S., Newell, J., Scarrot, C. J., & Gillespie, T. (2009). Secondary prevention of hearst diseases in general practice. *BioMed Journal*, 6, 339.

Murso, S.P & Hiatt, W. R (2006). Peripheral arterial disease in patients with diabetes mellitus. *Journal of American College of Cardiologist*, 49, 921-929. Doi: 10.1016/j.jacc

Murthner, P., David, B.R., Cushman W. C., Bangalore, S. Calhoun, D.A. and Pressel, O. (2014). Treatment resistant hypertension and incidence of CVD and end stage reral disease: result from the antihypertensive and lipid lowering treatment to prevent heart attack trial. *Hypertension*, 64, 1012-21.

Najlaa, A. & Faruk A. (2015): Prevalence of Cardiovascular Disease and Associated Risk Factors among Adult Population in the Gulf Region. *Advances in Public Health*, 23, 1-10. Retrieved from http://www.hindawi.com

Nathan, D. W. (2015). *Epidemiology and prevention of CVD*. Oxford Textbook of Global Public Health (6th ed). Oxford University Press. U.S.A. Retrieved from http://oxfordmedline.com.

National Institute on Alcoholism and Drug Dependence (2015). *Alcohol effects on the body*. Retrieved from https://www.niaaa.nih.gov/alcohol.health-effects-body.

National Heart, Lung, & Blood Institute (2007). Morbidity and Mortality: Chart Book on Cardiovascular, Lung, and blood Diseases. National Institutes of Health, Bethesada.

National Institute of Health (2016). Conducting research with community groups. West Journal *Nursing Research*, 37(10), 1323-1339.

National Health Services (2015). *"Cerebrovascular diseases; Risk and Prevention".* Retrieved from www.nhs.uk.

Nelson, M. Rejeski, W., Blair, S. N., Duncan, P. & Judge, J. (2007). Physical Activity and Public Health in Older Adults: recommendations from the American College of Sports Medicine and the American Heart Association. *Circulation,* 116, 1094-1105.

New York State Department of Health (2012). *Cardiovascular disease*s, New York State. Retrieved from http://www.health.ny.gov/diseases/cv/heart diseases.

Njelekela, M.A. Rose, M., Alfo, M., Nuru, L.M., Donna, S., & Enju, L. (2009). Gender-related differences in the prevalence of cardiovascular diseases risk factors and their correlates in Urban Tanzania. *BioMed Central Cardiovascular disorders,* 20 (6), 177-189.

Noar, S. M. (2005). Health Behavior Theory and cumulative knowledge regarding health behaviors. *Health Education Research,* (3), 275-90.

Nohair, S.A.L., Mohammed, A.A.L., Sharaff, Naeem, Z., Midlet F., Homaidan, A.L. & Winter, S.J. (2017). Risk Profile of Coronary Heart Disease among the Staff Members of Qassion University, Saudi Arabia. *International Journal of Health Science Qassion*, 11 (1), 1-5.

Nwafor, C.E. & Alikor, C.A. (2016). Pattern of Cardiovascular Disease admissions in the medical ward of the University of Port Harcourt Teaching Hospital. *The Nigerian Health Journal*,.16(2), 1-6.

Nwagu, E. N. & Agbaje, O. S. (2017). *Demographic and Statistical methods in Health, Education and Social Sciences*. Zion Press, Nsukka.

Nwajagu. C. I. (2007). Procedure fot precessing of retirement benefits-computation. An unpublished seminar submitted to the Department of Public Administration. University of Nigeria, Nsukka.

Nwankwo, T; Yoon, S.S., Burnt, V. & Gu, Q. (2013*). Hypertension among adults in the United States, National Health and Nutrition Examination Survey*. Data brief 2013,133, 1-8.

Nwoke, E. A. & Okafor, J. O. (2014). *Sociodemographic correlates of sexual behaviours iii*: a cross sectional survey of adolescents in Imo State secondary schools.

Nworgu, B.G. (2006). *Educational research:* Basic issues and methodology (2nd ed). Enugu, University Trust Publishers.

Ogengo, J.A., Olabu, B.O., Ongera D. & Sinkeet, S.R. (2010). Pattern of acute myocardial infarction in an African Country. *Journal of Cardiologica*, 65 (6), 613-618.

Oguanobi, I. N, Ejim, E.C, Basiden, J.C., Conwubere, B.J., Ike, S.O., Anisiuba, B.C., Ike, V.O., Aneke, E.O. (2014). *Pattern of CVDs amongst medical admissions in a regional Teaching Hospital in South Eastern Nigeria (UNTH) Enugu.* 10 (2). 77-80.

Ogunmola, O. J., Olaifa, A. O., Oladipo, O. O., & Babatunde, O. A. (2013). Prevalence of CV risk factors among adults without obvious cardiovascular disease in a rural community in Ekiti State Southwest Nigeria. *BioMed Central Cardiovascular Disorders*, 13, 89.

Oguoma, V.M, Nwose, E.U., Skinner, T.C., Digban, K.A, Onyia, I.C, & Richards, R.S. (2015). Prevalence of Cardiovascular disease risk factors among a Nigerian adult population, relationship with income level and accessibility to CVD risks screening. *BioMed Central,* 15,397.

Ojikutu, R. K. (2009). The prevalence of cardiovascular disease in Lagos state, Nigeria and Ghana. *Journal of development studies,* 6 (2),41-50.

Ojo, O. I. & Mohammed, J (2013). Anthropometry and CVD risk factors among retirees and non-retirees in Ile-Ife, Nigeria: a comparative Study. *Nigerian Medical Journal,* 54(3), 160, 164.

Okafor, C., Anyadibe, U. & Ofoegbu, E. (2014). The magnitude of obesity and its relationship to blood pressure among the residents of Enugu metropolis in South east Nigeria. *Annals of Medical Health Science Research,* 4 (4), 624.

Okoye C (2006). *The mystery of silent killers, save a life foundation*. Nigeria. Publishers.

Oladipo, O.O, Salako, L. Sadiq, L. Soyinka, K. & Falase, A.O. (2013). Knowledge of hypertension and other risk factors for heart disease among Yoruba Rural Southwestern Nigerian population. *British Journal of Medicine and Research,* 3 (4), 793-1003.

Olarinde, J.O. Adeleke, O.O., Olutoyin, O.O. & Ohewole, A.B. (2013). Prevalence of Cardiovascular risk factors among adults without obvious CVD in a rural community in a developing country. Biomedical Central Journal, 1(2), 25-32. .

Onwuasigwe, C. (2010). *Principles and Methods of Epidemiology*. (2nd ed). Nigeria. El. Demak Publishers.

Onwuchekwa, A.C. & Asekoneh, G.E. (2009). Pattern of Heart Failure in a Nigerian Teaching Hospital. *Dove Press Original Research,* 5, 745-750. .

Osuji, C.U., Onwubuya, E.I., Ahaneku, G.I. & Omejua, E.G. (2014). Pattern of cardiovascular admissions at Nnamdi Azikwe University Teaching Hospital Nnewi, South East Nigeria. *Pan African Medical Journal,* 17(116), 1-9.

Ottawa, O. (2018). What is the meaning and concept of retirement? Retrieved from https://www.post-infinancial .com.

Owusu, I.K. & Boakye, V.A. (2013). Prevalence and Aetiology of Heart Failure in Patients seen at a Teaching Hospital in Ghana. *Journal of Cardiovascular Disease Diagnosis,* 1, 131.

Paquissi., F.C., Cuvinje, A.B.P. & Cuvinje, A.B. (2016). Prevalence of peripheral arterial disease among adult patients attending outpatient clinic at a general hospital in South. *Angola*. *Scientifics Journal,* ID 2520973, 1-6. Retrieved from http://www.hindawi.com/journal/scientifica.

Parks, K. (2010). Parks textbook of preventive and social *medicine*. India. Banasidas Bhanot publishers.

Perez, M. I. & Musin; M. (2008). "Pharmacological interventions for hypertensive emergencies". *The Cochrane database of systematic review,* (1), 1-3.

Pilote, L., Dasgupta, K, Guru, V., Humphries, K.H., McCrath, J., & Tagalakis, V. (2007). A comprehensive view of sex-specific issues related to CVD. *Canadian Medical Association journal,* 176 (6), 514-544.

Pouter, N. R., Prabhakaram, D. & Cail, Fied, M. (2015). "Hypertension". *Lancet,* 386,801-12(14), 61468-9.

Prasanna, D., Rajesh. V., Satish, K.B.P. Rajveer S., Priyank, T., & Valbhav, P. (2013). A study of Socio-demographic and behavioural risk factor in patients with cardiovascular Disease visiting rural hospital in South India. *International journal of Pharmaceutical Science Review Resources,* 22 (2), 35, 196-199.

Rahman, M., Nakamura, K., Seino, K. & Kizuki, M. (2015). Socio-demographic factors and the risk of developing cardiovascular disease in Bangladesh. *Annals Journal of Preview Medical,* 48 (4), 456-61.

Rahman, M. A., Spurrier, N., Rahmn, M., A., M., Choudhury, S. O. & Leeder, S. (2013). Rose Angina Questionnaire Validation with diagnosis to detect coronary heart disease in Bangladesh. *Indian Heart Journal,* 65(1), 30-39.

Rajnish, J., Bharti, T., Shiri, P.K., Ulhas, N.J. & Rajeer G. (2013). Prevalence of Cardiovascular risk factors among rural population of elderly in Wardha district. *Journal of Cardiovascular Disease Research,* 4, 140-146.

Rakale, C.Q., Jinnan, L.& Sharon, K, D. (2012). Social determinants of cardiovascular diseases risk factor presence among rural and urban Black and white men. *Journal of Men's health,*.19 (2), 120-126.

Ratey, J.J., & Loehr, J. E. (2011). The positive impact of physical activity on cognition during adulthood: a review of underlying mechanisms, evidence and recommendations. *Review in the Neurosciences,* 22, 171-185.

Regents of the University of Minnesota (2004). Severe heart failure questionnaire: Italian translation and Linguistic Validation. Retieved from https://www.researchgate.net.

Regit-Zagnosek, V. (2006). Therapeutic implications of the gender-specific aspects of cardiovascular disease. *Nature Reviews Drug Discovery,* 5 (5), 425-438.

Rejesk, W.I., Bertoni, A. G. & Ip, E. H. (2012). Look Ahead Research Group. Lifestyle change and mobidity in obese adults with type 2 diabetes. *National England Journal of Medicine,* 366, 1209-1217.

Relm, J. (2010). The different dimensions of alcohol consumption and burden of disease. *An Overview of Addiction.* 105, 817-843.

Rodriguez, M.A., Kumar, S. K. & De Caro, M. (2010). "Hypertensive crisis". *Cardiology in Review,* 18 (2), 102.

Roereck, M. & Rehm, J. (2010). Irregular heavy drinking occasions and risk of ischaemic heart disease. A systemic review and meta-analysis. *American Journal of Epidemiology,* 171, 633-644.

Romunoski, C. E, Lee, S., Kim, M.J., Ingram, D.L. Plasisen C.L. & Yordanov, U. (2010). Systems Genetics Analysis of Gene-by-Environment Interactions in Human Cells. *American Journal Human Geneology*, 86 (3), 3399-410.

Rooke, T. W., Hirsh, A. T., Misra, S., Sidawy, A. N., Beckmen, J. A., & Findeiss, L. (2013). Management of patients with peripheral artery disease: a report of the American College of Cardiology Foundation/American Heart Association Taskforce on Practice Guidelines. *Journal of the American College of Cardiology*, 61(14), 1555-70.

Rosentock, I.M., Becker, M.H. & Kirscht, J.P. (1950). Historical orign of health belief model/health education. *Mongraphs*, 2, 328-35.

Rouban, K. Z., Rita, F., Mirna, N. C., Roland, A., Hassan, H., Pascale, S. & Atul, P. (2016). Prevalence and Correlates of Coronary Heart Disease: first population-based in Lebanon. *Vascular Health Risk Management*, 12, 75-84. .

Sacco, R, L., Kasner, S, E., Broderick, J. P., Caplan, L, R., Connors, J. J., & Culebras, A, E. (2013). An update definition of stroke for the 21st century, a statement from American Heart Association / American Sroke Association. *Stroke*.44 (7), 2064-2089.

Saidu, H. (2018). Cardiovascular Disease admissions in medical wards of a Tertiary Hospital in North-Western Nigeria. *Journal of Dental and Medical Sciences*, 17(5), 47-50.

Saliu, A., Adenike, O., Olukunle, O. & Ismail, A. (2014). Sociodemographic correlates of modifiable risk factors for hypertension in a rural local government area of Oyo State Southwest, Nigeria. *International Journal of Hypertension, Retrieved from https://dx.Doi:.org/10.115.*

Samide, O.A., Anarfi, J.K. Akins, A.D. & Koram, K.A. (2014). Pattern of Cardiovascular Disease Mortality in Ghana. .*Ethin Dis-Winter*, 24 (1), 55-9.

Sanya, E.O., Desahi, O.O., Adepogi, F., Aderibigbe S.A., Shettu A & Olaosebikan., O. (2015). Prevalence of Stroke in Three Semi-Urban Communities in middle belt region of Nigeria. *The Pan African Medical Journa*l, 20(33), 1-6.

Schirmang, T.C, Ahn, S. H & Murphy, T. P. (2009). Peripheral arterial disease: update of overview and treatment. *Medical Health Research International*, 92, 398-402.

Scott, J. (2014). *Ageing Australian's Back at World. Oldest retirement age*. Jakarta, Beritasatu Media Holdings.

Selvarajah, S., Hanift, J., Kaur, G., Gaut, H. T., Chee, C. K., & Lim, C. M. et al (2013). Clustering of CV risk factors in a middle-income country: a call for urgency. *European Journal of Preventie Cardiology*, 20 (2), 368-75.

Sererky, L. J., Eringer, T. P., Vollmer, W. M., Feldstein, A., Copper, L. S. & Stevens, V. J. (2005). Effects of lifestyle modifications on blood pressure by race, sex, hypertension status and age. *Human Hypertension,* 19, 21-31.

Shah, R. S. & Lole J.W. (2010). "Smoking and stroke" the more smoke the more you stroke". *Expect review of cardiovascular therapy*, 8 (7), 917-932.

Shanti, M., Pekka, P. & Bo, N. (Ed). (2011). Global Atlas on cardiovascular diseases prevention and control. Geneva. World Health Organization, World Heart Federation and World Stroke Organization.

Sharmmas, N. W. (2007). "Epidemiology, Classification, and Modifiable risk factors of peripheral artery disease". *Vascular Health Risk Management,* 3(2), 229-34.

Silverman, D. (2013*). Doing qualitative research: a practical handbook*. Thousand Oaks: SAGE Publications Limited, USA.

Silas, R. Bibiloui, M. Dei, M. & Ramos, E (2014). Metabolic Syndrome Prevalence among Northern Mexicon adult population. *Plos one* 9(8).

Sinclair, A., Morley, J. E.., Rodriguez, M. L., Puoolisso, G., Bayer, T. & Zeyfang., A. (2012). Diabetes mellitus in older people: position statement on behalf of the international Association of Gerontology and Geriatrics., the Europian Diabetes working party for older people, and the International Task Force of Experts in Diabetes. *Journal of American Medical Directory Association,* 13, 497-502.

Sloan, F.A., Bethel, M. A. & Ruiz, D. Shea, A.H., & Femglos, M.N. (2008). The Growing burden of diabetes in the United States. *Elderly journal,* 168(2), 192-199.

Smith, S, C., Allen, J., Blair, S, N., Bonow, R, O., Brass, L, M. & Taubert, K, A. (2006). Guidelines for secondary prevention for patients with coronary and other vascular disease. American Heart Association /American College of Cardiology. *Journal of American Coll Cardiology*,47, 2130-2139. .

Strazullo, P., D, Elia, K., Kandala, N. B., & Cappuccio, F, P. (2009). Salt intake, Stroke and cardiovascular disease. Meta-analysis of prospective studies. *British Medical Journal,* 2(1), 10-16.

Sumitra, S., Argur, B., Tera, S., Rodrigo, R. & Surya, R, N. (2017). Coronary Artery Disease Risk Factors among Females in Tertiary Cardiac center Nepal. *International Journal of Cardiovascular Research*, 6, 4.

Sun, F., Norman, I. J., & Whale, A. E. (2013). Physical activity in older people: a systematic review. *BioMed Central Public Health*, 13, 449.

Sutchitle, P. (2013). Aspirir in primary prevention of Cardicvascular disease and cancer: a systmatic review of the balance of evidence from randomized trials. *Health journal,* (8), 12.

Tamayo, T., Christian, H. & Rathmann, W. (2010). Impact of early psychosocial factors (childhood socioeconomic factors and adversities) and future risk of type 2 diabetes, metabolic disturbances and obesity: a systematic review. *Biomedical Central Public Health*, 10, 525-528.

Tang, Z., Zhon, T., Luo, Y., Xie, C., Huo, D., Tao, L., Pan, L.& Guo, X. (2014). Risk factor for cerebrovascular disease mortality among the elderly in Beijing: A competing Risk Analysis. *PLOS ONE,* 9:(2), 16.

Temorenga, L. A., Hawatson, A. J., Jones, R. M. & Mann, J. (2014). "Dietary sugars and cardiometabolic risk: systemic review and meta-analysis of randomized controlled trials of the effects on blood pressure lipids" *American Journal of Clinical Nutrition*, 100 (1), 65-67.

Thalacker, K. M., (2011). Health belief and social learning model. *Journal of Health Promotion practice*, (2), 12-18.

Toan, T., K. (2012). Antenatal and Delivery Care Utilization in Urban and Rural Contexts in Vietnam: a study in two health and demographic surveillance sites, thesis at the Nordic School of Public Health Gottenburgg, Sweden.

Tokarz, A., Stawarska, A & Kolczewaska, M. (2007). Qualitative assessment of diet and nutrition of elderly people affiliated in selected Warsaw Social Association. *Bio-metabolic Chemical Toksykol*, 15 (4), 359-354.

Tyrovalas, S., Koyanagi, A., Garin, N. Olaya, B. Ayuso-Mateos, J. L., & Miret, M. (2015). Diabetes mellitus and its association with central obesity and disability among older adults: a global perspective. *Experimental Gerontology*, 64, 70-7.

United States Department of Health and Human Services (2012). *Medicare Eligibility Tool*. Retrieved from http://www.medicare.gov/MedicareEligibility/

United States Department of Health and Human Services (2014). *A Guide to the 50th Anniversary surgeon General's Report on smoking and Health*. Atlanta.

Ursoni, U, S. (2012). *Primordial prevention*. Retrieved from http://www.pitt.edu.on.

Uzoagulu, A. E. (2011). *Practical guide to writing Research Project, Reports in Tertiary institution*. Enugu: John Jacobs Classic Publishers.

Villareal, D. T., Apovian, C. M. & Kushner, R. F. (2005). Obesity in older adults: technical review and position statement of the society. *Obesity Research*, 13, 1849-1863.

Violi, F., Basili, S., Berger, J. S. & Hiatt, W. W. (2012). Antiplatelet therapy in peripheral artery disease. Handbook of experimental pharmacology, 210, 547-63.

