STUDENTS' AWARENESS AND ATTITUDE TOWARDS RISK FACTORS FOR HIGH BLOOD PRESSURE IN AHMADU BELLO UNIVERSITY, ZARIA

BY

PAULINA ONYOWO ADAH
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DECLARATION

I hereby declare that this dissertation (Students' awareness and attitude towards risk factors for high blood pressure) is a product of my research effort. It has not been presented or published anywhere by any person, institution or organization or used for any previous application for a degree or other qualification. All sources of information have been duly acknowledged by means of references.

_____ _____

Pauline Onyowo Adah Date

CERTIFICATION

This dissertation titled **Students' Awareness and Attitude towards Risk Factors for High Blood Pressure in Ahmadu Bello University, Zaria**, meets the regulations governing the award of the degree of M.Sc Sociology of Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

_____	_____	_____
Prof. B. F Okeshola Chairman, Supervisory Committee	(Signature)	(Date)
_____	_____	_____
Dr. T. Halliru Member, Supervisory Committee	(Signature)	(Date)
_____	_____	_____
Dr. Y. K Gandu Head of Department	(Signature)	(Date)
_____	_____	_____
Prof. Kabir Bala Dean, School of Postgraduate Studies	(Signature)	(Date)

DEDICATION

To my lovely and supportive family whose love and support made this success a reality. You are the best!

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LIST OF ACRONYMS AND ABRBREVIATIONS

ABU - - - Ahmadu Bello University

AHA - - - American Heart Association

AIDS - - - Acquired Immunodeficiency Syndrome

BHF - - - British Heart Foundation

BMI - - - Body Mass Index

CVD - - - Cardiovascular Diseases

HBP - - - High Blood Pressure

HIV - - - -Human Immunodeficiency Virus

HPLP - - -Healthy People Library Project

IDI - - - - -In-depth Interview

IHD - - - -Ischemic Heart Disease

ISH - - - - International Society of Hypertension

ISH - - - - Isolated Systolic Hypertension

NCD - - - -Non-Communicable Diseases

NGOs - - -Non-Governmental Organizations

NIH - - - - National Institute of Health

NYC - - - National Youth Commission

STEPS - - Stepwise approach to surveillance

TV - - - - -Television

UAE - - - -United Arab Emirate

US - - - - - United Nations

WHO - - - World Health Organization

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ABSTRACT

The prevalence rate of high blood pressure (HBP) among youths in Nigeria and the world at large is said to be on the increase. This is attributed to lack of knowledge of several modifiable risk factors (excessive alcohol consumption, smoking, lack of exercise etc) and non-modifiable risk factors (age, hereditary, race and sex). Literatures reviewed on HBP hold that no specific cause for the disease in question has been discovered. This study set out to assess the level of awareness of risk factors for high blood pressure; level of youth engagement in unhealthy lifestyles and dietary habits; level of knowledge of preventive and control measures for high blood pressure; and possible strategies for enhancing youth awareness of risk factors for high blood pressure as well as it's preventive and control measures among students of Ahmadu Bello University (ABU), Zaria. The "Health Belief Model" was adopted for the study with its basic assumptions that people were afraid of getting serious illness and that health related behaviors reflect the level of threat perceived; that is a person's perceived seriousness and susceptibility of an illness provokes the likelihood of preventive action. The functionalist theory was also adopted. Data were collected from three hundred and ninety-eight (398) undergraduate students in both Main and Kongo campuses of ABU. Eight in-depth interviews were conducted. Findings from the study revealed poor knowledge of most risk factors associated with high blood pressure among students; poor dietary habit with most students consuming carbohydrate foods mostly for breakfast, lunch or dinner weekly; high rate of snack foods and sugared drinks consumption on daily bases; low rate of students' engagement in regular physical activities. On consumption of alcohol, findings revealed that about 51% of students who consumed alcohol had parent(s) who do not consume alcohol indicating that youth alcoholic habit may not be associated with parental influence. On the other hand, parental influence on cigarette smoking proved to be likely as about 54% of students who smoke cigarette indicated having parent(s) who smoke cigarette as well. Also, about 78% of students who consume alcohol and 100% of those who smoke cigarette were males, revealing part of the reasons why the male gender is said to be more prone to high blood pressure compared to the female gender. About 52% of students who indicated ever being diagnosed of HBP were from polygamous homes. Furthermore, students' knowledge of preventive measures for high blood pressure was revealed to be below average. The qualitative data also revealed that no health education sessions or any form of awareness on high blood pressure with particular reference to students (youth) either during the daily health education sessions held at the university sick-bay or during the annual orientation for new students. Findings from the study showed that there is urgent need for awareness campaign on risk factors for high blood pressure in the university and possibly the wider society, and further recommends annual health seminars by respective faculties and places of worship, information on risk factor for HBP through fliers and bill boards by the University Health Service and the Guidance and Counselling.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

High blood pressure otherwise called hypertension is a major threat to public health. The disease has been identified as a major cause of morbidity and mortality globally. It is as a result of this global burden, that the world's premier blood pressure society known as the International Society of Hypertension (ISH) was established in 1966 to encourage and promote the advancement of scientific research and its application to the prevention and management of heart diseases, stroke, hypertension and other cardiovascular diseases (CVD) around the world (www.ish.org ; 2013).

According to the Report of WHO (2002), hypertension is the most prevalent CVD affecting at least 600million people worldwide. The report refers to hypertension as an important contributor to cardiovascular diseases, which according to Mathers, et al (2000), were responsible for the deaths of 17million people each year, or approximately one - third of the global deaths annually. This rose to about 17.5million deaths in 2009 (WHO, 2009). It is projected to account for about 23.3 million deaths annually by the year 2030 (WHO, 2013).

A review of the global burden of high blood pressure by the International Society of Hypertension (ISH) indicated that approximately 54% of stroke, 47% of ischemic heart disease

(IHD), 75% of hypertensive disease and 25% of other Cardiovascular Diseases (CVDs) are attributed to hypertension, equating approximately 7.6 million deaths attributable to high blood pressure (Lawes et al, 2008).

In Africa however, the World Health Report (2001), stated that Non - Communicable Diseases (NCD) especially hypertension, accounted for 22% of the registered deaths in the year 2000, killing even more than malaria (WHO, 2002). It has been projected that up to three quarters of the world's hypertensive population will be in economically developing countries by the year 2025 (Kearney et al, 2005). According to the final report of a national survey (1997), the national Experts Committee on Non-communicable Diseases (NCDs) ranks hypertension first among the NCDs in Nigeria. However, as Ekwunife and Aguwa (2011) pointed out, the disease is yet to be considered a problem in the country.

More importantly, it is essential to note that from high blood pressure from time immemorial has been no respecter of age. To this, the World Health Organization (1985) asserted that although there were several epidemiological reports on the prevalence of hypertension in adults, a dearth of information continued to exist in adolescent hypertension in many parts of the world. Several studies have observed and documented the distribution of cardiovascular risk factors in childhood and adolescent population in many countries (Berenson et al, 1980 and Harris 1987 and Webber et al, 1993).

After decades of the existence of the disease, as well as the existence of international and national societies of hypertension, the depth of knowledge youths have of hypertension and its risk factors which could make them prone to it, as well as its preventive and control measures are the concern of this research.

1.2 Statement of the Research Problem

It has been observed in recent times by medical experts that young adults especially the black skinned, now suffer and die from high blood pressure. According to Savoca et al (2009), in the year 2000, African Americans aged 25-29 died from the disease at almost three times the rate among whites, while hospitalized hypertensive patients among African Americans consisting of ages of 18- 44, were six times greater than hospitalizations among the whites. In Sub-Saharan Africa according to Mayosi et al, (2009), high blood pressure is also the predominant driver of Cardiovascular Diseases (CVD) especially among black Africans.

In Nigeria, Adebayo (2013) confirmed that very often, children and young adults in their 20s and 30s are being diagnosed with the disease. In relation to this, he noted that hypertension in youth is increasing abnormally. This he said could be hereditary and has been linked to an increased intake of salt, fatty foods, obesity, lack of exercises, inadequate intake of vegetable and fruits, smoking, uncontrolled consumption of alcohol and low level of awareness of the disease. Ogunbo (2013), stated that one in every four adults in Nigeria has hypertension and that more young persons are presently dying of the complications of the disease. He thereby stressed that there is need for aggressive enlightenment on early detection of the disease. Ajayi (2013) also maintains that the reason why more young adults in Nigeria are dying of the disease is ignorance, wrong socio-cultural beliefs and poor health seeking behaviour.

Results of a study carried out by Berenson et al (1984) showed that high blood pressure in childhood indicated the early stages of hypertension which therefore was a risk for young adult and adult cardiovascular disease.

In Nigeria, Musa and Lawal (2000), Balogun et al (1990) and Eferakaye et al (1982) have also carried out studies on the levels of blood pressure in adolescent children, all of which confirmed its existence. Mijinyawa et al (2008) further maintains that hypertension is known to track from

youth to adulthood, which makes it a useful predictor of essential hypertension adulthood. In the study carried out on the prevalence of hypertension and associated cardiovascular risk factors among secondary school teenagers in Kano, between ages 13 and 19 years, seventy students had systolic blood pressure 140mmHg and/or diastolic blood pressure 90mmHg indicating high prevalence. The result further revealed that the prevalence rate of hypertension among the younger participants rose from 4.3% to 11.8% among the oldest students. Out of the 70 participants, a majority (88,5%) had grade 1 hypertension, 10.0% had grade 2 hypertension and 1.5% had grade 3 hypertension (Mijinyawa et al, 2008).

The autopsy of the tragic incident of the sudden death of a famous Nigerian football player, Samuel Okwaraji, which occurred ten minutes from the end of a world cup qualifier against Angola in Lagos in 1989, revealed that the 25-year old died of an enlarged heart and high blood pressure (Ojo, 2002). This incident proves that hypertension is indeed a "silent killer" and it has not been a disease affecting only the old as perceived by many.

However, due to the fact that there are no clear-cut symptoms for high blood pressure, millions of people are said to be living with it ignorantly. This is thus often referred to as "the silent killer" in various publications and among health workers. In this light, some heart organizations, such as the Nigerian Hypertension Society among others, with support from state governments like Abia State have been said to make efforts in organizing awareness campaigns to keep the public abreast with the preventive and control measures of the disease. Notwithstanding, ignorance still remains one of the major reasons for the increasing prevalence of the disease not only among the aged, but also among the youth who are the strength and future of any nation.

A cross-sectional study of undergraduate students of the University of Ibadan, conducted by Ameen and Fawole (2007), revealed that the prevalence of risk factors for Cardiovascular

Diseases (CVDs) such as hypertension was high. This was drawn from students' consumption of baked snacks, cigarettes, alcohol and less physical exercises. In ABU, these risk factors are observable in reasonable number of students as they feed on snacks and soft drinks, others (predominantly males) smoking cigarettes mostly at the social centre and sculpture garden and taking alcohol in specific locations (1759, Exodus and Mami market Bassawa Barracks) off campus. Overweight and stress are also observable risk factors.

However, the crux of the matter is whether students are 'aware' of these risk factors. Also, it is important to note that a major risk factor, though not mentioned in the list of risk factors for hypertension by scholars is the 'lack of awareness'. It can be said to be the most dangerous risk factor and the fastest means of encountering death in any disease, for ignorance in itself is a disease.

Shaikh et al (2011), having carried out a study on 'knowledge regarding risk factors of hypertension among first year students of a medical university, discovered that knowledge of the predisposing risk factors is vital in the modification of lifestyle behaviors conducive to optimal cardiovascular health. Also, measuring and appropriately disseminating knowledge of controllable risk factors at an early age is an essential preventive educational approach. So far, risk factors of hypertension are not well studied in young adults and public awareness of hypertension in countries undergoing epidemiological transition is dismal. There is a paucity of data on the knowledge of hypertension and its risk factors among teenagers and young adults as most studies describe knowledge of hypertension and its risk factors in older adults and the elderly, the young are considered to be at a lower risk developing the disease.

Considering the above mentioned problem, the study sets to fill this gap by addressing the following questions.

1.3 Research Questions

1. What is the level of ABU students' awareness of risk factors for high blood pressure?
2. What are the students' unhealthy risks – laden lifestyles for high blood pressure?
3. Are students aware of the preventive and control measures for high blood pressure?
4. What are the strategies that could be adopted to improve awareness of preventive measures of risk factors for high blood pressure among youth?

1.4 Aims and Objectives of Study

1. To assess the level of awareness of risk factors for high blood pressure among ABU students.
2. To examine the level of students' engagement in unhealthy lifestyles.
3. To ascertain the level of knowledge of the preventive and control measures of high blood pressure among students of ABU.
4. To proffer possible strategies to enhance ABU students' awareness of risk factors for high blood pressure as well as control measures among youth.

1.5 Significance of the Study

This study will help identify the social factors responsible for youth proneness to high blood pressure. Findings such as the level of youth awareness to hypertension, their proneness to it and the preventive and control measures, as well as socio-economic backgrounds of youths who engage most in risk factors for hypertension, will be brought to light and this will aid the

government, heart and hypertensive related organizations in strategizing, for better and more effective awareness programs in the future.

Also, this research will provoke the minds of students to reflect on their lifestyles that predispose them to hypertension, as well as to seek more knowledge on the disease and adopt precautionary measures to avoid it.

Findings from this study will add to the existing stock of knowledge in the field of hypertension and cardiovascular diseases especially as it relates to youth and their knowledge on the risk factors of the deadly disease. Therefore, it will be of immense help to anyone who intends to carry out a similar research in the future.

Finally, the importance of a research of this sort cannot be over emphasized as it affects the youths who are the strength and future of a better and healthier Nigeria.

1.6 Scope and Delimitation of the Study

The study was carried out in both campuses (Main-campus and Kongo-campus) of Ahmadu Bello University, Zaria. It was basically centered on high blood pressure, precisely students' knowledge of risk factors as well as lifestyles associated with the disease.

This study is interested in students of all Federal Universities in Nigeria, as well as other youths in the general society, but due to manpower and financial constraints, it was limited to students of AB.U. However, this restriction did not compromise the quality of the study. The population of the study is undergraduate students of both campuses of A.B.U.

1.7 Definition of terms

Cardiovascular Disease (CVD) - is defined as illness of the heart and blood vessels, including high blood pressure, heart attack, stroke and heart failure (HPLP, 2004).

High Blood Pressure (HBP) - is a condition through which blood is passed through the body's blood vessels at greater force than normal. It can lead to tiredness, heart attack, stroke and other health problems. It is also called hypertension (HPLP, 2004).

Ischemic Heart Disease (IHD) - is a disease characterized by reduced blood supply to the heart muscle usually due to coronary arteries diseases. Its risks increase with age, smoking, diabetes, and hypertension (Gulati, 2006).

Non - Communicable Disease - is a medical condition or disease which by definition is non-infectious or non-transmissible among people. It may be chronic diseases of long duration and slow progression, or they may result in more rapid death such as some types of sudden stroke (Wikipedia, 2013).

Risk factor - something that contributes to illness: a feature of somebody's habits, genetic makeup, or personal history that increases the possibility of disease or harm to health (Encarta English Dictionary, 2009).

Youth - is a young male or female aged from 14 - 35years. Young people in this age group require social, economic and political support to realize their full potential (NYC, 1997).

CHAPTER TWO

REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews literature in line with the topic of study and the study objectives. It consists of six sections; the review of related literature which covers the views of different authors on this particular issue, risk factors of high blood pressure; health problems of high blood pressure; preventive and control measures of high blood pressure; the problem with hypertension awareness and control in developing countries; and the theoretical framework which tries to give an understanding to the topic of study.

2.2 Review of Related Literature

High blood pressure is technically called hypertension. According to the Healthy People Library Project (2004), it is a condition in which blood is pushed through the body's blood vessels at greater force than normal. The presence of high blood pressure accelerates the process of hardening of the arteries called atherosclerosis (Stahl, 1976). High blood pressure is measured using a sphygmomanometer; this is usually a digital blood-pressure monitor, which is made up of a box with a tube leading to a cuff. Blood pressure is measured in millimeters of mercury (shortened to 'mmHg'). A blood-pressure reading gives two figures. The first figure is the systolic pressure and the second is the diastolic pressure (British Heart Foundation, 2005). The systolic pressure is the pressure when the heart beats while the diastolic pressure is the pressure when the heart relaxes (Food and Drug Administration: Office of Women's Health, 2007).

According to the HPLP (2004), there are three main types of hypertension:

a) Primary hypertension (or "essential hypertension") - this form of high blood pressure is the most common, affecting over 90% of people who are 45 years old and above. While there is no known cause, there are a number of factors that contribute to its development, including age, heredity, lifestyle, diet, ethnicity, etc.

b) Secondary hypertension (or "nonessential hypertension") — unlike primary hypertension, this form of high blood pressure can be attributed to a specific cause. Among the possible short-term causes are pregnancy and the use of certain types of medication. The long-term causes include kidney disorders and head injuries. This type of hypertension accounts for nearly 10% of all high blood pressure cases. However, when the specific cause is identified and properly treated, blood pressure often returns to normal levels.

c) Isolated systolic hypertension(ISH)—this form of high blood pressure is most common in older people, affecting over 65% of people more than 60 years of age. ISH comes with no symptoms, as such many people may have it yet feel well. ISH is characterized by high pressure levels when the heart is beating (systolic), but normalized levels between beats, when the heart is resting (diastolic). This large gap between pressure levels can lead to a straining of the arteries.

Unlike many other diseases, high blood pressure is said not to have causes or **symptoms.** The only way of knowing if you have hypertension is to have your blood pressure measured (BHF, 2005). However, symptoms do arise, but when they do, according to the Healthy People Library Project (2004), it means that blood pressure is too high, often causing damage to such critical organs as the heart or kidneys. In the most severe cases, when symptoms arise, they might come in the form of headaches, excessive perspiration (sweating), chest pains, muscle tremors, fatigue, weakness, nausea, vomiting, heart palpitations, vision problems, blood in urine and confusion.

The BHF (2005), adds that breathlessness and nose bleeding can sometimes be a sign of high blood pressure.

High blood pressure is said to affect the body in various ways. The most critical effect is the strain it can put on the heart. High blood pressure also damages blood vessels and, if left untreated over time, can greatly impair the heart, brain, kidneys, and eyes. With few or no noticeable symptoms, this silent and potentially deadly condition can lead to severe physical damage well before a person understands what is happening and seeks medical treatment (HPLP, 2004).

The disease is also tagged as a serious risk factor for different forms of heart disease such as:

Congestive heart failure, which most commonly affects the elderly. As high blood pressure stretches and damages the heart from overwork, it also strains the blood vessels and hardens the arteries, making them thicker and less flexible, thereby greatly increasing the chances of **heart attack and stroke.**

However, it is important to note that high blood pressure is said to be not only a major risk factor to heart disease, but to other health disorders as well. Without diagnosis and treatment, the kidneys can become stressed and damaged, hurting their ability to clean the blood and potentially leading to kidney failure. Among the temporary and permanent vision problems that can result are optic nerve swelling and bleeding in the retina. To avoid these and other life-threatening complications, doctors recommend having blood pressure checked at least once a year, so patients who have high blood pressure can be treated effectively. This is important because research shows that, compared to people who have received treatment for high blood pressure; those who have hypertension but do not know it are about 6 times more likely to have congestive heart failure, seven times more likely to have a stroke, and three times more likely to have

coronary artery disease. Since high blood pressure has virtually no symptom until it becomes severe, it is especially important for people to monitor and control their blood pressure on an ongoing basis (HPLP, 2004).

