

**PREVENTIVE HEALTH SEEKING BEHAVIOUR AND KNOWLEDGE  
RELATING TO HYPERTENSION AMONG NON-TEACHING STAFF OF THE  
COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN, OYO STATE**

**BY**

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## DEDICATION

This work is dedicated to Almighty God who in His infinite mercy made His grace available to me in the course of this work. He proved to me beyond reasonable doubt that “it is not of him that willeth, nor of him that runneth, but of God that showeth mercy” (Romans 9:15)

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## **CERTIFICATION**

I hereby certify that this study was carried out by UKENI Uchechi Mercy in the department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

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## ABSTRACT

Hypertension contributes largely to morbidity and mortality experienced from cardiovascular diseases worldwide. Studies have been conducted on hypertension among various populations in Nigeria, but only a few have provided data on hypertension-related preventive Health-Seeking Behaviour (HSB) among non-teaching staff in the hospital environment. This study was conducted to determine the preventive HSB and knowledge relating to hypertension among non-teaching staff of the College of Medicine, University of Ibadan (CoMUI).

A total of 315 out of 379 consenting non-teaching staff of CoMUI on the University College Hospital premises were involved in this descriptive study. Blood Pressure (BP) was determined as specified in the European Society for Hypertension/World Health Organization guidelines. Body Mass Index was assessed using a known-weight standardized weighing scale and heightometer. Qualitative and quantitative data on knowledge and HSB relating to hypertension were collected using a pre-tested key informant interview guide and a semi-structured questionnaire respectively. Respondents' preventive HSB relating to hypertension were assessed through their responses on preventive practices. Respondents' attitudes towards preventive behaviour and knowledge of hypertension were measured on 20-point scale each. Respondents with scores  $\geq 10$  points on knowledge and attitude were classified as having good knowledge and positive attitude respectively towards HSB. Data were analysed using thematic approach as well as descriptive statistics, Chi-square and logistic regression.

Age range of respondents was 21-60 years with a mean of  $42.8 \pm 13.3$  years; 58.4% were males and 73.7% had tertiary education. Hypertension prevalence among respondents was 25.4% (68.8% male; 31.3% female). Prevalence of overweight and obesity was 33.1% (58.7% male; 41.3% female) and 20.3% (26.6% male; 73.5% female) respectively. Preventive behaviour reported by respondents included non-consumption of alcohol (65.1%), regular BP check-up (46.3%), regular exercise (41.9%) and controlled diets (low salt intake 47.3%, cholesterol-rich fast foods 15.2%). Few respondents (39.3%) had positive attitude towards preventive HSB relating to hypertension. Non-alcohol consumption was 4 times more likely to be observed (OR: 4.2; 95% CI 2.6-6.9) while

exercise was twice less likely (OR: 2.1; 95% CI 0.3-0.7) by the respondents. Respondents' educational qualifications and administrative rank were significantly associated with preventive HSB ( $p < 0.05$ ). Majority (77.1%) of the respondents (54.7% male; 45.3% female) had good knowledge of hypertension especially on the symptoms (headache; 69.5%), while 43.8% had low knowledge of hypertension prevention (screening/early detection; 14.9%). All key informants identified too much alcohol consumption, cigarette smoking, non-regular BP check-up (once a month) and poor exercise as major risk factors of hypertension. Many of them did not consider diet as one of the major risk factors of hypertension. Most of the interviewees disclosed that they sometimes indulged in practices which constitute risk factors for hypertension, especially non-regular BP check-up. This was attributed to their busy schedule and unwelcoming attitudes of the physicians when they visited the clinic.

Respondents' knowledge of hypertension was good; however many of them had negative attitude to alcohol consumption had, did not exercise regularly and consume cholesterol-rich fast-food. Work-place health promotion and education strategy such as health talk for behaviour change is required to improve the situation.

**Key words:** Hypertension, Health- seeking behaviour, Controlled diet

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## LIST OF ACRONYMS

BMI:	Body Mass Index
BP:	Blood Pressure
CDC:	Center for Disease Control
CVD:	Cardio-Vascular Disease
CDL:	Chronic Disease of Life style
CRF:	Chronic Renal Failure
DBP:	Diastolic Blood Pressure
ESH:	European Society of Hypertension
ESC:	European Society of Cardiology
ESRD:	End-Stage Renal Disease
ISH:	International Society of Hypertension
IEC:	Information Education Communication
JNC:	Joint National Committee
KII:	Key Informant Interview
NCCDP:	National Center for Chronic Disease Prevention
NCD:	Non-Communicable Disease
SBP:	Systolic Blood Pressure
SSA:	Sub-Saharan Africa
UCH:	University College Hospital
WHO:	World Health Organization

## OPERATIONAL DEFINITION OF TERMS

**Non-teaching staff:** People who are officially employed to do administrative work in different areas in the College of Medicine other than teaching and research; drivers, clerks, cooks, Secretaries etc.

**Risk factors of hypertension:** Behavioural and lifestyle patterns adopted by the individuals that are likely to contribute to development of hypertension.

**Preventive health seeking behaviour:** Individual pattern of living that contribute to reduction of risk factors in hypertension including; attitude to cigarette smoking, avoidance of too much alcohol consumption, eating healthy diet, regular physical activities and regular checking of blood pressure.

**Key Informant Interview:** Interview conducted among the selected Heads of the Units in the College of Medicine.

**Knowledge:** Referrers to those with correct understanding of what hypertension means, risk factors, signs and symptoms and complication hypertension

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## CHAPTER ONE

### INTRODUCTION

#### 1.1: Background to the study

Health is essential for social and economic development; it is therefore seen as a resource for everyday living and sought after by all. The link between health and human behaviour is a major area of interest in public health. Kasl and Cobb 1966 identified three types of health behaviour: preventive health behaviour, illness behaviour, and sick-role behaviour. Preventive health behaviour is "any activity undertaken by an individual who believes himself to be healthy for the purpose of preventing or detecting illness in an asymptomatic state" (Kasl and Cobb 1966). Studies on health seeking behaviour have shown the numerous influences on an individual's health behaviour. These influences include past experiences with health services, perception about quality and efficiency of health services and influences at the community level (Sule, Ijadunola, Onayade, Fatusi, Soetan and Connell, 2008). The decision to seek help is also influenced by an individual's educational and economic status, the extent to which the person is worried about the symptom and duration of experiencing the symptom (Katung 2001, Amaghionyeodiwe, 2008).

Health seeking behaviour is influenced by a large number of factors apart from knowledge and awareness. This behaviour among different populations, is a complex outcome of many factors operating at individual, family and community level including their bio-social profile, their past experiences with the health services, influences at the community level, availability of alternative health care providers and their perceptions regarding efficiency and quality of the services (Lurie , Hintzn and Lowe, 1995). In the United States and other developed countries, premature death and disability results mainly from chronic diseases such as hypertension, heart disease, stroke, cancer, injury, emphysema, chronic obstructive pulmonary disease, and arthritis. Many of these illnesses have been characterized as resulting largely from "accumulated, multiple indiscretions" (Westberg and Jason, 1996) and linked to habitual, and sometimes harmful, ways of living. It follows that considerable morbidity and premature mortality could be reduced if

individuals practiced certain preventive health behaviours. Preventive actions in relation to hypertension can reduce, though not totally eliminate the chances of acquiring the disease. The strength of the cause and effect relationship between certain behaviour and hypertension as health problem one is trying to prevent will determine the impact performing the behaviour will have on reducing the risk. This impact is measured in terms of attributable risk. Attributable risk is a measure of the chance of acquiring a disease if the risk factors for it are eliminated or preventive health behaviour is practiced. The chances are influenced by the relationship of the preventive behaviour to the risk factor of the disease. Diet, physical activities, healthy life style and nutrition are important factors in the promotion and maintenance of good health throughout the entire life course. Their role as determinants of chronic non-communicable disease is well established and they therefore occupy a prominent position in prevention activities (World Health Organization, 2002).

High blood pressure, also known as hypertension is considered to be the result of environmental influences acting over time on the genetically predisposed individual (Pickering, 1967). Hypertension is an important public health challenge worldwide (Lopez, Mathers, Ezzati, Jamison and Murray 1990–2001). However it remains inadequately managed everywhere (Godley, Pham, Rohack, Woodward, Yokoyama and Maue, 2001).

Though the exact causes of hypertension are usually unknown, there are several factors that have been highly associated with the condition. These include: Smoking, obesity or being overweight, diabetes, sedentary lifestyle, lack of physical activity, high levels of salt intake (sodium sensitivity), Insufficient calcium, potassium, and magnesium consumption, Vitamin D deficiency, high levels of alcohol consumption, stress, aging, medicines such as birth control pills, genetics and a family history of hypertension, Chronic kidney disease, adrenal and thyroid problems or tumours (Mabuza, 2006).

However, a variety of lifestyle modifications has been shown in clinical trials to lower blood pressure (Ebrahim and Smith, 1998) and to reduce the incidence of hypertension (Stevens, Obarzenk, Cook, Lee, Appel and Smith 2001). These include weight loss in overweight (Leoter, Abbott, Campbell, Mendelson, Ogilvie and Chockalingam, 1999),

engage in physical activity (Hagberg, Park and Brown, 2000), moderation of alcohol intake (Xin, He, Frontini, Ogden, Motsamai and Whelton, 2001), a diet with increased fresh fruit and vegetables and reduced saturated fat content, reduction of dietary sodium intake (Sacks, Svetkey, Vollmer, Appei, Bray and Harsha, 2001), and increased dietary potassium intake (He and Whelton, 1999).

In addition, hypertension often coexists with other cardiovascular risk factors, such as tobacco use, diabetes, hyperlipidemia and obesity, which compound the cardiovascular risk attributable to hypertension. Worldwide, these coexistent risk factors are inadequately addressed in patients with hypertension, resulting in high morbidity and mortality (Klunggel, Boer, Paes, Seidell, Nagelkerke, Bakker, 1998). It has become increasingly evident that hypertension which is one of the risks of stroke, ischemic heart disease and renal failure are not confined to a subset of the population with particularly high levels of blood pressure, but rather that risk occurs in a continuum, affecting even those with below average levels of blood pressure (MacMahon, Peto, Cutler, Collins, Sorlie and Neaton, 1990). This indicates that individual with unhealthy behaviour or lack preventive abilities towards hypertension are potentially at risk of high blood pressure.

### **1.2: Statement of the problem**

The burden of chronic diseases is rapidly increasing worldwide. It has been calculated that, in 2001, chronic diseases contributed approximately 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease (World Health Organization, 2002). The proportion of the burden of non-communicable diseases is expected to increase to 57% by 2020. It has been projected that, by 2020, chronic diseases will account for almost three-quarters of all deaths worldwide, and that 75% of deaths due to stroke, and 70% of deaths due to diabetes will occur in developing countries (World Health Organization, 1998). Most of these chronic diseases have their roots on hypertension.

Hypertension is recognized as a silent killer due to the damages it causes on the target organs on a continuous and progressive basis until symptoms are manifested (Macmillian, Peto and Cutler, 1990). Population-based studies have shown that hypertension accounts for up to 35% of all atherosclerotic events, including 49% of all cases of heart failure. It

increases two- to three times in an individual risk of various cardiovascular consequences (Padwal, Strauss and McAlister, 2001).

As a chronic, non-communicable disease which plays vital role in the development of cardiovascular diseases and has contributed greater percentage to the global mortality rate, hypertension is associated with a variety of risk factors. These risk factors ranges from obesity, fast foods; most of which are high in fat, especially animal fat, salt, sugar, alcohol consumption (Beaglehole and Yach, 2003) changes in dietary consumption, along with a decrease in physical activity and other environmental factors (Puoane, Steyn and Bradshaw 2002). The epidemic of obesity, with its attendant co-morbidity; hypertension, is not a problem limited to industrialized countries (World Health Organization, 2000). A disturbing increase in the prevalence of overweight among the industrializes countries has taken place over the past 20 years in developing countries as diverse as India, Mexico, Nigeria and Tunisia (de Onis and Blossner, 2000). Recent evidence has shown, however, that the prevalence of these conditions which is a likely predisposing factor to hypertension, is rising in developing countries and that the burden is increasingly moving to persons of lower socioeconomic status (WHO, 2002). Also data from South Africa indicate that the burden of non-communicable diseases, particularly cardiovascular diseases, such as stroke which is caused by hypertension, is increasing in the urban Black African population (Bradshaw, Groenewald and Laubscher, 2000). Hypertension is becoming an increasingly common health problem worldwide because of increasing longevity and prevalence of contributing factors (Yusuf, Reddy, Ounpuu and Anand, 2001). The current prevalence in many developing countries particularly in urban societies is already as high as those seen in developed countries (Vorster, 2002).

In Nigeria, the prevalence of hypertension ranged from 17-20% in the urban communities and 11.2% in the rural communities. Also, a worksite study of hypertension prevalence which was carried out among non-academic staffs in Obafemi Awolowo University, Ile-Ife, Nigeria, was revealed to be 21% (Erhun, Olayiwola, Agbani and Omotoso, 2005). Also in Nigeria, awareness about hypertension is poor, as only 33.8% of those with elevated blood pressure were aware of their conditions (Akinkugbe, 1999). This stem from the fact that individual's preventive behaviour in terms of regular check-up is poor. In a study of patients, medical students, workers, and factory hands in Sagamu, Nigeria,

the level of information about hypertension and its various determinants ranged from 10-51.7% (Familoni, 2002).

### **1.3: Justification**

It is quite clear that hypertension is a major public health problem in Sub-Saharan African countries, particularly in Nigeria. Levels of detection, treatment, and control are worryingly low, suggesting that high levels of adverse effects such as stroke, heart failure, and renal failure will become apparent in the years to come.

There have been a considerably large number of studies that provide data about hypertension in Sub-Saharan Africa especially Nigeria, but very few of these provide preventive health behaviour data which allow comparability between studies (Godfrey and Sarah, 2010). However, in cross-sectional surveys on occupational factors in hypertension carried out in rural and urban communities in the former Bendel State of Nigeria (now Edo and Delta State), revealed that both occupational and environmental factors could have great effects on the health seeking behaviour of individual. Non-teaching Staff of the University of Ibadan, request for sick leave seems to be unconnected with ill-health related to hypertension. Some may have died from these diseases and many others hospitalised.

It is assumed that there is every tendency that where one lives or works or spends the greater percentage of his/her time every day, has a way of influencing the behaviour of the person either positively or negatively. Non-Teaching Staffs of College of Medicine are non-medical professionals working in the administrative department of the college. They are believed to have the tendency and capability of making informed decisions concerning their health as a result of influence of both academic and hospital environment. How true is this assumption in terms of preventive health seeking behaviour in relation to hypertension? Although, they work in the environment saturated with health information, there is a propensity for them to have limited or inadequate information on key health issues, including hypertension.