Wald, N. J., Simmonds, M. & Morris, J. K. (2011). Screening for future cardiovascular disease using age alone compared with risk factors and age. *PloS One*, 6, 1-7.

Ward, H. Toledano, M. B. Shaddick, G., Davis, B. & Elliot, P. (2012). *Oxford Handbook of Epidermiology for Clinicians.* Oxford. Oxford University Press..

Werner, D. & Bower, B. (1988). *Helping health workers learn: a book of methods, aids and ideas for instruction at village level.* Palo Alto, Heaparian Foundation.

West, D. S., Elaine, P. T., Bursac, Z. & Felix, H. C. (2008). Weight loss of Blacks, Whites and Hispanics men and women in diabetes Prevention Program. *Obesity*,16, 1413-1420.

Whelam, B. J & Sarva, G.M. (2013). Design and methodology of the irish longitudinal study on ageing. *Journal of the American Geriatics Society*, 61, 265-268.

William, M., Unrau, Y. A. & Grinnell Jr.Y. A. (2005). The qualitative approach In R.M. Grinnell Jr & Y. A. Unrau (Eds). Social work research and evaluation: Qualitative and quantitative approaches, (7th ed) (pp. 403-420).

Wong, N. D. (2014). Epidemiological studies of coronary heart disease and the evolution of preventive cardiology, Natures reviews. *Cardiology*, 11 (5), 276-89.

World Health Organisation (1997). Strenghtening nursing and midwifery, a global study. *Journal of World Forum.* 9(3), 9.

World Health Organization (2001). *Cardiovascular Disease Questionnaire*. Retrieved from https://www.cck. Gov.

World Health Organization (2007). *Prevention of CVDs. Pocket guidelines for assessment and management of Cardiovascular risks*. Geneva. WHO.

World Health Organization (2008). *WHO report on the global tobacco epidemic: The MPOWER package*. Geneva. WHO.

World Health Organization (2009). *Global Health risks: Mortality and Burden of disease attributed to selected major risks*. Geneva. WHO.

World Health Organization. (2009b). World Health Organization Steps Instrument: WHO Stepwise approach, Geneva.

World Health Organization (2010). *Equity, social determinants and public health programmes.* Geneva. WHO.

World Health Organization (2010). *Global estimate of the burden of disease from second land smoke*. Geneva. WHO.

World Health Organization (2010). *Global recommendations on physical activity for health.* Switzerland. WHO.

World Health Organization (2010). *Prevention of cardiovascular diseases: Guidelines for assessment and management of cardiovascular risk*. Geneva. WHO.

World Health Organization (2011). *Ageing and Employment Statistics. Average effective age of retirement,* Retrieved from https://www.acid org.

World Health Organization (2011). *WHO report on the global tobacco epidemic warning about the dangers of tobacco*. Geneva. WHO.

World Health Organization (2012). *Regional office for Southeast Asia. Hypertension factsheet.* Retrieved from: http://www.searo.who.int/linkfiles.communicalbediseases-hypertention.

World Health Organization (2012). *Stroke Statistics.* Retrieved from http://www.strokecentre.who.stroke.statistics

World Health Organization (2013). *Promoting food and vegetable consumption around the world*. Geneva. WHO.

World Health Organization (2014). *CV mortality: age-standardized death rate.* Retrieved from https;//www.who. info/medidcv/mortality.com.

World Health Organization (2014). Global burden of diseases, mortality and causes of death collaborators, global, regional and national age-sex specific, all-cause and cause-specific mortality for 240 causes of death, 1990-2013, a systematic analysis for the global burden of study 2013". *Lancet,* 385 (1963), 117-71.

World Health Organization (2015) "Social determinants of risk and outcomes for CVDs, a scientific Statement from the American Heart Association. *Circulation,* (123), 873-898.

World Health Organization (2015). *Global Status Report on Non-Communicable Diseases.* Retrieved from http://www.who.in/medicentrelfactsheets1317.

World Health Organization (2016). *The determinants of health: Health impact Assessment.* Retrieved from www.who.int.

World Health Organization/International Association for the study of obesity/international obesity Task force (2013). *The Asia-Pacific perspective*: *Redefining obesity and its treatment.* Retrieved from http://www.who.nit-nutrition/redefing.obesity.

World Health Organization (2017). *Cardiovascular disease factsheet*. Retrieved from https://www.who.inf-cardiovascular,diseases.

Yang, F., Qian, D., Hu, D., Hou, M., Chela, S. & Fan, N. (2016). Prevalence of CVD risk factors clustering in Chinese adults. *Clinical Trials and Regulatory science in Cardiology* 15, 1-6.

Yazdanyar, A. (2010). The Burden of Cardiovascular Disease in the Elderly: Morbidity, Mortality and Costs. *Clinical Geriatric Medicine,* 25 (4), 563-566.

Zeldan, F.K., Chahine, M.N., Asmar, K., Hossein, H., Salameh, P. & Patha, K.A. (2016). Prevalence and Correlates of Coronary Heart Disease. *Dove Press original research,* 12, 75-84.

Zhou, T., Xia, L. Tang, Z, Xie, C. ao, L., Pan, L., Huo, D. & Guo, X. (2014). Risk factors of CVD mortality among the elderly in Beijing, 1992-2009: an 18 years' cohort study *International Environmental Research Public Health,* 11, 2193-2208.

Appendix A

Department of Human Kinetics and Health Education,
University of Nigeria, Nsukka
15/3/ 2018

Dear respondent,

This questionnaire is designed to determine the socio-demographic correlates of cardiovascular Diseases (SCCVD). The findings of the study will enable the researcher to design preventive strategies that will help to minimize or control cardiovascular diseases. Therefore, you are kindly required to respond to each item of the questionnaire as honestly and frankly as possible. Your responses will be treated confidentially and none of them will be held against you. Please, do not write your name in any part of the form. Please return the completed copy of the instrument to the researcher or her assistants. Thank you.

Yours Sincerely

Ugbelu Jacinta E
(Researcher)

Socio-demographic Correlates of Cardiovascular Diseases Questionnaire (SCCVDQ)

Section A: Respondents Socio-demographic Data

Instruction: Please place a tick (√) against the option that best applies to you.

1. What is your age?
   (a) 55-74 years ( ).
   (b) 75years and above. ( ).
2. What is your gender?
   (a) Male ( ).
   (b) Female ( ).
3. What is the highest level of education you completed?
   (a) Low education status (Primary education and secondary education) ( ).
   (b) High education status (Post secondary and university education) ( ).
4. What is your monthly pension?
   (a) ₦20,000 - ₦40,000. ( ).
   (b) ₦41,000 and above ( ).
5. Where do you reside (location)?
   (a) Urban ( ),
   (b) Rural ( ).

SECTION B: Cardiovascular Diseases Questionnaire

INSTRUCTION: Please place a tick (√) against the option that best applies to you.

S/N	Items	Yes	No
6	Have you ever had any pain or discomfort in the chest that is repeating or continuous?		
7	Do you have the pains when climbing hills or when in hurry?		
8	Did you get the pain when you walked at ordinary pace on the level?		
9	Does the pain force you to stop walking?		
10	If you standstill, did the pain get relieved?		
11	Do you get relieved from the pain after 10 minutes or less?		
12	Have you ever experienced shortness of breathe even when you do not have cold?		
13	Have you ever had to sleep on 2 or more pillows to help breathe?		
14	Have you ever been told by a healthcare provider that you have heart pain?		
15	Within the last 1 year, have you ever had a severe pain across the front of your chest lasting for about 30 minutes or more?		
16	Did the pain occur for the first time in the past 12 months?		
17	Have you ever had a feeling of weakness, lightheaded, fainting?		
18	Have you ever had pain or discomfort in the arms or shoulder?		
19	Have you ever had confusion or trouble speaking?		
20	Have you ever had sudden numbness or weakness of face, arm or leg especially on one side?		
21	Have you ever had sudden trouble seeing in one or both eyes?		
22	Have you ever had partial stroke?		
23	Have you ever experienced severe headache without fever?		
24	Have you ever experienced unexplained dizziness?		
25	Have you ever experienced trouble walking or loss of balance?		
26	Do you experience tingling sensation in the fingers and toes?		
27	Do you have swelling in the ankles or legs?		
28	Does the swelling make your walking about or climbing stairs difficult?		
29	Does the swelling make your sexual activities difficult?		
30	Did the swelling make you eat less of the foods you like?		
31	Does the swelling make you feel worried and depressed?		
32	Do you experience pain in the heart when engaging in recreational activities such as brisk walking or cycling?		
33	Have you been repeatedly admitted to hospital because of the problem?		
34	Do you feel tired or fatigued unnecessarily?		
35	Do you feel pains or discomfort in your legs when you walk?		

S/N	Items	Yes	No
36	Do you feel the pains even at rest?		
37	Have your fingers or toes ever looked pale, bluish or discoloured?		
38	Do you have any open wounds on the legs or feet that is healing slowly?		
39	Did you smoke any tobacco products such as cigarettes, pipes or hand-rolled cigarettes?		
40	Have you stopped smoking?		
41	Do you drink alcoholic beverages such as beer, wine, spirit, ton or kaikai?		
42	Have ever been told by healthcare provider to reduce alcohol intake?		
43	Do you eat fruits every day?		
44	Do you eat food prepared with vegetables daily?		
45	Have you ever been told by a healthcare provider to reduce salt intake to control high blood pressure?		
46	Have you ever been told by a healthcare provider to reduce weight to control high blood pressure?		
47	Do you engage in moderate regular exercise such cycling, walking or jogging?		
48	Do you sit down to watch television, listen to radio or crack jokes often?		
49	Have you ever been told by a doctor or other health workers that you have high blood pressure or hypertension?		
50	Do you check your blood pressure regularly?		
51	Are you receiving treatment for high blood pressure from a doctor or other health worker?		
52	Have you ever been told by a doctor or other health worker that you have high blood sugar or diabetes?		
53	Do you check your blood sugar level regularly?		
55	Are receiving treatment for diabetes from a doctor or other health worker?		

Appendix B

Cardiovascular Disease Focus Group Discussion Guide (CVDFGDG)

Thank you very much for accepting to participate in this discussion. We assure you that it will be brief. I am---------- University of Nigeria, Nigeria and my assistant is ---------- The discussion is to find out cardiovascular diseases experienced by the retirees as well as risk factors associated with them. The findings from the discussion will be used to develop preventive strategies for cardiovascular diseases. The data that will be obtained from the discussion will be used for research purposes and will be treated with utmost confidentiality.

1. Whom do you think that suffer from cardiovascular diseases (CVDs)? In your view do think that older adults including retirees mostly suffer from CVDs? In your experience, do you think that retirees suffer CVDs such as stroke, heart attack, heart failure and peripheral arterial disease? Which of them is more prevalent?
2. What do you think are the likely causes of CVDs? Do you think that exposure to unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity, and unhealthy diet can result to CVDs among older adults including retirees?
3. In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?
4. In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reasons?
5. Can you say that CVDs are associated with income? Do you think that retirees with poor or low income are more vulnerable to CVDs?
6. As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?
7. Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What the reasons for being more prevalent in a particular area?
8. Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?

Appendix C

Department of Human Kinetics

and Health Education,

University of Nigeria, Nsukka

27/9/2018

Dear Sir/Madam,

Cardiovascular Disease Preventive Strategies Questionnaire (CVDPSQ)

The researcher is a postgraduate student of the above named Department and institution currently carrying out a study titled: Socio-demographic Correlates of Cardiovascular Diseases and Preventive Strategies among Retirees in Enugu State, Nigeria. You have been selected to respond to the instrument due to your wealth of knowledge and expertise. Section A presents the summary of major findings and section B contains the formulated preventive strategies for CVDs accompanied with specific objectives, research questions and hypotheses. Kindly indicate the degree of appropriateness of the proposed strategies by placing a tick (√) against the items using aa response option of Very appropriate (VAP), Appropriate (APP), Inappropriate (IAP) and Very Inappropriate (VIAP). Your expert judgement/assessment of these proposed preventive strategies for CVDs among retirees will be highly appreciated.

Thank you for anticipated cooperation.

Yours faithfully,

Ugbelu Jacinta.E.

(Researcher)

Instructions: Section B: Please place a tick (√) against the degree of appropriateness (i.e, very Appropriate-VAP, Appropriate-AP, Inappropriate- (IAP) and Very Inappropriate-(VIAP) of the option that applies to you.

Major Finding	Objective	Strategies	VAP	AP	IAP	VIAP
1. Moderate proportion of retirees engaged in cigarette smoking and alcohol abuse, physical inactivity and unhealthy diet.	A. To prevent retirees from engaging in risk factors for CVDs.	**Cigarette Smoking** 1. Public service announcement by the government banning people from smoking.				
		2. Creating awareness on the dangers of cigarette smoking.				
		3. Use of newsletters, posters containing graphic images on the effects of cigarette smoking.				
		4. Mobile health/social worker tracing smokers and counselling them to quit.				
		5. Banning tobacco (cigarette) advertising and promotions.				
		6. Rehabilitating and integrating the quitters through tobacco use cessation programmes.				
		7. Creating, implementing and protecting strong national tobacco control policy/programme as mechanism to exert governmental leadership in tobacco control.				
		Alcohol use/abuse 1. Creating awareness on the dangers of alcohol use/abuse through public service announcements.				
		2. Early identification of people at risk and counseling them to reduce alcohol intake.				
		3. Identification of alcohol abuse disorders prompt treatment rehabilitation and integration.				
		4. Follow up and possible referral to rehabilitation centres.				
		5. Increasing excise duties on alcoholic beverage, to discourage or minimize purchase rate and consumption.				
		6. Regulating availability of alcohol beverages by government.				
		7. Restrictions on time and place of sales of alcoholic beverages by the government.				
		8. Banning the advertisement and promotion of alcoholic beverages by the government.				

Major Finding	Objective	Strategies	VAP	AP	IAP	VIAP
.		**Physical Inactivity** 1. Promotion of transport policies that may prioritize walking and cycling.				
		2. Urban design with pedestrian ways to encourage safe active commuting.				
		3. Public awareness through mass media of the importance of physical activity in preventing cardiovascular diseases among retirees.				
		4. Community based programmes to encourage the elderly engage in physical activity, educate them on moderate physical activity programmes such as cycling, brisk walking and flexibility training.				
		5. Encouraging at least 30 minutes of moderate-intensity physical activity in 3-5 days in a week among retirees..				
		Unhealthy Diet **1.** Consumption of food rich in fresh fruits and fresh vegetables daily.				
		2. Intake of high fiber/whole grains foods such as corn, beans.				
		3. Intake of fish especially oily fish at least twice a week.				
		4. Reduced intake of beverages and carbonated drinks but more intake of clean water.				
		5. Reduction in dietary salt/sodium intake and sugary items.				
		6. Avoidance of fat rich food such as butter and. processed meats.				
2. Low proportion of retirees had hypertension and Diabetes mellitus	1To prevent exposure to risk factor for hypertension and diabetes mellitus. 2. To modify lifestyles associated with hypertension and diabetes mellitus among retirees.	**Hypertension** 1. Lifestyle modifications such as physical activity, alcohol moderation, quitting cigarette smoking, reduction of sodium intake and increased consumption of fruits and vegetables to control mild hypertension (>140/90mmHg).				
		2. Regular checking of blood pressure in adults (< 140/90mmHg).				
		3. Health education on the signs and symptoms of high blood pressure for early detection and management.				
		4. Adhering strictly to medical prescriptions, treatment and management regimen. .				
		5. Hypertensive patients should be screened for CVDs.				

Major Finding	Objective	Strategies	VAP	AP	IAP	VIAP
		Diabetes Mellitus 1. Regular checking of fasting blood glucose (normal< 110mg/dl).				
		2. Lifestyle modifications such as physical activity, weight control, blood pressure control cholesterol management, and carbohydrate consistent diet.				
		3. Adhering strictly to medical prescriptions, treatment and management regimen. .				
		4. Health education on the signs and symptoms of diabetes mellitus for early detection and management.				
3.Moderate proportion of retirees suffered CVDs.	To reduce proportion of retirees who suffer from CVDs.	**Cardiovascular Diseases (CVDs).** 1. Preventive strategies must be individualized depending on clinical profiles of each retiree.				
		2. Healthy lifestyle behaviours such as smoking cessation, improved physical activity, diet modification and alcohol intake moderation.				
		3. Regular consultation with cardiologist to assess the state of the heart and other vital organs.				
		4. Physical exercise test should be done to assess endurance and safety prior to physical exercise programme.				
		5. Health insurance scheme. for retirees should be designed and effectively implemented.				
		6. Retirees should be paid pensions and gratuity promptly to tackle their health challenges.				
		7. Primary health care facility should be equipped with qualified personnel to care for retirees with CVDs.				
		8. Ambulance services, should be provided in emergency cases to convey patients to hospital before complications.				
		9. Government should take proper care of retirees/elderly as done in advanced countries.				

Appendix D

Appendix E

Appendix F

Pension payment summary

Appendix G

Sample Size Table

Appendix H

Clustering of Pension Zones into the three Senatorial Districts

Senatorial Districts	Pension Zones
Enugu East	Abakpa
	Agbani
	Enugu
	Ikem
Enugu West	Awgu
	Ezeagu
	Oji-River
	Udi
Enugu North	Enugu-Ezike
	Nsukka
	Ogbede
	Umulokpa

Appendix I

Pension Zones Sampled in the three Senatorial Districts

Senatorial Districts	**Pension Zones Selected/ pop**.
Enugu East	Abakpa zone ----urban--1174
	Agbani zone----Rural--51
	Ikem zone------Rural--50
Enugu West	Oji-River-----Urban--138
	Awgu zone----Rural--65
	Ezeagu zone----Rural--248
Enugu North	Nsukka zone----Urban--935
	Ogbede zone----Rural--70
	Enugu_Ezike----Rural--138

Appendix J

Formula for sample stratification

$$\frac{\text{Total number in each stratum} \times \text{sample size}}{\text{Total Population}}$$

Abakpa	$\frac{1174}{2869} \times 972$	=	397.7
Agbani	$\frac{51}{2869} \times 972$	=	17.2
Awgu	$\frac{65}{2869} \times 972$	=	22.0
Enugu-Ezike	$\frac{138}{2869} \times 972$	=	46.7
Ezeagu	$\frac{248}{2869} \times 972$	=	84.0
Ikem	$\frac{50}{2869} \times 972$	=	16.9
Nsukka	$\frac{935}{2869} \times 972$	=	316.7
Ogbede	$\frac{70}{2869} \times 972$	=	23.7
Oji-River	$\frac{138}{2869} \times 972$		46.7
			971.6
			= 972

Appendix K

Number of retirees selected in each Pension Zones in the three Senatorial Districts

Zones	**Sample**	**Males**	**Females**
Abakpa	397.7	198.85	198.85
Agbani	17.	28.6	8.6
Awgu	22	11	11
Enugu-Ezike	46.7	23.35	23.35
Ezeagu	84.0	42	42
Ikem	16.9	8.45	8.45
Nsukka	316.7	158.35	158.35
Ogbede	23.7	11.85	11.85
Orji-River	46.7	23.35	23.35
Total	**972**	486	486

Appendix L

Transcribed Responses of Retirees on Socio-demographic Correlates of Cardiovascular Diseases Focus Group Discussion Guide.