According to BeLue et al, (2009) urbanization is strongly correlated with an increase in hypertension prevalence, and migration from rural to urban areas is also associated with increased blood pressure. To this, Gupta et al (1996), asserts that South Africans who have spent most of their life time in urban areas are more likely to be hypertensive than those from rural areas. Steyn et al (2008), suggests that mass migration from rural to urban and semi-urban areas probably accounts for the high prevalence of hypertension in black Africans living in urban areas, reasons being that urbanization affects food consumption patterns, with increased consumption of fats, oils, and animal-based foodstuff. This diet change can increase bodyweight, which is an independent risk factor for the development of hypertension. Sobngwi et al (2004) maintain that body-mass index is a powerful predictor of hypertension which is also strongly associated with urbanization. This, for BeLue et al$_s$ (2009) might result from dietary changes, reduced physical activity in addition to increased psychological stress, and interruption of traditional family links. Tide Idris (Lagos state commissioner for health) when being interviewed on the reason for the increase in prevalence of hypertension in the city of Lagos (Nigeria), concurred when he mentioned that urbanism or city life has implications for levels of stress and loss of family cohesion (Bulletin of the World Health Organization, 2013). Also, due to the fact that unlike the rural areas, most jobs require between 8 to 12 hours of one's time, coupled with the long drive home due to intense hold-ups on the way home, most people are predisposed to snack stores or eateries where fast foods and sugared drinks are readily available to them.

2.3 Risk Factors of High Blood Pressure

According to the Healthy People Library Project (2004) and the BHF (2005), no single cause of the condition seems apparent. Treatment for it therefore, has been based on keeping blood pressure at normal levels or under control. This they maintain involves identifying the specific risk factors that, when combined, can greatly increase a person's chance of developing high blood pressure. These risk factors are classified into two; the **Controllable** risk factors consisting of high salt intake, obesity, excessive alcohol use, cigarette smoking, lack of exercise, use of certain medications, drug or chemical use, diabetes, kidney disease as well as stress, and the **uncontrollable** risk factors consisting of heredity, race, gender and age.

a) Controllable Risk Factors

i. Salt: Salt has been found to be a risk factor because too much of it can raise fluid levels in the bloodstream, forcing the heart to work harder and blood pressure levels to rise. Sodium (salt) promotes fluid retention, and excessive fluid in the blood vessels of a person leads to additional increase in blood pressure caused by pressure on the vessel walls (Sonne-Holm, et al, 1989).

Several researchers have confirmed the effect of salt in hypertension. Soudarssanane, et al, (2006) says the overall prevalence of hypertension was found to increase with increased amount of salt intake. Francesco Cappuccio et al (2011) maintain that high salt intake is not just related with high blood pressure but may cause high BP and other cardiovascular outcomes.

ii. Obesity is another key risk factor. When a person gains weight, his or her blood levels also increases; causing the heart to pump more blood. The additional weight is said to cause a

person's blood pressure to elevate because it increases **cholesterol** levels, which further lellpads to the straining and hardening of the blood vessels and the heart (HPLP, 2004).

Individuals with BMI (Body Mass Index) less than 19.0 are underweight, BMI 19.0 to 25.0 are normal, BMI 26.0 to 30.0 are considered as over-weight and BMI of greater than 30.0 are considered as obese (Barlow *et al* 1998). Overweight or obese individuals are twice as likely to develop hypertension. According to Sonne-Holm, et al, (1989), over 50% of Americans are overweight, and the percentage is increasing. In 1980, 25% of Americans were overweight, and the incidence had risen to 55% by 1999. In the Framingham offspring study, obesity was found to be the major controllable risk factor for hypertension. In Nigeria, the prevalence of overweight individuals ranged from 20.3% - 35.1%, while the prevalence of obesity ranged from 8.1% - 22.2% (Chukwuonye, et al, 2013).

Recent studies have shown a significant increase in the prevalence of obesity in adolescents and young adults in America and in the United Kingdom and the cost of obesity and its associated illnesses is also increasing (Wang and Dietz 2002). Nigeria is not an exception. According to Ibhazehiebo et al (2007), in Edo state Nigeria though no published data are available, daily contact with obese adolescents and young adults suggests an increase among the age group. This is as a result of westernization of diets and rapid emergence of fast food and confectionaries which are highly by young adults especially of the higher socioeconomic group. In his study of 60 obese non-athletic young medical students (40 females and 20 males) revealed they were within the age range of 18 – 22 years and twenty percent of males and seven percent of females were found to be hypertensive.

iii. Excessive alcohol consumption can also reduce the heart's ability to function properly, thereby increasing blood pressure levels. Drinking too much alcohol is also said to make high

blood pressure medication less effective (HPLP, 2004). Excessive alcohol consumption has been linked to elevated blood pressure. It is also important to remember that a 5-ounce glass of wine contains approximately 100 calories and, therefore, even modest daily use can lead to gradual weight gain, which can in turn bring about an additional risk factor; overweight (Sonne-Holm, et al, 1989).

iv. Smoking: The rate of tobacco consumption still remains high. For instance, approximately 50 million Americans still smoke, and annually the United States spends 23 billion dollars in related medical costs (Larson et al, 1990). Smoking which kills thousands of Americans each year, negatively impacts nearly all organs in the body. Of its many effects on the cardiovascular system, smoking raises blood pressure-at least in the short term. This rise in blood pressure is considered secondary to the nicotine-related release of body chemicals such as adrenaline, which causes the blood vessels to constrict. In fact, like hypertension, smoking by itself leads to an increased risk of stroke, due to an acute decrease in blood flow to the brain (Cruickshank et al, 1989).

v. Stress and emotions are another controllable risk factor of high blood pressure also that leads to the development of high blood pressure. In fact, people who have a lot of stress in their lives or who suffer from emotional conditions like depression or anxiety are thought to have at least twice the risk of developing high blood pressure than others. This is because the stress hormone, cortisol, is released from the adrenal glands in greater amounts causing blood pressure to increase when a person experiences short-term or long-term stress. Like adrenaline, cortisol levels rise when a person is under stress. When a person's "stress hormone" levels are elevated on a consistent basis, it can lead to a variety of health problems, from depression to high blood

pressure to cancer. Different forms of stress may also prompt people to escape their troubles by overeating, smoking, or abusing alcohol, all of which cause blood pressure to rise (HPLP, 2004).

a) Uncontrollable Risk Factors

Though anyone is susceptible to high blood pressure, some people are more susceptible due to certain constant factors such as race, age, gender and heredity. These are uncontrollable risk factors which can be said to be part of the reasons for the uneven impact of high blood pressure,

i. **Age**: According to the Healthy People Library Project (2004). African Americans are much more likely to develop the condition earlier and more severely than whites. The chance of having high blood pressure increases as you get older. About two out of three adults over the age of 60 have high blood pressure and about sixty-five percent of Americans aged 60 or older, have the disease (National Institute of Health, 2013). Even among adolescents, a study carried out by Akinkugbe, et al (1999) on blood pressure patterns in the city of Ibadan Nigeria, showed that adolescents aged 16-19years had higher blood pressures than those aged 12-15years.

ii. **Gender:** men and women are equally likely to develop high blood pressure during their lifetime. However, before age 45, men are more likely to have controlled high blood pressure than women (National Institute of Health, 2013). Also, men are said to have a greater chance of developing the uncontrollable HBP before age 55, whereas women are more likely to develop it after the age of 75 and after menopause (National Institute of Aging, 2013). Even among youth, boys are at higher risk of developing HBP and pre-hypertension than girls (NIH, 2013). A number of studies in Nigeria have reported and confirmed the relationship between gender and

hypertension. Jervase, et al (2008) studied 563 Ibos aged 20 to 89 and the outcome revealed that men generally exhibited relatively higher levels of blood pressure, except for age groups 50-59years and 60-69years where blood pressure was slightly higher in females. Also, Ekwunife, et al (2010) on the conclusion of a study on hypertension prevalence, awareness, treatment, and control in Nsukka, where in 756 adult participants (364 men and 392 women) aged 18 years and above were examined, asserted that men had higher prevalence of high BP than women. Blood pressure was 40.3% and 24.7% for males and females respectively.

iii. **Heredity:** Heredity/Genes are another factor, if one or both parents have or once had hypertension, the children then have a greater chance of developing it too (BHF, 2005). To this, health research has proven that genetics is one of the causes of high blood pressure and cardiovascular disease (HPLP, 2004).

iv. **Race**: High blood pressure can affect anyone. However, it's more common in Africans and African Americans as they tend to get HBP earlier in life, often have more severe cases, are less likely to achieve control levels with treatment, and have higher rates of early death from HBP related problems such as coronary heart disease, stroke and kidney failure (NIH, 2013).

Although, pre-hypertension and high blood pressure are becoming more common in children and teens, African American and Mexican American youth are more likely to develop HBP and pre-hypertension (NIH, 2013). In 2000, African Americans (aged 25-29 years) died from CVD at almost three times the rate as Whites, Hypertension hospitalization rates among 18-44year-old African Americans were six times greater than Whites (American Heart Association, 2008). In Africa, there is a dearth of data pertaining youth and hypertension.

2.4 Health Problems from High Blood Pressure

The following complications of high blood pressure described below can be avoided or delayed through prevention and treatment,

a) **Stroke** - High blood pressure is a leading cause for stroke, which occurs when blood has trouble flowing to the brain. High blood pressure can make a blood vessel rupture, causing a hemorrhage (bleeding) in the brain. Strokes or "brain attacks" are also caused by blood clots and narrowing of the arteries **(atherosclerosis).** They can lead to such complications as the inability to speak, brain damage, paralysis, and death. It is important for high blood pressure patients in particular to monitor their health and get effective treatment for the condition before it leads to a stroke the risk of which doubles every 10 years after the age of 35 (HPLP, 2004).

b) **Kidney Disease** - The kidneys help to keep blood pressure levels regular by cleaning the blood of extra fluids and wastes. When a person develops high blood pressure, the kidneys can become damaged. When the kidneys are no longer able to function properly, the extra fluids and wastes that remain in the blood can lead to even higher blood pressure levels and, ultimately, illness. If left untreated, a person suffering from kidney disease may need a kidney transplant or **dialysis** treatment, which is the use of a machine to help the kidneys function and clean blood. High blood pressure is the second leading cause of kidney failure, and leads to over 15,000 new cases in the U.S every year. Research has also shown that between 20 and 25 percent of patients who must undergo dialysis first had "slightly elevated blood pressure" that had been untreated. Early and effective treatment of high blood pressure can also help to prevent the occurrence of kidney disease (HPLPS, 2004). High blood pressure causes artery damage and the

kidneys are packed with arteries. Kidneys are supplied with dense blood vessels and high volumes of blood flow through them. Over time, uncontrolled high blood pressure can cause arteries around the kidney to narrow, weaken or harden. These damaged arteries are not able to deliver enough blood to the kidney tissue. Uncontrolled high blood pressure can lead to kidney damage as more arteries become blocked and stop functioning, the kidneys eventually fail. This process can happen over several years, but it can be prevented (AHA, 2012).

c) **Vision Problems** - Vision loss or blindness can result from optic nerve damage that is brought on by high blood pressure. The condition can also lead to bleeding in the retina, the light-sensing part of the eye. This disease is called **retinopathy,** which can result in partial or complete blindness. Early detection and treatment can help to prevent vision loss brought on by high blood pressure (HPLP, 2004),

d) **Hardened Arteries (Atherosclerosis)** - Hardening and thickening of the arteries, can result from high blood pressure. Hardened arteries can lead to a greater buildup of fats and cholesterol in the arteries and blood vessels, causing the heart to enlarge and weaken because it is forced to pump harder. This disease can block the proper flow of blood and oxygen that the heart, brain, and vital organs need to work properly. Blood clots may also form in an artery, blocking the flow of blood entirely. While considered a slow and advancing disease that mainly affects the aged, atherosclerosis (also called arteriosclerosis) may result in a heart attack or stroke if left untreated over time. In addition to high blood pressure, other risk factors that contribute to the progression of this disease include smoking, diabetes, obesity, and family history (HPLP, 2004).

e) **Heart Attack** - Hypertension can contribute to the hardening of arteries, which can lead to a heart attack. In order to function properly, the heart muscle itself needs a continuous supply of oxygen-rich blood. When arteries become narrowed or blocked, this vital flow becomes lessened, causing muscle damage and **angina** (chest pains). Heart attacks result when arteries and the flow of blood to the heart become completely blocked. In general, any disruption in the workings of the heart is life threatening and in need of prompt medical attention.

f) **Heart Failure** - Another aspect of the effect that high blood pressure can have on the heart is in the form of heart failure. As previously mentioned, the heart can be forced to work harder due to complications of high blood pressure and atherosclerosis. Under these unhealthy, untreated conditions, the heart begins to stretch and enlarge (either partially or as a whole). Eventually, the heart fails to function effectively, either too much, not often enough, or irregularly and ultimately results in **congestive heart failure.** This disorder may involve a failing of the entire heart or just one side of it. When the left side of the heart fails, blood and other fluids get backed up in the lungs. The first signs of this condition are breathing problems, such as shortness of breath. When the right side fails, blood may back up into other areas of the body as the veins fill and leak fluid into the surrounding tissue. Symptoms of right-side failure include fatigue, indigestion, liver damage, and swelling in the legs.

2.5 Preventive and Control Measures of High Blood Pressure

Although there is still no cure for high blood pressure, it can be effectively controlled through treatment that may involve lifestyle and dietary changes, as well as medication. For those who have yet to develop the condition, maintaining a healthy lifestyle and diet throughout life can go

a long way in preventing this potentially deadly condition. There are many ways people of all ages, races, and family backgrounds can help to prevent or lessen their chances of developing high blood pressure. Among the most important recommendations are:

- Eat properly (limit salt intake).
- Get exercise.
- Practice relaxation techniques to reduce stress.
- Avoid alcohol and tobacco.
- Monitor your health (including regular blood pressure readings).
- Take blood pressure medicine, if prescribed. One can greatly reduce ones chance of developing high blood pressure by following the recommendations listed above. In more serious cases, medication may be necessary to help control the condition. However, it is very important to prevent the development of high blood pressure in the first place. The following is a more in-depth review of the key ways that people with and without high blood pressure can help to control or prevent the condition from becoming severe or out of control (HPLP, 2004).

a) **Maintaining the Right Weight**

The link between weight and blood pressure is often very strong and direct. Moreover, as people gain weight, their blood pressure levels increase. The same is true for many people who are obese but lose weight. They can expect their blood pressure levels to decrease. In fact, losing ten pounds or more can help to lower the blood pressure. This is why weight loss is considered one of the most important and effective natural treatments for preventing or reducing high blood pressure. People who are overweight (as opposed to obese) are believed to be two to six times

more likely to develop high blood pressure than those who are at or maintain their healthy, desirable weight levels (HPLP, 2004).

The ability to maintain a healthy weight requires more than self-control and willpower. At least six factors influence the weight-behavior, environment, health status, culture, income level and genetics. In order to avoid obesity, first get regular exercise, at least thirty minutes a day of activity equivalent to vigorous walking. You can do it all at once or in divided segments, Second, focus on healthy eating, not deprivation diets. Choose healthy foods such as vegetables, fruits, grains and lean meat. Seek foods for their nutrient value and not for their calories. Third, lose weight slowly. One pound per week is most effective. Even five to ten percent of your body weight can improve your health (Busch. 2000).

b) Eating Properly

The golden rule for living a long and healthy life is maintaining a balanced diet that includes fruits, vegetables, grains, and fish along with limited amounts of salt, fat, and sugar. This is especially important for people with high blood pressure who are also striving to lose weight. As a rule, many medical organizations recommend that people consume no more than 1 teaspoon (2,400 milligrams) of sodium a day. Americans, on average, take in between 4,000 and 6,500 milligrams a day! This is why more Americans as compared to people in other countries, have a greater risk of developing high blood pressure (African Americans and the elderly are particularly sensitive to sodium). One critical change that people suffering from high blood pressure need to make is to reduce the amount of salt and sodium they consume. This includes table salt and foods that are high in sodium, like canned soups, smoked meats, smoked fish, seasonings, and many packaged and processed foods. This is why it is important to read the

"Nutritional Facts" labels on most goods at the supermarket in order to determine how much sodium per serving a food item contains (HPLP, 2004).

Experts recommend tasting food before considering adding salt - and eliminating the salt shaker from the dinner table. Experimenting with herbs and spices while cooking can help replace the flavor lost from salt and result in food that tastes delicious. While reducing sodium, consider increasing potassium intake. A healthy balance of potassium may be beneficial to the control of high blood pressure. Foods high in potassium include bananas, black beans, carrots, oranges, milk, pork, potatoes, prunes, spinach and veal. A healthy diet should include 2000 to 5000 mg of potassium and 300 to 500mg of Magnesium per day. Magnesium is important to vascular tone and relaxation. Foods high in magnesium include beans, nonfat yogurt, nuts, potatoes and spinach (Cappuccio and MacGregor, 1991).

Also, Calcium which is better known for building strong and healthy bones may also play a role in hypertension. It has been noted that some hypertensive people have lower calcium levels in the blood and higher excretion of calcium in the urine (Zoccali, et al 1989). In a review of over 20 studies, individuals given 1 to 2 grams of calcium supplements per day had lower blood pressure as a result. But it is advised to maintain a healthy diet that includes calcium from dairy products (Grobbe and Waal- Manning, 1990).

c) Getting Exercise

Along with eating properly, regular physical activity is the key to losing weight, feeling good, and ensuring better, lifelong health. In addition to lowering blood pressure, exercise helps to burn calories, reduce appetites, tone muscles, alleviate stress, lower cholesterol levels, and prevent heart disease and countless other health problems. Whether one has high blood pressure or not, it is widely recommended that people perform at least 30 to 40 minutes of physical

exercise three to four times a week. The benefits are innumerable. In terms of high blood pressure, people who exercise are 20 to 50 percent less likely to develop high blood pressure than those who are not physically active (HPLP, 2004).