Furthermore, most of the non-teaching staff are middle income earners that have tendency to pay little or no attention to issues of health which may be due to internal and external factors, such as family pressure, family crisis, work pressure and political and economic

instabilities. This study has the potential to document information on the knowledge of non-teaching staff working in the hospital environment towards hypertension and its risk factors and their health seeking behaviour. It also has the potential to provide wealth of information on the hypertension prevalence among non-teaching Staff, knowledge and attitudes of Non-Teaching Staffs of College of Medicine as well as factors that influence their preventive health seeking behaviour in relation to hypertension.

#### **1.4: Research Questions**

1. What is the level of knowledge on the risk factors relating to hypertension among non-teaching staff in College of Medicine?
2. What preventive health-seeking behaviour do non-teaching staff adopt to prevent hypertension?
3. How prevalent is hypertension among Non-Teaching Staff of College of Medicine?
4. What factors influence health seeking behaviour of Non-Teaching Staff of College of Medicine?

#### **1.5: Broad Objective**

The broad objective of the study is to document the preventive health seeking behaviour of non-teaching staff of College of Medicine Ibadan in relation to hypertension.

#### **1.6: Specific Objectives**

1. To determine the prevalence of hypertension among non-teaching staff
2. To assess the knowledge of non-teaching staff on risk factors of hypertension
3. To examine the preventive health-seeking behaviour of non-teaching staff towards hypertension prevention
4. To identify factors influencing health seeking behaviour of non-teaching staff of College of Medicine.

#### **1.7: Hypotheses**

The null hypotheses that guided this study were as follows:

1. There is no significant relationship between the nutritional status of Non-Teaching Staff of College of Medicine using BMI and the prevalence of hypertension among them.

2. There is no significant relationship between educational status of Non-Teaching Staff and their preventive health seeking behaviour in relation to hypertension.
3. There is no significant relationship between gender and knowledge of preventive health behaviour relating to hypertension among Non-Teaching Staff of College of Medicine.
4. There is no significant relationship between years of service and knowledge of preventive health behaviour on hypertension.
5. There is no significant relationship between respondent's knowledge of risk factors of hypertension and their attitude towards the risk factors

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## CHAPTER TWO

### LITERATURE REVIEW

According to the 21<sup>st</sup> century field model on determinants of health, there are three broad levels on which health can be promoted; primary, secondary, and tertiary. The environmental variables that should be considered relate to primary prevention (how we should keep ourselves well), secondary prevention (if we are getting sick, how we can detect these conditions early), and finally tertiary prevention (if we are sick, how we can get the best care). Secondary prevention involves activating the health care system to reduce the prevalence of disease and injury which can lead to recovery. Disability, death, or disease and injury can be resolved outside the health care system with appropriate self-care and good decision making (Nzioka, 2005).

At the beginning of the 20th century, the three leading causes of death were pneumonia/influenza, tuberculosis, and gastritis. These three diseases accounted for more than a third of all deaths at the time (Brownson and Bright, 2004). Advances in microbiology formed the foundation for infectious disease prevention during the first half of the 20th century. Following Koch's work in the late 1800s on the anthrax bacillus showing how bacteria could cause disease, numerous pathogenic organisms were discovered, and the germ theory of prevention emerged as a driving force in medicine and public health (Bullough and Rosen, 1992).

Currently, hypertension, heart disease, cancer, stroke and other cardiovascular diseases are the leading causes of death, and they account for approximately two-thirds of all deaths (Brownson and Bright, 2004). In Nigeria, hypertension is one of the most common non-communicable diseases (Akinkugbe, 1992) with more than 11% of adult population living with the illness in African most populous country (Kadiri, 2001). Despite effective therapies and lifestyle interventions, optimal control of blood pressure remains very serious health challenges to health professionals especially in most developing countries like Nigeria. Kadiri (2001) reported that less than one-third of people with hypertension in Nigeria undergo medications and less than one-third of those undergoing treatment

have their problem being absolutely managed (Kadiri, 2001). Hypertension awareness and prevention are essential tools in the prevention of coronary heart disease and other cardiovascular diseases. Prevention of hypertension from affecting target organs in the body remains an essential public health challenge that needs to be addressed. It is therefore imperative to identify medium through which high blood pressure could be prevented and at the same time improve the knowledge of hypertensive persons in order to reduce the risk of cardiovascular diseases and associated morbidity and mortality.

## **2.1. Overview of hypertension**

### **Blood pressure**

Blood pressure is defined as the pressure or force exerted by the blood on the walls of the blood vessels in which it is contained and it is expressed in millimetres of Mercury (mmHg). Blood pressure in the arteries is higher than in the veins due to some delay in movement of blood through the arteriolar and capillary system. The arterial walls are continuously subjected to stretch and are therefore always full (Marieb, 1999). Each time the heart beats (about 60-70 times a minute at rest), it pumps blood into the arteries. Blood pressure is at its highest when the heart beats, pumping the blood. This is called systolic blood pressure. When the heart is at rest, between beats, blood pressure falls. This is diastolic pressure. (World Health Organization, 1999)

Arterial blood pressure is then described as the result of the discharge of blood from the left ventricle into the already full aorta. Because arterial pressure is required to be high enough for blood flow through capillary beds in order to be maintained, Peripheral resistance have to be overcome. Systolic blood pressure is produced when the left ventricle contracts and pushes blood into the aorta: it is thus the measurement during ventricular systole. In an adult the normal value is about 120 mmHg. Diastolic blood pressure occurs as the heart is resting following the ejection of blood and is in complete cardiac diastole. In an adult the normal value is about 80mmHg (Martini, 2001). Blood pressure itself is not harmful – it is essential as it is the force that drives blood through the blood vessels to supply oxygen and nutrients to the body's organs and tissues and carry away waste materials. However, when blood pressure becomes too high it has damaging effects on almost every part of the body and can lead to serious illness and death (Joint National Committee, 1997).

## **2.2. Hypertension and its classifications**

According to the guidelines issued by the World Health Organization–International Society of Hypertension (WHO–ISH, 1999) and the sixth report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (Joint National Committee, 1997), hypertension in adults is defined as a resting systolic blood pressure (SBP) of 140 mmHg or greater and/or a diastolic blood pressure (DBP) of 90 mmHg or greater in adults who are not taking antihypertensive medication. In other words, hypertension is sustained high blood pressure at  $\geq 140/90$  mmHg.

According to Boucher and Malinder (1999), for persons 18 years and older, a hypertensive person is regarded as a person with multiple blood pressure readings of 140/90 mmHg or higher. Hypertension can be classified based on cause and severity. Classification of hypertension according to cause is regarded as primary and secondary hypertension, and classification of hypertension according to severity is numerically based on systolic and diastolic pressure as reflected in tables 2.1 below according to specific guidelines generated by different organisations.

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**Table 2.1: European Society Hypertension/European Society Cardiology Guidelines**

<b>Degrees of Hypertension</b>	<b>Systolic BP</b>	<b>Diastolic BP</b>
Optimal	< 120	< 80
Normal	120-129	80-84
High normal	130-139	85-89
Stage 1 (mild hypertension)	140-159	90-99
Stage 2 (moderate hypertension)	160-179	100-109
Stage 3 (severe hypertension)	≥180	≥110
Isolated systolic hypertension	≥140	<90
Source: JNC: Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure(2003)		

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**Table 2.2: Joint National Committee Guidelines**

<b>Degrees of Hypertension</b>	<b>Systolic BP</b>	<b>Diastolic BP</b>
Normal	< 120	< 80
High normal	130-139	85-89
Stage 1	140-159	90-99
Stage 2	160-179	100-109
Stage 3	≥180	≥110

Source: JNC: Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure(2003)

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**Table 2.3: World Health Organization Guidelines**

<b>Degrees of Hypertension</b>	<b>Systolic BP</b>	<b>Diastolic BP</b>
Optimal	< 120	< 80
Normal	120-129	80-84
High normal	130-139	85-89
Stage 1 (mild hypertension)	140-159	90-99
Subgroup borderline	140-150	90-94
Stage 2 (moderate hypertension)	160-179	100-109
Stage 3 (severe hypertension)	≥180	≥110
Isolated systolic hypertension	≥140	<90
Subgroup borderline	140-149	<90
Source: JNC: Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure(2003)		

Although the systolic and diastolic classification of hypertension were generated by different organization as shown in the tables above, it is worthy to note that in each guideline, the high blood pressure starts from 140/90mmHg and above.

Generally, Hypertension is a product of genetic predisposition with environmental and lifestyle factors. In his report, Beevers (2001) stated that in 90% of all cases, the reason for hypertension remains unclear. This is referred to as essential or primary hypertension. Usually these patients do not have many signs or symptoms. Headaches sometimes occur – but more so with very high pressures and are localized in the occipital region. According to Woods, Froelicher and Halpenny (1995) there are several theories to explain primary hypertension. Some of the causes of primary hypertension are Genetic predisposition; a family history of hypertension, heart disease, type 2 diabetes and environmental factors including age and hormone state

### **2.3 Global prevalence of hypertension**

Hypertension is an important public health challenge worldwide because of its prevalence and its role as a risk factor for cardiovascular disease. The prevalence of hypertension in continents and selected countries is shown on table 2.4. Hypertension is a health risk for all populations in the world, with the exception of very small isolated groups that continue to live a pre-industrial lifestyle (Richard; Albert, George and Mensah, 2003). It is a powerful independent risk factor for death from cardiovascular diseases. It is also a common clinical condition affecting more than 600 million persons worldwide and seen in nearly all populations (Richard; Albert, George and Mensah, 2003). The estimated total number of adults with hypertension in 2000 was 972 million. Of these, 333 million were estimated to be in economically developed countries and 639 million in economically developing countries, with North America 37.4%, Europe 37.4%, China 22.6%, South America 40.7%, Australia 37.4% and Africa 26.9 % (Kearney, 2005). Notwithstanding, it is estimated that by 2025, the number of people with hypertension will increase by about 60% to a total of 1.56 billion as the proportion of elderly people will increase significantly. Other reasons are the continuing population increase and changes in lifestyle, which includes a diet rich in sugar and high-fat processed foods and sedentary behaviour, mediated by televisions, computers and cars (Kearney, 2005).

According to Murray and Lopez (1997), it is estimated that over the next 10 years, some 11 million people in Latin America and the Caribbean (LAC) will die from

cardiovascular diseases due to increase in the prevalence of hypertension. Nearly 23% of these deaths will occur among people under the age of 60, which clearly represents premature mortality that can be prevented or delayed. However, Alleyne and Lenfant, (1999), estimated that the prevalence of hypertension in Latin America and Caribbean ranges from 8% to 30%, which could be seen to complement the earlier estimates.

In Kuwait, as of 1999, hypertension showed a prevalence rate of 26.3% (El-Reshid , Al-Owaish and Diab, 1999). Also, in 2005, a study on the prevalence of hypertension amongst young and middle aged Kuwaiti citizens attending the primary health care centers was found to be 6.4% in males and 6.1% in females. Influence of risk factors such as age, body mass index, exercise and smoking was statistically significant (Fotooh, Najat, Hamdyia, Abdul Salam, Abdul Razzak, Mahdi, 2005).

On the average, 28% of the Koreans reported to be hypertensive in 2007 of which the prevalence rises with age (Kearney, Whelton, Reynolds, Whelton, and He, (2004). Given the fast pace of population aging in Korea, one can assume that its prevalence will continue to rise (Oh, Sung, Hong and Connor, 2004).

In the United States, hypertension is among the most prevalent diseases affecting 24% of the adult population or nearly 50 million Americans, and is among the most common reasons for an outpatient medical visit (Burt, Whelton and Roccella, 1995). In the Department of Veterans Affairs health care system (VA), hypertension is the most common chronic condition, with a prevalence of 37% (1 million veterans are affected) (Yu, Raveloand Wagner 2002). In 1999-2006, the prevalence of hypertension in U.S. adults was 43.4% and similar figures have been reported from many Western countries (Sarafidis and Chen, 2008). The rates of hypertension were highest in participants who were 60 years or older than those between 20- to 39-years. Furthermore, hypertension was more common in individuals with a higher body mass index (BMI) (60% for BMI  $\geq$  35 and 32% for BMI of 23). Slightly more than half of adults with hypertension were aware of their disease in 1999-2004; fewer than half were treated for their hypertension with medications; and less than two-thirds were controlled to <140/90 mmHg with medication(Sarafidis and Chen, 2008). This trend in poor blood pressure control is observed worldwide.

Although reliable, large-scale, population-based data on high blood pressure in sub-Saharan Africa (SSA) are limited. Recent studies provide important and worrisome findings in both epidemiology and clinical outcomes (Richard; Albert, George and Mensah, 2003). Although overall hypertension prevalence is between 10% and 15%, prevalence rates as high as 30% and 32% have been reported in middle-income urban and some rural areas. In most SSA settings, hypertension control assumes a relatively low priority and little experience exists in implementing sustainable and successful programmes for drug treatment (Sarafidis and Chen, 2008).

Rapid urbanization and transition from agrarian life to the wage-earning economy of city life continue to fuel increases in average blood pressure levels and prevalence of hypertension. Although the true burden of high blood pressure in sub-Saharan Africa remains largely unmeasured, compelling preliminary evidence suggests that it is the foundation for epidemic cardiovascular disease in Africa and already contributes substantively to death and disability from stroke, heart failure, and kidney failure in this region (Sarafidis and Chen, 2008).

Success in limiting this epidemic in SSA will depend heavily on the implementation of sustainable and aggressive population-based programme for high blood pressure awareness, prevention, treatment, and control. It will be critical to obtain investments in improved surveillance and programme-relevant research to provide the evidence base for policy development and effective hypertension prevention and control (Richard; Albert and George, 2003).

Hypertension prevalence is probably on the increase in developing countries where adoption of western lifestyles and the stress of urbanization both of which are expected to increase the morbidity associated with unhealthy lifestyles are not on the decline. (Castelli, 1984). Environmental factors are reported to play a key role in hypertension, 90% of which are better classified as having unknown cause. High blood pressure in adults has a high impact on the economy and on the quality of life of individuals with important implications for resource expenditures. A number of studies revealing the prevalence of hypertension in populations of West African origin have been reported (Cooper, Rotimi and Ataman 1997).