NSUKKA ZONE

Formal introduction and brief explanation.

FGDG1: **Whom do you think that suffer from CVDs? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retiree suffer CVDs such as heart attack, stroke, heart failure, coronary heart disease and peripheral arterial disease? Which of them is more prevalent?** (Participant 1male) Older people. (Participant 2 male), retiree and older people suffer more from CVDs. (Participant 1 male) Retiree and elderly suffer CVDs such as stroke, heart attack, heart failure and leg problems. (Participant 3 male) Stroke is more common. (Participant 3 male) heart attack is more common.

FGDG2: **What do you think are the likely causes? Do you think that exposure to unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 3 male) hypertension. (Participant 1 male) overthinking. Retirees unanimously agreed that CVDs can be caused by unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet. Participant 1 male argued that cigarette smoking does not cause CVDs because he was a chain smoker who stopped because a priest told him that cigarette smoking causes cancer.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (Participant 1 male) Any age group can suffer CVDs but more in old people like retirees and elderly.

FGDG4: **In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reasons?** (Participant 3 male) males suffer more CVDs than females because males carry family burden more than females.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** Retirees agreed that level of income is associated with CVDs. (Participant 1 male) Retirees with lower income suffer more CVDs because of not having enough money to buy good food, carter for the family or even to buy drugs which can result to heart problems.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher level of education are mostly affected?** (Participant 2 male) Education is not associated with CVDs. Anybody can suffer CVDs irrespective of level of education.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What are the reasons for being more prevalent in a particular area?** (Participant 1 male) Retirees living in the urban areas suffer more CVDs than those in the rural areas because those in the urban areas are not eating natural food and are not doing physical exercise.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retiree?** All the participants agreed that CVDs can be prevented. (Participant 1 male) by eating balanced diet, regular exercise, drinking water very well, having liberal mind and not thinking evil.

AGBANI ZONE

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from CVDs? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure, coronary heart disease and peripheral arterial disease? Which of them is more prevalent?** (Participant I male) Adults and older people. (Participant 2 male) older people suffer CVDs more because of tears, wears and weakness of organs at old age. Participants agreed that retiree suffer from these CVDs. (Participant 3 male) stroke is more common among the elderly and middle aged not only retirees.

FGDG2: **What do you think are the likely causes CVDs? Do you think that exposure to unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 3 male) diabetes. (Participant 2 male) hypertension and unhealthy lifestyles such as not eating well and alcohol abuse especially drinking in an empty stomach. Participants also accepted that exposure to unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** Participants said that age can be associated with CVDs. (Participant 1 male) Elderly from 6oyears and above.

FGDG4: **In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reasons?** (Participant 1 male) Both men and women suffer CVDs. (Participant 2 male) men suffer more because of overthinking.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** Participants said that level of income can be associated with CVDs. (Participant 3 male) lower income suffer it more because they think too much on how to solve family problem like paying school fees, house rents and feeding. (Participant 1 male) lower retirees because of non-payment of pensions and gratuity.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education more mostly affected?** (Participant 1 male) CVDs are not associated with level of education. Another participant female 5 said that anybody whether educated or not can suffer CVDs.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What are the reasons for being more prevalent in a particular area?** (Participant 3 male) those in the urban areas suffer more CVDs because they do not eat natural food, do not engage in physical exercise, do not do farm work and do not eat natural food as done by those in the rural areas.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees** Participants agreed that CVDs can be prevented. Participant1 male CVDs can be prevented by government through by taking care of retirees and elderly as done in advanced countries. Participant 2 male by paying pensions, gratuity and providing drugs for retirees and elderly.

EZEAGU ZONE

Formal introduction/brief explanation

FGDG1: **Whom do you think that suffer from CVDs? In your view do you think that older adults including retirees mostly suffer CVDs? In your experience, do you think that retirees suffer CVDs such as heart attack, heart failure stroke etc? Which is of them**

is more prevalent? (Participant 4 female) older people including retirees suffer CVDs because of old age. (Participant 5 female) retirees and elderly such CVDs. (Participant 1 male) Heart attack is more common.

FGDG2: **What do you think are the likely causes? Do you think that exposure to unhealthy life styles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 2 male) some causes are natural while others are due to overthinking. However, participants accepted that unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet, hypertension and diabetic mellitus can cause CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think more mostly affected?** (Participant 2 male) CVDs are associated with age. (Participant 3 male) 50years-70years and above.

FGDG4: **In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reasons?**

(Participant 3 male) Men suffer CVDs more than women because men bear more family responsibilities than women.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** (Participant 4 female) CVDs are not associated with level of income. (Participant 5 female) both those with low income and those with high income suffer CVDs because of overthinking.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?** Participants agreed that level of education can be related to CVDs. (Participant 3 male) those with higher education suffer CVDs more because they think too much about many things such as their academic carrier and how to make both ends meet.

FGDG7: **Based on your experience, do you think that retirees in the urban area suffer CVDs more than those in the rural areas? What are the reasons for being more prevalent in a particular area?** Participant 1 male) those in the urban suffer CVDs more than those in rural areas. This is because those in the urban area think too much about family responsibilities such as house rents, school fees and feeding of the family and may not have enough money for feeding and eating natural food which can result to CVDs.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs?** (Participant 3 male) it can be prevented by disassociating from overthinking and bad lifestyles.

ENUGU EZIKE

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from CVDs? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience, do you think that retiree suffer from CVDs such as heart attack, stroke, heart failure, coronary heart disease and peripheral arterial disease. Which of them is more prevalent?** (Participant 1 male) older people including retirees suffer from CVDs. (Participant 3 male) older people retired and not retired. Participants accepted that retirees suffer from such CVDs. (Participant 4 female) stroke is more common. (Participant 3 male) heart attack is more common.

FGDG2: **What do you think are the like causes of CVDs? Do you think that exposure to unhealthy lifestyles such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** Participants accepted that CVDs have some causes. (Participant 4 female) said thatCVDs are caused by overthinking, over labour, and family problems (Participant 1 male) overstress. (male P 3) said that cvds can be projected through diabolic means (poision). Participants accepted that unhealthy lifestyles like alcohol abuse, cigarette smoking, unhealthy diet and physical inactivity can cause CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (Participant 1 male) age can be associated with CVDs. (Participant 4 female) 60years and above.

FGDG4: **In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reasons?** (Participant 4 female) Men suffer CVDs more because of overstress, and overthinking on how to raise the children up.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** Participants said that level of income is associated with CVDs. (Participant 4 female) those with low income suffer CVDs more because they overstress or had to work too hard to bring their children up.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?** (Participant 4 female) level of education is not associated with CVDs. (Participant 2 male) CVDs can occur in both educated and non-educated, primary or university education.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What are the reasons for being more prevalent in a particular area?** (Participant 1 male) those in the rural areas suffer CVDs more because those in the village (rural) are always suffering and struggling to get money which can lead to CVDs. (Participant 2 male) retirees in the villages suffer more because they are poor.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among retirees?** Participants accepted that CVDs be prevented. (Participant 4 female) it can be prevented by reducing over work, and government granting free education to our children, employment of youths.

ABAKPA ZONE

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from cardiovascular disease (CVDs)? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure coronary heart disease and peripheral arterial disease? Which of them is more prevalent?** (Participant 1 male) older people suffer CVDs more than younger ones. Participants said that retirees and elderly suffer such CVDs. (Participant 3 male) stroke occur most common. (Participant 2 male) leg problem is more common.

FGDG2: **What do you think are the likely causes of CVDs? Do you think that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, unhealthy diet and physical inactivity can result to CVDs among older adults including retirees?** (Participant 1 male) restlessness and over labour. (Participant 3 male) overthinking. Also, retirees agreed that unhealthy lifestyles such as alcohol abuse, cigarette smoking, unhealthy diet and lack of physical exercise can cause CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** Participants agreed that CVDs are related to age. (Participant 1 male) more in elderly, from 60yrs and above.

FGDG4: **In your view do you think that men suffer CVDs more than women? If women suffer more CVDs, what the reasons?** (Participant 3 male) Men suffer CVDs more than women because men bear more family burden/problems than women.

FGDG5: **Can you say that CVDs are associated with level of income? DO you think that retirees with poor or low income are more vulnerable to CVDs?** All the participants agreed that level of income can be linked to CVDs. (Participant 1 male) retirees with low income suffer CVDs more than those with high income because poor people may not have to carter for family responsibilities.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education. Do you think people with higher education are mostly affected?** (Participant 1 male) level of education can be associated with onset of CVDs. (Participant 3 male) CVDs occur more in people with primary education because they has low income and may not meet up with family needs which can lead to overthinking.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What are the reasons for being more prevalent in a particular area?** (Participant 2 male) CVDs are more in people living in urban areas. (Participant 3 male) urban retirees suffer CVDs more because of poor diet and not eating natural food.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?** Participants said that CVDs can be prevented. (Participant 2 male) through God's intervention. (Participant 1 male) through financial assistance.

OGBEDE ZONE

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from cardiovascular disease (CVDs)? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure, coronary heart disease and peripheral arterial? Which of them is more prevalent?** (Participant 1 male) all ages. (Participant 4 female) all ages (Participant 5 male) more in old people including retirees suffer more CVDs. (Participant 4 female) old people and retirees suffer such CVDs. (Participant 3 male) Stroke is more common.

FGDG2: **What do you think are the likely causes of CVDs? Do you think that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 3 male) CVDs are caused by harmful use of alcohol and chewing kolanut. (Participant 1 male) CVDs are caused by over thinking. P 1 male said that alcohol is a risk factor for CVDs especially if the individual drinks in an empty stomach. P1 male said that cigarette smoking damages the lungs and heart thereby causing heart problems. However, retirees accepted that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs**.**

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (Participant 1 male) CVDs can be associated with age. (Participant 3 male) any age group can suffer CVDs but more in older people and elderly (60 years and above).

FGDG4: **In your opinion, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are your reasons?** (Participant 3 male) both men and women suffer it. (Participant 1 male) men suffer CVDs more than women because men carry more family problems and burden than women.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** (Participant 4 female) CVDs can be linked to level of income. (Participant 6 female) low income people suffer more from CVDs because of lack of money to carter or sustain the family.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?** (Participant 6 female) CVDs are associated with level of education. (Participant 5 female) people with lower or primary education suffer more from CVDs.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What are reasons for being more prevalent in a particular area?** (Participant 3 male) those in the urban (town) areas suffer more from CVDs than those in the rural areas because those in the town don't exercise themselves, store their food in refrigerator which makes the food not to be fresh and natural.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?** (Participant 3 male) said that CVDs can be

prevented through eating healthy diet, reducing alcohol intake and drinking more of water. (Participant 2 male) said that CVDs can be prevented by having liberal mind and not thinking evil.

IKEM ZONE

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from cardiovascular disease (CVDs)? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure, coronary arterial disease and peripheral arterial disease? Which of them is more prevalent?** (Participant 1 male) older adults including retirees suffer CVDs. (Participant 2 male) elderly suffer such CVDs. (Participant 3 male) heart attack is more common. (Participant 4 female) stroke is more common.

FGDG2: **What do you think are the likely causes of CVDs? Do you think that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 1 male) said that CVDs can be caused by over thinking and over labour. (Participant 2 male) said that CVDs are caused by abuse of alcohol. (Participant 3 male) said that CVDs are caused by poor diet. Retirees accepted that unhealthy lifestyles can cause CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (Participant 4 female) age is associated to CVDs. (Participant 1 male) 50 years and above. (Participant 2 male) elderly 60 years and above.

FGDG4: **In your opinion, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are your reasons?** (Participant 3 male) both men and women suffer CVDs equally. (Participant 4,5 & 6 female) women suffer it more because women think too much about their children especially if the children are troublesome, stubborn or if the husband abandoned the family responsibilities for the wife. (Participant 1 male) men suffer CVDs more because men bear family problems and responsibilities than women.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** (Participant 1 male) said that level of income can be related to CVDs. (Participant 2 male) more in low income and poor people because they cannot satisfy their problems while rich people have enough money to solve their family problems/needs. (Participant 2 male) more in poor people because they have no money to solve their problems.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?** (Participant 2 male) CVDs are associated with level of education and people with low education suffer more CVDs because they have no knowledge of what is happening or how to handle the health problem but people with high education can consult people to solve their health problems.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What reason for being more prevalent in a particular area?** (Participant 4 female) CVDs are more in the rural (village) areas. Because people in the villages over suffer especially from farm work, do not have rest always working to carter for the family. (Participant 2 male) more in rural areas because they are always working, no time to rest.. (Participant 3 male) more in rural areas because of poverty.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?** (Participant 5 female) it can be prevented if government can pay salaries, pensions and gratuity so that money can circulate. (Participant 2 male) said it can be prevented by creating awareness of CVDs,

OJI-RIVER

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from cardiovascular disease (CVDs)? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure coronary heart disease and peripheral arterial disease? Which of them is more prevalent?** (Participant 5 female) everybody suffer CVDs (Participant 1 male)

elderly including retirees. (Participant 2 male) 30 years and above whether retired or not. (Participant 1 male) elderly suffer such CVDs but heart attack is more common. (Participant 5 female & 3 male) said that stroke is more common.

FGDG2: **What do you think are the likely causes of CVDs? Do you think that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees?** (Participant 5 female) CVDs have no cause. (Participant 3 male) CVDs have some causes, some are hereditary others are due to dietary problems. (Participant 6 female) over thinking and poisoning. Participants also accepted that unhealthy lifestyle can lead to CVDs

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (Participant 1 male) age is associated with CVDs and is among 50years and above. (Participant 2 male 65 years and above). (Participant 5 female) all ages suffer CVDs. (Participant 6 female) 55 years and above.

FGDG4: **In your view, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are the reason** (Participant 5 female) men suffer CVDs more because of overthinking about family responsibilities. (Participant 6 female) female suffer more because they are always thinking about their children.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** (Participant 2 male) CVDs are associated with level of income. (Participant 1 male & 5 female) said that people of low income and poor people suffer CVDs more because of poverty and no money even for treatment. (Participant 2 male & and 4 female) said that CVDs are more in high income retirees because they live sedentary lifestyles.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected?** (Participant 4 & and5 females) CVDs are not associated with level of education because diseases have no respect for education or qualifications. (Participant 1 male) CVDs are more in retirees with higher (University) education because they are always trying to meet up even thinking about their academics. (Participant 2 male) CVDs are more in retirees with primary education because of lack of knowledge.

FGDG7: **Based on your experience, do you think that retirees in the urban area suffer CVDs more than those in the rural areas? What reason for being more prevalent in a particular area?** (Participant 1 male) CVDs are more people living in the urban areas (towns) because of overthinking about family feeding, house rent, school fees. (Participant 2 male) more in urban areas because and do not exercise themselves. (Participant 3 male) more in people living in rural areas (Village) because of poverty (Participants4 &5 females) CVDs are more in the village because of lack of money to go to hospital and the sickness will continue to progress until the person dies.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?** All the participants said that CVDs can be prevented. (Participants 4&5 females) said that CVDs can be prevented through peace, unity and love in the family, without fighting between the couple in the family, (Participant 1 male) by endurance, tolerance and forgiveness. (Participant 3 male) by knowing the cause and then the prevention. (Participant 3 male) by active life, and exercises.

AWGU

Formal introduction and brief explanation

FGDG1: **Whom do you think that suffer from cardiovascular disease (CVDs)? In your view do you think that older adults including retirees mostly suffer from CVDs? In your experience do you think that retirees suffer CVDs such as heart attack, stroke, heart failure, coronary heart disease and peripheral arterial disease? Which of them is more prevalent?** (Male P 1**)** Everybody can suffer CVDs especially elderly whether retired or not (female P 5**)** Yes, elderly suffer from such CVDs. Heart attack and strokes are more common.

FGDG2: **What do you think are the likely causes, of CVDs? Do you think that exposure to unhealthy lifestyles, such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet can result to CVDs among older adults including retirees? (**female P 4**)** Yes, CVDs have some causes such as overthinking, and bad lifestyles and no rest. Retirees accepted that unhealthy lifestyle can lead to CVDs.

FGDG3: **In your opinion, do you think that CVDs are associated with age? What age group do you think are mostly affected?** (female P 4) CVDs are associated with age. Elderly are mostly affected 40years-60years and above.

FGDG4: **In your opinion, do you think that men suffer CVDs more than women? If women suffer more CVDs, what are your reasons**? (male P 3**) Men** suffer CVDs more because of overthinking. Women suffer more CVDs because of over labour when men abandon their wives and the children and women will bear family problems and needs alone.

FGDG5: **Can you say that CVDs are associated with level of income? Do you think that retirees with poor or low income are more vulnerable to CVDs?** (female P 4**)** said that it is associated with level of income. More in people with low income because of poverty and have no money to solve their problem which can lead to overthinking and CVDs. More in rich or people with high income because they are not contended with what they have, always striving to acquire more which can lead to CVDs.

FGDG6: **As a retiree, do you think that CVDs are associated with level of education? Do you think that people with higher education are mostly affected**? (male P **2)** CVDs are not associated with level of education. CVDs are more in people with primary education because they may not know what to do to be healthy.

FGDG7: **Based on your experience, do you think that retirees in the urban areas suffer CVDs more than those in the rural areas? What reason for being more prevalent in a particular area?** (female P 4) CVDs are more in retirees in urban areas because they are not taking any precaution at all, eating unhealthy diet. More in the rural areas (villages) because they do not take care of themselves, no money to buy drugs or go to hospital until the problem become severe.

FGDG8: **Do you think that CVDs can be prevented? What strategies do you think can be used to prevent CVDs among the retirees?** (male P 1, female P 4 & 5) said that CVDs can be prevented. By quitting our habits such as quitting cigarette smoking and doing regular exercise.