Mayo clinic staff Arizona (2012) view exercise as a drug free approach to lowering high blood pressure. According to them, regular physical activity such as mowing the lawn, raking leaves, scrubbing the floor, basketball, tennis, climbing stairs, walking, jogging, bicycling, swimming, etc, makes the heart stronger and a stronger heart can pump more blood with less effort. Therefore, if the heart can work less to pump blood, the force on the arteries decreases, lowering one's blood pressure. Becoming more active can lower one's systolic blood pressure (the top number in a blood pressure reading) by an average of 4 to 9 millimeters of mercury (mm Hg). That is said to be as good as some blood pressure medications. If ones' blood pressure is at a desirable level (less than 120/80 mm Hg), exercise can help keep it from rising as one grows older. But to keep blood pressure low, one would need to keep exercising. The benefits last only as long as one continues to exercise.

d) Avoiding Alcohol and Tobacco

According to the Healthy People Library Project (2004), using alcohol or tobacco to excess can greatly raise blood pressure (and lead to numerous other medical and personal problems). While putting a person at greater risk for developing high blood pressure, excessive alcohol consumption can damage the liver, heart, and brain. High in calories, alcohol can easily hurt one's efforts to lose weight. A number of recent studies have shown that limited alcohol consumption is not entirely bad for people and can have some health benefits. For example, some clinical trials have indicated that people who have one or two drinks a day have lower blood pressure and live longer than those who drink too much. Others have found that limited

wine consumption can prevent the accumulation of fat in the arteries and raise "good" blood cholesterol. However, these few benefits aside, what is unmistakable is that excessive alcohol has been and continues to be the source of countless personal, medical, and social problems throughout the world. Regarding tobacco, the easy answer to the problem of smoking is not to start in the first place. For those who do smoke, the simple solution is to gain the support you need to quit. The payoffs are remarkable, if not immediate, since the risk of heart disease after the first year of quitting is reduced by more than 50 percent.

e) Monitoring Health

This involves meeting with a doctor for regular check-ups and having your blood pressure measured on a regular basis, particularly if you have high blood pressure or pre-hypertension. Again, it is recommended that people have their blood pressure checked at least once a year. For those with hypertension, it is important to monitor, treat, and control the disorder on an ongoing basis. Doctors or health care providers often advise their patients with hypertension to keep track of their blood pressure on a daily basis using some form of home monitoring device. This allows the doctor and patient to monitor and record how his or her blood pressure changes over time. It also provides a more accurate diagnosis of the fluctuations at different times of the day and in between doctor visits. Home monitoring also helps in cases where a patient's blood pressure levels or medications change frequently.

Overall, it is normal for blood pressure readings to fluctuate 20 to 30 mmHg at different times of the day, particularly after performing some form of physical activity or while experiencing moments of excitement. It is suggested that patients do not become overly concerned about these fluctuations or become obsessive about their readings in general (HPLP, 2004)

f) Taking Blood Pressure Medicine

For those whose high blood pressure is serious enough to require medication, it is important to remember that changes in diet and lifestyle are also absolutely necessary. No single "wonder" drug or large amount of medication will help a person reduce his or her blood pressure to a healthy level. How one eats and lives will need to be improved as well.

g) Herbal Supplements

i. **Garlic:** This supplement is recommended by many holistic practitioners for the reduction of blood pressure and the promotion of cardiovascular health. In an analysis of eight published and four unpublished trials, garlic supplementation for at least four weeks led to a modest reduction in blood pressure (Silagy and Neil, 1994).

ii. **Moringa Oleifera** is a tree plant grown in different parts of the world, but mostly grown and said to originate from India. In Nigeria, it is called 'zogele' and mostly grown in the northern areas. It is mostly referred to as the 'miracle tree' by several authors as scientist continue to discover its rich nutrient content.

Ancient Indian folklore says this tree will prevent over 300 known diseases. From the seeds, the pods, the bark, roots and leaves, it is said to be the most generous giver of life enhancing nutrients (moringa-miracletree.com, 2014).

The role of moringa oleifera plant in treating high blood pressure has long been known to practioners of Ayurveda, the traditional medicine of India and its surrounding areas. Recent scientific studies have provided solid evidence that moringa supplements can indeed reduce high blood pressure in patients and provide benefits to overall cardiovascular health as well. Modern

medicine research supports the use of moringa leaf extract for the control of hypertension and the negative effects it can cause throughout the body (Lifted-Up, 2014).

According to Sanford Hoist (2000), the following nutritional breakdown of moringa leaves are essential for the control and prevention of high blood pressure; Moringa fresh leaves are said to be 7 times the vitamin C of oranges; 4 times the Calcium of milk; 3 times the potassium of bananas; 2 times the protein of yogurt; 4 times the vitamin A of carrots, and ^{3}A the iron of spinach. On the other hand, when dried in shade, the leaves are said to become a greater powerhouse of nutrition as it contains $^{l}/2$ the Vitamin C of oranges; 17 times the Calcium of milk; 15 times the Potassium of Bananas; 9 times the Protein of Yogurt; 25 times the Vitamin A of Carrots; and 20 times the Iron in Spinach. All these elements increase except Vitamin C.

2.6 The Problem with Hypertension Awareness and Control in Developing Countries

The WHO's Global status report on non-communicable diseases for the year 2010, states that of WHO's six regions, the African region has the highest prevalence of hypertension estimated at 46% of adults aged 25 and above. The situation would have been better but the problems caused by hypertension are made worse when people are not aware of the necessity for regular blood pressure checks or are unable to afford it. According to Olaiyinka Ogunleye who works in the hypertension unit in a hospital in Lagos Nigeria, it costs around 1,000 naira for a patient to have his or her blood pressure checked. (Bulletin of WHO, 2013).

Studies by Wang et al. (2002), and Oke and Bandale (2004) in Nigeria (West Africa) showed that poverty was one the disposing factors of hypertensive patients non-compliancy to treatment. ProCor (2009) asserts that the treatment of hypertension in developing countries is unaffordable for the average worker. This is due to the fact that, the lowest treatment pharmacologically is recorded to be 7.5-12% of the monthly income of the average worker in Ghana.

A systematic review that compared hypertension prevalence in settings with different rates of economic development showed higher overall prevalence of controlled hypertension in the more affluent countries, although the proportion of controlled hypertension in people aware of their disorder and treated pharmacologically was not meaningfully lower in developing settings (Pereira, et al, 2009). According to Damasceno et al (2009), conclusions from the STEPS (Stepwise approach to Surveillance) survey in Mozambique were similar suggesting that the big difference in terms of hypertension control between developed and developing countries is the extent of awareness, which is much lower in low-income regions. This difference in awareness might be predominantly attributable to the scarce human and material resources that characterize less affluent settings.

Furthermore, according to Ibrahim and Damasceno (2012), health professionals and the general population have little knowledge about the importance, causes, and control of hypertension. In addition, they maintain that the major factor that contributes to poor awareness is that, hypertension as an asymptomatic disease, contrasts with the most common clinical situations faced daily by primary health-care workers in developing countries. Measurement of blood pressure is seen as a secondary task and is not systematically done. As a result, hypertension is not often diagnosed but that if patients are diagnosed with hypertension, a great proportion are lost to follow-up as a result of a poor relationship with their overburdened health professional, disorganized outpatient clinics with long waiting times, and the economic burden of purchasing drugs, which are generally paid for by the patients themselves.

Damascene, et al, (2009) and Addo, et al, (2007) blame the problem of hypertension awareness on scarce studies examining awareness and control of the disease in sub-Saharan Africa. Mather, et al, (2011) added that information on awareness and control of hypertension is needed for

planning effective control strategies and for resource mobilization. Musinguzi and Nuwaha (2013), haven studied the prevalence, awareness and control of hypertension in Uganda, of which more than a quarter of the adult population had hypertension but weren't aware of it, termed 'awareness' of hypertension a pre-condition for the control and prevention of the silent killer.

Murray and Lopez (1997) recognize that enormous challenges persist in the control of infectious diseases in sub-Saharan Africa, but then points out that non-communicable diseases are also important threats to the health of Africans, especially adults. Cohort studies on hypertension in Nigeria and Zimbabwe and epidemiological information by Asuzu, et al (1996) show that between 10 and 20 million people in sub-Saharan Africa may have hypertension and that treatment could prevent around 250 000 deaths each year. However, hypertension is fully treatable, but social conditions in Africa make the implementation of blood pressure control programmes difficult (Cooper, et al, 1998) as most low-income countries do not have a national policy for the control of non-communicable diseases. Primary health-care systems have not adapted to cope with these new challenges. As a result, primary healthcare units, mainly in sub-Saharan African countries, are often without the most basic equipment, such as a calibrated and functioning sphygmomanometer or a glucometer (Mendes et al, 2004).

Moreover, in sub-Saharan Africa, it is difficult to formulate and justify policy on treating and controlling chronic conditions such as hypertension as there are no health statistics from which to judge likely costs and benefits (Kaufman, et al, 1997). Again, Ibrahim and Damascene (2012) noted that most developing countries have no national guidelines for diagnosis and treatment of hypertension but that when they do, the local guidelines are merely a copy of the American or European guidelines, and have not been adjusted to meet the needs of the country.

According to Cameron et al, (2009), the deficient procurement and distribution process of essential drugs for treatment of hypertension is also a very common problem. As a result, these drugs are mostly out of stock, with the inevitable effects on compliance of patients and control of patients' blood pressure. For Siva, (2010), a potentially more important issue is that many of these drugs are counterfeit generic drugs bought without any process of quality control; adding that even if these generic drugs are not harmful, they are usually less efficient, and that this in the long run, increases the proportion of patients whose blood pressure is not correctly controlled.

Therefore, scarce resources and the projected importance of hypertension and its future effects, according to Ibrahim and Damasceno (2012), should be an important stimulus for innovative solutions that should help to override the enormous difficulties of these deficient health systems.

2.6.1 Possible solutions to the problem of awareness and control of hypertension in developing countries.

According to Ibrahim and Damasceno (2012), a cost-effective approach should be put in practice to help curb the problem of control of hypertension in resource-limited settings and eligibility for drug therapy should be restricted to patients who will really benefit from it, such as those at moderate or high risk. However, they suggest that a more aggressive treatment should be given to patients at highest risk. Realizing that this approach will only reach a very small number of people and will not effectively reduce the burden of cardiovascular events, they suggest that strategies should be reinforced by a strong national public health awareness campaign that would aim to reduce not only the prevalence of hypertension, but also all the other risk factors, such as consumption of alcohol, salt, and tobacco; obesity; and low physical activity, at both the population and the individual levels. For them, a cost-effective public measure for the control of hypertension is to reduce excessive salt intake. This is very important especially in Africa in

which most of its population are said to be salt sensitive. Meanwhile, in a revision of 32 salt-reduction initiatives around the world, according to Webster et al, (2011) none of the initiatives came from Africa, only South Africa has announced the need to legally control the salt content in most processed food available for consumption.

Life expectancy has increased during the past three decades in Finland. This is attributed to the decrease in salt intake incorporated into the nationwide nutritional recommendation. New salt labeling regulations were passed by the Ministry of Trade and Industry in conjunction with the Ministry of Social Affairs and Health. This legislation affected all item categories that contributed high salt intake to the average Finnish meal. These included; bread, cheese, butter, sausage, sauces and so on. The implementation of this legislation since 1 June, 1993 contributed remarkably to decreasing high blood pressure (Kofi, 2011).

The three most important steps to increase hypertension control in developing countries at an individual level are to use primary health care as the key point of control, to have nurses as the main human resources for diagnosis and follow-up, and to adopt a global cardiovascular risk approach as a strategy for drug treatment (Gaziano et al, (2005) and Mendis et al, (2007).

In terms of education, awareness of HBP disease as a silent killer should be created by health professionals. This is due to the fact that control of high blood pressure is dependent on involving the individual in a management plan. This may include firstly, lifestyle changes (healthy weight, physical activity, healthy diet, and avoiding heavy alcohol use) as well as close monitoring after diagnoses. This is very important in the control of HBP (ProCor, 2009).

Pereira and Azevedo (2008) noted that in developing countries, contact between the health care system and the community is limited. They therefore suggest that mass screening could provide a useful approach to increase awareness of the diagnosis but would have to be repeated frequently

for sustained effects. Such screening should, additionally, be closely linked to diagnostic and treatment opportunities.

However, Ibrahim and Damascene (2012), maintain that in Africa and Asia, many patients are given counterfeit drugs, sometimes purchased freely by the government. Therefore, they suggest that governments should make a special effort to supply basic drugs for treatment of poorest patients.

Lastly, according to Glassman et al, (2010) and Gaziano, (2007) a global risk approach has been proposed by the most recent hypertension guidelines from WHO and the International Society of Hypertension and has been shown to have an economic benefit in several developing settings. WHO has developed risk charts for different regions of the world that define the global risk of a cardiovascular event in the next 10 years on the basis of age, sex, systolic blood pressure, total cholesterol, the presence of diabetes, and tobacco consumption. Simpler risk charts were also proposed for developing countries where total cholesterol concentrations are generally assumed to be low, such as in sub-Saharan Africa.

2.7 Theoretical Framework

Health Belief Model

The health belief model was introduced in the 1950s by psychologists working on the US Public Health service. Its basic assertions are that people were afraid of getting serious illness and that health related behaviors reflect the level of threat perceived and a person's expected fear-reduction potential of taking action. In other words, perceived seriousness and susceptibility of an illness provokes the likelihood of preventive action. The theory identifies four aspects of this assessment:

— Perceived susceptibility to ill health (risk perception)

— Perceived severity of ill health

— Perceived benefits of behavior change

— Perceived barriers to taking action

The right combination of perceptions adds up to an individual's readiness to act. Health promotion messages through mass media, peer education, and other interventions act as cues to action. These cues are often necessary to overcome habitual unhealthy behaviors such as eating primarily high-fat foods, smoking, etc (Rosenstock et al, 1988).

According to Sutton (1982) and Flay (1985), giving information on the bad effect of smoking for instance, is also effective in promoting the prevention of smoking and in getting people to give up.

Sutton (1982), Sutton and Hallet (1989) are of the view that, information or awareness in the form of fear-arousing warnings may change attitudes and health behavior of people.

For Pender et al (2002), the perceived seriousness of a disease is basic to all further decision taken. Lack of perceived severity induces a person not to feel vulnerable. If a person perceives that his or her disease is not serious and that it is well controlled, then there will be no motivation to take further preventive action.

A study carried out by Wright et al, (2009) on the perception of seriousness and preventive health actions of patients with type 2 diabetes made evident the influence of perception on control when it was discovered that 87.5% of participants who did not perceive their diagnosis of type 2 diabetes as serious, actually ended up gaining weight instead of losing it and rarely visited the health centers for check-ups which is a preventive or control measure. If patients diagnosed

with type 2 diabetes perceive their condition as serious, they will be more likely to commit to and maintain recommended health action.

Direccao Geral da Saude (2006), maintain that it is necessary to inform and educate the population, to explain in a way that each person understands the message, allowing people to choose to adapt and take more healthy and desirable options within their own lifestyle.

Wyper (1990) asserts that several studies have examined breast self-examination behavior and reports that barriers and perceived susceptibility (the likelihood of having the illness) are the best predictors of healthy behavior.

According to De-Graft Aikin et al (2010), lay and patient knowledge of major chronic diseases and its consequences is poor in Africa. They assert that poor self-care have been attributed to poor medical knowledge, they therefore seek to promote the notion that greater and better individual knowledge will lead to a desired health behavioral change. However, they also admit that preventive health behaviors are not sure to be attained by mere information on perceived risks or perceived benefits of behavioral change.

From the premises given and literatures reviewed, one can hold that the importance of awareness or information on an illness (especially non-communicable diseases, in terms of risk factors, perceived severity of a disease as well as the benefits of preventive action) to adopting preventive health behavior, thus a healthier society especially in posterity cannot and should not be underestimated. For thus goes the saying; "my people perish for lack of knowledge". Most deaths (in adults and young adults within the ages 18 – 35), resulting from such non-communicable diseases as hypertension in developing countries like Nigeria is a result of lateness in detecting and seeking medical help. This is mostly blamed on poor knowledge, poor medical check-ups or poor perceived severity of the illness by people especially the youth who

mostly think that only the aged are prone to HBP. Hence, the urgent call from scientists and researchers for awareness campaigns and platforms for preventive health education.

This theory has helped in explaining the significance of the knowledge or awareness people have of the effects of an illness or a disease and their taking precautions as well as developing healthy behaviors. However, it stressed more on perceptions, thereby laying its emphasis on the individual and ignoring adverse health effect of not taking preventive actions toward developing high blood pressure. The functionalist theory is therefore adopted.

The Functionalist Theory

The functionalist theory was propounded by Auguste Comte (1798 - 1857) and Herbert Spencer (1820 – 1903). It was further developed and refined by Emile Durkheim (1858 – 1917) and Talcott Parsons (1902 – 1979)

The functionalist compared the society with an organism such as the human body. They argued that every organ in the body has a relationship to other organs and its own contribution to the maintenance of the (whole) organism. In other words, the society is seen as a self-regulating system made up of inter-related parts which function to ensure the stability and general well-being of the whole (Rakhi, N., and Licy, A.D (2011).

This school of thought believes that every part must exist in a mutual state to attain equilibrium and the dysfunction of one part will lead to instability. For instance, the human body is made up of ten different systems. They are the skeletal system; muscular system; nervous system; respiratory system; cardiovascular system; lymphatic system; endocrine system; digestive system; urinary system; male reproductive system and the female reproductive system. All these systems require the support and coordination of other systems to form a living and healthy

human body. If any of this system is damaged, the human body will become unstable and this lack of stability will ultimately lead to death. This is because the functions of one system cannot be performed by other systems (www.mananatomy.com 2016).

Thus, high blood pressure, a disease affecting the cardiovascular system is detrimental to the general wellbeing of students who are meant to fit into various vital social systems through which they will contribute to the government for instance, to sustain the state. That is, the health of students which mostly consists of young adults is dependent on the proper functioning of their body systems such as the cardiovascular system, to enable them function fully to support the society.

This theory has helped to explain the importance of cardiovascular health to the body, to students and the society at large. In other words terming high blood pressure as a destructive agent to the wellbeing of the human body and therefore to the whole society as health remains a significant system of every society.

However, the theory has not explained the aspect of 'awareness' which also constitute a major part of this study. Therefore, the study incorporated a different perspective; the health belief model.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the explanation of the research design, the methodology to be used for the study. It encompasses aspects of field work such as location of the study, types and sources of data, sampling technique, methods of data collection and method of data analysis as well as limitations of the study.

3.2 Location of the Study

The location of the study is ABU Zaria. Information and data for the study were gathered precisely from both the Main and Kongo campuses of Ahmadu Bello University Zaria, Kaduna State. This location was selected because the researcher is accustomed to it and it is the largest institution in the state where respondents (youths) could be easily sourced in large numbers.

ABU was founded on October 4th 1962 with four (4) faculties, fifteen (15) departments, with about four hundred and twenty-six (426) students. By the year 2002, the university had transformed into the largest and most extensive of all universities in sub-Saharan Africa. Currently, the university covers a land area of 7,000 hectares and encompasses twelve (12) academic faculties of which two (2) faculties namely: Law and Administration are situated in Kongo campus; a post-graduate school and eighty-two (82) academic departments. It also consist of five (5) institutions namely, Institute for Development Research, Institute for Agricultural Research, Institute of Education, Institute of Administration and National Animal Production Research Institute, (6) specialized centers, a Division of Agricultural College, a Demonstration Secondary School and a Staff primary school, which provides a variety of services to the

university and the wider society. The total student enrolment in the university's degree and sub-degree programs is about 35,000 drawn from every state of the federation, Africa and other parts of the world. There are about 1,400 academic and research staff as well as 5,000 supporting staff (www.abu.ng). The information above describes the verse nature of the university.

3.3 Population of Study

The population of this study comprised of only undergraduate students of the twelve faculties in both ABU campuses. The rational for selecting this population is due to the fact that most undergraduate students fall within the youth age (18 - 35yrs) and due to the nature of their daily activities, may be found to engage in risk factors of high blood pressure unaware of its later effect. Also, because of the irregular movement of post-graduate students in and out of the campus, they will not be included in the population of this study.