**Table 2.4 Summarized Global prevalence of hypertension**

Continents/ Countries	Prevalence of hypertension (%)			Year	Source
	Male	Female	Overall		
Africa <sup>(C)</sup> Nigeria <sup>(*)</sup> (Edo)	24.8%	13.2%	26.9% 20.2%	2000 2006	Kearney (2005) Omuemu ,Okojie and Omuemu, (2006).
Asia <sup>(C)</sup> Kuwait	6.4%	6.1%	26.3%	1999 2005	El-Reshid , Al-Owaish and Diab, 1999 Fotooh, Najat, Hamdyia, Abdul Salam, Abdul Razzak, Mahdi, 2005 Kearney (2005)
China <sup>(*)</sup>			22.6%	2000	
Europe <sup>(C)</sup> Italy <sup>(*)</sup> Spain <sup>(*)</sup>	44.8% 49.0 %	30.6% 44.6%	37.4% 37.7 46.8%	2000 1998 1990	Kearney (2005) Katharina, Cooper, Banegas, Simona, Hans-Werner, Michel Joffres, Mika, Neil, Paola, Fernando, Birgitta, Jaakko, Diego and Fenicia (2003).
North America <sup>(C)</sup> U.S.A <sup>(*)</sup>	29.8%	25.8%	37.4% 27.8%	2000 1988- 1992	
Mexico <sup>(*)</sup>	17.2% 14.7%	18.1% 25.6%	18.0% 21.4%	1995- 2000	Pedro, Luis, María and Sylvia (2001)
South America <sup>(C)</sup> Brazil <sup>(*)</sup>	26.9%	12.5%	40.7% 18.9%	2000 2001	Kearney (2005) Flávio Sarno and Carlos Augusto Monteiro (2007)
Australia <sup>(*)</sup>			37.4%	2000	Kearney (2005)

**(C): Continent, (\*): Country**

**\* Source: Personal compilation by the author**

#### **2.4. Prevalence of hypertension in Nigeria**

In Nigeria, it has been estimated that over 4.3 million Nigerians above the age of 15 years were hypertensive with systolic blood pressure of 160 mmHg and above, and/or a diastolic of 95 mmHg and above (Akinkugbe, 1999). There are a lot of studies, however, on community-based surveys on the prevalence and pattern of hypertension in the recent time (See table 2.5). A study conducted by Kadiri, Walker, Salako and Akinkugbe (2005) on Blood pressure, hypertension and correlates in urbanised workers in Ibadan, revealed that The prevalence of hypertension was 9.3% in the population, being 10.4% in men and 7.1% in women; age-adjusted rates were 9.8% and 8.0% respectively. The prevalence of hypertension increased with age in both genders.

To ascertain the rate of damage done by hypertension among the Nigerian population, Salako, Ogah, Adebisi, Adedapo, Bekibele, Oluleye and Okpechi (2007) conducted a study on “Unexpectedly high prevalence of target-organ damage in newly diagnosed Nigerians with hypertension” of which the study revealed that target-organ damage already exists in newly diagnosed hypertensive subjects before presentation.

In a study on the prevalence and pattern of hypertension in the adult population living in the ancient semi urban community of Ile-Ife, southwest Nigeria, two thousand and ninety-seven adults of above 20 years of age were recruited into the door-to-door survey through a multistage cluster sampling technique. The mean age and BP of the participants were aged  $44.2 \pm 11.6$  years and 127/77 mmHg, respectively. The participants (36.6%) had a BP of greater than or equal to 140/90 mmHg whereas 13.3% had BP of greater than or equal to 160/95 mmHg. 22.1% had isolated systolic hypertension whereas 14.5% had isolated diastolic hypertension using the BP of greater than or equal to 140/90 mmHg cut off-point. Using the BP of greater than or equal to 160/95 mmHg, isolated systolic hypertension and isolated diastolic hypertension were 6.63%, respectively. A male-to-female ratio of 1.7: 1 and 1: 5 was observed for BP greater than or equal to 140/90 mmHg and BP greater than or equal to 160/95 mmHg, respectively. Hypertension prevalence increased across age gradient from young to old adults (Adedoyin, Rufus, Mbada, Chidozie, Balogun, Michael, Martins, Tanimola; Adebayo, Rasaaq ;Akintomide, Anthony; Akinwusi and Patience, 2008).

To determine the prevalence, associated factors and relationship between prehypertension and hypertension, a study of two ethnic African populations in Northern Nigeria was conducted by Isezuo, Sabir, Ohwovorilole and Fasanmade (2010). The prevalence rates of prehypertension and hypertension were 58.7% (men 59.2%, women 58.2%) and 24.8% (men 25.9%, women 23.6%), respectively. Of those with hypertension, 13.9% were aware of their high blood pressure status of which 85.7% were commenced on treatment and 12.5% achieved blood pressure control. Overall, 1.5% of the study population had blood pressure <140/90 mm Hg (Isezuo, Sabir, Ohwovorilole and Fasanmade, 2010).

Furthermore, a worksite study of hypertension prevalence was carried out in a university community in South-western Nigeria. Overall crude prevalence was 21% in the respondent population. The study population was composed of adults aged 21 years and above whom at the time of the study was either academic or non-academic staffs in the federal university in South Western Nigeria. The respondent population was 1000, of these 66.5%, 33.5%, 13.3% and 86.7% were male, female, single and married, respectively. Crude prevalence of hypertension in the respondent population was 21%. Prevalence was 23.3% in males and 16.4% in females. This survey reveals that the prevalence of isolated systolic hypertension (ISH) and diastolic/systolic hypertension increased with age across the groups, age group 31-40 showing the least prevalence for both types; the rise in systolic blood pressure and the increasing risk of isolated systolic hypertension with advancing age have been attributed, in part, to increased peripheral vascular resistance (Erhun, Olayiwola, Agbani and Omotoso, 2005).

Works done by Cooper, Rotimi and Ataman (1997), Bovet, Ross and Gervasoni (2002), Cappuccio, Micah and Emmett, Kerry, Antwi and Martin-Peprah(2004), and Erhun ,Olayiwola , Agbani and Omotosho (2006) have reported on the prevalence, awareness, treatment and control of hypertension in western Africa and comparable populations. Cooper, Rotimi and Ataman (1997), reported that the hypertension prevalence rate was 14.5%, while Erhun ,Olayiwola , Agbani and Omotosho (2006), reported a raw prevalence rate of 21% in a workplace study of hypertension prevalence amongst Nigerians. However, there appears to be a paucity of data on the prevalence of isolated systolic hypertension (ISH) among Nigerian, using the JNC(1997) and 1999 WHO/ International Society of Hypertension definitions. Nonetheless, the disease remains the

most common type of hypertension and the most prevalent type of untreated hypertension among the elderly (Staessen, Amery and Fagard, 1990).

Furthermore, a study on the Blood pressure pattern and prevalence of hypertension in a rural community in Edo State showed the prevalence of hypertension in the study population to be 20.2% which is seen to be significantly higher in the male respondents (24.8%) than in the female respondents (13.2%). This is higher than the prevalence of 8-10% reported by Akinkugbe (1992) in rural communities in Africa and the prevalence of 5.9% reported by Oviasu (1978) in a rural community in mid-western Nigeria and 11% reported by Kuti (1993) in Aiyetoro community in Ondo State.

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**Table: 2.5. Summarized Prevalence of hypertension in Nigeria**

<b>Nigerian Population</b>	<b>Prevalence (%) of hypertension</b>	<b>Author</b>
Rural community in the mid-western Nigeria	5.9%	Oviasu (1978)
Rural communities in Nigeria	8-10%	Akinkugbe (1992)
Aiyetoro community, Ondo state	11.0%	Kuti (1993)
University community in south western Nigeria	21.0%	Erhun et al (2005)
Work place study amongst Nigerian	21.0%	Erhun, Olayiwola, Agbani and Omotoso, (2005)
Rural community in Edo State	20.2%	Omuemu, Okojie and Omuemu, (2006).
Semi-urban community of Ile Ife	13.3%	Adedoyin et al (2008)

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## **2.5. Hypertension; a risk factor of cardiovascular and other chronic diseases**

Hypertension is not just a disease in itself but also a risk factor for the development of several cardiovascular, cerebrovascular and renal diseases (Onwubere and Ike, 2000). The impact of hypertension on the lives of people is enormous when measured in terms of morbidity, mortality and economic loss to the individual, family and nation as a whole. It significantly impairs life expectancy; the higher the blood pressure, the greater the reduction in longevity. In the Framingham cohort, the risk of developing coronary heart diseases rose progressively with increasing systolic pressure or diastolic pressure both in middle aged and the elderly (Levy, Wilson and Anderson, 1990) People who have hypertension are usually unaware that they have the condition, unless the BP has been measured at health-care facilities. It is therefore frequently referred to as a 'silent epidemic' in South Africa. Consequently, hypertension is universally under diagnosed and/or inadequately treated resulting in extensive target-organ damage and premature death. Furthermore, hypertension frequently co-exists with other risk factors for chronic diseases of lifestyle (CDL), such as diabetes and obesity.

An important cross-sectional cardiovascular disease (CVD) risk factor survey was conducted by Connoret in randomly selected general practices across the country. The study population comprised 9 731 persons, 30 years or older, attending the private sector primary health-care services. Hypertension was found to be the commonest of the CVD risk factors among all the study participants, but stood out as the risk factor with the highest prevalence in the black African community (Onwubere and Ike, 2000).

Hypertension is the strongest risk factor of cardiovascular diseases compared to other modifiable risk factors especially in middle and late adult life in both males and females (Collins and McMahon, 1994). Hypertension is a blood pressure of 140/90mmHg or above, which is an addition of 10 mmHg or more above normal 120/80mmHg (Holm, Cunningham, Bensadoun and Madsen, 2006). Collins and McMahon (1994) further reported that hypertension was present in approximately 70% of all cases of cardiovascular diseases especially stroke. Barbara (2004) reported that the association between blood pressure and the risk of stroke has been shown to be constant, reliable, and independent of other risk factors. The report further indicated that as blood pressure increases, so does the possibility of stroke. For patients between 40 and 70 years old, each increment of 20 mmHg in Systolic Blood Pressure, or 10 mmHg in Diastolic Blood

Pressure, doubles the risk of stroke across the entire range from 115/75 mmHg to 185/115 mmHg (Barbara, 2004).

However, a number of studies indicated that the majority of people, including those at higher risk, have poor knowledge of risk factors for cardiovascular diseases, warning signs and appropriate response to warning signs (Pancioli, Broderick, Kothari, R., Brott, T., Tuchfarber, A., Miller, R., Khoury, J and Jauch, E 1998). Considering stroke as one of the cardiovascular diseases, a study done in the USA by Beckera, Fruina, Goodinga, Tirschwella, Lovea and Mankowskia (2001) found that baseline knowledge about stroke among the public was poor and the knowledge deficit was greatest among Asian-Americans, men, the less educated and low-income residents. Also, in a study done in Spain by Seguraa, Vegab, Lópezc, Rubiod and Castilloe (2003) confirmed that the community was still unfamiliar with stroke. Studies shows that public knowledge of stroke warning signs and risk factors was limited, with persons at greatest risk of stroke including the elderly who have the least knowledge (Greenlund Neff, Zheng, Keenan, Giles, Ayala, Croft and Mensah, 2003).

In South Africa a comparative study comparing the knowledge of risk factors for stroke among hypertensive, diabetic, and stroke patients revealed that knowledge of stroke risk factors amongst all groups was inadequate (Bogoshi, Stewart, Hale, and Fritz, 2003). The low prevalence of awareness, treatment, and control of hypertension as the most reliable and influential predictor of stroke, poses a serious challenge for stroke prevention in Sub-Saharan Africa (LemogoumDegaute, and Bovet, 2005).

A survey done by WHO (2003) in low and middle income countries reported that public knowledge on chronic diseases, including heart diseases, stroke, diabetes and cancer and its risk factors, was limited. Other studies done in Tanzania and Gambia (Walker, Mclarty, Masuki, Kitange, Whiting, Moshi, Massawe, Amaro, Mhina and Alberti, 1999) reported that lack of knowledge about stroke and its risk factors leads people, especially those in rural areas, to trying local herbs first instead of going to hospital immediately following a stroke.

Survey carried out in Seychelles by Line, Pascal, Jean-Pierre, Anne, Bernard and Fred (1998) pointed out that many people, whether non-hypertensive, unaware hypertensive, or aware hypertensive, had good basic knowledge related to hypertension determinants and

consequences, possibly an effect of a nationwide cardiovascular disease prevention programme over the last years. Furthermore, hypertensive persons with other concurrent cardiovascular risk factors affecting the overall heart risk knew well the detrimental effects of these other factors but reported making little actual change to control them (particularly regarding overweight and sedentary habits). Lifestyle interventions are instrumental in controlling other concomitant cardiovascular risk factors not necessarily related to hypertension, such as smoking, raised cholesterol level, or diabetes, hence the importance of a multifactorial approach to effective risk reduction in hypertensives (Kaufman, Owoaje, James, Rotimi and Cooper, 1996).

In Nigeria, reports from cross sectional, longitudinal, and randomised controlled trials show that isolated systolic hypertension constitutes a substantial cardiovascular risk. (Staessen, Fagard, Thijs, Celis, Arabidze and Birkenhager, 1997). It however remains under diagnosed and rarely treated (Coppola, Whincup, Walker and Ebrahim 1997) even though benefits of treatment have been established.

Furthermore, studies has shown that the knowledge about hypertensive symptoms is particularly poor, as only about one in 10 patients knew that hypertension is a disease that for most times runs a symptomless course. Most of the symptoms are due to target organ damage. Prompt and adequate treatment of hypertension will delay onset of complications and might reverse some end organ damage. Waiting for onset of symptoms, as most of the local populace are likely to do, could delay diagnosis and medical intervention (Oluranti, Abayomi and Olutoyin, 2004). It contributes to cardiovascular morbidity and mortality, and its control reduces significantly the end organ effects of the disease. Population-based studies have shown that hypertension accounts for up to 35% of all atherosclerotic events, including 49% of all cases of heart failure. It increases two- to three times an individual's risk of various cardiovascular consequences. (Padwal, Strauss and McAlister 2001; Oluranti, Abayomi and Olutoyin 2004), pointed out in their study that most of the patients were aware that hypertension would cause stroke and heart failure, but a third of the patients were not aware that it could lead to end-stage renal disease (ESRD) and chronic renal failure (CRF), which is an important cause of morbidity and mortality in this environment (Oyediran and Akinkugbe 1970) and constituted 7.9% of all admissions to medical wards in our hospital (Ogun, Adelowo and

Familoni 2000). They also stated that hypertension is perhaps second only to diabetes as a cause of ESRD in developed countries of the world. It is a cause and consequence of renal disease and a major determinant of renal disease progression. One of the risk factors that have been identified as predisposing to hypertensive includes black race (Oyediran and Akinkugbe 1970).

## **2.6. Risk factors of hypertension and its prevalence**

Hypertension has many risk factors, some within control and some which cannot be controlled. Hypertension risk factors which can be controlled include too much alcohol consumption, cigarette smoking, salt intake, non-physical activities and obesity while those out of control include age, race, and family history (Mayo Clinic, 2010). The risk of hypertension increases with age. The prevalence of hypertension is more among women who have entered their menopause and middle aged men. Among the blacks also, hypertension is particularly common and sometimes runs in a family. (Mayo Clinic, 2010).