Appendix M

Reliability Statistics

	Value	.621
	Part 1	
No of items		18[a]
	Value	.792
	Part 2	
	No of items	18[b]
	Value	.792
	Total items	36
Correlation between forms		.603
Kudder Richardson coefficient Equal length		.752
Kudder Richardson coefficient Unequal length		.752.
Outhman Split Half coefficient		.748

Appendix L

Themes arising from focus group discussion

Themes	Categories
People that suffer from Cardiovascular Disease (CVDs)	Older people including retirees and elderly. Adults and older people because of tears, wears and weakness of organs at old age. Older people both retired and not retired. Everybody but more in old people including retirees.
Most suffered CVDs	Heart attack, stroke, heart failure, leg problems (peripheral arternal disease).
Risk factors for CVDs	Hypertension, over thinking, unhealthy lifestyle such as cigarette smoking, alcohol abuse, physical inactivity and unhealthy diet, diabetes over labour, over stress and family problems. CVDs have no cause.
Relationship between age and CVDs.	Any age group can suffer CVDs but more in old people like retirees and elderly. Elderly from 60 years and above. 50 -70years and above. People from 40-60years and above
Relationship between gender and CVDs.	Male suffer more CVDs than females because males carry family burden more than female. Both men and female suffer CVDS. Female suffer CVDs more because women think too much about their children especially if the children are troublesome, stubborn or if the husband abandoned the family responsibilities for the wife.
Relationship between level of income and CVDs.	CVDs are associated with level of income. Retirees with low income suffer more CVDs because of not having enough money to buy good food, carter for the family or even buy drugs. Retirees on low income suffer CVDs more because of overthinking about family problems such as paying school fees, house rents and non-payment of pensions and gratuity. Retirees of low income suffer more CVDs because of poverty and no money even for treatment. Retirees of high income suffer more CVDs because they live sedentary lifestyle, not contended with what they have, always striving to acquire more which can lead to CVDS. Both low income and high income retirees suffer CVDs because of overthinking.
Relationship between level of education and CVDs.	CVDs are not associated with level of education. Anybody can suffer CVDs irrespective of educational

	status. CVDs are associated with level of education. Retirees with high educational status suffer CVDs more because they think too much about their academic carrier. Retirees with low educational status suffer CVDs more because of low income, lack of knowledge of health problems and how to tackle them.
Relationship between place of residence and CVDs.	Retirees living in the urban areas suffer more CVDs than those in the rural areas because of poor diet (do not eat natural foods) and do not participate in physical activities, do not do farm work. Retirees in urban areas are over burdened by family responsibilities such as house rents, school fees family feeding and may not have for healthy chefs which can result to CVDs. Not taking any precautions. Retirees in rural areas suffer more CVDs because they are poor, always suffering, working and struggling to get money. Lack of money to go to hospital for treatment and the sickness will continue to progress until the person dies.
Strategies for CVDs prevention.	All retirees concerted that CVDs can be prevented. Preventive strategies include eating balanced diet, regular exercise, drinking water liberally, having liberal mind and not thinking evil. Government paying pensions and gratuity promptly, free drugs for retirees and elderly, dissociating from overthinking and bad lifestyle. Reducing over work/stress, government granting free education to children and employment of youths. Through God's intervention and financial assistance, creating awareness about CVDs. Through peace, unity and love in the family. Endurance, tolerance and forgiveness knowing the cause of CVDs, active life and exercises. By stopping habits such as cigarette smoking and alcohol.

Appendix N

DEMOGRAPHIC VARIABLES

Age

	Frequency	Percent

55-74	586	61.6
71 and above	951	38.3
Total	951	99.9

Gender

	Frequency	Percent
Male	475	49.9
Female	476	50.0
Total	951	99.9

Level of Education

	Frequency	Percent
Low education status	525	55.2
High education status	426	44.8
Total	951	100.0

Level of income

	Frequency	Percent
N20,000-N40,000	793	83.4
N41,000 and above	158	16.6
Total	951	100.0

Place of Residence

	Frequency	Percent
Urban	736	77.3
Rural	215	22.6
Total	951	99.9

Appendix O

Quanitivtive Data from SCCVDQ.

Appenidx P

Quantitative Data from CVDPSQ

Appendix R

Standardized Instruments

Apart from using correlation coefficient to determine relationship, regression analysis can be used to establish relationship. Nworgu (2006) described regression analysis as a correlation based technique for making predictions. It is a form of predictive technique which investigates the relationship between dependent (target) and independent (predictor) variable. The variable to be predicated is referred to as the criterion (target) variable while the variable used in making the prediction is called the predictor variable. Uzoagulu (2011) stated that when one predictor variable is used to predict one criterion variable, it is referred to us simple linear regression. This implies that the relationship involves only two variables- a single independent variable and a dependent variable. On the other hand, when the prediction involves two predictor variables (more than one) and one criterion variable is referred to as multiple linear regressions. Cohen, Manion and Morrison (2008) identified two types of regression analysis namely, simple linear regression and multiple regression. Simple linear regression involves one independent (predictor) variable and one dependent (criterion) variable, while multiple regressions involve two or more independent variables and one dependent variable. The multiple regression analysis is used when the researcher wants to predict and weight the relationship between two or more independent variables and one dependent variable.

Multiple regression analysis has been used by different scholars to establish relationship between variables. Saliu, Adenike, Olakunle and Ismail (2014) used multiple regression analysis to analyze the data to determine socio-demographic correlates of modifiable risk factors for hypertension in Oyo-State.

Physical measurement of the retirees including the blood pressure, weight and height were obtained. Blood pressure was measured with sphygmomanometer and stetoscope, and it was measured in millimeter mercury (mmhg). Blood pressure of 140mmhg/90mmhg-159mmhg-99mmhg is regarded as mild or stage one hypertension while blood pressure of 160mmhg/100mmhg-170mmhg/109mmhg or higher is regarded as severe or stage 11 hypertension (Go et al 2013). Weight and height were measured to calculate the body mass index (BMI) in order to determine obesity among the retirees. Weight was measured with weighing scale and recorded in kilgramme while height was measured with caliberated ruler in meters. BMI was calculated by dividing the body weight in kg by height in meters squared (kg/m2). BMI of 25kg/m2-29kg/m2 is classified as overweight, BMI of 30kg/m2-34kg/m2 is class 1 obesity, BMI 35kg/m2-40kg/m2 is class11 obesity while BMI of 40kg/m2 and above is class 111 or gross obesity (WHO, 2014). Data generated from these measurements were used to compare the quantitative data and in discussing the findings of the study. (See Appendix G, page 164).

Assessment/measurement of CVDs.

Assessment of CVD risk is often a first step in the management of CVDs. CVD risk assessments are extremely useful in reducing risk for heart diseases because the assessments help to determine whether a patient is a t high risk for heart diseases. American College of Cardiology, ACC and American Heart Association AHA (2013) indicated that CVD risk assessments are used to determine the likelihood of a patient developing heart disease such as heart attack, stroke or others in the near future. CVD risk can be assessed with individual risk or multiple risk factors (absolute CVD risk). Australian Institute of Health and Welfare (2011) stated that assessment of CVD risk on the basis of the combined effect of multiple risk factors is more accurate than the use of individual risk factor. CVD risk assessment can be done periodically. Kavous, Leening and Nanehen (2014) posited that individuals aged 20 years or older without established CVD should undergo periodic cardiovascular risk assessment every three to five years. According to the authors, periodic risk assessment offers the opportunity to

identity CVD risk factors and offer guidance on the appropriate management of specific risk factors and overall CVD risk.

A number of multivariate risk assessment models have been developed for estimating risk of CVDs. These include Framinghan General CVD score (2008), QRISK and QRISK 2 (2007), American College of Cardiology/American Heart Association pooled cohort hard risk calculator (2013), Joint British Societies (JBS) risk score (2014), multi-Ethnic study of Atherosclerosis (MESA) risk score (2015) and Absolute Cardiovascular disease risk (2012). The Absolute Cardiovascular disease risk grouped the risks to be assessed into modifiable and non-modifiable risk factors. The modifiable risk factors to e assessed are smoking status, blood pressure, body mass index, nutrition, physical activity level, diabetes, alcohol intake (National Vascular Disease Prevention Alliance (NVDPA 2012). Since this study focused on modifiable risk factors, the study adopted absolute CVD study assessment (2012). This implies that the study assessed CVDs among the retirees examining the following risk factors: smoking status, blood pressure, body mass index, nutrition, physical activity level, alcohol intake and diabetes. The assessment was done using questionnaire and it can be referred to as self- rated health (SRA). The accuracy of self reported CVD and its determinant factors are important in CVD prevention and management among older adults (Ueshima, Sekikawa & Miura, 2009). Accurate information on the prevalence and trend of these diseases is essential in societal disease management and medication compliance (Heuerta, Tormo & Egea-Caprro's, 2009). Despite its simplicity, SRA is a powerful instrument as it has been shown to be highly predictive for mortality in different sub groups of the population and in different cultures (Singh-Manoux, Dugravour, Shipley, Ferrie, Mantikinen & Goldberg 2007; Desalvo, Bloser, Reynold, He & Murtner, 2006). Studies have demonstrated that SRA correlates highly with objective health assessment and health status indices, including measures of physical and functional health, and utilization of health care services (Desalvo et al 2006; Desalvo, Fan, McDonell & Fin, 2005). Subjective assessment or SRH could potentially be even more sensitive than external measures in monitoring population health. In this study, the SRH was used to assessment of CVDs.

Measurement serves a number of critical roles in the effort to address any health problem. Measurement of CVD risks is the basis for determining the scale of the global CVD epidemics for understanding how best to intervene, and is critical to the success of efforts to reduce CVDs and its breadth of determinants. Alvan (2009) outlined these metrics to include demographics,

risk and risk mitigation including behavior (e.g smoking status, physical activity level, diet and nutrition) biomedical measures (e.g weight, height, blood pressure, cholesterol); disease outcomes (e.g cardiovascular events); cause- specific mortality, health provider quality improvement measures, health systems performance, economic measures, intersectional policy measures (e.g cigarette costs, and sales data, agricultural trends and urbanization); and measures of global action. The study adopted the measurement of risk behaviours (cigarette smoking, alcohol abuse, physical inactivity, unhealthy diet, which were done through subjective SRA.

The qualitative **Appendix H**

Physical measurement of respondents (n = 951).

S/N	Age	Sex	BP(mmHg)	WT(kg)	HT(meters)	BMI
1	55-74	F	150/90*	84kg	1.58m	26.5
2	55-74	F	150/100	78kg	1.56m	25
3	75 and above	F	150/100	75kg	1.6m	23.4
4	75 and above	F	160/100	73kg	1.58m	24.3
5	55-74	F	140/90	76kg	1.6m	23.7
6	55-74	F	140/90	80kg	1.58m	25.3
7	75 and above	F	150/100	82kg	1.54m	26.1
8	75 and above	M	160/100	69kg	1.61m	21.4
9	55-74	M	150/90	75kg	1.6m	23.4
10	55-74	M	140/100	70kg	1.59m	22.8
11	75 and above	M	140/100	71kg	1.6m	22.1
12	75 and above	F	140/95	80kg	1.55m	25.8
13	55-74	F	140/80	75kg	1.57m	23.8
14	55-74	M	130/80	71kg	1.59m	22.3
15	55-74	F	130/80	85kg	1.53m	27.7
16	75 and above	F	150/100	82kg	1.5m	27
17	75 and above	F	170/100	78kg	1.57m	24.8
18	55-74	F	110/70	80kg	1.58m	25.3
19	55-74	F	120/90	83kg	1.6m	25.9
20	55-74	F	130/100	84kg	1.58m	26.5
21	55-74	F	140/100	86kg	1.57m	27.3
22	75 and above	F	120/90	82kg	1.59m	25.7
23	75 and above	F	150/100	81kg	1.56m	25.9
24	75 and above	F	160/90	80kg	1.55m	25.8
25	75 and above	F	140/100	78kg	1.57m	24.8
26	75 and above	F	150/90	76kg	1.59m	24.1
27	75 and above	F	150/100	77kg	1.58m	24.3
28	75 and above	F	140/90	83kg	1.6m	25.9
29	55-74	F	130/80	85kg	1.59m	26.7
30	55-74	F	120/90	84kg	1.58m	26.5
31	75 and above	F	140/100	80kg	1.54m	25.9
32	75 and above	F	130/90	81kg	1.6m	25.3
33	75 and above	F	130/80	85kg	1.57m	27.7
34	75 and above	F	140/90	87kg	1.53m	28.4
35	75 and above	F	140/80	83kg	1.54m	26.9
36	75 and above	F	130/90	72kg	1.59m	22.6

37	75 and above	F	140/100	75kg	1.53m	24.5
38	75 and above	F	130/100	70kg	1.56m	22.4
39	55-74	F	140/100	78kg	1.57m	24.8
40	55-74	F	130/80	80kg	1.54m	25.9
41	55-74	F	140/90	81kg	1.59m	25.4
42	55-74	M	140/90	68kg	1.5m	22.6
43	75 and above	F	150/100	72kg	1.57m	22.9
44	75 and above	M	140/90	79kg	1.6m	24.6
45	55-74	M	150/90	75kg	1.61m	23.2
46	55-74	M	130/100	77kg	1.59m	24.2
47	75 and above	M	140/100	65kg	1.58m	20.5
48	75 and above	M	140/100	80kg	1.6m	25
49	75 and above	M	130/90	75kg	1.58m	23.4
50	55-74	M	130/80	73kg	1.57m	23.2
51	75 and above	M	130/90	62kg	1.57m	20.6
52	55-74	M	120/80	82kg	1.62m	23.8
53	75 and above	M	130/90	91kg	1.63m	27.9
54	55-74	M	110/70	80kg	1.55m	25.8
55	55-74	M	110/80	65kg	1.59m	20.4
56	75 and above	M	120/90	70kg	1.6m	21.8
57	55-74	M	110/80	74kg	1.60m	23.1
58	55-74	F	110/90	82kg	1.59m	25.7
59	55-74	F	110/90	77kg	1.54m	25
60	75 and above	M	130/100	73kg	1.56m	23.3
61	75 and above	F	130/90	73kg	1.59m	22.9
62	75 and above	F	120/80	75kg	1.54m	24.3
63	55-74	F	130/90	76kg	1.59m	23.8
64	55-74	F	140/100	74kg	1.6m	23.1
65	55-74	M	120/80	77kg	1.57m	24.5
66	75 and above	M	130/90	79kg	1.6m	24.6
67	55-74	F	110/80	70kg	1.6m	21.8
68	75 and above	F	120/90	78kg	1.59m	24.5
69	75 and above	F	120/80	79kg	1.58m	25
70	55-74	M	130/90	76kg	1.6m	26.8
71	75 and above	M	140/90	76kg	1.6m	23.7
72	55-74	M	140/100	75kg	1.60	23.4
73	55-74	M	110/70	77kg	1.55	24.8
74	55-74	M	120/70	78kg	1.57	24.8
75	75 and above	M	150/90	69kg	1.55	22.2
76	55-74	M	120/80	78kg	1.6	24.3
77	75 and above	M	130/90	65kg	1.58	20.5
78	75 and above	M	140/100	74kg	1.60	23.1
79	75 and above	M	140/100	70kg	1.62	24.6
80	75 and above	M	130/100	72kg	1.60	22.5
81	75 and above	F	140/90	84kg	1.57	26.7
82	75 and above	M	140/100	73kg	1.59	22.9
83	55-74	M	110/80	70kg	1.6	25
84	55-74	M	120/90	75kg	1.58	23.7
85	55-74	M	130/80	80kg	1.62	24.6
86	75 and above	M	140/90	75kg	1.64	22.8
87	75 and above	M	130/90	71kg	1.63	23.3
88	55-74	M	120/80	76kg	1.60	23.7
89	55-74	M	120/80	73kg	1.55	23.5

90	75 and above	F	140/100	74kg	1.58	23.4
91	55-74	F	130/90	79kg	1.54	28.8
92	55-74	F	120/90	88kg	1.59	27.6
93	55-74	F	140/100	87kg	1.6	27.1
94	75 and above	M	160/100	78kg	1.62	24.0
95	55-74	F	160/100	120kg	1.59	37.7
96	55-74	M	150/100	76kg	1.60	23.7
97	55-74	M	130/90	76kg	1.61	23.6
98	55-74	M	120/70	78kg	1.60	24.3
99	55-74	F	110/70	75kg	1.6m	23.4
100	75 and above	F	160/100	84kg	1.57	26.7
101	55-74	F	140/90	82kg	1.55	26.4
102	55-74	F	150/100	80kg	1.6m	25
103	55-74	M	110/80	77kg	1.6	24
104	55-74	M	130/90	74kg	1.59	23.2
105	75 and above	M	150/100	77kg	1.58	24.3
106	55-74	M	130/90	79kg	1.6m	24.6
107	55-74	M	200/120	77kg	1.57	24.5
108	55-74	M	130/70	75kg	1.58	23.7
109	55-74	M	130/80	74kg	1.59	23.2
110	55-74	M	160/90	71	1.59	22.3
111	55-74	M	110/90	72kg	1.55m	23.2
112	75 and above	M	140/90	73kg	1.6m	22.8
113	75 and above	M	130/100	74	1.52	24.3
114	55-74	M	100/80	71	1.6	25.3
115	75 and above	M	130/90	72	1.59	22.6
116	75 and above	M	160/100	77	1.57	24.5
117	75 and above	F	150/100	79	1.59	24.8
118	55-74	M	120/80	71kg	1.60	25.3
119	55-74	M	110/70	75kg	1.58	23.5
120	75 and above	M	120/90	71kg	1.50	23.6
121	55-74	M	130/90	82kg	1.7m	24.1
122	75 and above	M	130/100	64kg	1.56	20.5
123	55-74	M	160/100	83kg	1.65	25.4
124	55-74	M	120/90	69kg	1.60	21.5
125	75 and above	M	110/90	75kg	1.61	23.2
126	75 and above	F	150/100	80kg	1.58	25.1
127	75 and above	M	150/90	72kg	1.62	22.2
128	55-74	M	120/80	74kg	1.60	26.2
129	75 and above	M	140/100	70kg	1.57	22.2
130	75 and above	M	160/90	67kg	1.59	21.0
131	75 and above	M	150/100	79kg	1.60	21.5
132	55-74	M	120/80	61kg	1.65	23.9
133	55-74	M	130/90	75kg	1.61	23.2
134	75 and above	F	130/100	78kg	1.59	24.5
135	75 and above	M	120/90	75kg	1.65	22.7
136	55-74	M	140/90	74kg	1.61	23.1
137	55-74	M	110/90	80kg	1.62	24.6
138	55-74	M	120/80	75kg	1.57	23.8
139	75 and above	M	140/100	76	1.60	23.7
140	55-74	M	130/85	79kg	1.64	24.0
141	55-74	M	150/100	75kg	1.56	24
142	75 and above	M	140/90	73kg	1.6	22.8

143	75 and above	M	160/100	69kg	1.53	22.5
144	75 and above	M	160/90	72kg	1.57	22.9
145	75 and above	M	150/90	71kg	1.55	22.9
146	75 and above	M	140/100	68kg	1.59	21.3
147	75 and above	M	160/90	70kg	1.6	21.8
148	75 and above	M	120/90	70kg	1.6	21.8
149	55-74	M	120/80	72kg	1.62	22.2
150	55-74	M	110/90	74kg	1.61	22.4
151	75 and above	M	140/100	68kg	1.55	21.9
152	55-74	M	130/90	69kg	1.6	21.5
153	75 and above	M	130/80	67kg	1.61	20.1
154	55-74	M	150/100	70kg	1.59	20.0
155	55-74	M	140/100	82kg	1.6	25.0
156	55-74	M	130/85	75kg	1.54	24.3
157	75 and above	M	130/80	73kg	1.6	22.8
158	75 and above	M	120/90	74kg	1.57	23.5
159	75 and above	M	120/85	70kg	1.6	21.8
160	75 and above	M	140/90	73kg	1.60	22.8
161	75 and above	M	130/90	78kg	1.60	24.3
162	55-74	M	140/85	77kg	1.59	24.2
163	55-74	M	150/90	79kg	1.6	24.6
164	55-74	M	110/80	82kg	1.58	24.9
165	55-74	F	140/100	85kg	1.59	26.7
166	55-74	M	130/90	84kg	1.6	26.2
167	55-74	M	110/80	80kg	1.54	25.9
168	75 and above	M	140/90	74kg	1.52	24.3
169	55-74	M	120/80	68kg	1.55	21.9
170	55-74	F	110/90	76kg	1.57	24.2
171	55-74	F	120/80	89kg	1.58	28.1
172	75 and above	F	150/100	75kg	1.56	24.0
173	55-74	M	130/90	78kg	1.6	24.3
174	75 and above	M	160/90	74kg	1.6	23.1
175	75 and above	M	150/90	72kg	1.61	22.3
176	75 and above	F	160/100	72kg	1.61	22.3
177	75 and above	M	150/90	81kg	1.54	26.2
178	55-74	M	140/100	85kg	1.55	27.1
179	55-74	M	140/90	86kg	1.57	27.3
180	55-74	M	110/80	80kg	1.59	25.1
181	55-74	M	120/70	88kg	1.6	27.5
182	75 and above	F	130/90	87kg	1.54	28.2
183	75 and above	F	140/100	79kg	1.57	24.8
184	55-74	F	120/90	84kg	1.55	27
185	55-74	F	110/70	78kg	1.58	24.5
186	55-74	F	130/90	75kg	1.55	24.1
187	75 and above	F	150/100	74kg	1.6	23.1
188	75 and above	F	140/100	78kg	1.58	24.6
189	55-74	F	170/100	80kg	1.59	25.1
190	55-74	F	130/90	80kg	1.58	25.3
191	55-74	F	130/80	82kg	1.55	26.4
192	55-74	M	130/90	71kg	1.6	22.1
193	55-74	M	120/80	72kg	1.6	22.5
194	55-74	M	120/80	65kg	1.54	21.3
195	55-74	M	110/80	68kg	1.53	22.2