3.4 Types and Sources of Data

The study employed both the primary and secondary sources of data. This involved the administration of questionnaires, In-Depth Interview (IDI) as well as statistical reports on the distribution of students for each faculty retrieved from the MIS office, ABU. The questionnaires were distributed to registered undergraduate students in 100 level and above, while a staff of the university's guidance and counseling unit and three religious leaders (Muslim, Protestant and Catholic) were interviewed. Also, out of the 5 doctors and 19 nurses in Sick-Bay kongo, 16 doctors and 59 nurses in Sick-Bay main-campus (admin secretary's offices of both Sick-Bay), 2 medical personnel; each from both university Sick-Bays, were interviewed using the IDI source. This was because the health workers were believed to have some vital information as they deal directly with students. In addition, three religious leaders in ABU (a priest, an imam and a

pastor) were interviewed. This was to discover if health programs are being organized for students who constitute the majority of their congregation.

3.5 Sample Size and Sampling Techniques

The stratified sampling technique was employed. This is due to the fact that ABU is a very large entity consisting of about 31,473 undergraduate students (study population) belonging to different faculties and departments. This sampling technique also ensured that each stratum was represented. Both campuses was divided into strata (faculties).

In order to get the sample size for the study, the total population of undergraduate students of ABU was found to be 31,473 (MIS, 2014). Thereafter, the simplified Yamane formula was employed to arrive at the sample size: $n = \frac{N}{1+Ne^2}$ (stats.stackexchange.com, 2012).

Where n = sample size

N = total population

e = level of significance $(0.05)^2$

$$n = \frac{31473}{1 + 31473\ (0.05)^2}$$

n = 399.98 Approximately 400

Furthermore, the sample size for each faculty will differ just as the population. This will be sorted as follows:

Faculty of Administration has a population of 3,443;

$$\frac{3443\ x\ 400}{31473} = 44\ questionnaires$$

Faculty of Agriculture has a population of 472;

$$\frac{472\ x\ 400}{31473} = 6\ questionnaires$$

Faculty of Arts has a population of 2,650;

$$\frac{2650\ x\ 400}{31473} = 34\ questionnaires$$

Faculty of Education has a population of 4,601;

$$\frac{4601\ x\ 400}{31473} = 58\ questionnaires$$

Faculty of Engineering has a population of 3,872;

$$\frac{3872\ x\ 400}{31473} = 49\ questionnaires$$

Faculty of Environmental Design has a population of 3,240;

$$\frac{3240\ x\ 400}{31473} = 30\ questionnaires$$

Faculty of Law has a population of 1,413;

$$\frac{1413\ x\ 400}{31473} = 18\ questionnaires$$

Faculty of Medicine has a population of 1,647;

$$\frac{1647\ x\ 400}{31473} = 21\ questionnaires$$

Faculty of Pharmaceutical Sciences has a population of 837;

$$\frac{837\ x\ 400}{31473} = 11\ questionnaires$$

Faculty of Sciences has a population of 6,515;

$$\frac{6515\ x\ 400}{31473} = 82\ questionnaires$$

Faculty of Social Sciences has a population of 3,164;

$$\frac{3164\ x\ 400}{31473} = 40\ questionnaires$$

Faculty of Veterinary Medicine has a population of 519;

$$\frac{519\ x\ 400}{31473} = 7\ questionnaires$$

Total = 400 *questionnaires*

Furthermore, the availability sampling method was employed in administering questionnaires to undergraduate students in each faculty respectively. In addition, two medical personnel and a staff of guidance and counseling unit were purposively selected for the in-depth interview.

3.6 Methods of Data Collection

The researcher adopted both the quantitative (survey) and qualitative (in-depth interview) methods, to elicit information from the target population.

3.6.1 Quantitative Data (Survey)

Questionnaires were used to obtain information from respondents. The questions were both the open-ended and the closed ended. The open-ended questions gave respondents room for expression, while the closed ended enabled respondents select among various options provided by the researcher. The questionnaire covered areas such as socio-economic/socio-demographic characteristics of respondents, knowledge of risk-factors for high blood pressure, lifestyle and dietary habits, knowledge of preventive and control measures as well as possible suggestions to enhance awareness on risk factors for high blood pressure (Appendix I).

The use of questionnaires aided the supply of information that were statistically analyzed and used for the generalization of findings at the end of the study.

3.6.2 Qualitative Data (In-depth interview)

The in-depth interview was used to obtain key information from the university medical personnel, staff of guidance and counselling unit and religious leaders on risk-factors, preventive and control measures of high blood pressure among youths, its prevalence rate as well as measures of health education their unit provide. In carrying out this exercise, an interview guide designed by the researcher was used. The guide consisted of questions in line with the study objectives (Appendix II and III).

The IDIs provided more information as the informants were people who deal directly with students' health.

3.7 Methods of Data Analysis

In line with the methods employed in the collection of data for this study, two methods of data analysis were used. The quantitative data collected through questionnaire was analyzed using the Statistical Package for Social Sciences (SPSS). Frequency tables, percentages and charts were used in the analysis of the univariate variables.

On the other hand, the qualitative data generated through the IDIs was analyzed using the descriptive approach. First, the interview from the tape recording was transcribed in written form and sorted in line with the research objectives. Also, the body language (non-verbal expressions) of the key informants was not left out in the analysis.

The combination of the two methods of data analysis provided more insightful understanding as well as enriched information as the qualitative data were used to obtain better understanding of results from quantitative data.

3.8 Variables

This study consist of two variables. The dependent variable and the independent variable. The dependent variable is 'attitude towards risk factors for high blood pressure', while the independent variable is 'students' awareness'.

3.9 Problems Encountered in the Field

In the process of carrying out this study, several challenges confronted the researcher in the field. Due to the busy schedules of students and reluctant attitude displayed in agreeing to fill the questionnaires, the researcher had to take time to explain and convince students on the need to represent their various faculties before most of them accepted to do so. Also, the researcher spent more time (about three weeks) than projected in large faculties such as sciences, Education, to mention a few as it became necessary to distribute, wait and collect the questionnaires to minimize the number of missing questionnaires.

Also, it was difficult for the researcher to get the approval of the Chief Medical director which was a requirement needed to carry out interviews with medical personnel in the Sick-Bay. Thereafter, it took months of several visits to get the audience of some of the informants. In fact, the staff of the guidance and counselling unit of the Kongo campus could not be interviewed. This was due to their tight schedules which they tendered apologies for.

CHAPTER FOUR

FINDINGS ON STUDENTS' AWARENESS AND ATTITUDES TOWARDS RISK FACTORS FOR HIGH BLOOD PRESSURE IN ABU

4.1 Introduction

This chapter consists of the analyses and interpretation of both the quantitative and qualitative data collected from the field. This was done thematically using the objectives of thestudy to present the data adequately. There are six sections which are; the socio-demographic characteristics of the respondents, knowledge of risk factors for hypertension, lifestyle and dietary habits of respondents, knowledge of preventive measures for hypertension, possible solutions to enhance awareness on risk factors for high blood pressure and lastly, test of hypothesis.

The study adopted the triangular method in the analysis and interpretation of data. The triangular method involves the combination of both quantitative and qualitative method (highlighting areas of convergence and divergence) in the interpretation of the findings collected from the field. This method enhances the validity as well as the reliability of the study. In all, a total of 398 questionnaires were collected and 5 key informants were interviewed.

4.2 Socio-Demographic Characteristics of Respondents

This section focuses on the socio-demographic characteristics of respondents such as sex, age, religion and marital status, faculty, level of study and type of home.

Table 1: Socio-Demographic Characteristics of Respondents

Sex	**Frequency**	**Percentage**
Male	245	61.6
Female	153	38.4
Total	**398**	**100.0**
Age	**Frequency**	**Percentage**
16-20years	70	17.6
21-25years	233	58.5
26-30years	74	18.6
31-35years	11	2.8
36years and above	10	2.5
Total	**398**	**100.0**
Religion	**Frequency**	**Percentage**
Christianity	227	57.0
Islam	169	42.5
Traditional Religion	2	0.5
Total	**398**	**100.0**
Marital Status	**Frequency**	**Percentage**

Single	372	93.5
Married	26	6.5
Total	398	100.0

Faculty	**Frequency**	**Percentage**
Administration	44	11.1
Agricultural Sciences	6	1.5
Arts	34	8.5
Education	58	14.6
Engineering	48	12.1
Environmental Design	30	7.5
Law	17	4.3
Medicine	21	5.3
Pharmaceutical Sciences	11	2.8
Sciences	82	20.6
Social Sciences	40	10.1
Veterinary Medicine	7	1.8
Total	**398**	**100.0**

Level of study	**Frequency**	**Percentage**
100	47	11.8

200	110	27.6
300	92	23.1
400	107	26.9
500 and above	42	10.6
Total	**398**	**100.0**

Type of Home	**Frequency**	**Percentage**
Monogamous	265	66.6
Polygamous	130	32.7
No response	3	.8
Total	**398**	**100.0**

The data collected show that 62% of the respondents are of the male gender while 38% are of the female gender. The male respondents who participated in this research are more than the female respondents because most females simply shied away from participating. On age distribution, data collected reveals that respondents between the ages of 21 and 25years are 59%. This is followed by respondents between the age of 26 – 30years, representing 19% and respondents between the ages 16 and 20years representing 18%. While respondents between the ages of 31 and 35years and 36years and above are 3% each. This indicates that most of the respondents who participated in the study are young adults in their productive age.

Data obtained also revealed the religious background of respondents, 57% of the respondents are Christians while about 43% are Muslims. However, 1% are traditional worshipers. Marital status

of respondents shows that a significant proportion (94%) is single while few (6%) are married. Majority of respondents are single due to the nature of environment in which the questionnaires were administered.

Information on faculties represented has it that 27% of the respondents were of the faculty of sciences while the faculties of Agricultural Sciences and Veterinary Medicine had the lowest number of respondents (1.5% and 1.8%). The above is however in proportion to the given population in each faculty. Students in 200 and 400 (28%, 27%) levels constituted the majority of respondents while students in 100 and 500 levels above, were the lowest (12%, 11%) population.

Furthermore on type of home, majority (67%) of the respondents come from monogamous homes while about 33% of the respondents come from polygamous homes.

4.3 Knowledge of Risk Factors for Hypertension by Respondents

This section examines respondents' knowledge of risk factors for high blood pressure. In order to achieve this, the section reveals responses on a number of risk factors such as stress, smoking, alcohol consumption, regular consumption of sugared drinks and baked foods, age, hereditary and gender.

Stress (such as job strain, emotional distress, social and educational environment) is a risk factor for high blood pressure as it can lead to repeated blood pressure elevations (Kulkarni S., et al 1998). Students' knowledge on the above was sought (Table 2).

Table 2: Views of Respondents on whether Stress was a Risk Factor for High Blood Pressure

Stress	Frequency	Percentage

Agree	345	86.7
Disagree	10	2.5
Not sure	43	10.8
Total	**398**	**100.0**

Table 2 reveals that majority (87%) of the respondents agreed that stress is a risk factor for high blood pressure. However, about 3% of the respondents disagreed and 11% weren't sure if stress was a risk factor for high blood pressure or not.

In an in-depth interview conducted with a medical doctor of the university health service (sick-bay) agrees with the above results. He stated that:

> Indeed stress is one of the risk factors for HBP that a good number of students may be aware of. In fact, I'm sure most of them think that stress is the only risk factor that predisposes one to hypertension….

It can be ascertained from the data above that most students agreed and are aware that stress predisposes one to hypertension.

The development of high blood pressure can also be fostered through bad eating habits such as regular consumption of processed, deep fried or baked foods as they contain more fats and salt than one could imagine (wwwnatureword.com). The frequency of students' consumption of baked foods is shown below (Table 3).

Table 3: Views of Respondents on whether Regular Consumption of Baked Foods (snacks) was a Risk Factor for High Blood Pressure

Baked Food	**Frequency**	**Percentage**
Agree	79	19.8
Disagree	102	25.6
Not sure	217	54.6

Total	**398**	**100.0**

Table 3 shows that 20% of respondents agreed that regular consumption of snacks is a risk factor to high blood pressure. While 26% disagreed and 55% who are the majority were not sure that regular consumption of baked foods is a risk factor for hypertension. Therefore, it can be deduced from the data above that most students are not aware that regular consumption of snacks could contribute to making them prone to high blood pressure.

Excessive alcohol consumption has been linked to elevated blood pressure (Sonne-Holm, et al, 1989). Table 4 shows views of respondents on whether or not, regular consumption of alcohol was a risk factor for high blood pressure.

Table 4: Views of Respondents on whether Regular Consumption of Alcohol was a Risk Factor for High Blood Pressure

Consumption of Alcohol	**Frequency**	**Percentage**
Agree	178	44.7
Disagree	50	12.6
Not sure	170	42.7
Total	**398**	**100.0**

Forty-five percent (45%) of the respondents agreed that regular consumption of alcohol is a risk factor for high blood pressure while 13% of the respondents out rightly disagreed. Also, 43% of the respondents were not sure if regular consumption of alcohol is a risk factor for hypertension. From the data, it can be said that the number of respondents who are not aware as well as those

who were not sure that regular consumption of alcohol is a risk factor for high blood pressure outnumbered respondents who are aware of it.

Cigarette smoking is also a controllable risk factor for high blood pressure. It raises blood pressure in a short time (Cruickshank et al, 1989). Table 5 shows the knowledge of students on whether smoking is a risk factor for HBP.

Table 5: Views of Respondents on whether Regular Smoking is a Risk Factor for High Blood Pressure

Smoking	**Frequency**	**Percentage**
Agree	151	37.9
Disagree	57	14.3
Not sure	190	47.7
Total	**398**	**100.0**

Findings from table 5 reveals that 38% of the respondents agree that regular smoking is a risk factor for high blood pressure while 57(14%) of the respondents disagree. However, 190(48%) are not sure if regular smoking is a risk factor for high blood pressure or not. We can therefore conclude that most of the respondents are not aware of this risk factor for high blood pressure.

Overweight and obesity are established risk factors for high blood pressure and hypertension is approximately twice more prevalent in the obese than in the non-obese (Flegal KM, et al, 2002). Students' knowledge on the above fact was sought (Table 6).

Table 6: Views of Respondents on whether overweight (obesity) is a Risk Factor for High Blood Pressure

Obesity	**Frequency**	**Percentage**
Agree	211	53.0

Disagree	29	7.3
Not sure	157	39.4
Total	**398**	**100.0**

Table 6 reveals that majority (53%) of the respondents agree that overweight or obesity is a risk factor for high blood pressure while, 29(7%) of the respondents disagree. However 157(39%) of the respondents were not sure of excess fat being a risk factor for hypertension. The information therefore indicates that most students are aware that excess fat or obesity is a risk factor for high blood pressure.

Genetic factors likely play some role in high blood pressure. If one or both parents have or once had high blood pressure the children then have a greater chance of developing it too (BHF, 2005). Table 7 below reveals students' knowledge on the uncontrollable risk factor; hereditary.

Table 7: Views of Respondents on whether Hereditary was a Risk Factor for High Blood Pressure

Hereditary	**Frequency**	**Percentage**
Agree	169	42.5
Disagree	49	12.3
Not sure	180	45.2
Total	**398**	**100.0**

Table 7 shows that 43% of the respondents agree that hereditary is a risk factor for hypertension, while 12% of the respondents disagreed. However, 45% of the respondents were not sure if hereditary is a risk factor for hypertension or not. Hence, it can be deduced that most students are not aware that hereditary is a risk factor for High Blood Pressure.

Physical activity is good for the heart and circulatory system. An inactive lifestyle increases the chance of high blood pressure (AHA, 2015). Table 8 shows students' knowledge of lack of exercise as a risk factor for high blood pressure.

Table 8: Views of Respondents on whether Lack of Exercise was a Risk Factor for High Blood Pressure

Lack of Exercise	Frequency	Percentage
Agree	202	50.8
Disagree	49	12.3
Not sure	147	36.9
Total	**398**	**100.0**

Table 8 shows that a reasonable number (51%) of the respondents agree that lack of exercise is a risk factor for high blood pressure while 12% of the respondents disagree. However, 37% of the respondents are not sure if lack of exercise was a risk factor for high blood pressure. We can deduce that an average majority of students are aware that lack of exercise is a risk factor for high blood pressure.

Sex also is one of the uncontrollable risk factors for high blood pressure. According to AHA, (2015), men are at greater risk for cardiovascular disease than women. Studies using the technique of 24-hour ambulatory blood pressure monitoring have shown that blood pressure is higher in men than in women. Figure 1 shows views of respondents on which sex they thought to be more prone to high blood pressure.

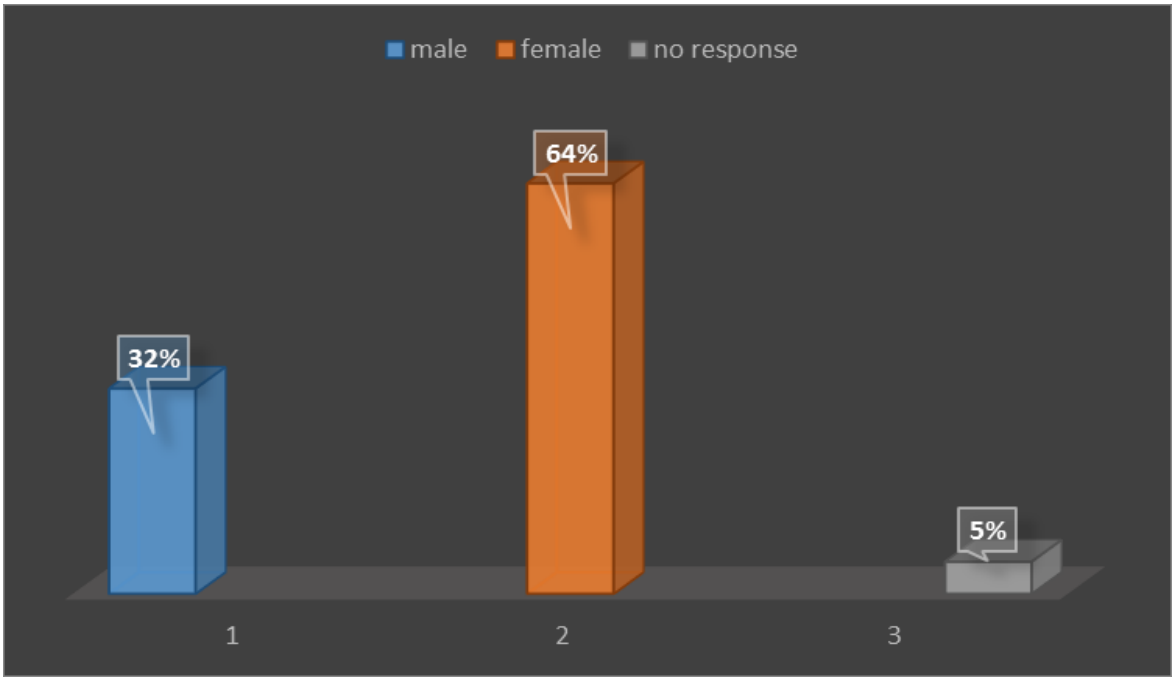


Figure 1: Views of Respondents on which Gender is more prone to High Blood Pressure

Figure 1 shows few (5%) of the respondents gave no response. However, 32% of the respondents were of the view that the male gender is more prone to HBP, while a significant proportion (64%) of the respondents think the female gender is more prone to HBP. The data however does not correspond to the assertions of medical research on risk factors for high blood pressure which states that the male sex is more prone to hypertension than the female sex. Also, all the doctors interviewed concurred to the assertions of researches as they each stated that the male gender is more prone to hypertension. For instance, a doctor said that:

> Sex is also one of the non-modifiable risk factors for high blood pressure, and research so far has it that the male sex are more prone to the disease compared to the female sex

From the information above, it can be asserted that most students are not aware that the male sex is more prone to hypertension compared to the female sex.