### **2.6.1. Excessive Alcohol consumption**

The Public health community has been concerned for a long time about the widespread habitual consumption of alcohol and the relationship of this habit to the immense global burden of hypertension and of consequent cardiovascular conditions such as cardiovascular heart disease (Darwin and Carma, 2002). Intervention studies have shown acute increase in blood pressure in men who drink predominantly on weekends and longer-term pressor effects on regular daily drinkers (Puddy, Rakic and Dammitt, 1999). In a study, a randomized controlled, crossover trial, the effects of two drinking patterns (weekend and daily drinking) was evaluated on a pressor responses to alcohol in 55 male drinkers using the clinic and 24-hour ambulatory blood pressure (ABP) monitoring. When there was a switch from high-alcohol to low alcohol intake periods, the fall in systolic ambulatory blood pressure (SABP) in weekend and daily drinkers were similar (Rakic, Puddy and Burke, 1998). The sixth report of the Joint National Committee on Prevention, Detection and Evaluation recommends that daily alcohol intake be limited to no more than 1 oz (30mL) ethanol (24 oz = 720mL of beer), 10 oz (300ml) of wine, or 2 oz (60ml) of 100-proof whiskey or 0.5 oz (15ml) ethanol for women and lighter-weight people (The sixth report of JNC, 1997).

### **2.6.2. Poor nutrition and high salt intake**

It is widely understood that unhealthy diets play a significant role in the causation and progression of chronic disease, although the numbers attributable to these causes vary (Centers for Disease Control and National Center for Chronic Disease Prevention and Health Promotion, 2003). An unhealthy diet, overall, appears to be an independent risk factor for certain chronic diseases but also plays a crucial role in its effect on chronic disease through the influence on the development and maintenance of obesity by altering energy balance (Centers for Disease Control and National Center for Chronic Disease Prevention and Health Promotion, 2003). Throughout the world, 'western' diets, high in fat and energy and with more animal-based foods, are replacing more traditional plant-based diets and people are getting less physical exercise. The trend is towards a higher energy density diet (i.e. one with more calories in the same amount of food), with more fat and added sugar in foods; greater saturated fat intake, mostly from animal sources (meat and dairy products); and reduced intakes of complex carbohydrates, fibre, fruit and vegetables. This nutrition transition', along with other factors such as ageing populations, leads to a sharp increase in obesity and related chronic diseases (Centers for Disease Control & National Center for Chronic Disease Prevention and Health Promotion, 2003). The significant association between salt intake and hypertension has long been for more than half-century.

After the study conducted in the mid-1960s in which data were compiled from 34 surveys of blood pressure from around the world to check for the distribution of BP and its changes with age, Epstein and Eeckhoff speculated on the previously proposed hypothesis that differences in salt intake among populations might partially explain the observed differences in BP. They noted the need for data from clinical trials to assess the effect of lower salt intake both in lowering BP among patients with hypertension and in preventing hypertension altogether (Darwin and Carma, 2002). Many clinical trials of dietary salt reduction have been conducted to test the BP response in persons with and without hypertension and results have consistently shown statistically significant effects on BP differences or changes in salt intake (Darwin and Carma, 2002). The result of the Dietary Approaches to stop hypertension (DASH) trial, popularly known as DASH-sodium were reported in which the variable sodium intake components was added to both the control and Dash diet arm (Sacks, Svetkey and Vollmer, 2001). In both diet groups, the BP was

lower at every level of sodium intake and was successively lower as sodium was reduced from high to intermediate to low.

### **HYPERTENSION, RACE AND SALT INTAKE:**

Because sodium metabolism plays a key role in blood pressure regulation, many researchers sought explanations for excess African-American hypertension in factors related to renal handling of sodium, presumably under genetic control. Several authors in the 1960s and 1970s posited that blacks were more likely to suffer from a genetic mutation affecting sodium excretion. Some suggested that since blacks originated from hot and humid environments, they may possess innate capacities for sodium retention that would prove maladaptive in other settings. Others proposed that salt supplies for the sub-Saharan progenitors of African-Americans were historically limited (Jay, 2006)

Population surveys in the US in the last century have consistently documented higher blood pressures and related cardiovascular sequelae in blacks compared to whites. The enormous attention focused on this observation has resulted in a dichotomous view of hypertension risk: whereby populations of African origin are considered more susceptible than all other continental groupings and a strong genetic hypothesis of inherent predisposition to hypertension among blacks has become the conventional wisdom (Cooper R, Rotimi C. 1997). According to the study conducted by Thomas, Juan, Dong-Churl, In-Sun, Ronald, Pharm, Ricardo, and Feride (2007) on Ethnic/Racial Variations in Blood Pressure.

Awareness, Treatment, and Control, Age-adjusted prevalence of hypertension was reported to be highest in blacks (41.8%), followed by whites (29.8%), other Hispanics (29.3%), and Mexican Americans (28.2%). Hypertensive Mexican Americans are younger (mean age, 51.1 years) than whites (59.5 years), other Hispanics (56.1 years), or blacks (52.9 years). Among hypertensive persons, blacks are more likely than other racial/ethnic subgroups to be obese, while whites are less likely to be smokers. Among hypertensive persons, whites are more likely than other racial/ethnic subgroups to have health insurance, while Mexican Americans are least likely to report a routine health care site and most likely to report no health care visits within the past year. Among hypertensive individuals, prevalence of diabetes is lower for whites than for other racial/ethnic subgroups. Mean BP for persons with hypertension is 141/76 mm Hg. Mean

BP is lowest for whites compared with other racial/ethnic subgroups and highest for blacks. (Thomas, Juan, Dong-Churl, In-Sun, Ronald, Pharm, Ricardo, and Feride, 2007).

### **2.6.3. Physical inactivity**

People who are inactive tend to have higher heart rates. The higher your heart rate, the harder your heart must work with each contraction and the stronger the force on your arteries. Lack of physical activity also increases the risk of being overweight. Because physical inactivity is a primary risk factor driving the global increase in chronic disease, sport can play a critical role in slowing the spread of chronic diseases, reducing their social and economic burden, and saving lives.

A recent study found that physically inactive women had a rate of all-cause mortality that was 52% higher than that of physically active women; their risk of cardiovascular mortality was doubled, and their risk of cancer-related mortality was 29% higher (Hu, Willett, Stampfer, Colditz and Manson, 2004). When energy intake is balanced with energy expenditure, body weight remains constant. Thus, overweight and obesity can occur when energy intake is greater than energy expenditure for a sustained period of time (Hill and Wyatt, 2005).

### **Obesity and metabolic syndrome**

The metabolic syndrome is a cluster of risk factors for cardiovascular disease and diabetes that includes hypertension, glucose intolerance, dyslipidaemia and abdominal obesity. High blood pressure is considered one of the key features of metabolic syndrome (Schillaci, 2004). The metabolic syndrome considerably increases the risk of cardiovascular and renal events in hypertension. It has been associated with a wide range of classical and new cardiovascular risk factors as well as with early signs of subclinical cardiovascular and renal damage. Obesity and insulin resistance, beside a collection of independent factors, have been implicated in the pathogenesis. Arterial hypertension is often part of a constellation of anthropometric and metabolic abnormalities that include abdominal obesity, characteristic dyslipidemia (low high-density lipoprotein cholesterol and high triglycerides) and glucose intolerance.

Mechanisms involved in the metabolic syndrome are obesity, insulin resistance and a group of independent factors, which include molecules of hepatic, vascular, and immunologic origin with pro-inflammatory properties. Although insulin resistance is associated with obesity and central adipose tissue, not all obese subjects have insulin resistance. Skeletal muscle and the liver, not adipose tissue, are the two key insulin-response tissues involved in maintaining glucose balance, although abnormal insulin action in the adipocytes also plays a role in development of the syndrome. The underlying factors promoting development of the metabolic syndrome are overweight and obesity, physical inactivity, and an atherogenic diet. Most individuals who develop the metabolic syndrome first acquire abdominal obesity without risk factors but, with time, multiple risk factors tend to appear, initially with only borderline elevations but then with progressive worsening. Thus, a reduction in body weight by a proper low-calorie diet and an increase in physical activity address the very mechanism of the metabolic syndrome and are hence recommended as just first-line therapy by all current guidelines (Thompson, Buchner, Pina, Balady, Williams and Marcus, 2003).

A modest caloric reduction (500–1000 cal/day), on the contrary, is usually effective and beneficial for longterm weight loss. A realistic goal is to reduce body weight by 7–10% over a period of 6–12 months. Long-term maintenance of weight loss is then best achieved when regular exercise is part of weight reduction management [49]. Current guidelines recommend a daily minimum of 30 min of moderate-intensity physical activity (Krauss, Eckell, Howard, Appel, Daniels and Deckelbaum, 2000). Additional increases in physical activity appear to enhance beneficial effects. Nutritional therapy calls for low intake of saturated fats, trans fatty acids, and cholesterol. Reduced consumption of simple carbohydrates and increased intake of fruits, vegetables, and whole grains is recommended. Extremes in intakes of either carbohydrates or fats should be avoided (Krauss, Eckell, Howard, Appel, Daniels and Deckelbaum, 2000). Smoking cessation is mandatory. Accumulating evidence suggests that the majority of individuals who develop the metabolic syndrome do not engage in recommended levels of physical activity and do not follow dietary guidelines, for fat consumption in particular (McKeown, Meigs, Liu, Saltzman, Wilson and Jacques, 2004).

#### **2.6.4. Cigarette smoking**

Smoking interdependently raises BP, although epidemiologically the relationship between smoking and hypertension is often confounded by factors associated with both. Not only does smoking tobacco immediately raise blood pressure temporarily, but the chemicals in tobacco can damage the lining of the artery walls. This can cause the arteries to become narrow, increasing the blood pressure (Mayo Clinic, 2010). Studies have shown that tobacco-related diseases including hypertension still contribute to approximately 440,000 premature deaths each year in United States (American Cancer Society, 2007).

Higher alcohol intake and lower consumption of fruits and vegetables are more often found in smokers than non-smokers and these are both associated with hypertension. Elements in cigarette smoke other than nicotine also have been implicated in range of adverse health effects. Although from the public health standpoint, the contribution of tobacco to other health risks exceeds its role in hypertension (Darwin and Carma, 2002).

#### **2.7. Long-term effects of hypertension**

Hypertension is often referred to as the silent killer because it usually does not produce definite symptoms until it reaches an advanced stage. The first sign of high blood pressure may be an incident such as stroke or heart attack. Untreated high blood pressure is the major cause of strokes; it is also one of the major risk factors for a heart attack. Even before one of these incidents occurs, however, and even though a person may feel well, hypertension, if not prevented or treated, is taking its toll on vital organs throughout the body. Fortunately, the consequences of hypertension can be largely prevented by lowering high blood pressure into the normal range and keeping it there.

#### **2.8. Relationship between hypertension and body mass index**

The relationship between Body Mass Index and Blood Pressure has long been the subject of epidemiological research. BMI is known to be a measure of body fatness (Freemark, 2005). This measure of weight is grouped into four categories: underweight (below 18.5), normal weight (18.5-24.9), overweight (25.0 –29.9) and obese (30 and above) (Freemark, 2005). Obesity is associated with an increased risk of developing hypertension at an earlier age and with more severe hypertension (Kaplan, 1998). Moreover once hypertension develops with obesity, other risk factors for cardiovascular diseases are likely to be present. Unfortunately, obesity complicates the management of hypertension

because of the concomitant insulin resistance, which adds to pathogenic mechanism and subtracts from the efficacy of many antihypertensive therapies. Obesity plays a major role in the initial development of hypertension, and evidence indicates this relationship begins in youth. In the Framingham Offspring study of young to middle-aged adults, 64% to 78% of newly developed hypertension was associated with obesity or excess weight gain (Darwin and Carma, 2002). Overweight and obesity significantly increases the risks of high BP, coronary heart disease, ischaemic stroke, type II diabetes mellitus and certain cancers. Worldwide about 58% of diabetes mellitus and 21% of ischaemic heart disease are attributable to BMI above 21 kg/m (World Health Organization, 2002).

Body mass index has also been identified by the World Health Organization as the most useful epidemiological measure of obesity. It is nevertheless a crude index that does not take into account the distribution of body fat, resulting in variability in different individuals and populations (WHO, 2000).

The relationship between BMI and hypertension is of particular interest to developing countries as excess cardiovascular mortality among lean hypertensive subjects have been reported in some longitudinal studies (Folsom, Li, Rao, Cen, Zhang and Liu, 1994). Interpreting the blood pressure–BMI relationship is further complicated by the implication from some studies of a brink effect below which there appears to be no correspondence between the variables (Bunker, Ukoli, Matthews, Kriska, Huston and Kuller, 1995). Some of these studies have relatively small samples and therefore limited power to detect a true relationship (Kaufman, Owoaje, James, Rotimi and Cooper, 1996). It is not surprising, therefore, that the threshold is suggested most commonly for women, who tend to exhibit weaker correlations between BMI and blood pressure in all studies. Several authors have suggested that for women in unindustrialized settings there is no identifiable association between blood pressure and BMI, even at levels that would be considered obese ( $30 \text{ kg/m}^2$ ) (Walker, Walker, Manetsi, Tsotetsi and Walker, 1990). Still in studies with substantial statistical power, however, analyses are seldom conducted that explore the consistency of the blood pressure–BMI correlation across the range of BMI values.

In a study conducted by Tesfaye, Nawi, Van Minh, Byass, Berhane, Bonita and Wall (2007), a significant positive correlation between BMI and hypertension was observed in all the population sub-groups, although the correlation coefficients were weak (less than 0.30).

## **2.9. Concept of preventive health seeking behaviour**

Good health is of critical importance to many people while they are generally aware that their behaviour plays an important role in achieving and maintaining physical well-being. In Western societies, it is difficult not knowing that one is, to some extent, responsible for one's own health as people are continuously reminded of the importance of their behaviour for staying healthy by both public health campaigns and medical care professionals (Brownell, 1991). Yet, even though good health is generally considered important, and many people have good intentions for healthy behaviour, the vast majority report difficulties in consistently performing those behaviours. They may find it hard, for instance, to maintain a healthy diet or a pattern of regular exercise in the face of temptations of modern life. Changing a bad health habit seems even more difficult than maintaining a good one (Polivy and Herman, 2002).

In the broadest sense, most definition of health behaviour identified actions as core attribute to human behaviour. However, difference exists in respect to other attributes. While Parkerson (1993) includes actions of individuals, groups, and organizations as well as their determinants, correlates, and consequences, including social change, policy development and implementation, improved coping skills, and enhanced quality of life, Gochman (1982) however included not only observable, overt actions but also the mental events and feeling states that can be reported and measured. He defined health behaviour as: "those personal attributes such as beliefs, expectations, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overt behaviour patterns, actions, and habits that relate to health maintenance, to health restoration, and to health improvement" (Gochman, 1982). Gochman's definition is consistent with and embraces the definitions of specific categories of overt health behaviour proposed by Kasl and Cobb (1966) in their seminar articles. Kasl and Cobb (1966) define three categories of health behaviour as follows:

**2.9.1. Preventive health behaviour:** Any activity undertaken by an individual who believes himself to be healthy, for the purpose of preventing or detecting illness in an asymptomatic state.