196	55-74	M	120/90	70kg	1.6	21.8
197	55-74	M	120/90	68kg	1.58	21.5
198	55-74	M	130/80	70kg	1.6	21.8
199	55-74	M	140/90	83kg	1.62	25.6
200	75 and above	M	150/100	74kg	1.59	23.2
201	75 and above	M	150/100	75	1.57	23.8
202	75 and above	M	160/90	78	1.58	24.6
203	55-74	F	120/80	80	1.6	25
204	75 and above	F	140/100	83	1.61	25.7
205	75 and above	F	140/90	82	1.56	26.2
206	55-74	F	110/80	84	1.55	27
207	75 and above	F	140/90	81	1.62	25
208	75 and above	F	130/90	83	1.59	26.1
209	75 and above	F	160/100	82	1.6	25.6
210	75 and above	F	150/100	79	1.61	24.5
211	55-74	F	130/90	80	1.6	25
212	55-74	F	130/90	78	1.7	22.9
213	55-74	F	110/80	78	1.7	22.9
214	55-74	M	120/90	68	1.6	21.2
215	55-74	M	130/90	70	1.62	21.6
216	55-74	M	140/90	75	1.65	22.5
217	55-74	M	140/85	70	1.7	20.5
218	55-74	M	140/100	72	1.64	21.9
219	55-74	M	130/80	70	1.55	22.5
220	55-74	M	130/90	74	1.6	23.1
221	75 and above	F	150/100	78	1.65	23.6
222	75 and above	F	150/100	76	1.50	25.3
223	75 and above	F	160/100	79	1.51	26.1
224	75 and above	F	140/90	77	1.6	24.0
225	55-74	F	140/100	79	1.58	25
226	75 and above	F	150/90	80	1.57	25.4
227	55-74	F	110/70	80	1.59	25.1
228	55-74	F	130/90	81	1.7	23.8
229	55-74	F	120/85	78	1.6	24.3
230	75 and above	F	140/100	79	1.62	24.3
231	75 and above	F	160/90	80	1.70	23.5
232	75 and above	F	140/100	81	1.65	24.5
233	55-74	F	120/90	95	1.55	30.6
234	55-74	F	130/80	87	1.57	27.7
235	75 and above	F	140/100	80	1.58	25.3
236	55-74	M	130/80	90	1.65	27.2
237	55-74	M	130/90	80	1.70	23.5
238	75 and above	M	140/100	70	1.72	20.3
239	75 and above	M	150/100	72	1.73	20.8
240	75 and above	M	140/80	85	1.71	26.5
241	75 and above	M	160/90	73	1.72	21.2
242	55-74	M	110/80	70	1.65	21.2
243	75 and above	M	130/90	68	1.58	21.5
244	55-74	M	130/90	69	1.57	21.9
245	55-74	M	140/80	74	1.59	23.2
246	55-74	M	130/90	65	1.50	21.6

247	55-74	M	120/90	70	1.50	23.3
248	75 and above	M	130/100	68	1.51	22.2
249	55-74	M	140/90	71	1.49	24.4
250	55-74	M	130/90	69	1.6	23
251	55-74	M	130/80	78	1.7	22.9
252	55-74	M	140/100	80	1.61	24.8
253	55-74	M	140/90	81	1.65	24.5
254	75 and above	M	150/100	70	1.57	22.2
255	55-74	M	130/90	82	1.55	26.4
256	55-74	M	140/90	81	1.6	25.3
257	75 and above	M	150/100	78	1.54	25.3
258	75 and above	M	160/100	72	1.59	22.6
259	55-74	F	130/90	85	1.6	26.5
260	75 and above	M	160/100	65	1.59	20.1
261	75 and above	M	150/90	68	1.6	21.3
262	55-74	M	140/90	70	1.62	21.7
263	75 and above	M	150/100	73	1.62	22.3
264	56-74	M	130/80	74	1.59	23.2
265	55-74	M	130/90	74	1.6	23.1
266	55-74	M	140/100	73	1.54	23.7
267	75 and above	M	140/90	72	1.55	23.2
268	55-74	M	130/90	71	1.57	22.6
269	75 and above	M	140/100	70	1.59	22.0
270	75 and above	M	130/90	72	1.60	22.2
271	55-74	F	110/80	78	1.59	24.5
272	55-74	F	120/70	80	1.6	25
273	55-74	F	130/80	85	1.65	25.7
274	75 and above	F	140/90	86	1.56	27.5
275	75 and above	F	150/90	89	1.57	28.3
276	55-74	F	140/100	88	1.58	27.8
277	75 and above	F	150/100	70	1.58	22.1
278	55-74	F	130/80	85	1.68	25.5
279	55-74	F	120/80	86	1.67	22.7
280	75 and above	M	150/100	74	1.67	22.1
281	55-74	M	130/80	82	1.56	26.2
282	55-74	M	140/80	82	1.59	25.7
283	55-74	M	150/90	71	1.57	22.6
284	55-74	M	130/80	75	1.60	23.4
285	55-74	M	150/90	78	1.6	24.3
286	55-74	M	130/80	70	1.59	21.8
287	75 and above	M	130/90	74	1.55	23.8
288	55-74	M	140/90	80	1.6	25
289	55-74	M	150/80	81	1.62	25
290	55-74	M	150/90	75	1.60	23.4
291	75 and above	M	130/70	68	1.58	21.5
292	75 and above	M	130/100	69	1.54	22.4
293	75 and above	M	160/100	70	1.61	21.7
294	55-74	M	130/90	81	1.7	23.8
295	55-74	M	150/90	78	1.65	23.6
296	75 and above	M	160/100	68	1.60	21.2
297	55-74	M	110/70	79	1.61	24.5
298	55-74	F	120/70	78	1.58	24.6
299	55-74	F	120/90	80	1.57	25.4

300	55-74	F	130/100	84	1.60	26.2
301	55-74	F	130/100	85	1.59	26.7
302	75 and above	F	140/100	80	1.55	25.8
303	75 and above	F	130/90	81	1.56	25.9
304	55-74	M	130/90	86	1.6	26.8
305	55-74	M	140/90	74	1.61	22.9
306	55-74	M	140/90	75	1.58	23.7
307	55-74	M	140/100	76	1.63	23.7
308	55-74	M	140/80	78	1.60	24.3
309	75 and above	M	140/90	80	1.57	25.4
310	75 and above	M	160/100	80	1.55	25.8
311	75 and above	M	160/100	78	1.54	25.3
312	75 and above	F	150/90	70	1.60	21.8
313	55-74	F	150/80	76	1.61	23.6
314	55-74	F	140/80	79	1.55	25.4
315	55-74	F	150/90	84	1.57	26.7
316	55-74	F	120/70	85	1.59	26.7
317	55-74	F	130/90	82	1.6	25.6
318	75 and above	F	140/100	84	1.56	26.9
319	75 and above	F	150/100	81	1.61	25.1
320	55-74	F	150/100	80	1.58	25.3
321	55-74	M	130/70	74	1.6	23.1
322	75 and above	M	130/80	76	1.59	23.8
323	55-74	M	140/100	80	1.63	24.5
324	55-74	M	140/100	84	1.65	25.4
325	75 and above	M	150/100	70	1.62	21.6
326	55-74	M	150/100	72	1.61	22.3
327	55-74	F	130/90	86	1.6	26.8
328	55-74	M	120/90	78	1.59	24.5
329	55-74	M	140/100	76	1.58	24.0
330	55-64	M	130/80	80	1.6	25
331	55-74	M	110/70	79	1.6	24.5
332	55-74	M	120/80	77	1.61	24.2
333	55-74	M	140/90	79	1.59	25
334	55-74	M	150/100	76	1.55	24.5
335	55-74	F	140/90	85	1.59	26.7
336	55-74	F	110/70	82	1.58	25.9
337	55-74	F	130/90	84	1.6	26.2
338	55-74	M	120/80	74	1.61	22.9
339	55-74	M	140/80	73	1.60	22.8
340	55-74	M	130/80	75	1.59	23.5
341	55-74	M	130/80	78	1.55	25.1
342	75 and above	M	150/100	77	1.53	25.1
343	55-74	M	130/80	79	1.64	24
344	55-74	M	140/90	80	1.65	24.2
345	75 and above	M	130/90	72	1.59	22.6
346	55-74	M	130/80	75	1.6	23.4
347	55-74	F	120/110	85	1.61	26.3
348	55-74	F	120/90	87	1.59	27.3
349	55-74	M	130/80	77	1.55	24.8
350	75 and above	M	150/100	72	1.57	22.9
351	55-74	M	130/90	80	1.6	25

352	55-74	M	140/90	81	1.62	25.1
353	55-74	M	140/80	80	1.60	25
354	55-74	M	140/90	75	1.59	23.5
355	55-74	M	150/100	74	1.58	23.4
356	75 and above	M	170/100	70	1.6	21.8
357	75 and above	M	160/100	73	1.60	22.8
358	55-74	M	140/80	85	1.59	26.7
359	55-74	M	160/100	72	1.55	23.2
360	55-74	M	140/90	75	1.56	24.0
361	75 and above	M	130/90	74	1.58	23.4
362	55-74	M	140/100	74	1.62	22.8
363	55-74	M	130/90	76	1.60	23.7
364	75 and above	M	130/80	72	1.58	22.7
365	75 and above	M	140/90	70	1.54	22.7
366	55-74	M	110/90	85	1.6	26.5
367	75 and above	M	130/90	70	1.56	22.4
368	75 and above	M	140/100	75	1.58	23.7
369	55-74	M	120/80	74	1.6	23.1
370	55-74	M	120/90	75	1.60	23.4
371	55-74	M	130/90	76	1.52	25
372	55-74	M	120/90	78	1.59	24.5
373	55-74	F	120/80	83	1.62	25.7
374	55-74	M	140/90	71	1.59	22.3
375	55-74	F	130/90	84	1.58	26.5
376	75 and above	M	150/100	74	1.61	23.1
377	75 and above	F	140/100	86	1.60	26.8
378	75 and above	F	150/190	87	1.56	28.0
379	55-74	M	110/90	79	1.65	23.9
380	55-74	M	140/90	78	1.61	24.3
381	55-74	M	150/90	76	1.62	23.7
382	75 and above	M	150/100	72	1.54	24.0
383	55-74	M	150/100	73	1.6	22.8
384	75 and above	M	160/100	72	1.57	24
385	55-74	M	150/100	74	1.58	23.8
386	75 and above	M	160/100	68	1.58	22
387	55-74	M	150/100	69	1.59	23
388	55-74	M	150/100	70	1.6	23
389	75 and above	F	140/100	82	1.57	26.4
390	55-74	F	140/90	80	1.58	25.8
391	55-74	F	130/80	85	1.6	26.5
392	55-74	F	120/80	86	1.62	26.8
393	55-74	F	120/80	84	1.59	27.0
394	55-74	M	130/90	74	1.61	23
395	75 and above	M	150/100	75	1.60	23.4
396	55-74	M	160/90	78	1.65	23.6
397	55-74	M	160/100	79	1.59	25.4
398	55-74	M	120/80	69	1.52	23
399	55-74	M	130/90	77	1.64	24
400	55-74	M	130/100	75	1.63	23.4
401	55-74	M	130/90	76	1.6	23.7
402	55-74	F	120/70	74	1.55	23.8

403	55-74	M	110/90	73	1.59	23.8
404	55-74	F	130/100	83	1.59	26.7
405	75 and above	F	140/90	82	1.58	26.4
406	55-74	M	150/100	71	1.55	23.6
407	55-74	F	130/80	81	1.6	25.3
408	55-74	F	140/90	83	1.60	25.9
409	55-74	M	130/90	75	1.57	24.1
410	55-74	F	130/80	84	1.60	26.5
411	55-74	F	140/90	86	1.63	26.8
412	55-74	F	140/100	85	1.65	25.7
413	75 and above	M	150/100	78	1.64	24.3
414	55-74	F	130/90	88	1.66	26.6
415	75 and above	F	140/100	87	1.56	28.0
416	55-74	M	140/90	72	1.57	23.2
417	55-74	F	130/80	86	1.60	26.8
418	55-74	F	140/100	85	1.59	27.4
419	55-74	F	140/90	82	1.63	25.6
420	75 and above	M	150/100	72	1.59	23.2
421	55-74	F	140/90	83	1.71	24.4
422	55-74	F	150/100	85	1.61	26.5
423	55-74	F	150/90	87	1.62	27.1
424	55-74	M	130/80	80	1.7	25
425	75 and above	F	170/90	72	1.6	22.5
426	55-74	F	130/80	85	1.7	25
427	75 and above	F	150/100	71	1.59	22.1
428	75 and above	M	140/100	82	1.7	24.1
429	55-74	M	150/100	68	1.6	21.2
430	55-74	M	140/100	70	1.62	21.8
431	55-74	F	130/90	82	1.7	24.1
432	55-74	F	140/90	85	1.7	25
433	75 and above	F	130/100	82	1.68	24.1
434	75 and above	F	130/100	81	1.59	25
435	55-74	F	120/70	85	1.6	26.5
436	75 and above	F	130/90	75	1.6	22.5
437	75 and above	F	130/80	73	1.6	22.8
438	75 and above	F	140/90	85	1.65	25.7
439	55-74	M	120/70	69	1.7	20.2
440	55-74	M	120/80	68	1.7	20
441	75 and above	M	140/100	65	1.6	20.3
442	75 and above	F	130/90	81	1.6	25.3
443	75 and above	F	150/90	68	1.59	21.2
444	55-74	F	120/90	78	1.7	22.9
445	55-74	M	140/90	64	1.59	20
446	55-74	M	140/90	65	1.65	19.6
447	75 and above	M	150/100	68	1.7	20
448	55-74	M	130/90	70	1.72	20.5
449	55-74	M	140/90	69	1.68	20
450	75 and above	F	160/100	63	1.59	19.6
451	75 and above	F	140/80	65	1.58	20.6
452	75 and above	F	150/90	68	1.56	21.9
453	55-74	M	110/80	76	1.65	23
454	75 and above	F	130/90	70	1.57	21.8
455	75 and above	M	130/100	71	1.55	22.9

456	55-74	F	160/100	92	1.61	28.7
457	75 and above	F	140/90	84	1.65	25.4
458	75 and above	F	150/90	77	1.62	24
459	55-74	F	130/90	90	1.58	29
460	55-74	M	120/90	69	1.65	20.9
461	55-74	M	130/90	73	1.63	22.1
462	55-74	M	140/90	74	1.64	22.4
463	55-74	M	140/80	76	1.58	25
464	75 and above	M	150/100	63	1.58	25.3
465	55-74	M	140/90	75	1.6	25
466	55-74	M	130/90	80	1.6	26.6
467	75 and above	M	140/100	72	1.62	24
468	55-74	M	130/90	75	1.7	25
469	75 and above	F	150/90	76	1.6	25
470	75 and above	F	150/90	78	1.56	26
471	55-74	F	140/90	71	1.58	23.6
472	55-74	F	160/100	72	1.6	24
473	55-74	F	140/90	73	1.59	24.3
474	55-74	F	130/90	80	1.6	26.6
475	75 and above	F	150/90	81	1.6	27
476	55-74	F	130/90	90	1.7	30
477	55-74	F	140/90	88	1.68	29
478	55-74	F	140/90	87	1.55	29
479	55-74	F	130/80	78	1.65	26
480	75 and above	F	140/90	80	1.61	26.6
481	55-74	F	140/90	90	1.65	27
482	75 and above	F	150/90	82	1.6	25.6
483	55-74	F	140/80	86	1.65	26
484	55-74	F	140/90	83	1.57	26.7
485	55-74	F	150/100	75	1.56	24.1
486	75 and above	M	150/100	73	1.6	24.3
487	55-74	M	140/100	78	1.6	24.3
488	55-74	M	140/100	70	1.5	23
489	55-74	M	150/90	70	1.54	23
490	55-74	M	130/90	72	1.6	24
491	75 and above	F	120/90	75	1.6	25
492	75 and above	F	130/80	73	1.6	24
493	55-74	F	130/70	90	1.58	30
494	55-74	F	130/70	85	1.6	28
495	75 and above	F	140/100	75	1.6	25
496	55-74	F	130/80	86	1.64	28.6
497	55-74	F	120/70	90	1.65	27.2
498	55-74	F	130/80	90	1.7	26.4
499	75 and above	F	140/90	80	1.65	24.2
500	75 and above	F	140/80	74	1.57	24.6
501	75 and above	F	130/80	70	1.6	23.3
502	55-74	F	150/90	80	1.7	26.6
503	55-74	F	140/80	85	1.6	28.3
504	75 and above	F	130/90	81	1.58	27
505	55-74	F	150/80	72	1.59	24
506	55-74	F	140/90	76	1.6	25.3
507	55-74	F	110/60	90	1.7	27
508	75 and above	M	160/90	66	1.57	22