4.4 Lifestyle and Dietary Habits of Respondents

This section examines the lifestyles and dietary habits of respondents. In order to achieve this, responses as to whether they consume alcohol, cigarette, snacks, sugared drinks and how much of them they consume; the types of meals they "mostly" have in the course of their daily living as well as the physical activities they engage in weekly.

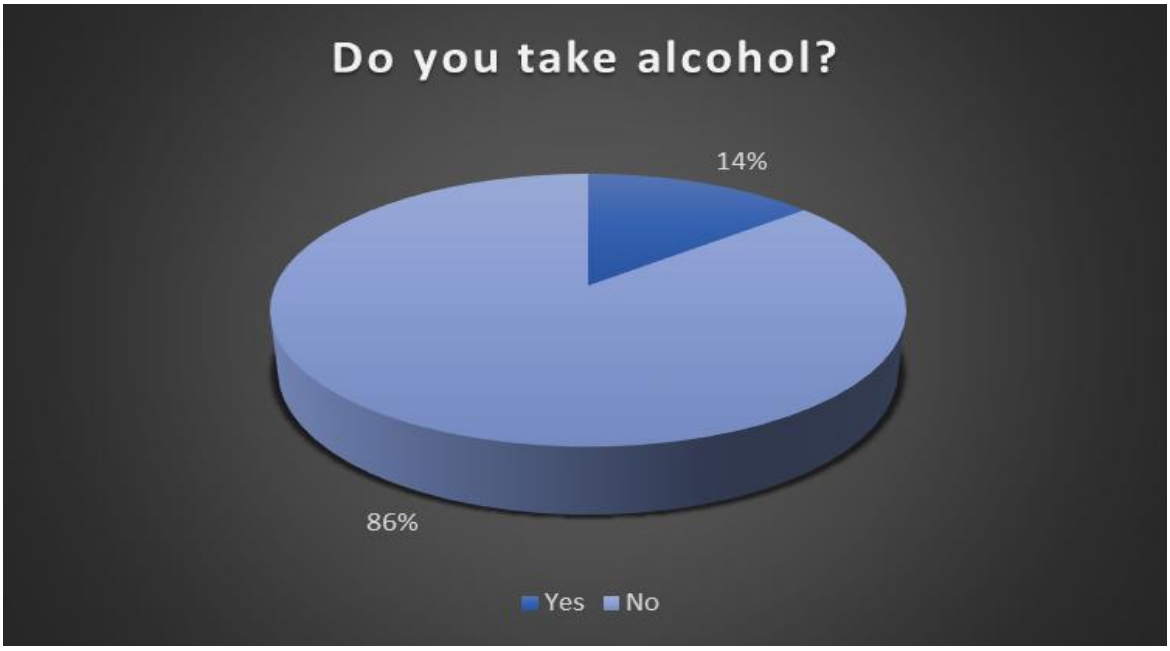


Figure 2: Views of Respondents on whether they Consume Alcohol

Figure 2 reveals that 14% (55) of the total respondents consume alcohol, while a significant proportion representing 86% (343) of the total respondents indicated that they do not consume alcohol. The low percentage of respondents who consume alcohol could be attributed to the culture of the environment, being that it does not encourage the sale of alcoholic drinks on campus.

In an in-depth interview, one of the doctors of the university health service (sick-bay) supported the assertion above when he said:

> Excessive consumption of alcohol is one of the risk factors for high blood pressure, although not very common in this part of the country where we are, so students who indulge in it may not be in large number

Therefore, from the information gathered above, it can be asserted that not many students in Ahmadu Bello University take alcohol.

To discover the consumption rate of the 14% (55) respondents above, figure 3 below represents and reveals the quantity in measure of bottles they consumed per week.

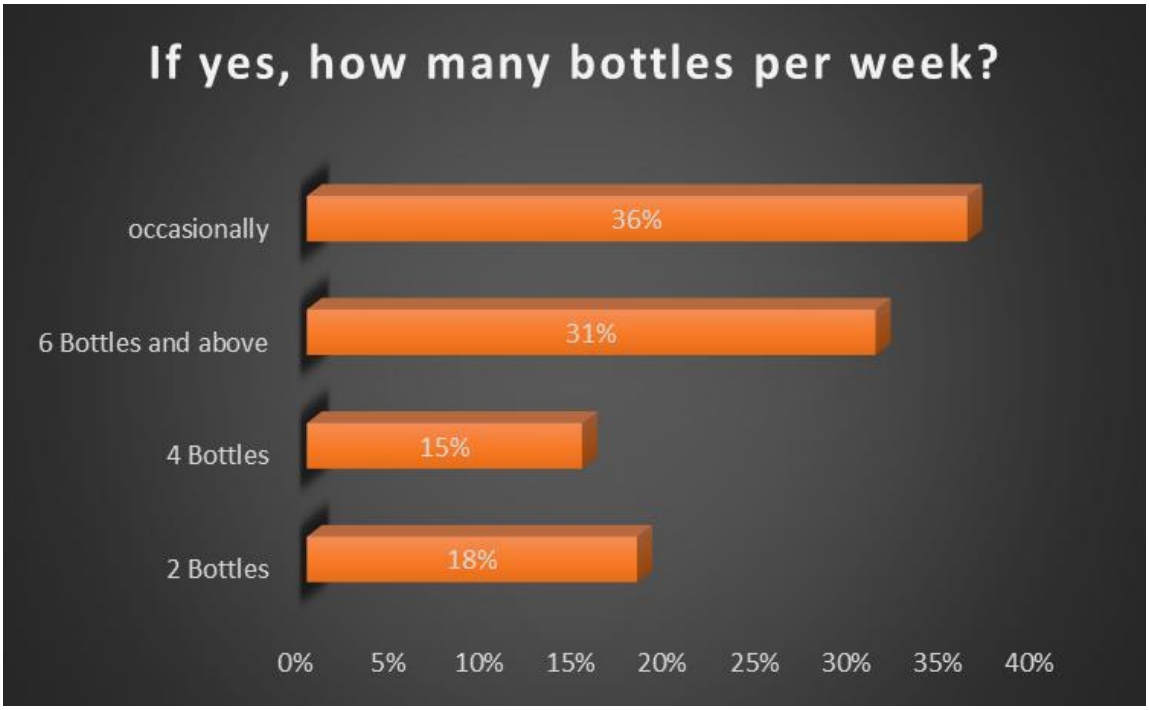


Figure 3: Views of Respondents on how much Alcohol they Consumed Weekly

Figure 3 shows that majority 36% (20) of the total of those who consume alcohol, claimed they take alcohol occasionally. This is followed by 31% (17) who consume six (6) bottles and above. Those who take two (2) bottles per week are 18% (10) while 15% (8) of the total respondents indicated that they take four (4) bottles weekly. According to Linchtenstein et al, 2006, the

American Heart Association (AHA) recommends that alcoholic beverage should be limited to not more than 2 drinks per day for men and 1drink per day for women. Since more students consume 2 to 4 bottles or even occasionally weekly, it can therefore, be said that more than half of the population of those who take to alcohol, consume it averagely per week.

Some habits such as drinking could be influenced by close relationships. According to Wickrama et al (1999), in adolescent and youth age, children tend to adopt the health lifestyles and habits of their parents. Figure 4 below reveals students who possibly were influenced by their parents.

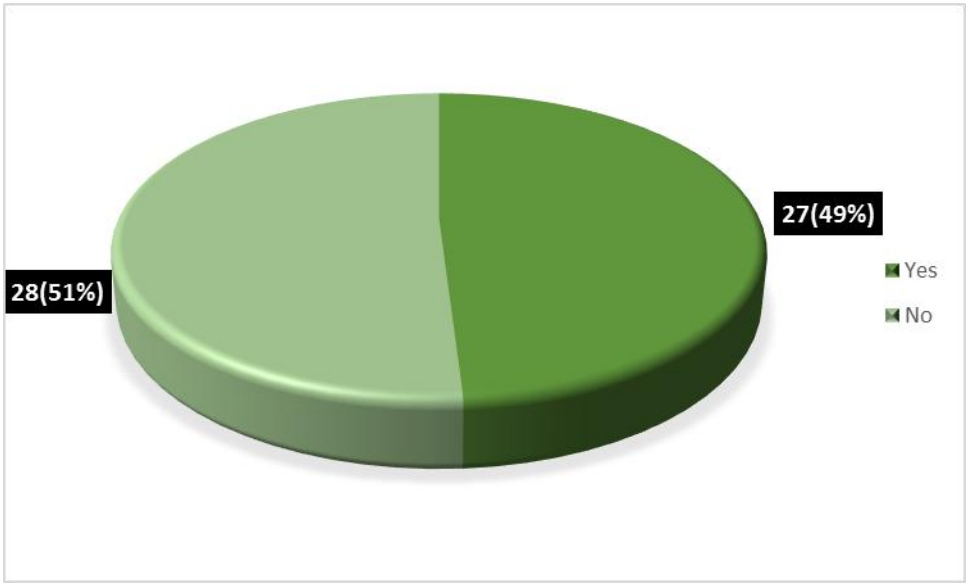


Figure 4: Responses (of those who take alcohol) on whether or not their Parent(s) also Consume Alcohol.

Figure 4 reveals that of the 55 respondents who indicated that they consume alcohol (see fig.2), 49% (27) of them indicated that their parent(s) do consume alcohol, while 51% (28) indicated that their parents do not. We can therefore deduce that it is not certain that most youths who take to the consumption of alcohol were influenced by their parents or have parents who also consume it.

The gender distribution of those students who consume alcohol is further revealed below

(Fig. 5).

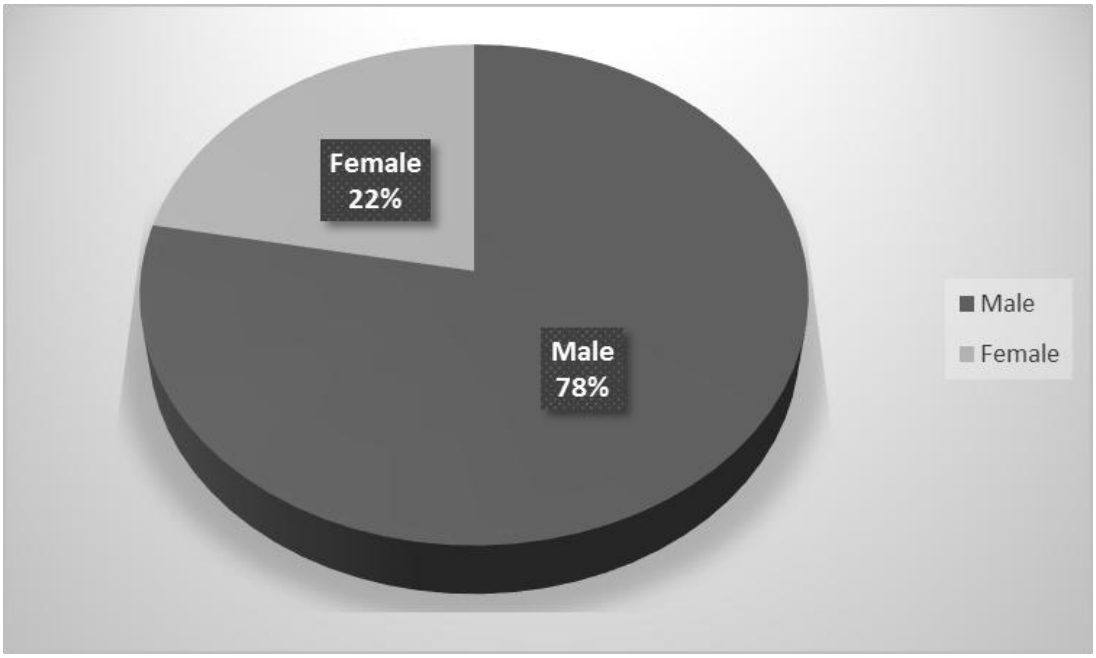


Figure 5: Gender Distribution of Respondents who Consume Alcohol

Figure 5 measures the relationship between gender and alcohol consumption. Information from figure 5 reveals that a significant proportion 78% (43) of the 55 respondents who consume alcohol are males, while 22% (12) are females. This however is no different from results of studies carried out over the years on the relationship between gender and alcohol consumption.

Cigarette smoking remains one of the controllable risk factors for high blood pressure. Its prevalence among respondents is revealed below (Fig. 6).

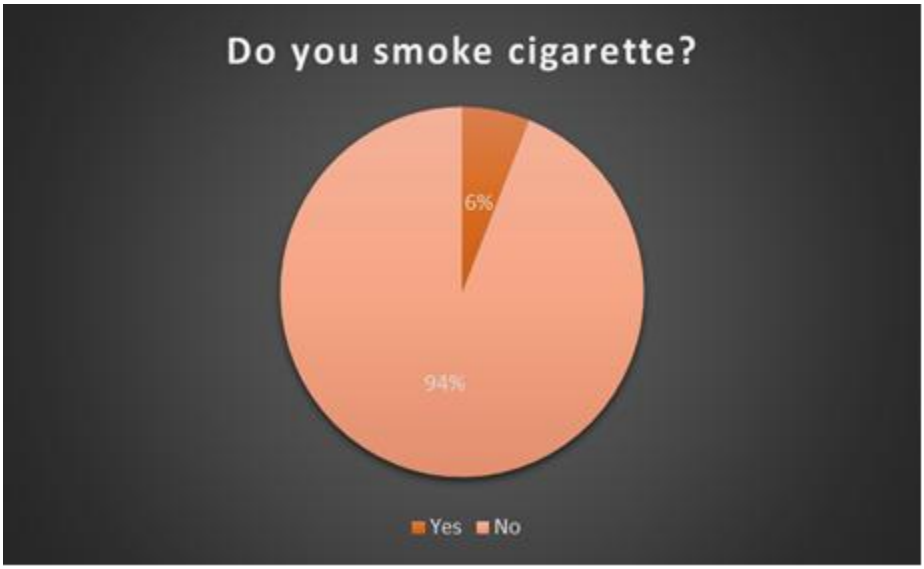


Figure 6: Views of Respondents on whether they Smoke Cigarette

Figure 6 shows that a few respondents representing 24(6%) of the total respondents indicated that they smoke cigarette, while a significant proportion 374(94%) indicated that they do not consume tobacco. Hence, it can be concluded that not many students in Ahmadu Bello University take to the habit of cigarette smoking.

However, the consumption rate of cigarette on a daily basis by the respondents who smoke are revealed in the figure below (Fig. 7).

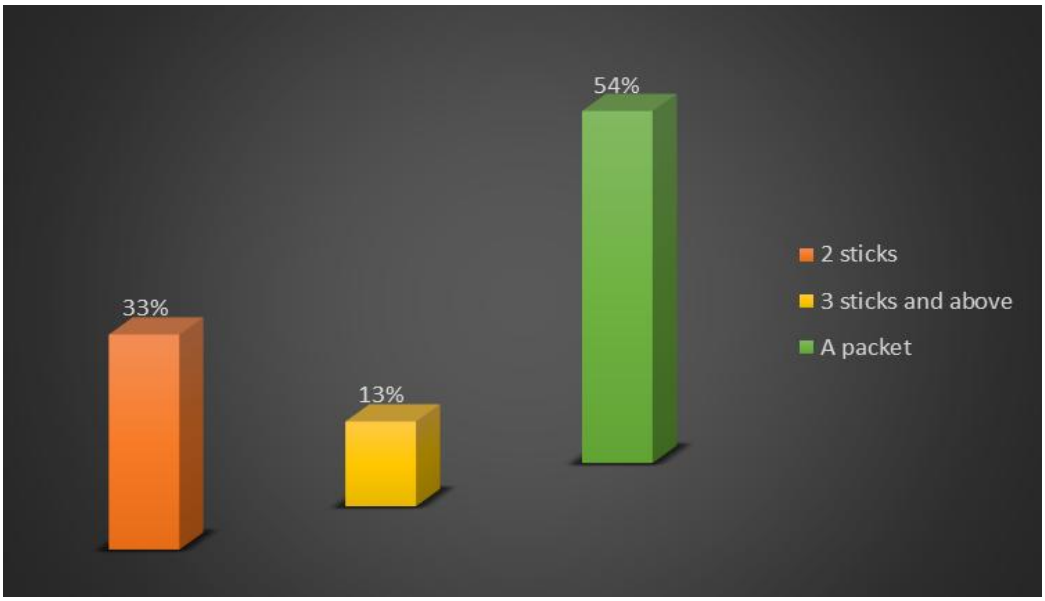


Figure 7: Views of Respondents on how much Tobacco they Consumed Daily

Figure 7 shows that 54% (13) of the total respondents smoke a packet of cigarette daily. This is followed by 33% (8) of the respondents consuming two (2) sticks of cigarette and 13% (3) of the respondents consuming three (3) sticks of cigarette or more on a daily basis. Hence, we can conclude that although the number of students who consume tobacco may be minimal, more than half of those who smoke cigarette daily consume at least a packet. However, there is no recommended sticks or quantity of tobacco to be consumed. Rather it is medically advised to stay off it completely.

Figure 8 below once again examines the assumptions of Wickrama et al (1999) on possible parental influence on children's health lifestyle and habit.

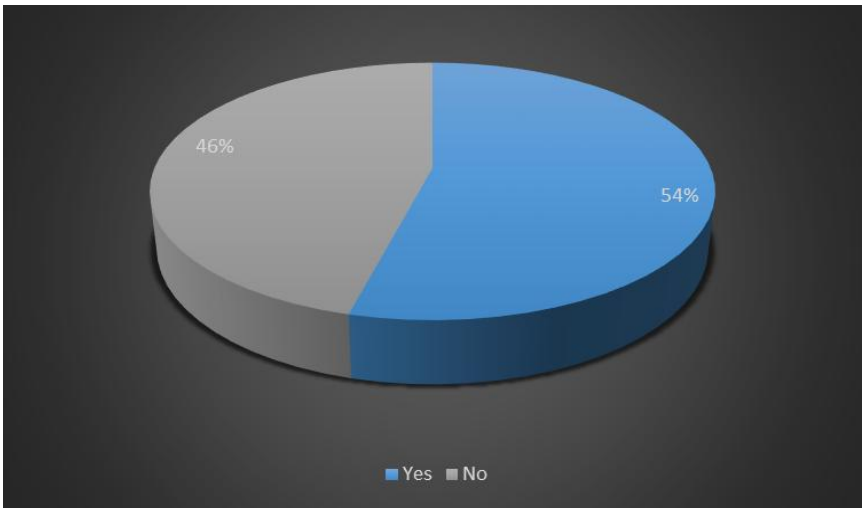


Figure 8: Responses (of those who smoke) on whether or not their Parent(s) also Smoke Cigarette.

Figure 8 reveals the relationship between parental influences on the child's cigarette smoking habit. Of the 24 (6% of total respondents, see fig 6), respondents who indicated that they smoke cigarette, 13(54%) of them indicated that their parent(s) do smoke cigarette, while 11(46%) indicated that their parents do not. From the data collected one may say that it is likely that the parent of most youths, who take to the habit of cigarette smoking, also smoke and possibly directly or indirectly encourage this habit in their children.