**2.9.2. Illness behaviour:** Any activity undertaken by an individual who perceives himself to be ill, to define the state of health, and to discover a suitable remedy (Kasl and Cobb 1966)

**2.9.3. Sick-role behaviour:** Any activity undertaken by an individual who considers himself to be ill, for the purpose of getting well. It includes receiving treatment from medical providers, generally involves a whole range of dependent behaviours, and leads to some degree of exemption from one's usual responsibilities (Kasl and Cobb 1966).

In the context of this work, preventive health behaviour generally follows from a belief that such behaviour will benefit health. An obvious example is quitting smoking to reduce the chances of early morbidity and mortality. It does not follow, of course, that all beliefs on which preventive behaviours are based are well founded, nor that the resulting behaviours will have the desired outcomes. Preventive actions can reduce, but not eliminate, the chances of acquiring a disease or illness. The strength of the cause and effect relationship between certain behaviour and the health problem one is trying to prevent will determine the impact performing the behaviour will have on reducing the risk. This impact is measured in terms of attributable risk (Parkerson, 1993).

Attributable risk is a measure of the chance of acquiring a disease if the risk factors for it are eliminated or preventive health behaviour is engaged in. The chances are influenced by the relationship of the preventive behaviour to the aetiology of the disease. Most people are aware that if you smoke, drink alcohol and indulge in an unhealthy diet, you have an increased risk of getting chronic diseases including hypertension. Some people who do not smoke or drink get chronic diseases, of course, but the numbers are small. Although individual actions contribute to a person's health behaviour, preventive health behaviour is not totally volitional. Sociocultural and environmental aspects of a person's life influence preventive health behaviour, and these factors can have minimal to great effect in determining whether preventive health behaviour is performed (Iyalomhe and Iyalomhe, 2010)

Some preventive health-related behaviour occurs for reasons unrelated to health. Cultural traditions, attitudes, and beliefs can play an important role in the ways in which people behave. Preventive health-related behaviours are also undertaken specifically to improve or enhance health. These types of behaviour include both primary prevention and early detection. Primary prevention behaviours aim to prevent the incidence of disease (the number of new cases occurring within a given time frame). Exercise to improve aerobic fitness and prevent cardiovascular disease is an example of a primary preventive behaviour. People who increase their levels of physical activity have been found to have reduced levels of risk factors such as high blood pressure, high blood cholesterol, and excess body fat. Early detection (or secondary prevention) behaviours aim to prevent early forms of disease from progressing. This involves people who have already developed preclinical disease or risk factors for disease but in whom the disease has not yet become clinically apparent (Iyalomhe and Iyalomhe, 2010).

There is no one theory or concept that explains why people perform certain behaviours. Many theories have been developed to describe, understand, explain, and influence health-related behaviour. Although these theories contribute substantially to our understanding of individual behaviour, they are often limited because the broader social and environmental context in which an individual lives is not taken into account. It is becoming increasingly recognized that individual unhealthy behaviours reflect the social, cultural, and environmental contexts within which they occur (Iyalomhe and Iyalomhe, 2010).

Epidemiological studies conducted in the 1940s and 1950s on the causal associations between cigarette smoking and chronic diseases led to a number of advances on evaluation of prevention programmes (Brownson and Bright, 2004). This made the researchers to begin to think in terms of risk factors for the development of chronic diseases with the idea that certain behaviours moderated the probability of disease. Studies were carried out to determine the major risk factors of chronic diseases. The studies identified six major risk factors, including hypertension, elevated blood lipids, cigarette smoking, sedentary lifestyle, obesity, and diabetes (Bullough and Rosen, 1992). The concept of “risk factors” forced researchers to think of chronic disease as the outcome of multiple factors and required a strategic change in thinking about chronic

diseases and their complications as being preventable rather than inevitable (Brownson and Bright, 2004). In other words, a reduction in chronic disease could best be achieved by altering factors that place a person at increased risk. Burgeoning research in this area has led to a better understanding of the tremendous influence that certain behaviours can exert upon health.

Disease prevention is not new, and links between behaviour and prevention have been articulated for thousands of years. For example, traditional Chinese medicine's (TCM) focus on prevention dates back more than 2,500 years and recommends eating healthful foods, engaging in physical labour, and doing breathing exercises (Selin, 2003). More than 2,000 years ago, Hippocrates (c. 460–377 b.c .) taught that “If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health”(Selin, 2003).

#### **2.10. Preventive behaviours towards hypertension**

Studies have shown that there is a strong association between alcohol consumption, physical activities, smoking, healthy diet, hypertension and the risk of vascular diseases. For instance, increased physical activity is an essential tool to preventing hypertension. This includes at least thirty minutes of moderate aerobic exercise preferably on every day of the week. Increased exercise can lower blood pressure and is equally important in reducing weight. According to evidence of epidemiological surveys by Morgan (2001), moderate exercise (walking three to five kilometres per day) can reduce the mortality and morbidity due to cardiovascular disease.

In a study conducted in Kimara and MbeziLuisi wards in Kinondoni Municipality by Mlunde (2007), it was established that a large number of people who were undertaking physical exercises knew its importance. A number of 122 (73.05%) participants believed that they did physical exercises so as to be physically fit.

Morgan (2001) conducted a community survey where he discovered an association between alcohol intake and blood pressure. He established the fact that People who drink one to two standard drinks daily may have a better prognosis than non-drinkers although it is claimed that blood pressure rises by 1mmHg for each standard drink. The problem

lies with heavy drinkers (those who drink six to eight or more drinks per day). Reducing or stopping alcohol intake is the only way to prevent and reduce blood pressure effectively. Alcohol intake must be limited to two standard drinks per day for men and one standard drink per day for women and small men. Keeping alcohol intake within safe limits will help reduce blood pressure and the risk of vascular (and other) diseases, also keep the weight down (Bouille, 2009).

According to Seedat (2006), a healthy diet remains the cornerstone to preventing and managing hypertension. A diet low in fat (animal fat) and low fat dairy products, high fibre wholegrain foods, fish rather than meat, limited use of sugar and sugar containing foods and limited sodium intake will help in weight reduction as well as prevent hypertension. A reduced salt intake not only reduces blood pressure but also improve the efficacy of ACE-inhibitors, angiotensin receptor blockers and beta blockers (Ker, 2006). Sodium foods including potato chips, hot dogs etc should be discouraged while low sodium foods should be encourage. Sodium intake must be limited to less than 2400mg per day (approximately half a teaspoon) (Seedat 2006). The Dietary approach to stop Hypertension has confirmed the effectiveness of increasing the consumption of vegetables and fruit (Bouille, 2009).

Finally regular check-up for early detection and regular monitoring of Blood pressure is another sure way of preventing the chances of developing hypertension. Blood pressure can conveniently be monitored at home. John Turner (2002) recommended automatic arm cuff models which he believes to be reliable but must be calibrated against regular cuff in the doctor's office.

### **2.11. Factors influencing preventive health seeking behaviour**

There is growing recognition in both developed and developing countries, that providing education and knowledge at the individual level is not sufficient in itself to promote a change in behaviour. An abundance of descriptive studies on health seeking behaviour, highlighting similar and unique factors, demonstrate the complexity of influences on an individual's behaviour at a given time and place (MacKian, 2003)

The choice to engage with a particular medical conduit is subjective by a variety of socio-economic variables, sex, age, the social status, type of illness, access to health

information and health services and perceived quality of the service (Tipping and Segall, 2008).

**2.11.1. Lack of health information:** Information, education and communication (IEC) campaigns combine strategies, approaches and methods that enable individuals, families, groups, organisations and communities to play active roles in achieving, protecting and sustaining their own health. Within IEC, the process of learning which empowers people to make decisions, modify behaviours and change social conditions is embodied. Studies have shown that awareness or lack of awareness of risk factors of hypertension greatly influences preventive behaviour. In the study conducted by Ronald, David, Paul, Deepa, Jennifer, Patrice, Joseph, Anne, Ruth and Robert (2008), it was discovered that most of study participants were unaware of the basic risk factors of hypertension, but rather believed that it is caused by eating too much pork and emotional stress. They are also not aware that hypertension is a symptomless disease, but instead believed that it usually comes with headaches, dizziness, or rapid heartbeat.

#### **2.11.2. Education**

Education as a determinant of health care utilization is a more complex variable. To some extent, education can improve the ability of individuals to produce health themselves through better lifestyles rather than relying on health services. Yet there is also much evidence that better basic education can, through general improvements in literacy and specific health studies, increase desired and actual use of health services (Tim and Cooper, 2004). Education provides the consumer with the basis for evaluating whether they or a dependent require treatment. Information on the best places to seek care is additionally required. While it is sometimes suggested that individuals are unable to assimilate information on treatment options, this assumption is challenged by work in Tanzania (Leonard, Mliga and Mariam, 2002). These studies suggest that, far from being passive consumers, patients actively seek out not only the best-known provider but the best facility for a particular illness. Perceptions of quality do, in fact, accord quite well with technical evaluations Both education and information may be interlinked since the ability to assimilate health messages is likely to be determined in part by the level of general education. The impact of information on treatment options and desirable health seeking behaviour is also important in determining demand. One study finds that lack of information on the malign effects of excessive antibiotic use has a substantial positive

effect on a preference for self-medication over use of health facilities (Okumura, Wakai and Umenai, 2002).

### **2.11.3. Consumer cost barriers**

Location and distance costs are often seen to negatively impact service utilization. A study in Vietnam found that distance is a principle determinant of how long patients delay before seeking care (Ensor 2007). The impact of location is not confined to low-income countries. One US study found that patients living more than 20 miles away from a hospital are much less likely to visit ambulatory services for after-care following myocardial infarction (Piette and Moos 2004). In Japan, one study found that access to follow-up treatment after treatment for cerebrovascular disease was considerably influenced by access to suitable transportation (Tamiya, Araki and Kobayashi, 2008). Consuming health care can be time intensive. Both patients and relatives may have to give up long periods of work (or leisure) in order to receive treatment. This represents an important cost to individuals, particularly during peak periods of economic activity (Tim and Cooper, 2004).

## **2.12. Complication associated with poor preventive behaviour towards hypertension**

Poor prevention of hypertension causes damage to many important organs in the body including brain, heart, arteries and eyes. It is three times risk of heart disease, seven times risk of stroke and six times risk of heart failure (John, 2002).

**2.12.1. Hardening of the Arteries:** Chronic hypertension causes damages on the blood vessels in every part of the body. It rapidly enhances the process of hardening of the arteries in both large blood vessels such as the aorta and its major branches and the smaller arteries (Dielis, 2005). This blood-vessel damage may not produce symptoms until it reaches an advanced stage, and then symptoms or findings will depend upon the site of the atherosclerosis. This is usually seen with age, obesity and high cholesterol (John, 2002).

**2.12.2. Stroke:** As one of the complications of hypertension, stroke results from the damages caused on the brain vessels due to high blood pressure (Forette, 2002). The circulatory system is designed to ensure a steady supply of blood and oxygen to the brain. When the body senses a decrease in blood flow to the brain, it takes immediate action to remedy the situation by raising blood pressure and by diverting blood from other organs and sending it to the head. The heart speeds up and vessels in the abdomen and legs

contract, allowing more blood to get to the brain. If the carotid artery and other blood vessels that supply blood to the brain become clogged with fatty deposits, vital blood flow to the brain may be diminished. In such a situation, the risk of a stroke increases (John, 2002).

**2.12.3. Heart failure:** Heart failure is a condition in which the heart cannot pump enough blood to the rest of the body. Heart failure is often a long-term (chronic) condition, but it can sometimes develop suddenly. It can be caused by many different heart problems. The condition may affect only the right side or only the left side of the heart. These are called right-sided heart failure or left-sided heart failure. More often, both sides of the heart are involved (Mant, 2011). Hypertension reduces blood flow to the heart and makes the heart work harder leading to heart attack and heart failure. The heart is composed mostly of muscle tissue, and any muscle that is strained will become large. In the early stages, the enlarged heart muscle has the added strength needed to pump blood against the increased pressure in the arteries (Mant, 2011).

**2.12.4. Damage of the Kidneys:** elevated blood pressure damages arteries in the kidneys. Each kidney contains a million or more tiny filtering units called nephrons. Each day, more than 400 gallons of blood flow through the kidneys, where waste products are filtered out and excreted in the urine and nutrients and other useful substances are returned to the bloodstream. Sustained high blood pressure forces the kidneys to work even harder. The increased blood pressure may eventually damage some of the tiny blood vessels within the kidney and reduce the amount of blood available to the filtering units. In time their ability to filter the blood efficiently is reduced. Protein may be excreted in the urine rather than returned to the bloodstream because of damage to the delicate excreting mechanism, and waste products that are normally eliminated from the body may build up in the blood. This accumulation can lead to a condition called *uremia*, and eventually to kidney failure, requiring periodic dialysis to cleanse the blood (John, 2002).

**2.12.5. Damage of the Eye:** Hypertensive retinopathy is damage to the [retina](#) from high blood pressure. The retina is the layer of tissue at the back part of the eye. High blood pressure can damage blood vessels in the retina. The higher the blood pressure and the longer it has been high, the more severe the damage is likely to be. It changes light and images that enter the eye into nerve signals that are sent to the brain (Kovach, 2009). The eyes contain tiny blood vessels that are vulnerable to damage from high blood pressure. After many years of poorly controlled hypertension, the retina or the screen in back of the

eye may be damaged because of a decrease in blood supply; haemorrhages and/or fatty deposits may occur. This condition is referred to as *retinopathy*. This situation is more common in people with poorly controlled diabetes; the risk is increased if the patient also has high blood pressure. At one time, poorly controlled high blood pressure was a major cause of diminished vision and blindness (Kovach, 2009).

### **2.13. Health promotion and education: a tool to prevent and control hypertension**

Health promotion is regarded as the most important strategy focusing on changes of both the environment and the individual to actively promote the health of the public (Chen, 2000). Health promotion campaigns to increase awareness among the general population and targeted messages to those at high-risk and their families may help to improve time to receive treatment for stroke sufferers. Effective and sustainable health promotion is about empowering people to gain control over the circumstances that affect their health and well-being (Provan, Nakama, Veazie, Teufel-Shone and Huddleston, 2003). There is considerable evidence that health-promoting behaviours offer the potential for improving health status and quality of life as well as reducing the cost of health care (Craig, Tom, and Glen 2005). Other studies reported that health-promoting lifestyle contributes to a positive quality of life because the individual who engages in a health-promoting lifestyle will remain healthy and functional without the burden of disease and disability (Green and Kreuter, 1991).

Health promotion and disease prevention programmes have been reported to have implications that seek to influence decision-making processes affecting health-seeking behaviours (Jackson, Coombs, Wright, Carney, Lewis-Fuller and Reizo, 2004). Studies have reported that health promotion and support groups help people sustain health improvements, lower lifestyle-related health care costs, as well as lower utilization of hospital services (Erfurt, Foote, and Heirich, 1991). A study conducted to evaluate the effectiveness of health promotion programmes consisting of a main programme provided over 4 days and a follow-up programme provided over 1 year, was shown to be effective in improving obesity, high blood pressure, and other cardiovascular risk factors (Muto and Yamauchi, 2001).