509	55-74	M	120/70	65	1.6	21.6
510	55-74	M	140/100	70	1.62	23.3
511	75 and above	M	150/90	71	1.6	23.6
512	75 and above	M	120/90	67	1.54	22.3
513	55-74	M	120/80	90	1.68	30
514	55-74	F	110/90	82	1.6	27.3
515	55-74	F	130/90	85	1.53	28.3
516	55-74	M	120/90	74	1.60	24.6
517	75 and above	M	160/100	70	1.55	23.3
518	55-74	M	110/70	65	1.5	21.6
519	55-74	M	130/90	70	1.6	23.3
520	55-74	M	140/100	78	1.57	26
521	55-74	M	110/80	78	1.6	26
522	55-74	M	120/90	80	1.6	26.6
523	75 and above	M	130/90	69	1.62	23
524	55-74	F	140/100	72	1.58	24
525	75 and above	F	150/90	74	1.56	24.6
526	55-74	F	150/80	77	1.6	25.6
527	55-74	F	140/80	78	1.59	26
528	75 and above	M	160/100	70	1.57	23.3
529	55-74	M	160/90	69	1.6	23
530	75 and above	M	140/80	71	71	23.6
531	55-74	M	110/90	73	1.68	24.3
532	55-74	M	120/90	80	1.7	26.6
533	75 and above	M	140/90	70	1.65	23.3
534	75 and above	M	140/100	68	1.55	22.6
535	55-74	M	110/80	71	1.63	23.6
536	75 and above	M	130/90	60	1.7	20
537	55-74	M	130/90	66	1.4	33
538	55-74	M	120/80	60	1.48	30
539	75 and above	M	160/100	65	1.5	21.6
540	55-74	M	140/90	58	1.6	19.3
541	55-74	M	150/90	60	1.6	20
542	55-74	M	150/100	61	1.61	20.3
543	75 and above	M	150/100	70	1.65	20.3
544	75 and above	M	140/80	70	1.50	23.3
545	55-74	M	140/80	54	1.59	18
546	55-74	M	130/80	60	1.51	20
547	55-74	F	130/80	65	1.6	21.6
548	75 and above	F	140/90	60	1.50	20
549	75 and above	F	140/90	55	1.61	18
550	75 and above	F	150/90	57	1.55	19
551	75 and above	F	160/100	60	1.55	20
552	55-74	F	130/70	61	1.1.58	20.3
553	55-74	F	130/80	65	1.69	21.6
554	55-74	F	110/70	60	1.68	20
555	55-74	F	120/80	54	1.64	18
556	75 and above	F	130/90	58	1.60	19
557	55-74	F	110/70	60	1.57	20
558	55-74	F	120/90	65	1.56	21.6
559	75 and above	F	130/100	60	1.7	20
560	55-74	F	120/80	80	1.75	23.5
561	55-74	F	130/90	60	1.60	20

562	55-74	F	130/80	80	1.65	26.6
563	75 and above	F	140/90	65	1.6	21.6
564	75 and above	F	130/100	68	1.50	22.6
565	75 and above	M	140/100	58	1.68	19.3
566	75 and above	M	130/100	55	1.7	17
567	55-74	M	120/80	90	1.7	26.4
568	55-74	M	120/90	62	1.50	20.6
569	75 and above	M	140/90	65	1.65	21.6
570	55-74	F	130/90	92	1.7	27.0
571	55-74	F	120/90	83	1.7	24.4
572	55-74	F	120/80	60	1.54	20
573	75 and above	F	130/90	55	1.6	18.3
574	75 and above	F	140/90	56	1.6	18.6
575	75 and above	F	140/90	76	1.6	25.3
576	75 and above	F	130/100	65	1.59	21.6
577	75 and above	F	120/90	65	1.6	21.6
578	55-74	F	120/80	67	1.65	22.3
579	55-74	F	120/70	60	1.50	20.0
580	55-74	F	120/70	75	1.6	25
581	55-74	F	120/80	60	1.5	20
582	55-74	F	130/90	60	1.50	20
583	75 and above	F	140/90	70	1.57	23.3
584	55-74	F	130/90	110	1.59	34.3
585	55-74	F	130/100	80	1.6	25
586	55-74	F	150/90	70	1.6	23.3
587	75 and above	F	140/100	70	1.51	23.3
588	55-74	F	140/90	65	1.53	21.6
589	55-74	F	140/80	60	1.56	20
590	55-74	F	130/80	60	1.6	20
591	75 and above	F	140/90	65	1.6	21.6
592	75 and above	F	130/90	60	1.58	21.6
593	55-74	M	140/100	70	1.6	23.3
594	55-74	M	140/90	80	1.68	26.6
595	75 and above	M	160/90	68	1.53	22.6
596	75 and above	M	170/90	70	1.61	23.3
597	55-74	M	140/80	88	1.70	29.3
598	55-74	M	130/90	79	1.70	26.3
599	55-74	M	140/90	84	1.71	28
600	55-74	M	150/100	60	1.6	20
601	75 and above	M	150/100	55	1.5	18.3
602	75 and above	M	140/100	57	1.52	19
603	75 and above	M	150/90	59	1.57	19.6
604	55-74	M	130/70	70	1.59	23.3
605	75 and above	M	150/90	55	1.58	18.3
606	55-74	M	110/90	60	1.55	20
607	55-74	M	120/90	60	1.6	20
608	55-74	M	140/90	61	1.58	20.3
609	75 and above	M	140/100	63	1.59	21
610	55-74	M	140/80	64	1.6	21.3
611	75 and above	M	140/100	60	1.65	20
612	55-74	M	120/90	68	1.70	20
613	75 and above	M	130/100	64	1.58	21.3
614	55-74	M	120/70	70	1.69	23.3

615	55-74	M	120/80	75	1.7	22
616	55-74	M	130/90	95	1.70	27.9
617	75 and above	M	140/90	75	1.68	22
618	75 and above	M	140/100	70	1.69	20.5
619	75 and above	M	150/90	71	1.55	23.6
620	75 and above	M	150/100	68	1.58	22.6
621	55-74	M	140/100	95	1.67	27.9
622	55-74	M	130/70	90	1.50	29.0
623	55-74	M	120/80	60	1.6	20
624	55-74	M	130/90	70	1.52	22.5
625	55-74	M	110/80	82	1.56	26.4
626	75 and above	F	120/90	70	1.6	21.8
627	75 and above	F	130/90	70	1.51	23.3
628	55-74	F	130/90	60	1.6	20
629	75 and above	F	140/100	62	1.58	20
630	75 and above	F	140/90	61	1.55	20.3
631	55-74	F	130/90	70	1.6	21.8
632	55-74	F	120/90	80	1.68	23.5
633	75 and above	F	130/100	65	1.69	19
634	75 and above	F	130/90	67	1.7	22.3
635	75 and above	F	130/90	63	1.65	21
636	75 and above	F	140/90	70	1.61	21.8
637	55-74	F	140/90	84	1.67	24.7
638	55-74	F	130/80	70	1.68	23.3
639	55-74	F	130/80	87	1.66	29
640	55-74	F	120/80	100	1.69	29.4
641	75 and above	F	160/100	85	1.55	27.4
642	75 and above	F	170/100	80	1.57	25.8
643	75 and above	F	150/90	65	1.6	21.6
644	75 and above	F	150/100	68	1.6	22.6
645	75 and above	M	160/100	70	1.62	23.3
646	55-74	M	130/90	65	1.68	21.6
647	55-74	M	140/90	80	1.7	23.5
648	55-74	M	150/100	82	1.70	24.1
649	55-74	M	140/80	76	1.64	23.7
650	55-74	M	140/70	84	1.65	26.2
651	75 and above	M	150/90	78	1.68	24.3
652	75 and above	F	150/100	77	1.64	24.0
653	55-74	F	140/100	80	1.56	25.8
654	55-74	F	130/70	95	1.71	27.9
655	55-74	F	120/80	84	1.7	24.7
656	55-74	M	110/80	60	1.58	20
657	55-74	M	150/100	64	1.63	19.3
658	55-74	M	140/70	58	1.69	19
659	75 and above	M	150/80	69	1.7	23
660	75 and above	M	140/90	78	1.70	26
661	75 and above	M	150/100	69	1.71	23
662	75 and above	M	160/100	70	1.69	23.3
663	55-74	M	150/100	84	1.72	28
664	75 and above	M	140/90	63	1.68	21
665	55-74	M	130/90	77	1.7	25.6
666	75 and above	M	140/90	63	1.67	21
667	55-74	M	120/90	65	1.64	21.6

668	55-74	M	110/70	81	1.70	27
669	55-74	M	120/70	60	1.7	20
670	75 and above	M	130/80	62	1.68	20.6
671	75 and above	M	140/80	65	1.58	20.9
672	55-74	M	130/90	60	1.57	19.3
673	75 and above	M	140/90	70	1.59	21.8
674	75 and above	M	160/100	71	1.56	22.9
675	55-74	M	150/100	79	1.58	25.4
676	55-74	F	120/90	85	1.65	25.7
677	55-74	F	130/100	60	1.68	18.1
678	75 and above	F	140/100	64	1.57	21.3
679	75 and above	F	140/100	66	1.55	21.2
680	55-74	F	120/90	83	1.6	25.9
681	55-74	F	110/70	81	1.59	25.3
682	55-74	F	120/80	59	1.6	18.4
683	55-74	F	120/70	58	1.65	18.1
684	55-74	F	140/90	70	1.67	21.2
685	55-74	F	150/90	72	1.68	21.8
686	55-74	F	140/80	73	1.63	22.8
687	55-74	F	130/80	84	1.64	26.2
688	55-74	F	140/90	81	1.7	23.8
689	55-74	F	120/80	82	1.6	25.6
690	55-74	F	130/80	60	1.64	18.7
691	55-74	F	150/100	67	1.7	19.7
692	55-74	F	140/100	65	1.69	19.6
693	55-74	F	130/80	79	1.68	23.9
694	55-74	F	130/70	80	1.64	25
695	55-74	F	110/80	66	1.7	19.4
696	55-74	F	150/90	64	1.64	20
697	55-74	F	150/100	70	1.55	22.5
698	55-74	F	160/100	72	1.56	23.2
699	55-74	M	140/80	86	1.6	26.8
700	75 and above	F	160/100	66	1.53	22.0
701	75 and above	F	140/90	69	1.58	22.2
702	75 and above	F	140/80	67	1.6	20.9
703	55-74	F	150/90	63	1.59	20.3
704	75 and above	F	150/90	70	1.58	22.5
705	55-74	F	140/100	87	1.6	27.1
706	75 and above	M	160/90	665	1.55	20.9
707	55-74	F	140/70	88	1.63	27.5
708	55-74	F	140/80	78	1.64	24.3
709	55-74	M	150/100	85	1.7	25
710	55-74	M	160/110	72	1.60	22.5
711	55-74	M	130/80	80	1.59	25.8
712	75 and above	M	140/80	60	1.55	19.3
713	65-74	M	160/90	55	1.61	17.1
714	55-74	M	150/90	75	1.6	23.4
715	75 and above	M	140/100	70	1.53	23.3
716	75 and above	M	150/90	58	1.52	19.3
717	55-74	M	160/100	80	1.6	25
718	75 and above	M	150/90	70	1.51	23.3
719	55-74	M	160/100	60	1.64	18.7
720	55-74	M	140/90	66	1.62	20.6

721	55-74	M	150/80	61	1.65	18.4
722	55-74	M	140/80	70	1.62	21.8
723	55-74	M	140/70	70	1.6	21.8
724	55-74	M	130/80	65	1.59	20.9
725	55-74	M	120/90	64	1.6	20
726	75 and above	F	130/90	65	1.55	20.9
727	55-74	F	140/90	65	1.59	20.9
728	75 and above	F	140/80	67	1.50	22
729	75 and above	F	150/90	60	1.57	19.3
730	55-74	F	140/80	65	1.6	20.8
731	75 and above	F	150/90	60	1.52	20
732	55-74	F	140/70	60	1.5	20
733	55-74	F	130/70	80	1.6	25
734	55-74	F	150/90	80	1.67	24.2
735	55-74	F	150/100	75	1.6	23.4
736	55-74	F	130/90	65	1.6	20.3
737	55-74	F	140/90	90	1.8	28.1
738	55-74	F	130/90	75	1.55	24.4
739	75 and above	F	140/100	62	1.50	20.6
740	75 and above	F	140/100	65	1.58	20.9
741	75 and above	F	130/100	67	1.59	21.6
742	75 and above	F	150/100	68	1.61	21.2
743	75 and above	F	140/90	70	1.54	23.3
744	75 and above	F	130/90	65	1.56	20.9
745	75 and above	F	140/100	62	1.55	20
746	55-74	F	130/90	89	1.54	29.6
747	55-74	F	140/80	68	1.56	21.9
748	55-74	F	140/70	81	1.6	25.3
749	55-74	F	130/70	69	1.53	23
750	75 and above	M	140/80	70	1.6	21.8
751	75 and above	M	140/90	64	1.6	20.6
752	55-74	M	140/90	67	1.57	21.6
753	55-74	M	140/100	60	1.50	20
754	55-74	M	120/70	60	1.51	20
755	55-74	M	110/80	65	1.58	20.9
756	55-74	M	120/70	65	1.6	20.3
757	55-74	M	110/80	75	1.6	23.4
758	75 and above	M	110/90	74	1.6	23.4
759	55-74	M	130/90	70	1.55	22.5
760	55-74	M	110/80	90	1.68	27.2
761	55-74	M	120/90	77	1.59	24.8
762	55-74	M	160/100	78	1.60	24.3
763	75 and above	M	130/90	70	1.60	21.8
764	55-74	M	140/90	74	1.62	23.1
765	75 and above	M	130/100	73	1.6	22.8
766	75 and above	M	140/100	70	1.54	23.2
767	75 and above	M	150/90	79	1.52	26.3
768	75 and above	M	140/90	78	1.56	25.1
769	75 and above	M	160/100	70	1.50	23.3
770	55-74	M	150/90	75	1.52	25
771	75 and above	M	140/100	70	1.6	21.8
772	75 and above	M	130/80	70	1.65	21.2
773	75 and above	M	130/90	69	1.67	20.9

774	55-74	M	140/100	72	1.64	21.8
775	55-74	M	130/90	75	1.63	22.7
776	75 and above	M	140/90	70	1.6	21.8
777	75 and above	M	130/100	62	1.50	20.6
778	75 and above	M	130/100	65	1.56	20.9
779	55-74	M	110/90	70	1.6	21.8
780	55-74	M	130/90	75	1.65	22.7
781	55-74	M	130/80	74	1.7	21.7
782	55-74	M	130/80	69	1.60	21.5
783	55-74	M	130/80	70	1.70	20.5
784	55-74	M	130/90	70	1.60	21.8
785	55-74	M	130/90	69	1.50	23
786	75 and above	M	150/100	65	1.60	20.3
787	55-74	M	130/90	74	1.50	24.6
788	55-74	M	170/100	65	1.50	21.6
789	55-74	M	150/100	60	1.50	20
790	55-74	M	130/100	70	1.60	21.8
791	55-74	M	140/90	65	1.60	20.3
792	55-74	M	110/70	81	1.70	23.8
793	55-74	M	110/70	62	1.50	20.6
794	75 and above	M	180/100	80	1.60	25
795	55-74	M	150/100	78	1.70	22.9
796	55-74	M	130/80	71	1.50	23.6
797	55-74	M	130/70	70	1.50	23.3
798	55-74	F	150/100	85	1.60	28.3
799	75 and above	M	150/100	60	1.50	20
800	55-74	M	150/90	76	1.60	23.7
801	55-74	M	130/80	70	1.60	21.8
802	75 and above	M	140/90	72	1.60	22.5
803	75 and above	M	150/100	75	1.60	23.4
804	75 and above	M	130/100	70	1.50	23.3
805	75 and above	M	160/100	76	1.50	25.3
806	75 and above	M	160/90	73	1.60	22.8
807	75 and above	M	130/90	66	1.60	20.6
808	75 and above	M	160/100	64	1.50	21.3
809	55-74	M	130/80	77	1.60	24.0
810	75 and above	M	130/90	67	1.60	20.9
811	55-74	F	130/80	85	1.60	26.5
812	75 and above	F	150/100	78	1.60	24.3
813	75 and above	M	150/90	65	1.60	20.3
814	55-74	F	150/90	80	1.60	25
815	75 and above	F	160/100	70	1.58	22.5
816	55-74	F	160/100	87	1.56	28.0
817	75 and above	F	180/100	83	1.54	26.7
818	75 and above	F	140/80	76	1.55	24.5
819	55-74	M	130/90	62	1.58	20
820	55-74	M	140/90	65	1.59	20.3
821	55-74	M	160/100	78	1.7	22.9
822	55-74	M	140/100	85	1.50	28
823	55-74	M	130/100	80	1.60	25
824	75 and above	M	140/100	67	1.60	20.9
825	55-74	M	150/100	89	1.60	27.8
826	55-74	M	120/80	76	1.58	24.5

827	75 and above	M	150/100	80	2.62	25.0
828	75 and above	M	180/100	65	1.59	20.9
829	55-74	M	150/100	78	1.58	25.1
830	75 and above	M	160/100	85	1.59	26.5
831	75 and above	F	150/90	74	1.60	23.1
832	55-74	F	180/110	76	1.5	25.3
833	55-74	F	120/80	85	1.60	26.5
834	55-74	F	130/90	83	1.6	25.9
835	75 and above	F	150/90	74	1.6	23.1
836	55-74	M	150/90	70	1.64	21.8
837	55-74	M	140/90	81	1.61	25.3
838	55-74	M	150/90	82	1.60	25.6
839	55-74	M	150/100	82	1.65	24.8
840	55-74	M	160/100	75	1.69	22.7
841	75 and above	M	140/80	67	1.5	22.3
842	55-74	M	130/90	75	1.61	23.4
843	75 and above	M	130/100	77	1.60	24.0
844	55-74	M	120/90	89	1.58	28.7
845	55-74	F	130/90	82	1.61	25.6
846	55-74	F	130/100	85	1.60	26.5
847	75 and above	F	130/80	74	1.59	23.8
848	75 and above	F	130/80	83	1.62	25.9
849	55-74	F	130/80	90	1.65	28.1
850	55-74	F	130/90	88	1.6	27.5
851	55-74	F	120/80	82	1.64	22.5
852	55-74	F	120/70	81	1.63	25.3
853	55-74	F	130/90	84	1.64	26.2
854	55-74	M	130/90	78	1.7	22.9
855	55-74	M	130/80	80	1.60	25
856	55-74	M	120/70	80	1.68	24.2
857	55-74	F	130/90	84	1.7	24.7
858	75 and above	F	140/90	84	1.59	27.0
859	55-74	F	120/70	82	1.58	26.4
860	55-74	F	130/90	81	1.65	24.5
861	75 and above	F	140/100	70	1.60	21.8
862	75 and above	F	130/90	78	1.58	21.9
863	75 and above	F	140/100	75	1.56	25.1
864	75 and above	F	140/90	74	1.59	23.8
865	55-74	M	130/90	85	1.6	26.5
866	75 and above	M	150/100	67	1.55	21.6
867	75 and above	M	140/100	70	1.59	22.5
868	55-74	F	120/70	87	1.57	28.0
869	55-74	F	130/80	85	1.6	26.5
870	55-74	F	140/90	82	1.60	25.6
871	55-74	F	140/80	75	1.61	23.4
872	75 and above	F	140/100	83	1.62	25.9
873	75 and above	M	140/100	76	1.6	23.7
874	55-74	F	130/70	74	1.58	23.8
875	55-74	M	130/90	68	1.55	22.6
876	55-74	M	140/100	65	1.53	21.6
877	55-74	M	130/80	66	1.6	20.6
878	55-74	M	130/90	69	1.7	20.2
879	75 and above	M	140/90	70	1.6	21.8