The gender distribution of students who smoke cigarette is shown in the Figure below

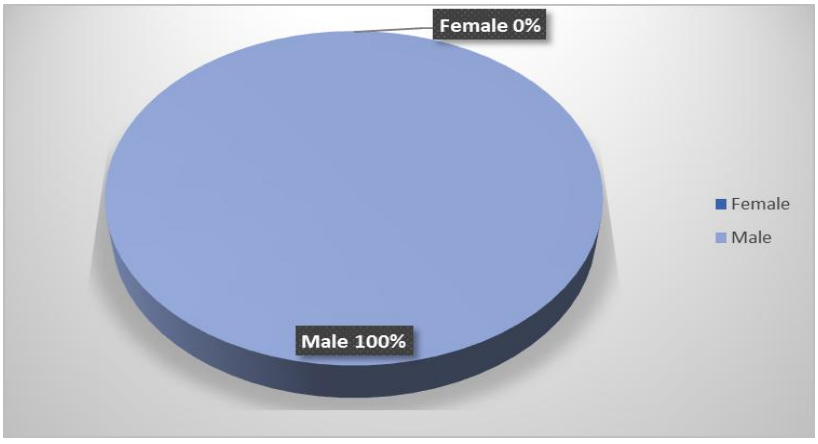


Figure 9: Sex Distribution of Respondents who Smoke Cigarette

Figure 9 measures the relationship between gender and cigarette smoking. Information from figure 9 reveals that all (100%) of the 24 respondents who smoke cigarette are males, while none (0%) is female.

Table 9 reveals the weekly consumption rate of snacks or baked foods of respondents.

Table 9: Views of Respondents on the number of times they Consumed Snacks in a Week

Consumption of Snacks	**Frequency**	**Percentage**
Once	109	27.4
2-3times	95	23.8
4-5times	142	35.7
Everyday	41	10.3
Occasionally (once in two weeks or a month)	11	2.8
Total	**398**	**100.0**

Table 9 shows that 36% of the total respondents indicated that they consumed snacks 4-5 times weekly. This is followed by 27% of the total population that consumed snacks once in a week and the least, 3% of the respondents consumed snacks occasionally (for instance, once in three weeks, once in two months, once in a while). From the data above, it can be deduced that majority of students consumed snacks almost every day of the week, which is quite regular and high. Consumption of snacks is suggested to be very minimal or be avoided totally as it constitutes more harm than good. This assertion is supported from one of the IDI informants when responding to the question on risk factors for HBP. She said;

> …also, bad eating habits such as feeding on junks, and snacks on a daily basis by majority of the students is something we can see every day on campus…

Table 10 reveals students weekly consumption rate of sugared drinks of respondents

Table 10: Views of Respondents on the times they consumed Sugared Drinks in a Week

Consumption of Sugared Drinks	Frequency	Percentage
Once	66	16.6
2-3times	52	13.1
4-5times	146	36.7
Everyday	95	23.8
Occasionally (once in two weeks or a month)	39	9.8
Total	**398**	**100.0**

Table 10 shows that 37% consumed sugared drinks 4-5 times weekly. This is followed by 24% of respondents who consumed sugared drinks every day of the week and the least proportion (10%) of the total respondents consumed sugared drinks, but occasionally (for instance once in two weeks, once in a month, once in a while, only at ceremonies). According to Linchtenstein et al (2006) men and women should consume not more than 9 spoons and 6 spoons of sugar per day. Since a bottle of soft drink is said to contain 10 – 12 spoons of sugar and most students consume sugared drinks 4-5 times and everyday weekly, it can be deduced that students consume excess sugar than recommended.

This assertion was supported by one of the key informants as he said:

> Although not a lot of students may consume alcohol but I see a lot of them consuming soft drinks like coke and other sugared drinks every now and then as though they can't do without it.

Maintaining a balanced diet or healthy feeding habit is a golden rule to healthy living. Healthy foods should include all the classes of food. Tables 11, 12 and 13 shows the eating habit of students.

Table 11: Views of Respondents on Meals they mostly consume for Breakfast, Daily

Meals for Breakfast	Frequency	Percentage
Solid starch meal (semo, eba, etc)	17	4.3
Rice	28	7.0
Bread	270	67.8
Garri	1	0.3
Beans	4	1.0
Indomie	66	16.6
Others	12	3.0
Total	**398**	**100.0**

Table 11 reveals the type of food students mostly have for breakfast on a daily basis. A significant proportion (68%) of the respondents indicated that they mostly have bread for breakfast, while a few (3%) of the total respondents indicated that they mostly have other types of food such as cornflakes, pap, bean cakes and fried yam for breakfast. However, only 1 (less than 1%) of the respondents indicated that he/she mostly have garri for breakfast. The data therefore holds that majority of students consumed carbohydrate (bread, indomie) as breakfast mostly.

Table 12: Students' Response on Meals they mostly consume for Lunch Daily

Meals for Launch	Frequency	Percentage
Solid starchy meal	96	24.1
Rice	184	46.2
Bread	6	1.5
Garri	36	9.0
Beans	33	8.3
Indomie	25	6.3
Others	18	4.5
Total	**398**	**100.0**

Findings reveal that majority (46%) of the respondents mostly have rice for lunch. While 5% of the respondents indicated that they mostly have other types of food like spaghetti, cuscus, a few (2%) of the respondents indicated that they mostly have bread for lunch. Results from table 12 above reveals that majority of students mostly consume carbohydrate (rice and solid starchy meals) for lunch on a daily bases.

Table 13: Views of Respondents on Meals they mostly consume for Dinner Daily

Meals for Dinner	**Frequency**	**Percentage**
Solid starch meal	98	24.6
Rice	86	21.6
Bread	5	1.3
Garri	17	4.3
Beans	36	9.0
Indomie	107	26.9
Others	49	12.3
Total	**398**	**100.0**

The data show that 27% of the respondents mostly eat indomie (carbohydrate). This is followed by 25% and 22% of the respondents mostly having solid starchy meal (semo, eba, amala) and rice for dinner. While 12% of the respondents indicated that they mostly take other kinds of food such as yam, spaghetti, a few 1% of the respondents indicated they mostly eat bread for dinner. Once again, it can be deduced from the findings above that majority of students consumed carbohydrate (solid starchy meals, rice, indomie) mostly for dinner, daily.

The IDI conducted supports the conclusions on the findings (tables 11, 12, and 13) above as regards dietary habits. For instance, one of the doctors had this to say:

> Generally, most youths especially students do not consume balance diet at all, when they come here and I ask what they have eaten for the day, their major food

is rice, or indomie for the females and swalo, garri and sometimes beans for the males.

Table 14: Views of Respondents on the Physical Activity they engage in

Physical Activity	Frequency	Percentage
Walking for 30-45 minutes	197	49.5
Jogging	58	14.6
Competitive sports	58	14.6
All of the above	36	9.0
Others(pushups, skipping)	8	2.0
None of the above	41	10.3
Total	**398**	**100.0**

Table 14 shows the views of respondents on which physical activity they engaged in. Of the total respondents, about 50% indicated that they engage in walks for about 30-45 minutes while those who indicated that they do engage in jogging and competitive sports are 15% respectively. However, few (2%) of the respondents indicated that they engage in other physical activities like pushups, skipping and road walks. While 9% of the respondents indicated that they engaged themselves in all of the above (i.e walking, jogging, competitive sports, push-ups and skipping), 10% of the respondents indicated that they do not participate in any physical activity at all. From the above data it can be deduced that most students do not participate in 'active' physical activities.

The IDI conducted also supports the above data concerning majority of respondents engaging in walks. For instance, a doctor stated that:

> Lack of proper physical exercise is a risk factor for high blood pressure and nowadays most of you young adult especially students do not engage in other exercises apart from walking around the school premises.

Also, the Head of Guidance and Counselling unit agreed to the above quote when she said:

> You youths of nowadays are very lazy and non-challant to exercises, apart from walking from the hostels to the lecture hall or library, those that you see participating in basketball and the likes are not many.

Table 15 reveals how often respondents (357) who indicated that they engage in one physical activity or the other on a weekly basis.

Table 15: Views of Respondents on how many times they engaged in Physical Activities, Weekly

Physical Activity	Once	Twice	Thrice	Four times and above	Total
Walking for 30-45minutes	13(6.6%)	24(12.2%)	16(8.1%)	144(73.1%)	197(100%)
Jogging	15(25.9%)	15(25.9%)	18(31%)	10(17.2%)	58(100%)
Competitive sports	20(35.0%)	16(27.5%)	8(13.8%)	14(24.1%)	58(100%)
All of the above	17(47.2%)	2(5.6%)	7(19.4%)	10(28.1%)	36(100%)
Others	4(50%)	0(0.0%)	1(12.4%)	3(38.0%)	8(100%)
Total	**69(19.3%)**	**57(16%)**	**50(14%)**	**181(50.7%)**	**357(100%)**

Information from Table 15 reveals that majority (73%) of the respondents who engage in 30-45 minutes walks, do so four (4) times or more a weekly basis, while majority (31%) of respondents who take to jogging, engage in it three (3) times in a week. For competitive sports, majority (35%) engage in it only once (1) in a week, while for those who indicated that they participate in walking, jogging and competitive sports (all of the above), while 35% engage in these once (1) in a week. Lastly, majority (50%) of those who engage in other exercises such as pushups, road walks and skipping, do so once weekly.

From the above, it can be deduced that most students who participate in active sports, do not do so often enough as it is less than the medically recommended (4times weekly), according to the American Heart Foundation's recommendation for physical activity (2015).

Figure 10 reveals students' responses on whether they have ever been diagnosed of high blood pressure.

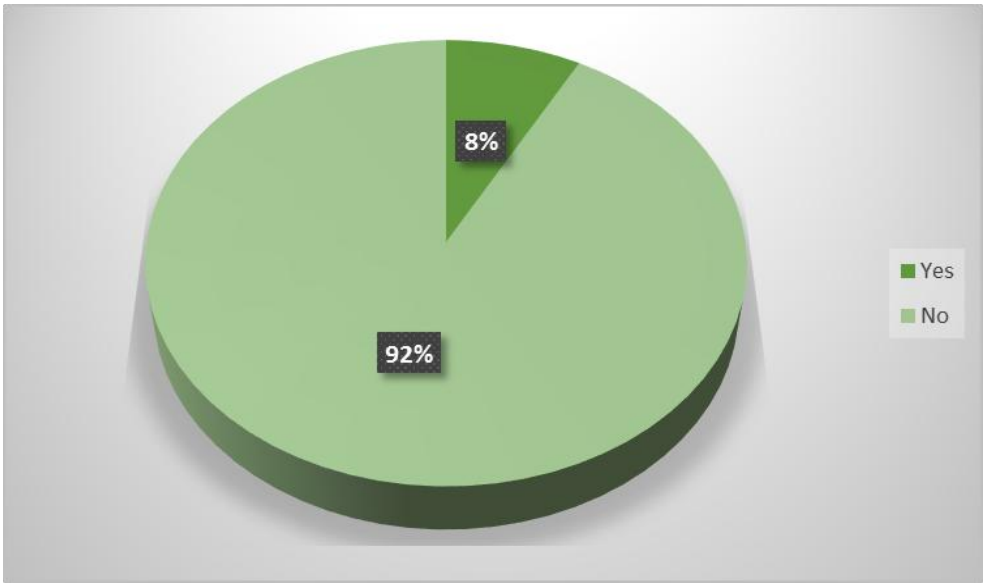


Figure 10: Views of Respondents as to whether they have ever been diagnosed with HBP

Data contained in figure 10 show that a minority 31(8%) of respondents indicated that they had ever been diagnosed with high blood pressure. Furthermore, among these 31 respondents, 8 respondents indicated that they were diagnosed of HBP between 12 and 19years, 12 respondents between 20 and 24years, 7 respondents between 25 and 29years and four (4) respondents at 30years and older. The above data thus affirms the fact that youths are being diagnosed with high blood pressure.

All four doctors in the IDI session supported the above data. For instance, when asked how many students they diagnosed with hypertension in a semester, a doctor said:

> Although the number of students being diagnosed with hypertension has increased compared to other years, they are still few. Years back we may not diagnose more than one or two students throughout a session but nowadays I alone diagnose about four to five cases in a semester.

In corroboration with the above another doctor stated:

> Before now, we sometimes rarely have a single case of HPB amongst students in a semester, but now we diagnose students with hypertension every semester, personally I have diagnosed 2 young students with it this semester, they are usually not in large number. It's more common in staff

Information on the causes of high blood pressure among those diagnosed are contained in Table 16.

Table 16: Supposed 'causes' to the Ailment in those Diagnosed with HBP

Supposed Causes	**Frequency**	**Percentage**
Stress	12	38.7
Obesity	5	16.1
Hereditary	3	9.7
High salt	5	16.1
Depression	2	6.5
Renal hypertension	1	3.2
Cannot remember	3	9.7
Total	**31**	**100.0**

Table 16 revealed that of the 31 respondents who indicated ever being diagnosed with hypertension, 12(39%) of the respondents maintained the supposed cause was said to be stress.

From the IDI conducted a doctor revealed that although there was no 'cause' for hypertension but stated that:

> During diagnosis we ask our patients questions on their life activities and in some cases, we discover that some overwork themselves without getting adequate rest and this poses them to constant headache and fastened heart beats.

Furthermore, 5(16%) of the 31respondents ascertained the supposed cause was said to be obesity. While for 3(10%) of the respondents, the said cause was linked to hereditary.

On the above, a doctor during the IDI session had this to say:

> I diagnosed a patient in the morning and from all indications he is not obese, doesn't take alcohol or smoke….but then both of his parents have hypertension meaning it is hereditary.

For another 5(16%) respondents, the supposed cause was said to be high intake of salt. To this from the IDI conducted, a doctor said:

> At times we discover some patients don't cook, they eat junks or go to eateries where the amount of salt in the food may not be controlled and this may just be what encourages hypertension in them.

Also, for 2(7%) of the 31 respondents, the supposed cause was said to be depression. To this, from the IDI conducted, a doctor had this to say:

> Few patients suffer from serious depression either from losing a loved one or so, this also is a risk factor and could pose them to secondary hypertension.

Lastly, while one respondent indicated that the supposed cause was said to be 'renal hypertension', 3(10%) of the 31 respondents could not remember what the supposed cause was said to be.

Note; all four doctors interviewed however maintained that there was no specific cause for high blood pressure but risk factors.

Table 17: Treatment Administered to those Diagnosed with HBP

Medications	Frequency	Percentage
Bendroflumethiazide	5	16.1
Anti-Depressants and referred for counselling	2	6.5
Was asked to exercise every day and eat balanced diet	6	19.4
Was asked to reduce salty snacks and foods	5	16.1
Cannot remember	13	41.9
Total	**31**	**100.0**

Table 17 reveals responses given on the forms of treatment or medications administered to respondents who have ever been diagnosed of hypertension. Majority of the 31 respondents 42% (13) indicated that they could not remember the medications they received. However, 19% (6) respondents indicated being asked to exercise daily as well as eat balanced diet. While 16% (5) respondents said they were placed on the drug Bendoflumethiazide, 16% (5) were asked to reduce salty snacks and foods.

On the above, one of the key informants had this to say:

> Most of the patients we treat, we always recommend exercise, good eating habits covering all classes of foods, reduction in salt in foods, alcohol, tobacco and prescribe other necessary drugs.

Lastly, 2(7%) of the 31 respondents said they were given anti-depressant drugs and recommended for counselling. From the IDI, a staff of guidance and counselling affirmed the above when she said:

> On very few occasions, the sick-bay recommends students suffering from depression to us for counselling.

Figure 11 measured the relationship between type of home and hypertension.

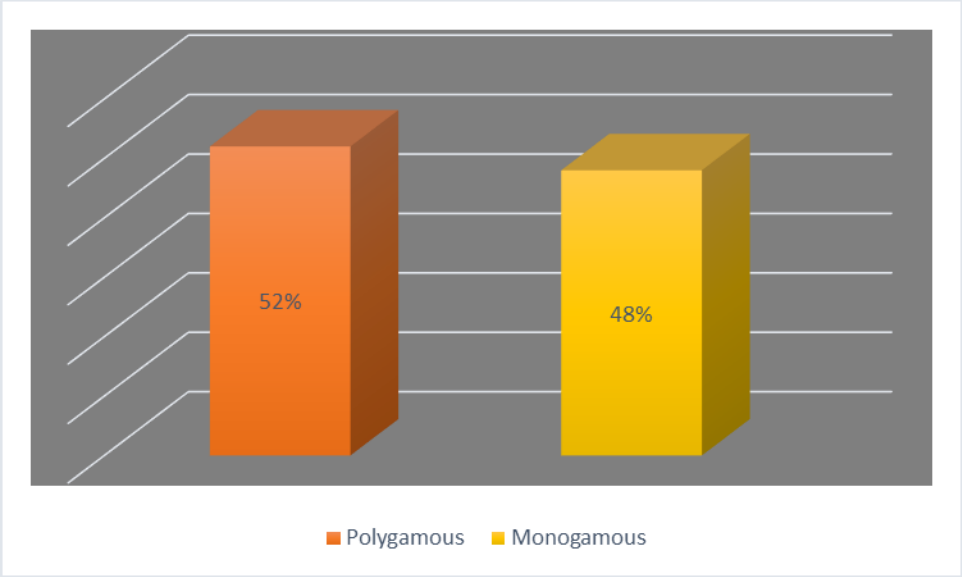


Figure 11: Types of Home of Respondents ever Diagnosed with HBP

Information in figure 11 reveals that more 16(52%) of the 31 respondents who indicated to have been diagnosed of hypertension come from polygynuous homes, while a lesser proportion 15(48%) comes from monogamous homes.

4.5 Knowledge of Preventive Measures for Hypertension by Respondents

This section examines respondents' knowledge of preventive measures for high blood pressure. In order to achieve this, the section identified responses to a basic question which demanded that respondents list out any preventive measure(s) for high blood pressure, which they were knowledgeable of.

Table 18: Views of Respondents on Preventive Measures for HBP

Preventive Measures for High Blood Pressure	Frequency	Percentage
Avoid thinking or worrying too much and getting stressed up	185	46.5
Exercise often, avoid salty foods, excessive alcohol and smoking	48	12.0
Take less salty foods only	33	8.2
Exercise so as to avoid getting fat	29	7.2
Always eat balanced diet	30	8.0
Avoid alcohol, cigarettes and hard drugs	26	6.5
Regular check-ups in the hospitals	9	2.3
Others	17	4.2
No response	21	5.2
Total	**398**	**100.0**

Findings reveal that 47% of the respondents gave the preventive measure to be avoidance of excessive thinking, worry and stress. While the lowest respondents representing 2% of the respondents know that high blood pressure could be prevented only by going for regular check-ups in the hospital. However, 4% of the respondents provided other responses such as “pray against it”, “get enough sleep every day” to mention a few, while about 5% of respondents gave no response at all.