Knowledge translation from health professionals to individuals or groups is an important tool in preventing and decreasing prevalence of disease. Knowledge translation tends to focus on health outcomes and changing behaviour. It is well recognized that knowledge alone does not necessarily imply adherence to prevention programmes or behaviour change (Provan, Nakama, Veazie, Teufel-Shone and Huddleston, 2003). However, individuals need basic knowledge of disease prevention, control and management before they can begin to adhere to medical advice.

According to the first International Conference on Health Promotion meeting in Ottawa on 21st day of November 1986, Health promotion was defined as the process of enabling people to increase control over, and to improve their health. This is true for all disease control and prevention especially in the case of hypertension prevention. To ensure this, the Ottawa Charter for health promotion established strategies which are responding to growing expectations for a new public health movement around the world (Provan, Nakama, Veazie, Teufel-Shone and Huddleston, 2003).

Responding to the challenges non-communicable diseases, United Nations General Assembly reaffirmed all relevant resolutions and decisions adopted by the World Health Assembly on the prevention and control of non-communicable disease. They underline the importance of continue addressing common risk factors through the implementation of the 2008-2013 Action Plan for Global strategy for the prevention and control of non-communicable disease (United Nations General Assembly, 2011). Some of these strategies are as follows;

### **2.13.1. Create health - promoting environments**

The complex links between people and their environment constitutes the basis for a socio-ecological approach to health. The overall guiding principle for the world, nations, regions and communities alike, is the need to encourage reciprocal maintenance – to take care of each other, our communities and our natural environment. Changing patterns of life, work and leisure have a significant impact on health. Work and leisure should be a source of health for people. The way society organizes work should help create a healthy society. Health promotion generates living and working conditions that are safe, stimulating, satisfying and enjoyable. Systematic assessment of the health impact of a rapidly changing environment – particularly in areas of technology, work, energy

production and urbanization – is essential and must be followed by action to ensure positive benefit to the health of the public (Ron, Enid, Rivka and Daniel, 2008).

In ensuring health promoting environment, there should be an advance in the implementation of the WHO Global Strategy on diet, physical activities and health by way of introducing policies and actions aimed at promoting healthy diets and increasing physical activity in the entire populations. This should include all aspects of daily living such as the provision of incentives for work-site healthy- lifestyle programmes and increase the availability of safe environments and recreational spaces to encourage physical activity (United Nations General Assembly, 2011).

Additionally, the United Nations General Assembly (2011) seek to promote and create an enabling environment for healthy behaviours among workers by establishing tobacco-free workplaces, safe and healthy working environments through occupational safety and health measures, good corporate practices, workplace wellness programmes and health insurance plans (United Nations General Assembly, 2011).

### **2.13.2. Strengthen and Reorient health services**

The responsibility for health promotion in health services is shared among individuals, community groups, health professionals, health service institutions and governments. They must work together towards a health care system which contributes to the pursuit of health. The role of the health sector must move increasingly in a health promotion direction, beyond its responsibility for providing clinical and curative services. Health services need to embrace an expanded mandate which is sensitive and respects cultural needs. This mandate should support the needs of individual and communities for a healthier life, and open channels between the health sector and broader social, political, economic and physical environmental components (Ron, Enid, Rivka and Daniel, 2008). Reorienting health services also requires stronger attention to health research as well as changes in professional education and training. This must lead to a change of attitude and organization of health services, which refocuses on the total needs of the individual as a whole person (Ottawa Charter, 1986).

Furthermore, United Nations General Assembly( 2011) recognised the need to promote the inclusion of non-communicable disease prevention and control within sexual and reproductive health and maternal and child-health programmes, especially at the primary

health care level, as well as other programmes, as appropriate and also integrate interventions in these areas into non-communicable diseases prevention programmes (United Nations General Assembly, 2011).

### **2.13.3. Develop personal skills**

Health promotion supports personal and social development through providing information, education for health and enhancing life skills. By so doing, it increases the options available to people to exercise more control over their own health and over their environments, and to make choices conducive to health (Ron, Enid, Rivka and Daniel, 2008). Enabling people to learn throughout life, to prepare them for all of its stages and to cope with chronic illness and injuries is essential. This has to be facilitated in school, home, work and community settings. Action is required through educational, professional, commercial and voluntary bodies, and within the institutions themselves (United Nations General Assembly, 2011).

### **2.13.4. Strengthen community action**

Health promotion works through concrete and effective community action in setting priorities, making decisions, planning strategies and implementing them to achieve better health. At the heart of this process is the empowerment of communities, their ownership and control of their own endeavours and destinies. Community development draws on existing human and material resources in the community to enhance self-help and social support, and to develop flexible systems for strengthening public participation and direction of health matters. This requires full and continuous access to information, learning opportunities for health, as well as funding support (Ron, Enid, Rivka and Daniel, 2008).

## **2.14. Gaps identified in the previous studies**

John Joseph Tesha (2006) conducted a study on Knowledge of stroke among hypertensive patients in selected hospitals in the Tanga Region, Tanzania. He discovered that there is lack of knowledge about stroke in general and specific knowledge of the risk factors, signs, and symptoms of stroke which results in the late presentation of patients at hospital. Notwithstanding, this study failed to assess first the knowledge of the hypertensive patients on the hypertension and its risk factors as well as the preventive behaviour. It is possible that the hypertensive patients might not have had slightest understanding about what they are suffering from and the possible causes.

A study on hypertension-related knowledge, attitudes and life-style practices among hypertensive patients in a sub-urban Nigerian community by Godfrey and Sarah (2010) readily revealed that few of the participants had good knowledge of hypertension and its risk factors. However, it did not reveal their attitudes towards the risk factors which might have contributed immensely to their developing hypertension. Also the study focused on the hypertensive patients alone without taking into cognisance of the non-hypertensive ones who might be at risk to developing hypertension as well as determining their knowledge and attitude towards the risk factors of hypertension and their preventive behaviour.

Also, in the review of studies conducted in Nigeria and other countries of the world on hypertension prevention and its risk factors, it was discovered that none of such survey have been conducted among non-teaching staff especially those working in hospital environment, thus making this study relevant.

This present study on the preventive health seeking behaviour in relation to hypertension have to an extent, bridged the gap discovered in the previous studies.

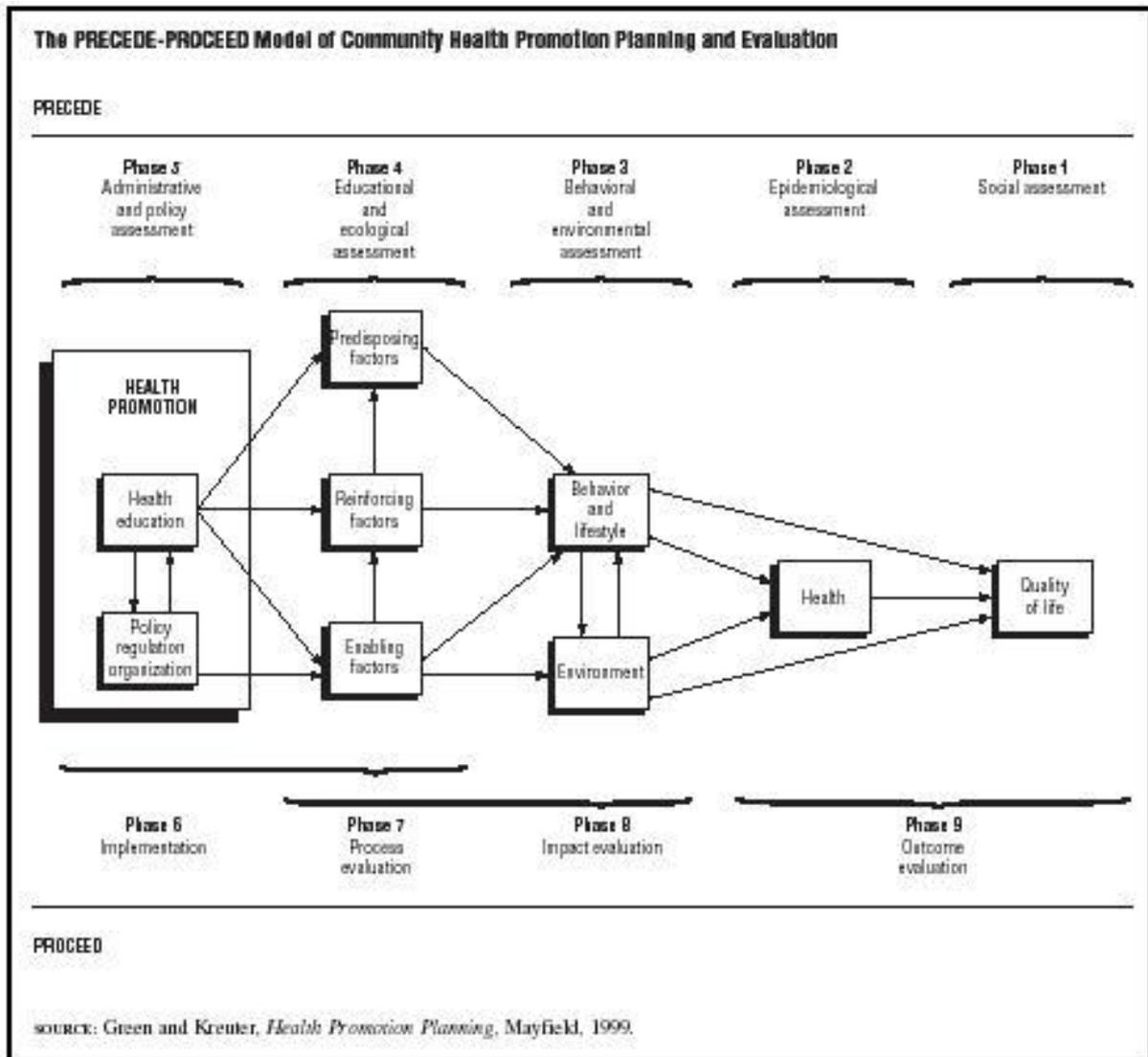
### **2.15. Conceptual framework**

Designing a programme aimed at behavioural change entails a thorough behavioural diagnosis of the preventive health seeking behaviour of non-teaching staff and the factors that influences this behaviour. This will help in the adoption of better, positive and desired behaviour. This diagnostic process could be explained using theoretical framework that can make clear the various concept of behaviour in relation to hypertension.

PROCEED (*Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development*) model was used for this study. The PRECEDE model provides a comprehensive structure for assessing health and quality of life needs and for designing, implementing, and evaluating health promotion and other public health programme so as to meet those needs. The PRECEDE model as developed by: Green and Kreuter (1991). PROCEED consists of five steps or phases. Phase one involves determining the quality of life or social problems and needs of a given population. Phase two consists of identifying the health determinants of these problems and needs. Phase

three involves analysing the behavioural and environmental determinants of the health problems. In phase four, the factors that predispose to, reinforce, and enable the behaviours and lifestyles are identified. Phase five involves ascertaining which health promotion, health education and/or policy-related interventions would best be suited to encouraging the desired changes in the behaviours or environments and in the factors that support those behaviours and environments (See Figure 2.1a).

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**Figure 2.1a: PRECEDE-PROCEED model**

### 2.15.1. Application of PRECEDE model to the study

An attempt to determine the preventive health seeking behaviour in relation to hypertension among non-teaching staff of College of Medicine and understand whether they consider the issue to be important is very essential. Precede model was used to explain the knowledge and attitudes of non-teaching staff of College of Medicine toward the risk factors of hypertension as well as factors that enable them to adopt preventive health behaviour (2.1b).

*Phase I:* This phase identified the social problem and the needs of the respondents. In the context of this work, the social problem is the prevalence of hypertension among the non-teaching staff of College of Medicine.

*Phase II:* In this phase the health determinant of this problem is the attitude towards the risk factors of hypertension including cigarette smoking, excessive drinking, lack of physical inactivity and consumption of unhealthy diet.

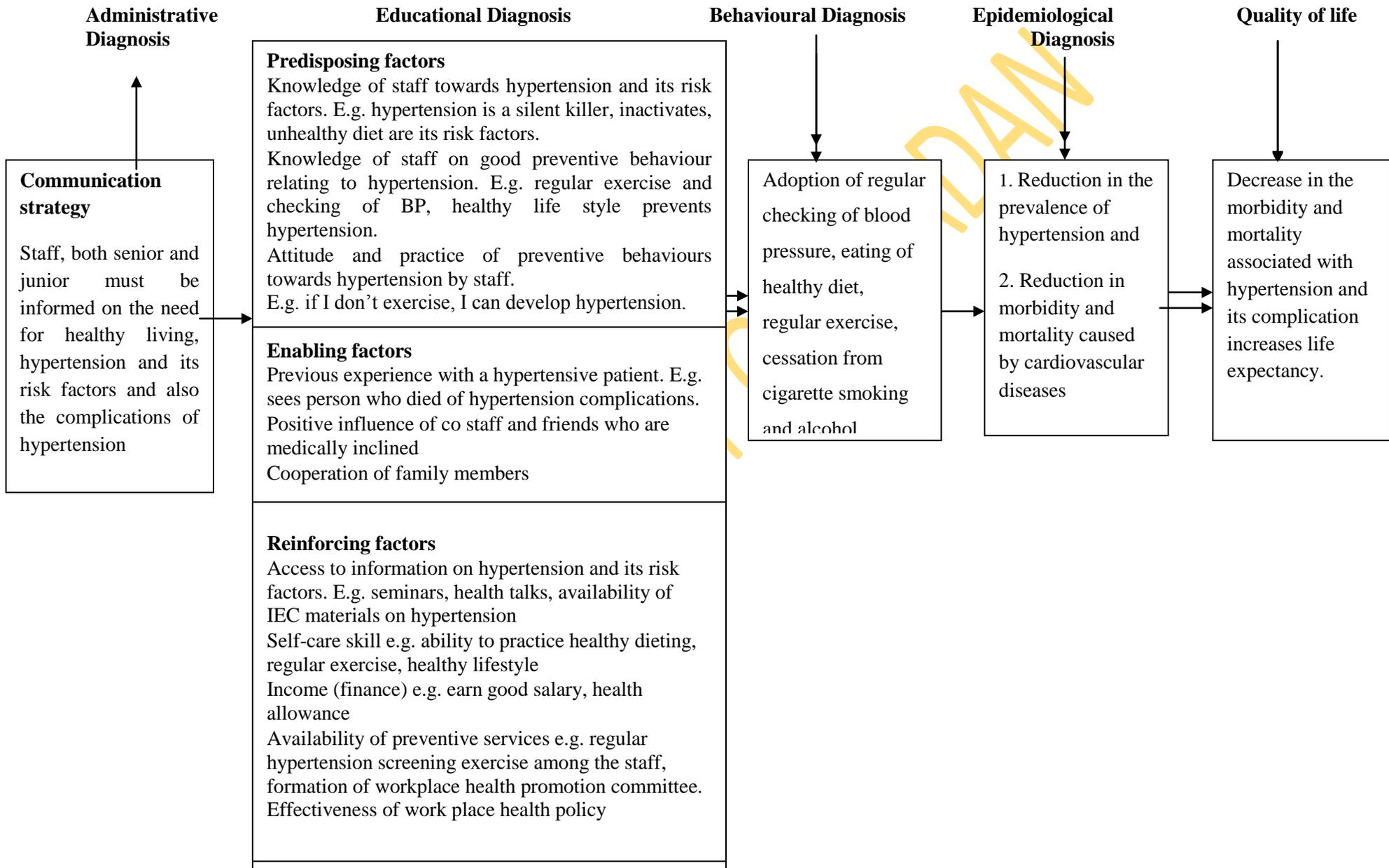
*Phase III:* Behavioural and environmental determinant of hypertension analysed in this study were the preventive health seeking behaviour, accessing the health information within the hospital environment and accessibility of health care services for preventive purposes.