880	55-74	F	130/80	78	1.68	23.6
881	55-74	M	130/70	68	1.69	20.6
882	75 and above	M	140/100	64	1.57	20.6
883	55-74	M	130/90	69	1.58	22.2
884	55-74	M	130/80	70	1.7	20.5
885	55-74	M	130/90	74	1.69	22.4
886	55-74	M	120/80	83	1.70	24.4
887	55-74	M	130/90	76	1.59	24.5
888	75 and above	M	140/80	68	1.50	22.6
889	55-74	M	120/90	65	1.50	21.6
890	55-74	M	150/80	25	1.65	22.7
891	75 and above	M	130/80	80	1.66	24.2
892	65-74	M	120/90	70	1.61	21.8
893	55-74	M	140/80	65	1.56	20.9
894	55-74	M	130/90	70	1.61	21.8
895	55-74	M	130/90	74	1.60	23.1
896	75 and above	M	150/90	75	1.64	23.4
897	75 and above	M	150/100	67	1.61	20.9
898	55-74	M	130/90	80	1.63	25
899	55-74	F	120/70	85	1.601.6	26.5
900	55-74	F	120/90	80	1.6	25
901	55-74	F	140/90	71	1.59	22.9
902	75 and above	M	150/80	65	1.55	20.9
903	75 and above	F	150/90	80	1.56	25.8
904	55-74	F	160/90	70	1.65	21.8
905	55-74	M	160/80	65	1.50	21.6
906	75 and above	M	150/90	68	1.6	21.2
907	75 and above	M	150/100	70	1.60	21.8
908	55-74	M	150/90	80	1.7	23.5
909	55-74	M	110/80	75	1.6	22.7
910	55-74	M	120/90	79	1.65	23.9
911	55-74	M	130/70	75	1.62	23.4
912	75 and above	F	150/100	90	1.65	27.2
913	55-74	F	140/90	85	1.5	28.3
914	55-74	F	180/110	82	1.5	27.3
915	55-74	F	110/70	75	1.6	23.4
916	75 and above	F	140/90	88	1.65	26.6
917	75 and above	F	130/100	89	1.6	27.8
918	55-74	F	120/90	90	1.60	28.1
919	55-74	F	130/70	76	1.50	25.3
920	55-74	F	120/80	83	1.65	25.1
921	55-74	F	140/80	85	1.55	27.4
922	55-74	F	140/80	84	1.6	26.2
923	55-74	F	140/90	82	1.58	26.4
924	55-74	F	140/80	80	1.57	25.8
925	55-74	F	150/70	88	1.59	28.3
926	55-74	F	130/90	85	1.6	26.5
927	55-74	F	140/90	80	1.65	24.2
928	55-74	F	140/90	85	1.61	26.5
929	55-74	F	130/90	90	1.60	28.1
930	55-74	F	130/90	91	1.58	29.3
931	75 and above	F	120/80	85	1.55	27.4
932	55-74	F	120/90	75	1.59	24.1

933	55-74	F	140/90	72	1.56	23.2
934	55-74	F	150/100	81	1.57	26.1
935	55-74	F	150/90	80	1.6	25.8
936	55-74	F	140/80	85	1.65	26.5
937	55-74	F	150/90	72	1.60	22.5
938	55-74	F	150/100	74	1.60	23.1
939	75 and above	F	160/100	78	1.55	25.1
940	75 and above	F	160/90	89	1.57	28.7
941	75 and above	F	150/90	82	1.59	26.4
942	55-74	F	150/100	80	1.55	25.8
943	75 and above	F	150/100	80	1.56	25.8
944	55-74	F	130/90	100	1.6	31.2
945	55-74	F	130/80	95	1.61	29.6
946	55-74	F	130/90	87	1.50	28
947	75 and above	M	140/90	89	1.65	25.4
948	55-74	F	130/100	80	1.62	25
949	55-74	F	140/100	101	159	32.5
950	55-74	F	140/90	102	1.6	31.8
951	55-74	M	120/90	80	1.7	23.5

Key: 140/90 –159/99=Mild hypertension
160/100 -170/109 = severe hypertension
25kg/m2-29kg/m2=overweight
30kg/m2-34kg/m2= class 1 obesity
35kg/m2-40kg/m2 = class11 obesity
40kg/m2 and above = class 111 or gross obesity.

.

Theory of reasoned action (TRA).SCCVDQ will be designed by adapting items from different standardized instruments such as Cardiovascular Disease Questionnaire-CDQ (2001-02), Rose Angina Questionnaire (2013), Healthy Heart Questionnaire, Peripheral Arterial Questionnaire and Severe Heart Failure Questionnaire (2009)adapting items from different standardized instruments such as Cardiovascular Disease Questionnaire-CDQ (2001-02), Rose Angina Questionnaire (2013), Healthy Heart Questionnaire, Peripheral Arterial Questionnaire and Severe Heart Failure Questionnaire (2009) while SCCVDQ will be used to collect base line data will consist of 54 items consisting of two sections-A and B. Section A will consist of 7 items to generate information on socio-demographic variables and will be designed by the researcher while Section B will generate information on cardiovascular diseases consisting of 60 items. The modification of the different standardized instruments will be done both in the questions and responses. In cardiovascular disease questionnaire, items 1-6, 8, 10, 30 and 40 will be included in the study. In Rose Angina Questionnaire, items 3-9 will ask questions on coronary heart disease. In Healthy Heart Questionnaire, items 32-39, and in RAQ items 1-2 will ask questions on myocardial infarction (heart attack) while items 40-48 will ask questions on CBVD (stroke). In peripheral arterial questionnaire, all the items with the exception of item 6 will be included in the study. In severe heart failure questionnaire, all the items will be adapted. Thus a total of 60 items will be adapted from different standardized instruments. In all the instruments in section B responses will be modified to “Yes or No” (see Appendix F page 107).

Hypercholesterolaemia also known as dsylipidemia is a strong risk factor of CVD. It refers to an increased level of cholesterol in the blood. Morun, Zhao, Gu, Coxson, Chen and Cheng (2012) noted that patents over 65 years of age have a higher prevalence of hyperlipideamia. Francisica, Maria and Damel (2013) posited that hypercholesterolaemia is a major risk factor that increases the risk of atherosclerotic diseases in adults. .Misra and Shrivastuva (2013) asserted that the elderly population is at higher risk of developing CVDs due to atherosclerosis caused by hypercholesteroleamia. Cholesterol is not entirely bad but when it becomes too high in the blood, it narrows the lumen of the vessels, thereby blocking blood flow. Wang and Cohan (2011) stated that plasma cholesterol originates from the intestinal absorption of food (mainly animal origin) and bile salts secreted by the liver and from cellular synthesis, primarily of hepatic origin. Cholesterol is used in the manufacturing of cell walls, bile and

hormones in the body. Most of the body's cholesterol is produced in the liver while some are derived from diet such as meat, fish, oil and eggs.

Cholesterol is insoluble substance carried in the blood in form of lipid-protein known as lipoprpteins. The lipoproteins carrying the cholesterol are classified by their density. WHO (2007) classified cholesterol into low density lipoprotein-cholesterol (LDL-C) and high density lipoprotein-cholesterol (HDL-C). Pownall and Gotto (2011) identified the classification of cholesterol based on density as very low-density lipoprotein (VLDL), intermediate-density lipoprotein (IDL), low-density lipoprotein (LDL) and high-density lipoprotein (HDL). Francisco, Maria and Daniel (2013) indicated that LDL is responsible for conveying cholesterol from liver to peripheral tissues and depositing them in the inner layer of the arteries thereby starting atherosclerotic process while HDL removes excess cholesterol from cells and transport them back to liver.

Low- density lipoprotein cholesterol is referred to as bad cholesterol while the high density is termed good cholesterol. LDL-C carry large amount of cholesterol than HDL-C and deposit them in the walls of the arteries causing atherosclerosis. Carmana, Duriez and Fruchart (2004) stated that LDLs are associated with an increased risk of atherosclerosis and CHD. Contrary, the HDL-C pick up the free cholesterol molecules and return them to the liver to be broken down thus reducing the deposit in the walls of the arteries. Contush and Chapman (2006) noted that HDL cholesterol is protective as it picks up the free cholesterol in the blood reducing atherosclerosis. Elevated levels of HDL cholesterol can protect against development of CHD (Aspand, Karavanan, Giampaoli, Jousilahti, Niemela and Brod et al. 2009). National Institute of Health (2013) indicated that total cholesterol less than 200mg/L or less than 5.2mmol is normal but greater than 240mg/L or 6.2mmol is abnormal and risky. LDL cholesterol of 100-129mg/dl or 2.6-3.3mmol/L is considered good but above this level is undesirable and poses increased CVD risk. HDL cholesterol greater than 60mg/dl or 1.55mmol/L is good and lowers the risk of CVDs.

Cholesterol is determined by many factors such as dietary, genetics and lifestyles. Fransisca, Maria and Daniel (2013) stated that factors which determine plasma cholesterol concentration include diet, exercise, and metabolic disorders. High plasma cholesterol is as a result of interaction between unhealthy lifestyle, diet habit, commitant diseases (DM), genetic disorders such as familial hyperlipidaemia (Brunzell, Balantyne, lipidologia, Barcelona &

Edicioies, 2011). This point out that high cholesterol can be derived from certain food items such as meat, eggs, oil and fish. This type of food increases the level of cholesterol more than the body can absorb, as such they are deposited on the walls of the arteries causing atherosclerosis and subsequent CVDs. Hypercholesterol may be asymptomatic and can only be diagnosed on routine health screening. However, the symptoms may manifest depending on the part of the body where blood flow is obstructed. If blood supply to the brain is restricted, it leads to transient ischemic attack (TIA) and the symptoms of stroke manifests. When the coronary artery supplying the heart is blocked, it leads to coronary heart disease. WHO (2007) noted that raised blood cholesterol increases the risk of heart disease and stroke. This is because high level of cholesterol leads to four atherosclerotic cardiovascular diseases which are responsible for greater morbidity and mortality. Since, hypercholesterolemia may be asymptomatic, routine screening of every individual including the retiree that visit health facility is advocated. These retirees that had high level of cholesterol should be advised on dietary and lifestyle modifications to prevent this serious risk factor Apart from the aforementioned risk factors that predispose to CVDs, other factors may be associated with onset of CVDs. These factors can be referred to as socio-demographic correlates.

Theory of reasoned action was propounded by Ajzen and Fishbein (1975). The theory posits that individual performance of a given behaviour is primarily determined by a person's intention to perform that behaviour. It asserts that most important direct determinant of behaviour is intention (Glanz, Rimer and Viswanath, 2008). This intention is determined by two major factors: the person's attitude towards the behaviour determined by the person's beliefs about the expected outcome of the behaviour and the evaluation of the outcome, and the influence of the person's social environment or subjective norms. Subjective norms refer to the person's belief about his or her social environment (Gross, 2005). This implies that beliefs about what people in the social environment expected the individual to do as well as the person's motivation to comply with the opinion of the significant others also determines an individual beahviour. Ajzen (1985) asserts that intention develop as an individual perception of a behaviour as being positive or negative together with the individual's impression of the way the society perceives the same behaviour. This implies that personal attitude and social pressures (expectations) shape intention, which is essential for behaviour modifications.

In other words, if a person perceives a positive outcome for performing a particular behaviour, then the person will hold a favourable attitude towards performing that particular behaviour. On the other hand, if the person believes that performing a particular behaviour will lead to negative outcomes, the person may develop an unfavourable attitude and may desist from such behaviour. Also, a person's subjective norms are determined by the normative beliefs. Normative beliefs is whether the significant others approve or disapprove the performance of the behaviour together by motivation to comply with the approval or disapproval of the significant others. Applied in this study, retirees who believe that adoption of healthy lifestyles will enable them achieve and maintain good health throughout their life are more likely to develop positive attitude towards healthy lifestyle and viz visa. Also, if the retirees believe that the significant others disapproves unhealthy lifestyles such as cigarette smoking, harmful alcohol consumption, physical inactivity and unhealthy diet, the retirees will develop a negative attitude towards such lifestyles and desist from such lifestyles that is capable of predisposing to CVDs. This theory will also be utilized to serve as a guide for planning strategies to prevent both the lifestyles and metabolic risk factors among the elderly.. Another theory of anchor in this study is health belief model.

while focus group discussion guide and risk reduction strategies questionnaires will beThe WHO step one Instrument for Chronic Disease Risk Factor Surveillance has 79 items with nine sub-scales, namely; preliminary section (item 1 to 10), demographic information (items 11 to 20), tobacco use (items 22 to 35), alcohol consumption (items 36 to 45), diet (item 46 to 51), physical activity (items 52 to 67), history of blood pressure (68 to 73) and history of diabetes (74 to 79). The modifications carried out in effect to CVDRFQ include the exclusion of preliminary section with its respective items, which are not relevant to the study. Furthermore, items 12, 14, 16, 18, 19, 20 and 21 under the demographic information section will be expunged due to their inapplicability in the context of this study. Thus, items 11, 13, 15 and 17 will be retained in this section. In the tobacco use cluster, only items 22, 23, 27, 30, 31, 32, 33 and 34 will be adapted due to their relevance to this study. The other items in this section seek information which is not the focus of the study. Besides, only items 36 to 43 will be adapted from the alcohol consumption sub-scale; items 46 to 49 will be adapted from the diet sub-scale; items 58 to 67 will be adapted from the physical activity sub-scale because items 52 to 57 seek information on physical activity participation at work place. Thus, the items (52 to 57) are not relevant to this study because retirees are the focus of the study. In addition, items 68 to73 and items 74 to79 will be adapted from the history of raised blood pressure and history of diabetes sub-scales due to the fact that that high blood pressure and diabetes are significant risk factors for cardiovascular diseases. Thus, a total of 53 items will be adapted from step one (See Appendix G, page 111). The modifications will facilitate elicitation of responses and accurate measurement of CVD risk factors among retirees in Enugu State.

designedThe WHO step one Instrument for Chronic Disease Risk Factor Surveillance has 79 items with nine sub-scales, namely; preliminary section (item 1 to 10), demographic information (items 11 to 20), tobacco use (items 22 to 35), alcohol consumption (items 36 to 45), diet (item 46 to 51), physical activity (items 52 to 67), history of blood pressure (68 to 73) and history of diabetes (74 to 79). The modifications carried out in effect to CVDRFQ include the exclusion of preliminary section with its respective items, which are not relevant to the study. Furthermore, items 12, 14, 16, 18, 19, 20 and 21 under the demographic information section will be expunged due to their inapplicability in the context of this study. Thus, items 11, 13, 15 and 17 will be retained in this section. In the tobacco use cluster, only items 22, 23, 27, 30, 31, 32, 33 and 34 will be adapted due to their relevance to this study. The other items in this section seek

information which is not the focus of the study. Besides, only items 36 to 43 will be adapted from the alcohol consumption sub-scale; items 46 to 49 will be adapted from the diet sub-scale; items 58 to 67 will be adapted from the physical activity sub-scale because items 52 to 57 seek information on physical activity participation at work place. Thus, the items (52 to 57) are not relevant to this study because retirees are the focus of the study. In addition, items 68 to73 and items 74 to79 will be adapted from the history of raised blood pressure and history of diabetes sub-scales due to the fact that that high blood pressure and diabetes are significant risk factors for cardiovascular diseases. Thus, a total of 53 items will be adapted from step one (See Appendix G, page 111). The modifications will facilitate elicitation of responses and accurate measurement of CVD risk factors among retirees in Enugu State.

by the researcher. The first instrument called Correlates of CVD Risk Factors Questionnaire (CCVDRFQ) will consist of 70 items and will be used to collect data on correlates of CVD risk factors among the retirees in Enugu State. The CCVDRFQ will be made up of two sections: A and B. Section A will consists of 8 items to generate information on socio-demographic variables of age, gender, level of education, level of income, belief system, marital status, location and living status. Section B which will consist of 62 items will be used to obtain data on CVD risk factors. Questions 9-18 will have two response options of “YES” or “NO”. (See Appendix G, page 14) while questions 19 -70 will have three response options of “Very Often”, “Often”, “Less Often” and “Never”. This will be weight as very often 4 points, often 3 points, less often 2 points and never 1point The second instrument which will be called Focus Group Discussion Guide on Cardiovascular Disease Risk Factors (FGDGCVDRF) will be used to collect qualitative data on the CVD risk factors to compliment the quantitative data generated from CCVDRFQ. This will consist of 12 open-ended questions that will guide the discussion concerning the risk factors for CVDs and factors associated with them (See Appendix H, page 18). Open ended questions will ensure extensive discussion with the groups. The guide will be based on the objectives of the study. The qualitative data that will be obtained from the responses of each group will be utilized in discussing the findings of the study.

The last instrument to be titled the Risk Reduction Strategies Questionnaire for experts will be developed by the researcher. This will be developed following the information to be generated from the CCVDRFQ and FGD. It will consist of (20) item statements comprising of an

introduction, 20 –item from the major findings that may arise from the CCVDRFQ and FGD. The instrument will be of two columns: column A will contain the major findings of CCDRFQ and the objectives while section B will contain the risk reduction strategies.

). Measurement is usually conducted using instruments such as tape, scale, ruler, a test or any other form of apparatus such as blood pressure apparatus. The measuring instrument is usually calibrated with numbers starting from the lower limit to the higher limit. Measurement can be done to determine if two variables are correlated. Correlation is one of the most common and most useful statistical methods. Creative Research System (2016) defined correlation as a statistical technique that can show whether and how strongly pairs of variables are related. Owie (2006) noted that two variables are said to be related if there exists such logical connections among characteristics of two variables that knowing something about the nature of one variable makes it possible to make inferences about the characteristics of the other. Once a relationship has been established between two or more variables, the extent of the association need to be ascertained. Owie (2006) indicated that this can be done by applying statistical technique called correlation coefficient or coefficient of association. The correlation coefficient is attached numerical values or indices ranges from -1.0 to +1.0 indicating the direction as well as the strength of the association between the variables. Owie indicated that these extremes, the relationship may be positive or negative, very low, high or very high depending on the extent of relationship. The positive(x) sign indicates positive relationship while negative (-) indicates negative relationship. Correlation at zero (0) shows no relationship.

Correlation coefficient can be determined by research techniques. Owie (2006) listed the three commonly used correlation techniques as Pearson Products Moment Correlation Coefficient, Spearman Rank Order Correlation Coefficient and

Kendall's Coefficient of Concordance. The most commonly used among the three is the Pearson product moment correlation coefficient represented by symbol "r". This technique can only be applied to data on interval scale and can be measured using two method, the deviation from the mean and the raw score method. Many instruments can be used to determine the relationship between two or more variables. Such instruments include questionnaires, observation technique, interview or focus group discussion. Ghazail et al (2015) employed questionnaire, physical measurement and interview to gather information on socio-demographic factors associated with CVD risk factors among Malaysian adults. Therefore, to determine the socio-demographic correlates of CVD risk factors among retirees in Enugu State, questionnaires and focus group discussion will be employed to obtain information which will answer the question of the association of the variables under the study. The instrument for the study will be WHO steps questionnaire researcher designed questionnaire. Focus group discussion will be conducted using a semi- structured questionnaire to collect qualitative information to compares with the quantitative data. Different scholars have used questionnaire and interview method to collected data on correlation between variables, for example, Saliu, Adenike, Olakunle and Ismail (2014) used WHO STEP instrument (comprising of questionnaire, physical measurement biochemical examination) to collect data on socio-demographic correlation of modifiable risk factors for hypertension in a rural Local Government Area of Oyo State, South West Nigeria. Mugure, Karama, Kyobutungi and Karanja (2014) used semi-structured questionnaire to determine the correlates for CVDS among diabetes/hypertensive patients attending outreach clinics in two Nairobi Shims, Kenya. From these, the researcher believes that questionnaire and focus group discussion can be used in this study to determine the socio-demographic correlates of CVD risk factors among retirees in Enugu State.Human kinetics and Health Education Department, University of Nigeria, Nsukka
30/8/18

The Chairman Medical Advisory Committee
ESUT Hospital Parklane
Enugu

Sir

APPLICATION FOR COLLECTION OF ETHICAL CLEARANCE

I humbly apply for permission to collect ethical clearance from your health facility.I am a post graduate student of University of Nigeria, Nsukka, conducting a study titled Socio-demographic Correlates of Cardiovascular Diseases and Preventive Strategies among Retirees in Enugu state, Nigeria. The research proposal has been approved by Departmental PG Examination panel. The second phase of the study is to collect baseline data from the retirees. Subsequently, health experts will provide information on the appropriateness of the formulated strategies to prevent or reduce incidence of CVDs among retirees. Attached are the project proposal copy and a letter from Head, Department of Human kinetics and Health Education, University of Nigeria, Nsukka.