Though similar to the findings above, the IDI key informants laid more emphases on less intake of salt, alcohol, tobacco, frequent exercise and regular health check-ups. For instance, a doctor in response to the above said:

> Prevention is and will always be better than cure. Especially for non-communicable and deadly diseases such as hypertension, which in most cases do not have symptoms. Young people should avoid sedentary lifestyles and take their health seriously so as to enjoy their old age. They should learn to mix foods with protein, vegetables and fruits for healthy diets, control their consumption of junks, sugary drinks to at most three times a week, with 2-3days interval. Control alcohol consumption. For tobacco, if possible should be avoided completely.

Having suggested preventive measures as those mentioned above, another doctor laid emphasis on medical check-ups as he said:

> It will be very helpful if students would cultivate the habit of coming for general check-ups in the clinic every now and then, not only when they feel sick, regular check-ups have saved a lot of lives.

From the above data, it is once again obvious that majority of youths or students view stress, excessive thinking or worrying to be the major risk factor for high blood pressure.

4.6 Possible ways to enhance Awareness on Risk Factors for High Blood Pressure

This section examines the views of respondents on possible solutions that can be put in place to enhance the awareness of risk factors for high blood pressure especially among youths. In order to achieve this, respondents' views were sought on whether they thought youths are already well informed and those who thought they are not, where further asked to suggest possible solutions.

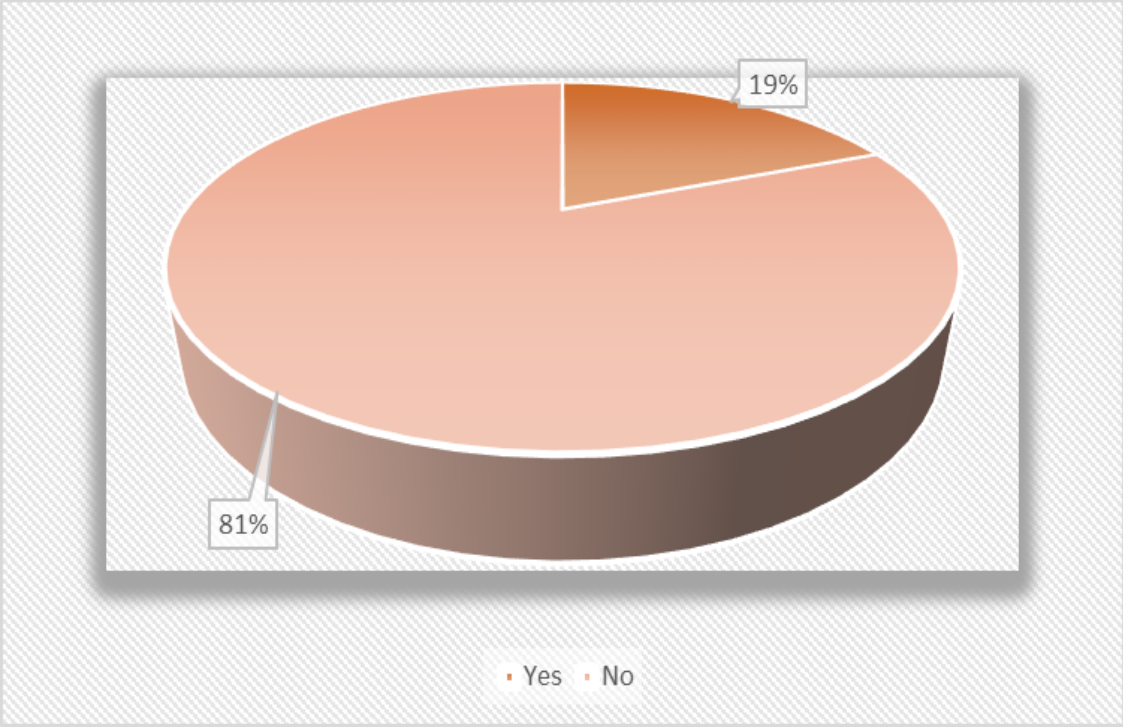


Figure 12: Views of Respondents on Students' Awareness of Risk Factors for HBP

Figure 12 reveals the thoughts of respondents on whether most youths/students were aware of risk factors that could make them prone to high blood pressure. Majority (81%) think that most youths/students are not aware, while 19% of the respondents think that students are aware that they could be prone to high blood pressure. From the data above, it can be said, that the topic of hypertension especially in youths is hardly mentioned or discussed among students. Hence, the need for more awareness.

From the IDI, informants maintained that most students or youths are not informed of all risk factors for high blood pressure. For instance, a medical practitioner observed that:

> I believe that apart from students in the medical sciences, all other students don't know anything about the risk factors for hypertension. Some of them don't even know that hypertension and high blood pressure mean the same thing.

Another doctor said:

> Only those who have been diagnosed of it and properly educated by their doctors or the curious ones who care to check it out on the internet would be knowledgeable on this.

Also, a staff of the guidance and counselling unit stated:

> I doubt if most students are aware of this because most young people think hypertension is a disease for elderly people, so they won't have the interest as they think it doesn't concern them

In disagreement with the responses above, another medical personnel said:

> I feel most students are aware, because most of them that I diagnose seem to know most of the risk factors, because they tend to have either their parents or relatives suffering from hypertension

Findings from both the quantitative and qualitative data above thus, reveal that most students are not likely to be aware of the risk factors for high blood pressure.

Therefore suggestions were sought from respondents on possible measures that could enhance awareness on risk factors for high blood pressure among students (Table 19).

Table 19: Views of Respondents on Possible Measures to enhance Awareness on Risk Factors for High Blood Pressure

Suggested Measures	Frequency	Percentage
Seminars in all faculties once every session as well as free check-ups	168	42.0
Attractive health shows on TV and adverts through the mass media.	42	11.0
Government should provide funds for public enlightenment programmes through its ministry of health.	24	6.1
The use of social media like facebook and text messages from mobile networks.	23	6.0
Topics on Risk factors and Effects for HBP should be inculcated in secondary school Biology and general courses in the university.	21	5.2
Health talks on the risk factors for HBP in places of worship.	18	5.0
Hand bills as well as bill boards around the campus and in the wider society.	16	4.0
Others	12	3.0
No response	74	19.0
Total	**398**	**100.0**

Table 19 shows that 42% of respondents were of the view that organizing attractive seminars in each faculty once every session as well as free check-ups will foster awareness. This view was supported in the IDIs conducted.

For instance, a doctor said:

> Although, during orientation programs in most faculties they mostly invite us to give health talks mostly on STDs (sexually transmitted diseases like HIV/AIDs).

> Topic of hypertension is normally not a part of it, but including it in health seminars organized by faculties at least once in a session with some refreshments for students would lure them to attend and it will be a successful means of passing this information through to the wider community.

A staff of the guidance and counselling unit stated:

> Health seminars should be organized by every faculty if possible departments once every year, and souvenirs like jotters or pen should be provided to encourage students to attend.

Table 19 also shows that 11% of the respondents were of the view that attractive health shows via television stations and adverts through the mass media in general would help enhance awareness among students and the general populace on the risk factors as well as prevention of high blood pressure. The qualitative data also supported the above. For instance, a doctor had this to say:

> The media is a very important tool if not the best medium of creating awareness especially in a society like ours where people don't like to read. Having a health show or repeated adverts on the risk factors and preventive measures on HBP on TV and radio stations would really help.

Also, an informant from the guidance and counselling unit supported the above views when she said:

> The mass media would really help spread the news fast. Especially through television and radio stations because a lot of youths this days hardly read newspapers.

Meanwhile, another doctor shared a slightly different view when he said:

> The mass media would have been one of the best ways to pass information about this ailment, but the question is how many youths nowadays watch our local news channels or read newspapers or listen to news on the radio stations.

Furthermore, some of the respondents were of the view that the government should be included in the process of creating health awareness on the ailment in question. Precisely as indicated in the table above, about 6% of the respondents were of the view that the government should provide funds for public health enlightenment campaigns via its ministry of health to enhance

awareness on the risk factors for high blood pressure. The qualitative data from all the key informants revealed similar points to buttress the above view. For instance, a doctor said in a bitter tone:

> Unfortunately in Africa, we the people and our government do not take preventive medicine seriously until it has become a severe problem to the society. The government needs to wake up and invest reasonable funds to awareness campaigns on risk factors and preventive measures of non-communicable diseases like hypertension and the likes which is increasing by the day in our society, before it gets out of hand.

Also, another doctor was of the view that:

> Both the federal and state government should take health issues and research more seriously, financial budgets on health should be more than what their budgets always reads. They should at least once in a year, make provisions for public campaigns as well as free medical check-ups both in urban and rural areas especially for silent deadly diseases such as hypertension for both the young and the old.

From the guidance and counselling unit, the key informant expressed her view on the involvement of the government with a rather different approach by first commending the government as she said:

> First, the government has been trying in terms of health for instance in tackling issues of HIV/AIDS, polio virus, malaria and the likes. Together with the various health NGOs, they may need to do more in funding for public health education on other disease like hypertension, diabetes, cancer and so on. It will definitely help.

However, when probed for how individuals could help protect themselves from high blood pressures, all key informants said that it shouldn't be left to the government alone, but that individuals of all age groups should cultivate the habit of living healthy life styles by watching what they eat, making personal health researches on the internet and inculcating the habit of visiting the hospitals as often as possible for random health check-ups.

Table 19 further reveals that another 6% of the respondents were of the view that the use of social media like facebook and text messages from mobile networks can serve as a measure through which the risk factors for high blood pressure can be better broadcasted for its prevention among youths in the society. From the IDI conducted, only one informant supported the above view. He said:

> I once had a hypertensive patient who said he came across a health post talking about HBP on facebook and he became curious and read more about it online. Since majority of our youths nowadays have facebook accounts and log on every now and then, it will be a good way of getting this awareness to them.

Also table 19 reveals the views of 5% of the respondents which was that health talks on the risk factors for HBP should be carried out in places of worship. This view was supported by the IDI when a doctor said:

> Passing information in religious gatherings can also be very effective because it is more easily adhered to. For instance the issue of getting people to know their genotypes, blood groups, prevention of hepatitis B, even the ebola virus have proven to be successful though talks in places of worship.

Table 19 show that 5% of respondents recommended the use of hand bills, as well as bill boards around the campus. Information from the IDI also supported the above view, when probed for other means of creating awareness on the ailment in question, the informant from the guidance and counselling unit said:

> Distribution of common photocopies of fliers containing information about high blood pressure can be given to passers-by the way the security does at times at the school gates. Also, just as we have bill boards about HIV/AIDs, such with information about hypertension will speak to people passing every day.

In line with the above information, a medical practitioner having mentioned that the use of bill boards will be effective in enhancing awareness, added saying:

> …in fact at the moment, we in the Sick-Bay are preparing to submit different health tips to be displayed on the university's electronic bill boards and information on high blood pressure would be inclusive.

Lastly, Table 19 also shows that 4% of the respondents suggested that topics on risk factors for HBP should be inculcated into secondary school Biology and health general courses in the university while about 3% of respondents had other views with statements such as "praying and fasting against it", "sleep well" "avoid getting angry" to mention a few. However, about 19% of the respondents gave no response.

Finally, further probe on measures on ground as well as better measures both the sick bay and the guidance and counselling unit could proffer for better awareness on risk factors for high blood pressure were or would be, a doctor from university health service (Sick-Bay, main-campus) said:

> Presently, we do take some time every morning, assigning one medical personnel or the other to give brief health education or hold an interactive lecture on preventive measures for different diseases to patients waiting at the lobby and topics like hypertension are not exempted. However, we would try to see that we stress on alerting the youths that they too are prone to the disease and also begin to advice all patients to avoid the risk factors and forward prevention tips to the university bulletin and electronic bill boards.

Information from a doctor from the University Health Service (Sick-Bay, Kongo-campus) differed as he said:

> What we try to do now is check our patients' blood pressure and whether it is high or low, we educate them on how to prevent or treat the ailment. But are planning on some minutes of health education sessions at the lobby at least within the morning hours every day with patients at the lobby and soon we shall kick start it with topics such as high blood pressure.

However, information from the guidance and counselling informant also differed from the above as she said:

> What we do mainly here does not have much in line with medicine. However, we would begin to advice people especially students who come for counselling to always try to check their blood pressures at the sick-bay.

On probing religious leaders on whether health seminars on hypertension have been organized for students in their congregation before, a Muslim religious leader (Imam) said:

> We actually don't organize health seminars per say, but when we hear of issues like the Ebola virus or HIV, we give necessary preventive information.

Information from priest differed from the above as he said:

> We have organized talks for the entire congregation, not students specifically, on Ebola virus, bird flu, HIV but planning on topics such as diabetes and hypertension.

Similar to the information above, the pastor said,

> We do have health talks on hygiene as well as healthy lifestyle and dietary habits, discouraging consumption of excess sugar, but not specifically hypertension for students".

From both the quantitative and qualitative data, it can be deduced that enhanced awareness of risk factors for high blood pressure as well as its prevention can be greatly improved if both the federal and state government would improve their policies on health by giving more attention and allocating more funds for preventive health campaigns on non-communicable diseases as well, if every faculty inculcates the habit of organizing attractive health seminars at least once every session, if health shows are organized by the mass media through the TV and radio stations, if hypertension is inculcated into secondary school Biology as well as general health course in the universities, information on the risk factors and preventive measures would be show cased on bill boards in both campuses and in the general society, as well as organizing health talks in places of worship.

4. 7 Discussion of Findings

It has become a reality today that not only the aged but young adults (youths) too can become prone to high blood pressure and in fact in some situations become fatal as well if not luckily detected early enough. Thus, the present study was set out to assess the awareness and attitude of ABU students on the risk factors for high blood pressure. In the course of the study, important findings were made.

On assessing the level of awareness of risk factors for high blood pressure, the study established deficiencies in students' knowledge. Level of awareness regarding regular consumption of baked food was 20%, regular consumption of alcohol 45%, regular consumption of tobacco 38%, overweight or obesity 53%, hereditary 43%, lack of physical exercise 51%, whereas for stress, a major portion of participants (87%) rightly chose stress as a risk factor for high blood pressure. This findings is in line with findings from a study of first year students in Ajman UAE by Akter, et al (2014) which indicated poor knowledge in most of the risk factors except for stress where 94% correctly chose stress as a risk factor. However, the findings of Shaikh, et al (2011) do not correspond to the above findings in that his findings revealed good knowledge of modifiable risk factors such stress, high cholesterol, smoking, and alcohol, with 75%, 73%, 77% and 64% respectively. On the other hand, further findings from Shaikh, et al, (2011) also revealed poor knowledge of non-modifiable risk factors, where in that more than 50% and 88% of the participants did not consider hereditary and the male gender as a risk factor. This finding has similar outcome with this present study with 64% and 57% not considering the male gender and hereditary as risk factors.

In examining the lifestyle and dietary habits of students, the study sought to evaluate students' attitude towards alcohol consumption. Although few 14% (55) of students consume alcoholic

drinks, findings reveal that more than half of them put together (18%, 15%, and 31%) consume at least 2 bottles, 4 bottles and 6 bottles and above weekly.

On possible parental influence on respondents' drinking habit, it was revealed that students whose parents do not consume alcohol (51%) were slightly more than those whose parents did (49%). This finding does not agree with the assertion of Wickrama, et al (1999), which stated that in adolescent and youth age, children tend to adopt the health lifestyles or habits of their parents. Neither does this finding agree that children of alcoholics are five times more likely to become alcoholics as well, compared to children of non- alcoholics (Chassin, et al, 1991). Furthermore, findings reveal that majority (78%) of students who consume alcohol are males. This supports the conclusion of Engs and Hanson (1990) having reviewed several studies, that a higher percentage of college men are likely to drink and to consume more alcohol than women.

The percentage of cigarette smokers was far lesser (6%) than the percentage of alcohol consumers. Findings reveal that more than half (54%) of the cigarette smoking population consumed at least a packet of cigarette daily. On possible parental influence on child smoking habit, it was discovered that more than half (54%) of students who smoke cigarette, have parents who smoke as well, indicating that children of smokers are more likely to become smokers than students whose parents do not smoke. This finding supports a survey of students in New Zealand, where students having at least one parent who smoked were said to be three times more likely to become daily smokers (Scragg and Glover, 2007). Also, in 2000, a prospective study of about 5,000 US families showed that parental smoking behavior have a critical influence over both initiation and continuation of adolescent smoking behavior (Bricker, et al, 2005). Furthermore, findings in this study reveal that all (100%) of those who smoke cigarette were male, indicating that cigarette smoking is more prevalent in males than females. This finding

supports the assertions of the Department of Gender and Women's health WHO (2003) which states that being a male is the greatest predictor for tobacco use with over all prevalence rate being four time higher among men than women globally (48% vs 12%).

This study also discovered that most students (36% and 10%) consume baked foods (snacks) 4-5 times and every day, weekly. Also, more than half (37% and 24%) of the student population consume sugared drinks 4-5 times daily. World Health Organization (2004), reported that in 2001 in Nigeria fruits and vegetable consumption decreases between the ages of 11 and 15 while the intake of snacks, sweet and soft drinks increases.

Asides feeding on snacks and sugared drinks, this study also examined that the dietary habit of students on daily bases is poor with 68% and 46% mostly having bread or rice for breakfast and lunch respectively, and another significant proportion (27%,25% and 22%) feeding on indomie, solid starch meals and rice respectively. Surprisingly, on the space left for students to indicate other types of food usually consumed, no student indicated meals of other classes of food. Rather, carbohydrate meals such as yam, spaghetti, among other were mentioned.

Students' engagement in regular physical exercise was found to be poor with half (49%) walking for 30-45 minutes (walking around the school in the process of carrying out their normal daily activities) only and about 10% indicating that they do not engaging in any exercise at all.

This study also discovered that among the few 31(8%) of students who had ever been diagnosed of High Blood Pressure, majority (12) were diagnosed between 20-24 years of age.

It was also discovered in this study more than half (52%) of students who indicated ever being diagnosed of HBP come from polygamous homes.

On seeking students' knowledge on preventive measures for HBP, it was once again evident that most students know stress to probably be the only or major risk factor for the disease with about 47%percent recommending only, that avoiding excessive thinking or worrying and stress as a preventive measure for HBP. This in turn indicates the urgent need for awareness campaign for risk factors as well as preventive measures for HBP amongst students.

From the in-depth interview, it was revealed that the University Health Services (Sick-Bay) has no particular health education session or form of awareness on high blood pressure in reference to students either during the daily health education sessions held or during the annual orientation for new students. Talks on hypertension were in reference to adults.

Theoretically, the health belief model asserts that people were afraid of getting serious illness and that health related behaviors reflect the level of threat perceived and a person's expected fear-reduction potential of taking action. In other words, perceived seriousness and susceptibility of an illness provokes the likelihood of preventive action. The theory identifies four aspects of this assessment:

- Perceived susceptibility to ill health (risk perception)
- Perceived severity of ill health
- Perceived benefits of behavior change
- Perceived barriers to taking action

The right combination of perceptions adds up to an individual's readiness to act (Rosenstock et al, 1988).

The poor knowledge of risk factors for high blood pressure and non-challant attitude of students in terms of healthy dietary-habits is due to the low perceived severity of the disease. It is obvious

from the study that most students have the perception that high blood pressure is a disease that is associated with mere stress as well as old age.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter consists of three sections: the summary of findings, conclusion and recommendation as regards enhancement of awareness on risk factors for high blood pressure among youths.