*Phase IV:*

- **Predisposing factors:** These are factors that offer a logical explanation for the occurrence of the behaviour. It also refers to antecedents to the behaviour that provide the rationale for the behaviour. In the perspective of preventive health seeking behaviour on hypertension, the predisposing factors include the knowledge and attitude of non-teaching staff related to hypertension, its risk factors and preventions. This was useful in the framing of some of the questions contained in the questionnaires. Environmental predisposing factors includes proximity of the health facility to the administrative offices, close relationship with medical personnel, free access to workshops and seminar presentations, free and easy access to health information.
- **Enabling factors:** These are factors which are due to the influence of others. They are subsequent to a behaviour that provides continuing motivation for the behaviour. They include attitude, knowledge and behaviour of friends, family

members, relations, policy makers, heads of departments, organization, group members and other significant others towards hypertension and its risk factors as well as its prevention. The detail application of this model are highlighted below. Some of the environmental enabling factors are contacts with patients, influences of colleague, workplace policy and death of a colleague as a result of hypertension.

- **Reinforcing factors:** These include factors that can influence or motivate the adoption of behaviour such as availability or absence of resource such as money, self-care skills, proximity or access to health facilities, educational programmes that should be organized to educate staff on the issue relating to preventive behaviour that should be adopted in order to prevent hypertension and also the provision of means of regular checking of blood pressure for early detection of hypertension. Epidemiological diagnosis: provision of free and regular means of checking blood pressure and educating staff members on living healthy life style which will help in preventing hypertension results in the reduction in morbidity and mortality caused by hypertension. Reinforcing environmental factors includes free medical care, medical allowances, free and easy access to Information Education Communication (IEC) materials. Quality of life: higher decrease in the prevalence of hypertension, cardiovascular diseases as well as decrease in the practice of unhealthy life style leads to increase in the life expectancy.



**Figure 2.1b. PRECEDE framework for the preventive health seeking behaviour of non-teaching staff in relation to hypertension**

UNIVERSITY OF IBADAN

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1. Study Design**

The descriptive survey was used to document the preventive health seeking behaviour relating to hypertension among non-teaching Staff of College of Medicine; University College Hospital Ibadan. This was due to its usefulness because it allowed information on the prevalence of the disease to be collected as well as opportunity for simultaneous assessment of exposure to risk factors of hypertension and disease status.

#### **3.2. Study Area**

This study was conducted in the College of Medicine, University College Hospital (UCH), University of Ibadan. The institution is located in Ibadan North Local Government Area. The University was established on 17 November, 1948. The University was originally instituted as an independent external college of the University of London (then it was called the University College, Ibadan). College of Medicine has 44 departments with a total number of 476 Non-Teaching Staff. Thirty-six out of the forty-four departments are located at the University College Hospital, 7 at University of Ibadan, main campus and one at Ibarapa community. This study focused only on Non-Teaching Staff of College of Medicine who were in the departments located in the University Teaching Hospital Ibadan (36 departments). This was because these Staff works in the environment where health information and health services could be easily access for healthy living.

#### **3.3. Study Population**

The study population consists of non-teaching Staff of various Departments in the College of Medicine Ibadan, who were in the University College Hospital premises.

### **3.4. Inclusion Criteria**

The study participants included all non-teaching staff of College of Medicine whose departments are located within the University College Hospital premises.

### **3.5. Exclusion Criteria**

Non-teaching staff that were either on leave or sick at the time of the study as well as those who disallowed the checking of their blood pressure and their anthropometric measurement.

### **3.6. Sample Size Determination**

The study included the total population of non-teaching Staff of the College of Medicine, University College Hospital which was 315 (See Table 3.1). therefore the entire population was used, thus making the use of sample size calculation unnecessary

### **3.7. Sampling Technique**

The total population of the Non-teaching staff of College of Medicine working in the University College Hospital premises was sampled.

**Table 3.1 Distribution of the sample size**

S/N	Units	No of non-teaching staff
1	ABH	7
2	Biomedical Communication	13
3	College Office	72
4	Finance	27
5	Medical Library	15
6	Provost Office	25
7	Dean's Basic	8
8	Chemical Pathology	9
9	Haematology	8
10	Medical Microbiology	11
11	Pathology	7
12	Virology	7
13	IAMRAT	14
14	Dean's Clinical	10
15	Anaesthesia	5
16	Community Medicine	10
17	Medicine	8
18	Obstetrics and Gynaecology	16
19	Ophthalmology	5
20	O.R.L.	2
21	Paediatrics	14
22	Physiotherapy	5
23	Psychiatry	4
24	Radiology	3
25	Radiotherapy	1
26	Surgery	7
27	Institute of Child Health	10
28	Dean's Public Health	8
29	Health Promotion and Education	4
30	EMSEH	15
31	Dean's Dentistry	9
32	Preventive Dentistry	2
33	Child Oral Health	3
34	Oral Pathology	6
35	Oral Surgery	3
36	Rest. Dentistry.	6
	Total	379

Source: Personnel Office, College of Medicine, University of Ibadan non-teaching staff statistics as at April 2010.

### **3.8. Instruments for data collection**

The data was obtained using both qualitative and quantitative methods of data collection.

#### **3.8.1. Qualitative Method**

Data for the qualitative aspect of the study were collected using Key informant interview. The Heads of units among the non-teaching Staff including Provost Office, EMSEH, Haematology, Finance, Health Promotion and Education and College office were interviewed. These helped in revealing more information such as knowledge of the leaders who have spent more years within the work environment and also identify a range of opinions and ideas on hypertension and its risk factors. It also helped in improving the quality of data collected. Questions on the risk factors of hypertension, their perception and belief about hypertension and its risk factors and factors which could facilitate or inhibit the practice of preventive healthy behaviour were asked. A total number of nine (9) Key Informant Interviews were conducted with three (3) respondents in each of the blocks. Informed consent and confidentiality were put into consideration.

#### **3.8.2. Quantitative Methods**

A self-administered, semi-structured questionnaire was used for the study. The questionnaire was generated from previous studies on hypertension and according to the study objectives. Data generated from Key Informant Interview were also used to modify the questionnaire. The questionnaire consisted of five sections and a total of 53 questions which were grouped to cover the socio-demographic profile of the respondents and the objectives. Section A provided information on the socio-demographic profile of the respondents, section B generated information on the respondents knowledge about the risk factors of hypertension, section C provided information on the respondents attitude and preventive behaviours towards hypertension and its risk factors. Section D generated data on the prevalence of hypertension among the respondents' and finally section E provided data on the

factors influencing preventive health behaviour towards hypertension and its risk factors. The questionnaire was written in English language.

### **3.9. Validity of instruments**

Some steps were taken to ensure the validity of the instruments. The instruments were critically scrutinized and validated by project supervisor and peers whose necessary corrections were effected. Thereafter, the instruments were pre-tested among the non-teaching staff of College of Health Sciences, Obafemi Awolowo University, Ile-Ife due to its similarities in characteristics to the study area. Effectiveness of the instrument in collecting appropriate data relevant to the objectives were determined as well as the level of comprehension of the questions.

#### **3.9.1 Pre-testing of Key Informant Interview guide**

The interview was conducted by the investigator and a colleague who served as a note taker and observer. The participants, who were the Heads of Departments among the non-teaching staff of Obafemi Awolowo University Ile- Ife, were briefed about the research and its purpose and their verbal informed consent were sought for. Their consents to use a tape recorder were also obtained. Five Key Informant interviews were conducted in the University. The average time for the interview was 40 minutes while the whole interview lasted for two days.

#### **3.9.2 Pre-testing of the semi-structured questionnaire**

A total number of 38 questionnaires (10% of the sample size) were administered among the non-teaching staff of College of Health Science, Obafemi Awolowo University Ile- Ife. The participants consisted of 20 males and 18 females. The following were the observations made at the end of the pre-testing exercise.

1. All participants were willing to participate due to an opportunity provided for them to check their blood pressure and their weight.
2. Due to too much work load, some participants were unable to fill the questionnaire on time.
3. There were need to re-phrase some of the knowledge questions for easy understanding.

4. Some participants found it difficult to fill the open-ended questions provided in section five of the questionnaire.

All these observations were taken note of and the corrections were made for the modification of the questionnaire prior to the real study.

### **3.10. Reliability of the instruments**

The reliability coefficient of questionnaire was determined from the pre-test using the Alpha-Cronbach test. The Alpha-Cronbach reported a reliability coefficient of 0.8 which was interpreted to be high. It therefore agrees with a correlation coefficient greater than 0.5 which was interpreted as high reliability.

### **3.11. Data Collection Process**

At first, Key Informant Interview was conducted in the three blocks where non-teaching staff of College of Medicine were located. The interviews were conducted by the researcher and a colleague who served as a note taker and an observer. Key Informant Interview guide were use and discussion were properly recorded. Each interview lasted for between 40minutes and 1hour while the whole exercise lasted for one month. The validated semi-structured questionnaires were self-administered with the help of two female research assistants who were trained nurses. The nurses helped in checking the Body Mass Index (BMI) and blood pressure of the respondents.

#### **3.11.1. Measurement of Blood Pressure**

Measurements of blood pressure were done in their respective offices. It began after the subject had rested for at least ten minutes. The patients were seated in a comfortable chair with their backs supported and arms bared and supported at heart level. An appropriate adult cuff size was used to ensure accurate measurement. The cuff was inflated to 30 mmHg above pulse occlusion. The systolic blood pressure was recorded at the first appearance of a sound and the diastolic blood pressure was recorded at the disappearance of the sound. Blood pressure was measured twice at two minute intervals and if the readings differed by more than 5 mmHg, an additional reading was taken. Calibrated mercury sphygmomanometer was used. Hypertension was diagnosed based on the laid down criteria by the World Health Organization - International Society for Hypertension (1999) (See Table 3.2). A Patient was labelled hypertensive if an average of three readings showed the systolic blood pressure to be

140 mmHg or greater and the diastolic blood pressure to be 90 mmHg or greater (World Health Organization - International Society for Hypertension, 1999).

**Table 3.2 Blood Pressure Measurement**

<b>Categories</b>	<b>SBP (mmHg)</b>	<b>DBP (mmHg)</b>
Optimal	<120	<80
Normal	<130	<85
High normal	130-139	85-89
Mild (grade 1)	140-159	90-99
Moderate (grade 2)	160-179	100-109
Severe (grade 3)	>180	>110

Source: World Health Organization/ International Society for Hypertension (1999)

### **3.11.2. Body Mass Index Measurement**

The Body Mass Index of the respondents was calculated by dividing the weight of the respondents by the square of their height;  $\text{Weight} / \text{Height}^2$  ( $\text{Kg}/\text{m}^2$ ).

**3.11.2a. Height measurement:** The height was measured with a measuring tape, the subject standing erect without shoes, leg forming a V-shape and the back against a wall. This was recorded in meters to one decimal point. Parallax effect in height measurement was avoided by fitting the measuring tape with a sliding head-piece at right angles to the upright, which was lowered onto the subject's head.

**3.11.2b. Weight measurement:** The body weight was measured using a known-weight standardized weighing scale without shoes. This was recorded in kilogramme to one decimal point. Scale adjustment error in weight measurement was avoided by adjusting the pointer to zero (with a knob in the weighing scale) before placing and weighing each subject. The zero was checked each day and the calibration assessed by reference to an object of known weight. Also, the scale was placed on a firm horizontal surface.

### **3.12. Data Analysis**

The KII sessions were transcribed and verbal quotations were cited to support some of the respondent's claims. Administered questionnaire were collected and kept away from unauthorized persons. The information collected using semi-structured questionnaire was coded, entered and analysed using Statistical Package for Social Sciences (SPSS) software, version 16.0. Both the descriptive and inferential statistics were used to analyse the quantitative data. The Regression analysis and Chi-square test was used to compare categorical variables at 0.05% level of significance.

**3.12.1. Knowledge analysis:** Respondents' knowledge of hypertension and its risk factors was analysed using knowledge scale. Ten knowledge questions were asked and points were allotted to each of the knowledge questions (2 points). Responses that

were very close to the most correct answer were allotted 1 point. Incorrect responses were given no point (See Table 3.3). The total knowledge score and the maximum obtainable score for each respondent were calculated. The knowledge scores were graded into good, fair or poor knowledge as presented below;

Maximum knowledge score =20;

Poor knowledge (code 1) = 0-7

Fair knowledge (code 2) = 8-12

Good knowledge (code 3) = 13-20

**Table 3.3: Knowledge scale on hypertension**

No	Question	Response/Options	Score
1	Hypertension is a -----	1. Chronic condition that mainly affects the heart, brain and kidney (1 pt.) 2. Disease that comes with old age only (1 pt.) 3. An increase /elevation in the blood pressure above normal (2 pts.) 4. Normal disease that could affect anybody (0 pt.)	
2	Which of the following is the normal range of blood pressure?	1. 130/85 mmHg (2 pts.) 2. 140/ 90 mmHg (0 pt.) 3. 160/100 mmHg (0 pt.) 4. 180/110 mmHg (0 pt.)	
3	Which of the following organs in the body are affected/damaged by hypertension	1. Heart; (0 pt.) 2. Ear; (2 pts.) 3. Kidney; (0 pt.) 4. Brain (0 pt.)	
4	Which of the following is a symptom of hypertension	1. Head arch; (0 pt.) 2. Malaria and typhoid (0 pts.) 3. Diarrhoea; (0 pt.) 4. None of the above (2 pts.)	
5	The best way to prevent hypertension is	1. Screening/early detection (1 pt.) 2. Cessation from drinking too much alcohol and cigarette smoking (1 pt.) 3. Regular exercise and healthy diet (1 pt.) 4. All of the above (2 pts.)	
6	Who does hypertension affect?	1. Men of all age (1 pt.) 2. Women of all age (1 pt.) 3. Men and women of all age who indulge in an unhealthy life style (1 pt.) 4. All of the above (2 pts.)	
7	Hypertension can lead to the following diseases except	1. Heart attack (0 pt.) 2. Stroke and blindness (0 pt.) 3. Renal diseases (0 pt.) 4. Diarrhoea (2 pts.)	
8	The following are the risk factors of hypertension except	1. Cigarette smoking and too much alcohol consumption (0 pt.) 2. Too much salt in the diet (0 pt.) 3. Physical inactivity (0 pt.) 4. talking too much (2 pts.)	
9	Which of the following statement is true about	1. Unhealthy diet including consumption of fast foods and high salt intake can never cause hypertension (0 pt.) 2. One can decide not to exercise at all and yet will not develop	

	hypertension?	hypertension (0 pt.) 3. Healthy behaviour including routine screening for blood pressure and healthy life style and diet can prevent hypertension (2 pts.) 4. You are liable to having hypertension at a certain age in your life no matter what you do (0 pt.)	
10	Which of the following statement is not true about hypertension?	1. The higher the blood pressure, the higher the risk of stroke, renal failure and heart attack (0 pt.) 2. Hypertension is a silent disease (0 pt.) 3. Complication of hypertension is not always severe (2 pts.) 4. Hypertension can run in a family (0 pt.)	