Thank you for your usual co-operation.

Yours Faithfully,

designed by Sarason, Shearin and Pierce (1987) will be used to measure social support as one of the social factors considered in this study. The SSQ6 has six items with multiple response option of very dissatisfied (1point), fairly dissatisfied (2 points) a little dissatisfied (3 points), a little satisfied (4 points), fairly satisfied (5 points) and very satisfied (6 points). This can be modified to very satisfied (4 points), a little satisfied (3 points), a little dissatisfied (2) points and

very dissatisfied (1 point) (See Appendix H, page 111)Access to healthcare services is one of the social factors likely to be associated with onset of CVD risk factors among the retirees. Ability to access and utilize medical care services can lead to early detection of CVD risk factors and possible prevent progress to CVDS. Edward et al.(2015) noted that access to medical care is a complex concept that incorporates 5 characteristics or dimensions: approachability, acceptability, availability and accommodation, affordability and appropriateness.

Approachability entails the ability of the retirees to identify the existence of health care services, the potential health impact of the services and to able to access those services as when necessary. It involves transparency, outreach, information and screening (Levesque, Hrrius & Russel, 2013). This implies that if health care providers will be able to render medical care services through outreach may be by mobile services, providing information on lifestyle modifications, screening retirees through physical measurements, and laboratory tests and rendering the services in a friendly manner, retirees will be motivated to access the medical cares for prevention and detection of the CVD risk factors. Russell (2013) stated that availability and accommodation involve the existence of healthcare services that are physically available and convenient (e.g. geographic location, hours of opening, availability and timing of appointments. This implies that if the healthcare services are not located within vicinity of the people, and people have to travel far, it will definitely affect access to medical care. On the other hand if organization of the healthcare services is poor in terms of hours of opening, presence of healthcare workers and facilities/equipment, the retirees may not be able to access the healthcare services which can affect the prevention of the risk factors.

Affordability represents the economic ability of the retirees to pay for healthcare services. Retirees from Enugu state may have difficulties accessing healthcare service, because of lack of health insurance, poor and irregular pension benefits, and lack of geographic proximity to care. Fowler, Corbie, Garrelt and Lafie (2007) asserted that lack of insurance is associated with a lower likelihood of adequate treat rent of risk factors and with an increased risk of stroke and cardiovascular health.

Acceptability entails cultural and social factors that influence the retiree’s perception of the various aspects of the healthcare services. It is pertinent to note that cultural beliefs, literacy level, social norms and social background of the retirees may have a significant impact on the

retiree's decision to access healthcare services. When the healthcare services are not approachable, available, affordable and acceptable by the retirees, accessing healthcare services will be difficult and will affect prevention of CVD risk factors. Apart from social factors, demographic factors will be determined to find out its association with risk factors for CVDs

Prevalence is one of the measures used by epidemiologists, researchers and healthcare providers to determine the number of people affected by a disease condition in a particular area and at a given time. Parks (2010) defined prevalence as the total number of all individual who have attribute of a disease at a particular time or during a particular period. Hounghton (2009) viewed prevalence as total number of cases of disease in a given population at a specific time In this study, prevalence is the number of occurrence of CVD risk factors among retirees in Enugu State. Prevalence of CVD risk factors will be measured through use of mean, because it is more consistent and reliable than the use of measures of central tendency like frequencies and percentages (Uzoagulu, 2011).

However, studying prevalence has several obstacles and limitations. To avoid these critical limitations, researchers have utilized diferrent types of standardized instrument to measure the occurrence of CVD risk factors. Alekandra and Joanna (2016) used authors questionnaire and standardized questionnaires, which are International Physical Activity Questionnaire (IPAQ)6, Fageston Test for Nicotine dependence9 , Michigan Alcoholism Screening Test (MAST)10 and Finish Diabetes Risk Scoring (FDRS)10 to determine the prevalence of risk factors for CVD among Polish surgical patients over 65 years. Oguoma et al (2015) used WHO step instrument for chronic disease risk factors among a Nigerian adult population: relationship with income level and accessibility to CVD risk screening. Similarily, Saliu, Adenike, Olakunle and Ismail (2014) used WHO steps instrument to collect data on sociodemographic correlate of modifiable risk factors for hypertension in a rural local government area of Oyo State. Based on the above review, CVD risk factors have been measuered using different standardized instruments. In this study, researcher designed questionnaire and some components of WHO steps instrument will be adapted, modified and integrated into the the instrument that will be used for data collection. The reason for the adaptation and modification of the WHO step instrument is attributed to the fact that it has been used in different locations in Nigeria which have similar socio-cultural background with Enugu

State. In determining the prevalence of CVD risk factors, measurement of correlation will be will be highlighted.

These strategies will target modification of lifestyles (such as healthy eating habits, tobacco cessation, reducing alcohol consumption, exercising regularly and reducing weight) and control of metabolic factors (such as hypertension and diabetes) through public health interventions among retirees in Enugu State.

Measures may be referred to as actions that are planned to achieve a particular purpose. Hornby, (2006) defined measure as the process of planning something or putting a plan into operation in a skilled way to achieve a particular goal. In this study, preventive measures are defined as well selected, planned and integrated programme of activity needed to prevent development of CVDs among the retirees in Enugu State and entire public in general

Reduction is a way or act of decreasing something either in size or amount. Simpson (2016) referred to reduction as the act or action of making something smaller or less in amount, degree or size. Reduction in this study is defined as the act or process of minimizing exposure to CVD risk factors among retires in Enugu State. Risk reduction is defined as lowering of factors considered hazardous for a specified disease (Farlex & Parters, 2009). Overweight or obesity is a growing public health problem and one of the major risk factors for CVDs among the elderly.

..

Increased level of cholesterol known as hypercholestroleamia is a major risk factor for CVD especially in the elderly. Misra and Shrivastava (20103) indicated that prevalence of hypercholestroleamia is higher in elderly population (age over 65 years). Chri, Kim, Marti and Chem (2014) reported that about fifty per cent of elderly suffer from hypercholestroleamia. In this study hypercholestroleamia is defined as raised levels of cholesterol in the blood which expose the elders to the danger oc developing CVDs. Cholesterol is a waxy substance produced by the liver and also derived from diet. The cholesterol can be high or low. High cholesterol (hypercholesterolemia) in the blood can be very harmful as it increases the formation of atheroma (fatty deposit in artery). This narrows the lumen of blood vessel, thus, impeding blood

flow and leading to formation of blood clots. When the clots block blood supply to the heart or brain it results to CVDs such as CHD or CVA. Hypercholestrolemia may not present overt signs and is mostly diagnosed during routine screening. Hypercholestroleamia may result from unhealthy diet.

In addition, data will be generated on social norms as a correlate of CVD risk factors. This may reveal that enforcement of certain lifestyles like ban on sale and intake of alcohol and cigarette will reduce will reduce the incidence of CVD risk factors among the retirees. This will be beneficial to the community members and policy makers who can enact bye-laws or even ban place ban on the sale and intake of alcohol (ethanol) and cigarette especially Indian hemps and the likes to reduce CVD risk factors among the elderly.

g retirees in Enugu State.

Social norms can be referred to as acceptable practices obtained in a particular community which helps to shape the behaviour of the community members. Hastic (2005) defined social norms as pattern of acceptable beliefs, attitudes and behaviours. Flury and Lee (2006) asserted that social norms help individuals understand acceptable standards within their peers and provide community members with the examples of desirable behaviours. In this study social norms refer to acceptable practices and behaviours that may help to shape the lifestyles of retirees to reduce CVDs risk factors. Social norms help to shape or control certain behaviours within the society. Where certain lifestyle such as cigarette smoking is prohibited by the norms, risk of CVDs is minimized. On the other, when the norms are weak or not enforced, certain lifestyle like smoking cigarette may be may be taken carelessly at any and everywhere which may to the development of CVDs. Social norms will be examined to see if it is associated with the onset of CVDs risk factors

Being married, single, separated or windowed may be capable of predicting CVDs risk factors. CVD risk factors are more prevalent in single people while people who are married have lower rates of CVD risk factors compared with those who are single, divorced or windowed (Scuth, 2014). Similarly, being married was associated with lower risk of CVDs in general (Dahamy, 2014). The present study will determine if marital status is associated with risk factors for CVDs among retirees in Enugu State.

Individual's religious affiliation is another factor influencing one's perception about diseases, causes and treatment. This can be traditional or christain religion. Awah, Unwin and Phillimore (2009) asserted that some respondents attributed the cause of diabetes to a curse or witchcraft. Gupta and Gordon (2013) reported that some respondents attributed the primary cause of diabetes to strong emotional experience and believed that God was in control of the progression of the disease. These beliefs affect the early detection, treatment and control of these risk factors. Thus, religious affiliation will be examined in this study to identify its association with CVD risk factors among retirees in Enugu State. Studying socio-demographic correlates of risk factors for CVDs among retirees will provide an insight for developing risk preventive strategies among retirees in Enugu State.

Risk is a part of every human endeavour and is encountered throughout life. Holton (2004) defined risk as the probability of an event occurring and the consequences of the event. Hornby (2006) defined risk as anything or person regarded as threat or likely to cause danger. Risk in this study is defined as any action or behaviour adopted by the retirees in Enugu State that may likely expose them to the development of CVD risk factors such as unhealthy diet, cigarette smoking, excessive alcohol consumption and physical inactivity. These actions or behaviours refer to as unhealthy lifestyles which may initiate metabolic disorders like hypertension, diabetes, hypercholestenlamia and obesity which are risk factor for CVDs. These risk factors can be prevented or reduced drastically by utilizing risk preventive strategies

Social norms can be referred to as acceptable practices in a particular community which help to shape the behaviour of the community members. Hactie (2005) defined social norms as the pattern of acceptable beliefs, attitudes and behaviours. Human behaviours are shaped or modeled according to the prevailing social norms in the community. Where certain practices and behaviours such as cigarette smoking and alcohol (ethanol) consumption is prohibited, risk of

CVDs is minimized. On the other hand, where social norms are weak or not enforced certain lifestyles such as cigarette smoking and ethanol consumption may be high. Where the retirees indulge in the two lifestyles, probably from youth or adulthood, the risk of CVD increases. . Vuksel and Corbett (2005) indicated that sanction against smoking in family and school environment are not enforced. Borland et al (2006) reported that favourable views of smoke free public places and/or reported presence of smoke-free public places were independent predictors of having smoke-free home. Non availability or non enforcement of social norms due to moral decadence in the society may be associated with unhealthy lifestyles such as cigarette smoking, alcohol abuse and poor dietary habits. These lifestyles are risk factors and may lead to metabolic risk factors such as hypertension and diabetes which have been reported to be high among elders including retirees in Enugu State. Apart from social norms, belief is another social to be determined in the present study.

An individual belief system is another social factor likely to influence an individual reasoning about disease, causes and treatment. The belief can be religious or cultural. Kagee, Roux and Dick (2007) stated that patients with hypertension attributed the cause to psychological state such as anger. Awah, Unwin and Philimore (2009) asserted that some respondents attributed the cause of diabetes to a curse or witchcraft. These erroneous beliefs affect the early detection, treatments and control of the CVD risk factors until it deteriorates to affect the heart causing CVDs. Gupta and Gordon (2013) reported that some respondents attributed the primary cause of diabetes to strong emotional experience and believed that God was in control of the progression of the diabetes. Ones cultural and personal beliefs may influence the individual's perception or intention to accessing and using health services (Odo & Samuel 2014). Due to the cultural belief or personal belief an individual experiencing hypertension or diabetes may decide to consult a diviner to ascertain the cause of the disease instead of going to hospital for orthodox healthcare services. From the result of the visitation to the diviner, witchcraft or punishment from the gods may be identified and the individual may be asked to appease the gods or even plan on how to send the illness back to the sender (Witch). As the person continue to visit from one diviner to the other, the problem progresses. This, misconception and misinterpretation of the causes of CVD risk factors negatively interfere with the screening of the individuals for early detection, treatment and control of CVD risk factors. This study tend to determine of belief system is associated with CVD risk factors among retiree in Enugu State.

A family predisposition can be a variable correlated with CVD risk factors.. Familial factors may be genetic which parents pass on to offspring. WHF (2005) posited that family history is correlated with CVD or CVD risk factors especially when the closest relation suffered one or multiple risk factors or had suffered CVD or CV events..The risk factors of CVDs are associated with family history. Incidence of hypertension, obesity, high blood lipids and diabetes are associated with family history (Armett et al., 2007). Morris (2016) stated that hereditary play a role in development of CVD risk factors. Morris further explained that individuals with a family history of early heart disease are at a greater risk for elevated blood lipids and hypertension which has been associated with coronary artery diseases. The high blood lipid linked to family history is referred to as familial hypercholesteroleamia. This has been linked to genetic mutations and is correlated with CHD and stroke (Arking & Chakravarti, 2009). Since parents pass some genetics materials to their children, it can be inferred that children can as well inherit some CVD risk factors from their parents. This knowledge of family history of CVD risk factors can help to plan risk reduction strategies among people with family history CVD risk factor. However, this study will examine if CVD risk factors among retirees in Enugu state is correlated with family history. Measurement is the act of finding the size, quantity or amount of something by assigning numbers. Measurement is the process of observing and recording the observations that are collected as part of research effort (William & Trochim, 2006). There are standardized instruments for measuring CVD risk factors. WHO (2004) developed an instrument for chronic disease risk factors surveillance called WHO steps instrument. It has 106 items and has three steps. Step 1consists of demographic information and behavioural measurements, step two consists of physical measurement while step three connsists of biomedical measurements. This is the most comprehensive instrument that measures all the risk factors for CVDs. It is also the most wildly used instrment for measurement of CVD risk factors. Saliu, Adenike, Olakunle and Ismail (2014) used WHO steps instrment to measure sociodemographic correlates of modifiable risk factors for hypertension in a rural Local Government Area of Oyo State and found that the tool can be applied for CVD risk factors.

Another instrument used to determine CVD risk factors are International Physical Activity Questionnaire (IPAQ) 6, Fageston test for Nicotine Dependence9, Michigan Alcoholism Screening Test (MAST) 10 and Finish Diadetes Risk Scoring (FDRS) 10 which has a 25 item. Aleksandra and Joanna (2016) used these instruments to measure the prevalence of CVD risk

factors among Polish Surgical patiens over 65 years. This instrument is incomprehensive as it measures only four out of the eight risk factors. Based on the above review, CVD risk factors have been measured using different standardized instruments that may be based on location, cultures and other sociodemographic variables. In this study, some sections of WHO steps instrument will be adapted modified and incorporated into the instruments that will be used for data collection. The reason for the adaptation is attributed to variations in the sociodemographic and cultural backgrounds of Enugu State which differs from Oyo State where the the previous study that WHO instrument was conducted. Also, the instrument is widely used in other places (that is standardized).

Lowering cholesterol can help to prevent heart affects, stokes and sudden deaths. WHO (2010) noted that reducing serum cholesterol for a 70year old man can result in average 20 per cent reduction in heart disease occurrence within five years. Estruch et al (2006) indicated that different diets have shown effectiveness in reducing total cholesterol, LDL cholesterol and triglycerides and increasing HDL. Ambigga (2011) recommended dietary advice, weight reduction and physical exercise to reduce hypercholesterol. Strategies to reduce hypercholesterol among retirees in Enugu State include dietary advice (reduce intake of fats and trans-fats foods, high cholesterol giving foods (such as eggs, diary product), to increase intake of oily fish, physical activity, reduce weight, regular checking of blood cholesterol and adherence to drugs as prescribed.

Social support received by an elderly may likely influence health status. Social support refers to the perception and actuality that one is cared for, has assistance available from other people and that one is a part of a supportive social network (Taylor, 2011). Social support refers to the varying types of aid that are given to members of social network (Isreal. et al, 2008). The extent of social support received by the retirees during illness such as hypertension or diabetes may hasten the recovery of the person. Uchino (2009) asserted that people with low social support are at much risk of death from variety of diseases such as cancer or CVDs. Conversely, high rate of social support have been associated with numerous positive health outcomes including recovery from coronary artery by-pass surgery and better diabetes control (Nuruijannah, Zaihaaru, Norhayti, Suzans & Nurulloual, 2016). Greater social support has been

linked to a lower risk cancer recurrence, higher survival rates among heart attack survivors, lower blood pressure, better immune response and better psychological well being while social isolation has been associated with an increased risk of multiple diseases including CVD risk factors and mortality (Stansteld, 2006).Support can come from family, friends, neigbhours, co-workers and community members.

Group of individuals that are connected in one way or the other for social integrations and support is referred to as social network. Edward et al (2015) stated that social networks influence health in two ways namely: through social influence on behaviour and through the resources embedded in social networks that are available to its members. Isreal et al (2008) indicated that members of social network can render emotional support, instrumental support, informational support and appraisal support. The study is set to find out if non availability of social support from the social network is associated with CVD risk factors among retirees in Enugu State. Addo, J., Smeeth, L. & Leon D.A. (2007). Hypertension in Sub-Sahara Africa. A Systematic Review. *Hypertension* 50 **(6)**. 1012-1018.

Adedayi, R.A., Mbada, C. E., Balogun, M. O. (2008). Prevalence and pattering of hypertension in a semi-urban community in Nigeria. *European Journal of Cardiovascular Prevention and Rehabilitation*.. 15**(6)**: 683-687.

An individual's access to healthcare may be linked to the onset of CVD risk factors. Access to healthcare entails ability to perceive and to seek, ability to reach, ability to pay and ability to engage in medical services. Addo, Smeeth,and Leon (2007) indicated that a significant portion of hypertension-related morbidity and mortality rates were influenced by low levels of detection, treatment and control. Gill, Mbamya Ramaga and Teslaye (2009) attributed lack of glyceamic control among diabetes to geographically scattered population, shortage of drugs and insulin. Access to medical care in this study refers to the ease with which the retirees receive the needed healthcare services. This study will determine if access to medical is associated with risk factors for CVDs among retirees in Enugu State. Apart from social factors, demographic factors may be correlated with risk factors for CVDs.