5.2 Summary of key Findings

This work is titled “Awareness and Attitude of Students towards Risk Factors for High Blood Pressure in Ahmadu Bello University, Zaria”. Specific objectives addressed were level of awareness of risk factors for high blood pressure among students, level of students' engagement in unhealthy lifestyles and dietary habits, level of knowledge of preventive and control measures for high blood pressure, and possible strategies to enhancing youth awareness of risk factors for high blood pressure as well as it's preventive and control measures among youth. To buttress our understanding of the topic in question, several relevant literatures were reviewed and the “Health Belief Model” which was introduced in the 1950s by psychologists was adopted for the study. Its basic assumptions is that people were afraid of getting serious illness and that health related behaviors reflect the level of threat perceived, that is a person's perceived seriousness and susceptibility to an illness that provokes the likelihood of preventive action. Furthermore, both quantitative (survey) and qualitative (in-depth interview) methods were employed to elicit information from the target population on the above mentioned objectives.

Information for this research was sort from both the Main-Campus and Kongo-Campus of Ahmadu Bello University Zaria, Kaduna State, Nigeria. The sample size was four hundred (400), all being undergraduate students. However, a total of 398 valid responses were analyzed.

From the analysis, the male respondents constituted 62% (245%), while the female respondents were 38% (153) (see table 1). On the basis of religion 227(57%) of the respondents were Christians, 42% (167) were Muslims and 2(1%) were traditional worshipers (see table 1). On the basis of age range, the highest total percentage of respondents were those between ages 21 and 25 with a total population of 233(58%) while the lowest total percentage of respondents were those aged 36years and older with a total population of 10(2%). As regards marital status, majority a significant proportion 372(94%) were single and a few 26(7%) were married.

As regards students' knowledge of risk factors for high blood pressure, results showed that most students are not aware of some modifiable risk factors such as the consumption of snacks, alcohol and tobacco. On regular consumption of snacks as a risk factor for high blood pressure, 79(20%) of respondents agreed it was a risk factor for high blood pressure, while 102(26%) disagreed and 217(54%) were not sure (see table 3). Also, on regular consumption of alcohol, results revealed that most students are not aware of it being a risk factor for high blood pressure as 50(13%) disagreed and 170(43%) were not sure, put against 178(45%) who indicated being aware (see table 4). Again, information collected showed that most students are not aware that regular consumption of tobacco is a risk factor for high blood pressure as 57(14%) disagreed and 190(48%) indicated not being sure, against 151(38%) who agreed, indicating that they are aware (see table 5).

It was also discovered that most students are not aware of the unmodifiable risk factors (hereditary and male gender). As regards hereditary, 169(43%) agreed it is a risk factor for high

blood pressure, while 49(12%) disagreed and 45% (180) indicated not being sure (see table 7). Also, on asking which gender is more prone to high blood pressure, majority (64%) think the female gender is more prone while 32% correctly indicated that the male gender was more prone to high blood pressure and 5% were not sure (see fig.1). Findings from the qualitative data however confirmed that majority of respondents were indeed not aware that the male gender is a risk factor itself when one of the medical doctors said that research so far, has it that the male sex are more prone to the disease compared to the female sex.

However, results also revealed that most students are aware of some modifiable risk factors for high blood pressure such as stress, obesity and lack of exercise. As regards stress, a significant proportion 345(87%) agreed to it being a risk factor for high blood pressure while few 10(2.4%) disagreed and 43(11%) indicated not being sure (see table 2). From the professional point, a medical doctor of the university health service (sick-bay) agrees with the above results, "A lot of students may not be aware of other risk factors for high blood pressure, but I'm sure most of them think that stress is the only risk factor that predisposes one to hypertension, in fact even some uneducated people believe that".

On obesity, 53% (211) agreed it was a risk factor for high blood pressure while few 29(7%) disagreed and 39% (157) were not sure (see table 6). Lastly on lack of exercise, 202(51%) agreed that lack of exercise could pose one to high blood pressure, while 49(12%) disagreed and 147(37%) indicated not being sure (see table 8).

As regards lifestyle habits of students, results revealed that not many students were of the habit of consuming alcohol and tobacco. When asked if they consumed alcohol, 55(14%) of the total respondents indicated they do, while 343(86%) indicated they do not consume alcohol (see fig.2). However, of the 55 respondents who take alcohol, results also showed that majority

20(36%) consume it occasionally (see fig. 3). Also, results revealed that it is not certain that most students who take to the habit of consuming alcohol were influenced by parents who also consume it, as 28(51%) of the 55 respondents who consume alcohol indicated that their parent(s) do not consume alcohol and 27(49%) indicated that their parent(s) consume it (see fig. 4). Lastly on alcohol consumption, results revealed that male students indulge more in alcohol consumption than female students as 43(78%) of the 55 respondents who consume alcohol are males and 12(22%) were females (see fig. 5).

When asked if they consume tobacco, 24(6%) of the total respondents indicated they do, while 374(94%) indicated they do not consume alcohol (see fig.6). However, of the 24respondents who take tobacco, results also showed that majority 13(54%) consume at least a packet of cigarette daily (see fig. 7). Also, results revealed that it is likely that most youths who take to the habit of smoking cigarette were influenced by parents who also consume it, as 13(54%) of the 24 respondents who consume alcohol indicated that their parent(s) do smoke cigarette are more than those 11(46%) who indicated that their parent(s) do not smoke cigarette (see fig. 8). Lastly on tobacco consumption, results revealed that male students indulge most in cigarette smoking compared to female students as results showed that all 24(100%) of respondents who smoke cigarette are males (see fig. 9).

As regards dietary habits of students such as consumption of snacks or baked foods, results revealed that most respondents 142(36%) indulge in this habit 4-5times weekly (see table 9). The qualitative data also corroborated the above information as one of the informant said: “also, bad eating habits such as feeding on junks and snacks on a daily basis by majority of the students, is something we can see every day on campus”. On the consumption of sugared drinks among students, findings show that majority 146(47%) of respondents consume sugared drinks 4-5times

weekly (see table 10). Also, on the three square meals consumed daily by students, results revealed that majority 270(68%) of respondents consume bread for breakfast mostly (see table 11), another majority 184(46%) of respondents consumed rice mostly for lunch while for dinner, most [107(27%), 98(25%), 86(22%)] respondents consumed indomie, solid starchy meals (eba, semo) and rice mostly for dinner.

On students' engagement in physical activities or exercise, results showed that majority 197(49%) of the respondents engage in regular walking for 30-45 minutes daily, indicating that most students do not engage in 'active' exercise (see table 14) and those who engage in active exercises such as jogging, competitive sports, to mention a few, do so less than 4times weekly (see table 15). From the professional point, a medical doctor expressed his view on the above thus, "Lack of proper physical exercise is a risk factor for high blood pressure and nowadays most of you young adult especially students do not engage in other exercises apart from walking around the school premises".

This study also revealed that 31(8%) of the respondents have been diagnosed with high blood pressure (see fig. 10) with a majority 12 indicating that they were diagnosed of the HBP between 20-24years of age. When asked for the suspected 'cause', another majority 12 out of the 31 respondents who indicated ever being diagnosed with hypertension maintained that the suspected cause was said to be stress (see table 16). However, on medications given, majority (13) of the 31 respondents indicated that they could not remember the medications received (see table 17). Furthermore, studies also show that 16(52%) of the 31 respondents who indicated haven being diagnosed of hypertension come from polygamous homes (see fig. 11).

As regards knowledge of preventive measures for hypertension, findings show that majority 185(47%) of respondents gave the preventive measure to be avoidance of xecessive thinking,

worry and stress (see table 18). This further indicate that majority of students view stress, excessive thinking or worrying to be the major risk factor for high blood pressure. In contrast to the quantitative data above, from the qualitative data other preventive measures for high blood pressure were equally stressed upon, such as eat healthy diets, control rate of consuming of junks, sugary drinks, alcohol and if possible avoid tobacco completely, have general check-ups in the clinic every now and then, not only when one feel sick.

Lastly, when respondents were asked to proffer possible measures to enhance awareness on risk factors for high blood pressure amongst youths, 168(42%) suggested that organizing seminars in each faculty once every session as well as free check-ups. Unlike the quantitative data above, the key informants from the qualitative data did not lay emphasis on organization of seminars alone, but on other measures such as funding of preventive health education or campaign by the federal and state government on non-communicable diseases in general, carrying out health education in places of worship, the use of bill boards and the university's electronic bill boards, the media, to mention a few.

5.3 Conclusion

In conclusion, it is obvious and evident that almost all students are aware of the disease 'high blood pressure' or hypertension,' being that they either have a parent or a relative or an acquaintance, who has ever been diagnosed to have this condition in question. This conclusion is drawn from comments made by majority of the respondents encountered in the course of the field work. However, findings from this study have brought to light, the information that quite a significant proportion of youths or students may be aware of the disease in question but are lacking in the knowledge of most of the risk factors which could make them prone to high blood pressure in their young age. This lack of knowledge can be said to be due the way and medium

through which information on high blood pressure has been carried out over the years both on the media, among peer groups and families. High blood pressure has been projected to be a disease exclusively for the old or adults in our society, hence the lack of motivation on the part of the youth for preventive action. Thus, confirming the assumptions of the health belief model, for instance, Rosenstock et al, (1988) maintains that health promotion messages through mass media, peer education, and other interventions act as cues to action. These cues are often necessary to overcome habitual unhealthy behaviors such as eating primarily high-fat foods, smoking, etc.

5.4 Recommendations

As often said, information is key, knowledge is the key to success, and regarding health, prevention will always be better than cure. The importance for the effective knowledge or awareness on the risk factors for high blood pressure for especially the youths in our society cannot be over emphasized. Therefore, the following recommendations are given to assist in the enhancement of the awareness especially among the students so as to sustain a healthy people for a healthy future of our society and Nigeria as a whole.

- Interactive health seminars should be encouraged and organized by every faculty in Ahmadu Bello University at least once every session with focus on risk factors, causes and preventive measures of both hypertension and other cardiovascular diseases
- Religious gatherings especially the churches and mosques on campus of which students constitute the majority of congregation should also inculcate the habit of organizing health seminars as often as possible on several health issues especially risk factors for deadly silent killers like hypertension.

- Also, the University Health Service should provide and promote the distribution of fliers containing information on risk factors for high blood pressure and other diseases at least for year one students annually.
- The Guidance and Counseling Unit of the main and Kongo campuses, should provide sign boards or make use of the university's electronic bill boards with information about hypertension. This will speak to people passing every day thereby creating better awareness.
- On the part of the individual (students), conscious evaluation of the types of foods consumed daily should become a habit, so as to create and maintain a healthy dietary habit and weight. Also, sugared drinks and snacks should be consumed at most three (3) times weekly with 2-3days interval. Pick on a game of his/her choice to help exercise for 30minutes at least three (3) times weekly and lastly, imbibe the habit of regular medical check-up at least once in every four (4) months as recommended by a doctor of the University Sick-Bay.

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APPENDIX I
QUESTIONNAIRE

Dear Respondent,

I am a student of the Department of Sociology, Ahmadu Bello University, Zaria. I am undertaking a study on the topic "students' awareness and attitude of risk factors associated with high blood pressure in ABU". This study is a requirement for the award of Masters of Science (M.Sc.) in Sociology. I would therefore be grateful if you would accept to provide correct and honest answers to all the questions contained in this questionnaire. I wish to assure you that any information given in this questionnaire will be treated confidentially.

Thank you.

Pauline O. Adah

Instruction; Please tick in the appropriate brackets against the options and provides solutions in the spaces where available.

SECTION A: SOCIO-ECONOMIC/DEMOGRAPHIC DATA OF RESPONDENTS

1. What is your sex?
   a. Male [ ] b. Female [ ]
2. What is your religion?
   a. Christianity [ ] b. Islam [ ] c. Traditional [ ] d. Others (specify) ----------
3. Age of respondents
   a. 16 –20yrs [ ] b. 21 –25yrs [ ] c.26 –30yrs [ ] d. 31-35yrs [ ] e. 36 and above[ ]
4. What is your marital status?
   a. Single [ ] b. married [ ] c. divorced [ ] d. widowed [ ]
5. What is your faculty? ----------
6. What is your department? ----------
7. What level are you?
   a. 100 [ ] b. 200 [ ] c. 300 [ ] d. 400 [ ] e. 500 and above [ ]
8. What type of home do you come from?
   a. Polygamous [ ] b. monogamous [ ]
9. How many siblings have you? ----------
10. What is your position in the family? ----------

11. Are your parents still alive?

    a. Father Yes [ ] No [ ] b. Mother Yes [ ] No [ ]

12. With whom do you live with?

    a. Both parents [ ] b. Father [ ] c. Mother [ ] d. Guardian [ ] d. spouse [ ]

13. What is / was the occupation of your Father?

    a. Civil servant [ ] b. business [ ] c. petty trading [ ] d. farming [ ] e. unemployed [ ] f. others (specify) ----------

14. What is the occupation of your Mother?

    a. Civil servant [ ] b. business [ ] c. petty trading [ ] d. farming [ ] e. unemployed [ ] f. others (specify) ----------

15. What is the highest formal education attained by your Father?

    a. No formal education [ ] b. Primary education [ ] c. Secondary education [ ] d. NCE/OND [ ] e. HND [ ] f. University [ ] g. others (specify) ----------

16. What is the highest formal education attained by your Mother?

    a. No formal education [ ] b. Primary education [ ] c. Secondary education [ ] d. NCE/OND [ ] e. HND [ ] f. University [ ] g. others (specify) ----------

SECTION B: LIFESTYLE AND DIETARY HABITS OF RESPONDENTS

17. Do you take alcohol? a. Yes [ ] b. No [ ]

18. If yes, how many bottles do you consume per week?

    a. 2 bottles [ ] b. 4 bottles [ ] c. 6 bottles and above [ ] d. occassionally

19. At what age did you start taking alcohol? ----------

20. Do any of your parents take alcohol?

    a. Yes [ ] b. No [ ]

21. If yes, who among them?

    a) Mother [ ] b) Father [ ]

22. Do you smoke cigarette?

    a. Yes [ ] b. No [ ]

23. If yes, how many sticks do you consume per day?

    a. 2 sticks [ ] b. 3 sticks and above [ ] c. a packet [ ]

24. At what age did you start smoking cigarettes? ----------

25. Do any of your parents smoke cigarettes?

    a. Yes [ ] b. No [ ]

26. If yes, who among them?

    a) Mother [ ] b) Father [ ]

27. How many times do you take snacks in a week?

    a. Once [ ] b. 2-3 times [ ] c. 4-5 times [ ] d. everyday

28. Do you consume sugared drinks? a. Yes [ ] b. No [ ]

29. If yes, how many times do you take sugar drinks in a week?

    a. Once [ ] b. 2-3times [ ] c. 4-5 times [ ] d. everyday [ ]

30. Which ONE of the following do you mostly consume in the course of the day? (tick only one food per/time of meal)

Food	Breakfast	Lunch	Dinner
a. Solid starchy meals			
a. Rice			
b. Bread			
c. Garri			
d. Beans			
e. Indomie			

31. Which of the following physical activity do you engage in?

    a. Walking for 30-45 minutes [ ] b. Jogging [ ] c. Competitive sports [ ]

    d. All of the above [ ] e. others (specify) ---------- f. none of the above [ ]

32.

Physical activity	Once	Twice	Thrice	4 times and above
a. If walking, how many times in a week?				
b. If jogging, how many times in a week?				
c. If competitive sports, how many times in a week?				
d. If all of the above, how many times in a week?				

SECTION C: KNOWLEDGE OF STUDENTS ON RISK FACTORS FOR HIGH BLOOD PRESSURE

33. Which of the following do you know is a risk factor for high blood pressure?

Risk factor	Agree	Disagree	Not sure
a. Stress			
b. Regular consumption of baked foods (snacks)			
c. Regular consumption of alcohol			
d. Regular consumption of tobacco			
e. Excess fat (obesity)			
f. Hereditary			
g. Lack of exercise			

34. How did you come about this knowledge? a) On the news [ ] b) from friends [ ]
c) From roommates [ ] d) from a health seminar [ ] e) others specify ----------

35. Are you aware that hypertension is nowadays diagnosed among youths?
a. Yes [ ] b. No [ ]

36. How did you come about this information? a) On the news [ ] b) from friends [ ]
c) From roommates [ ] d) from a health seminar [ ] e) others specify ----------

37. Do you believe that youths can be prone to hypertension?

    a. Yes [ ] b. No [ ]

38. Have you ever been diagnosed of hypertension?

    a. Yes [ ] b. No [ ]

39. If yes, at what age? ----------

40. What was said to be the cause? ----------

41. What medications were you given to control the health problem? ----------
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42. Which sex do you think is more prone to high blood pressure?

    a. Male [ ] b. female [ ]

43. If a or b above, why? ----------
----

44. Which measures do you know can be adhered to in order to prevent hypertension? List them
----------,----------,--
----------,----------,--------
----------,----------,

45. Do you think that most youths are aware that they could be prone to hypertension?

    a. Yes [ ] b. No [ ]

46. If no, what measures do you suggest could be put in place to enhance awareness and prevention of hypertension among students? ----------
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APPENDIX II
IN-DEPTH INTERVIEW GUIDE
FOR MEDICAL PRACTITIONERS

1. From your experience in practice, would you say the prevalence rate of hypertension among students (youths) has increased over the years?
   - Are students being diagnosed with high blood pressure?
   - If yes, can you specify or give an estimate of how many students in a semester?
   - Is it usual to have hypertensive patients who are students in a semester?
   - Which gender constitute the majority of students (youths) whom you have diagnosed with hypertension?
2. What could be the cause of the increasing prevalence rate of hypertension among youths (students)?
3. What are the causes or risk factors that could make students (youths) prone to hypertension?
4. What preventive measures do you suggest could be adopted by students (youths)?
5. Would you say that students are informed on high blood pressure and risk factors that could make them prone to it?
6. What measures of health education or awareness forum on hypertension (in reference to youths) do your unit provide?
7. What new or better strategies do you suggest can be put in place to create awareness on preventive mearsures of hypertension among students and youths in general?
   - By individual student
   - By the university health service
   - By the school management
   - By the government

APPENDIX III
IN-DEPTH INTERVIEW GUIDE
FOR GUIDANCE AND COUNSELLING STAFF

1. From your experience in practice, have you treated cases of students said to be suffering from hypertension?
   - Have they increased over the years?
   - If yes, can you specify or give an estimate of how many students in a semester?
   - Which gender constitute the majority of students (youths) with cases of hypertension whom you have attended to?
2. Are they usually referred to your unit from the sick-bay?
3. What were the said causes or risk factors?
4. What preventive measures do you suggest could be adopted by youths (students)?
5. Would you say that students are informed on high blood pressure and risk factors that could make them prone to it?
6. What measures of health education or awareness forum on hypertension (in reference to youths/students) do your unit provide?
7. What new or better strategies do you suggest can be put in place to create awareness on preventive mearsures of hypertension among students and youths in general?
   - By individual student
   - By the university health service
   - By the guidance and counseling unit
   - By the school management
   - By the government

APPENDIX IV
IN-DEPTH INTERVIEW GUIDE
FOR RELIGIOUS LEADERS

1. Which sect of people constitute your congregation?

2. How often do the church/mosque organize health programs

- For the entire church/mosque congregation

- For students

3. What are the health topics discussed in the seminars organized so far?

- Is high blood pressure and its risk factors among students one of the health topics ever discussed on any health seminars?