**3.12.2. Analysis of Attitude to hypertension prevention:** Like in the knowledge scale, respondents' preventive behaviours towards the risk factors of hypertension were measured using attitudinal scale. Ten questions were asked on preventive behaviours and points were awarded to each of the questions (2 points). The respondents' level of agreement or disagreement to each of the question was awarded points. This was also based on its closeness to the most right answer, while the most correct answer to the question was awarded full points (2 points) (See Table 3.4). This was different from knowledge scale in that the points awarded to the level of disagreement and agreement to each question varies. The total attitude score and the maximum obtainable score for each respondent were calculated which was used to grade each respondents as having positive, fair or negative attitude towards hypertension risk factors.

Maximum attitude score = 20

Negative attitude (code 1) = 0-5

Fair attitude (code 2) = 6-10

Positive attitude (code 3) = 11-20

**Table 3.4: Attitudinal Scale for the measurement of preventive behaviour to hypertension**

S/N	Statement	Scores
1	I consume alcohol because is good for the body no matter the quantity Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
2	I do not smoke Cigarette because it can cause hypertension. Agree- 1 pt. Strongly agree-2 pts. Disagree-0 pt. Strongly disagree-0 pt.	
3	I consume fast foods regularly and I don't think I can develop hypertension through that. Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
4	I exercise regularly to prevents the chances of developing hypertension Agree- 1 pt. Strongly agree-2 pts. Disagree-0 pt. Strongly disagree-0 pt.	
5	I check my blood pressure regularly for early detection of hypertension Agree- 1 pt. Strongly agree-2 pts. Disagree-0 pt. Strongly disagree -0 pt.	
6	I take too much cholesterol- containing food no matter how hard I try to stop it. Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
7	I Consume a lot of alcohol whenever am stressed or depressed and it does not affect me. Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
8	I put salt in my food while eating at all time and I don't think it has anything to do with hypertension Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
9	I smoke cigarette and I can't develop hypertension through that	

	Agree- 0 pt. Strongly agree-0 pt. Disagree-1 pt. Strongly disagree-2 pts.	
10	I never eat fast foods because I may likely develop hypertension if I do. Agree- 1 pt. Strongly agree-2 pts. Disagree-0 pt. Strongly disagree-0 pt.	

### 3.13. Ethical Consideration

To conduct this study, approval was obtained from UCH/UI Ethical Review Committee (Appendix IV). The study followed the ethical principles guiding the use of human participants in research:

- Informed consent was obtained from all the research participants With respect to confidentiality, no identifier like name of respondents was required.
- All necessary information on the research that participants needed were provided.
- All information provided by the participants was kept confidential.
- Checking of participants' blood pressure and BMI served as incentive to the participants
- Participants who were found to be hypertensive were immediately referred to the clinic for proper medication

### 3.14. Limitations of the Study

Some of the non-teaching staff refused to participate in the study even after much explanation, persuasion and assurance of confidentiality. Those who refused to participate in the study were mostly junior staff that can neither read nor write and so found the questionnaire to be cumbersome. Also, some non-teaching staff who were supposed to participate in the study were on leave while others especially junior staff were on outside duty. Participants who had only primary education found it difficult to read and understand the questions, as a result more time was spent reading and interpreting the questions for such participants. Finally, some participants had too

much work load that delayed them in filling the questionnaire while some others misplaced the questionnaire up to three times of visit.

## **CHAPTER FOUR**

### **RESULTS**

The quantitative and qualitative findings of this study are presented in this chapter. This included findings from Key Informant Interviews and findings from the survey.

#### **4.1: Socio- demographic characteristics**

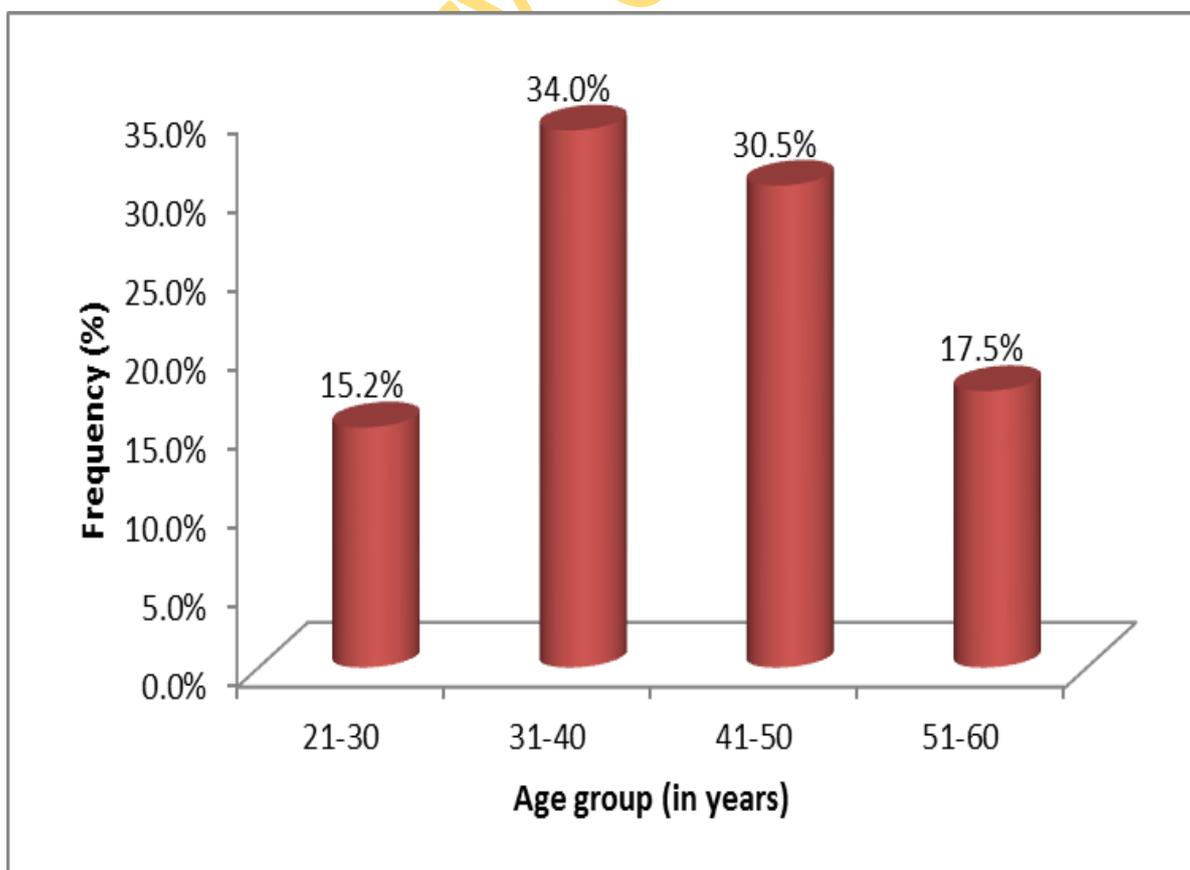
The Key Informants interviewed were mostly male. All of them were of the Yoruba ethnic group within the age range of 40-50 years and have been a staff in the College of Medicine for more than 10 years. All the participants were senior staff and occupy the position of heads of departments/units. They had minimum of secondary education. Also, the interviewees were all married men.

In support of the above data, findings from the survey show that ages of respondents ranged from 20 to 60 years with a mean age of  $42.8 \pm 13.2$  years. Majority 285 (90.5%) of the respondents were Yoruba and 152 (48.3%) had less than 10 years of experience while 159 (50.5%) had more than 10 years of experience. This is shown in Tables 4.1 and 4.2 and figure 4.1.

**Table 4.1 Education, Marital status, Religion and Ethnic group**

<b>Variable</b>	<b>Number</b>	<b>Percentage (%)</b>
<b>Sex</b>		
Male	184	58.4
Female	131	41.6
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Educational Qualification</b>		
Primary education	20	6.3
Secondary education	63	20.0
Tertiary education	232	73.7
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Marital status</b>		
Single	58	18.4
Married	250	79.4
Divorced	2	0.6
Widow/Widower	5	1.6
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Religion</b>		
Christianity	266	84.4

Islam	49	15.6
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Ethnic Group</b>		
Yoruba	285	90.5
Igbo	21	6.7
Others	9	2.9
<b>Total</b>	<b>315</b>	<b>100.0</b>



**Fig 4.1: Age distribution of the respondents**

**Table 4.2 Administrative rank, Location of Staff and Years of Service**

<b>Variable</b>	<b>Number</b>	<b>Percentage (%)</b>
<b>Administrative Rank</b>		
Senior Staff	187	59.4
Intermediate Staff	28	8.9
Junior Staff	100	31.7
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Location of Staff</b>		
Administrative Block	173	54.9
Academic block	38	12.1
Hospital Block	104	33.0
<b>Total</b>	<b>315</b>	<b>100.0</b>
<b>Years of service</b>		
>10 years	159	50.5
<10 years	152	48.3
No response	4	1.3
<b>Total</b>	<b>315</b>	<b>100.0</b>

#### **4.2: Knowledge of hypertension and its risk factors**

The respondents of the key informant interview were asked several questions on their understanding of hypertension and its risk factors. The first interviewee who had worked in the College for 23 years and had secondary education said:

*“It is a silent killer because it does not show on the face; you may not know or feel you have it unless you go to doctor”.*

He believed that hypertension could be caused by many factors. He said:

*“Over labour, so much thinking, sudden attack of heat, eating starchy and fatty foods (white amala, fufu, eba, egg, meat) can cause hypertension”*

The second interviewee who had tertiary education and have been in the College since 1999 (11years) understood hypertension to be a deadly disease, non-communicable disease that needed to be careful of and must be checked as often as possible. He went on by saying that hypertension can only be determined by going to medical personnel for check-up. In relation to the causes of hypertension, he said:

*“When you are stressed, you can develop hypertension. Also when you can't sleep, you can develop hypertension. High cholesterol, heat, fatty and oily foods, salt can also cause hypertension”.*

The third and fourth interviewee defined hypertension as blood pressure rising above normal, the fifth interviewee said it is hereditary while the sixth said it is a silent disease. Other interviewees agreed with the definition given by the second and third interviewee.

In respect to the symptoms associated with hypertension and its causes, almost all the interviewee recognised tiredness, dizziness, and persistent headache as symptoms of hypertension. The third interviewee said:

*“You will know because you will have body symptoms. You will notice in your body system, you have persistent headache, dizziness, as far as you do that, you know that there is something wrong with your system, you now have to go and check your BP and know whether its normal or rising”*

The seventh interviewee said:

*“You can have hypertension if you have problems including economy, mental, social expectation, a lot of needs facing one, little or no capital and if you don’t have amiable wife”.*

Additionally, findings from the survey show that 57.5% respondents accepted the fact that hypertension is an increase/elevation in the blood pressure above normal while 51.7% acknowledged that healthy behaviour including routine screening for blood pressure and healthy life style and diet can prevent hypertension. Greater percentage (73.3%) of the respondents identified talking too much as one of the risk factors of hypertension. Two hundred and nineteen (69.5%) were of the opinion that headache is a symptom of hypertension while 14.3% stated that hypertension has no symptom; thus a silent disease. (See tables 4.3 and 4.4 for details).

**Table 4.3a: Respondents' knowledge of hypertension and its risk factors**

<b>Knowledge items</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Definition of Hypertension</b>		
Chronic condition that mainly affects the heart, brain and kidney	54	17.1
Disease that comes with old age only		
An increase /elevation in the blood pressure above normal	24	7.6
Normal disease that could affect anybody	181	57.5
Don't know	39	12.4
	17	5.4
<b>Normal range of blood pressure</b>		
120/ 80 mmHg	227	72.1
140/ 90 mmHg	40	12.7
160/100 mmHg	10	3.2
180/110 mmHg	2	0.6
Don't know	36	11.4
<b>Organs in the body not affected/damaged by hypertension</b>		
Heart	16	5.1
Ear	232	73.7
Kidney	28	8.9
Brain	18	5.7

Don't know	21	6.7
<b>Symptom of hypertension</b>		
Head ache	219	69.5
Malaria and typhoid	11	3.5
Diarrhoea	24	7.6
None of the above	45	14.3
Don't know	16	5.1
<b>The best way to prevent hypertension</b>		
Screening/early detection	47	14.9
Cessation from drinking too much alcohol and cigarette Smoking	51	16.2
Regular exercise and healthy diet	66	21.0
All of the above	138	43.8
Don't know	13	4.1
<b>Those at risk of hypertension</b>		
Men of all age	4	1.3
Women of all age	6	1.9
Men and women of all age who indulge in an unhealthy life style	288	91.4
All of the above	8	2.5
	9	2.9

**Table 4.3b: Respondents' knowledge of hypertension and its risk factors (Contd.)**

Knowledge items	Frequency	Percentage (%)
<b>Disease that is not caused by hypertension</b>		
Heart attack	9	2.9
Stroke and blindness	2	0.6
Renal diseases	26	8.3
Diarrhoea	262	83.2
Don't knows	16	5.1
<b>Non- risk factor of hypertension</b>		
Cigarette smoking and too much alcohol consumption	7	2.2
Too much salt in the diet	18	5.7
Physical inactivity	47	14.9
Talking too much	231	73.3
Don't know	12	3.8

<b>True statement about hypertension</b>		
Unhealthy diet including consumption of fast foods and high salt intake can never cause hypertension.	51	16.2
One can decide not to exercise at all and yet will not develop hypertension.	32	10.2
Healthy behaviour including routine screening for blood pressure and healthy life style and diet can prevent hypertension.	163	51.7
You are liable to having hypertension at a certain age in your life no matter what you do.	53	16.8
Don't know	16	5.1
<b>Non- true statement about hypertension</b>		
The higher the blood pressure, the higher the risk of stroke, renal failure and heart attack	22	7.0
Hypertension is a silent disease	32	10.2
Complication of hypertension is not always severe	143	45.4
Hypertension can run in a family	96	30.5
Don't know	22	7.0

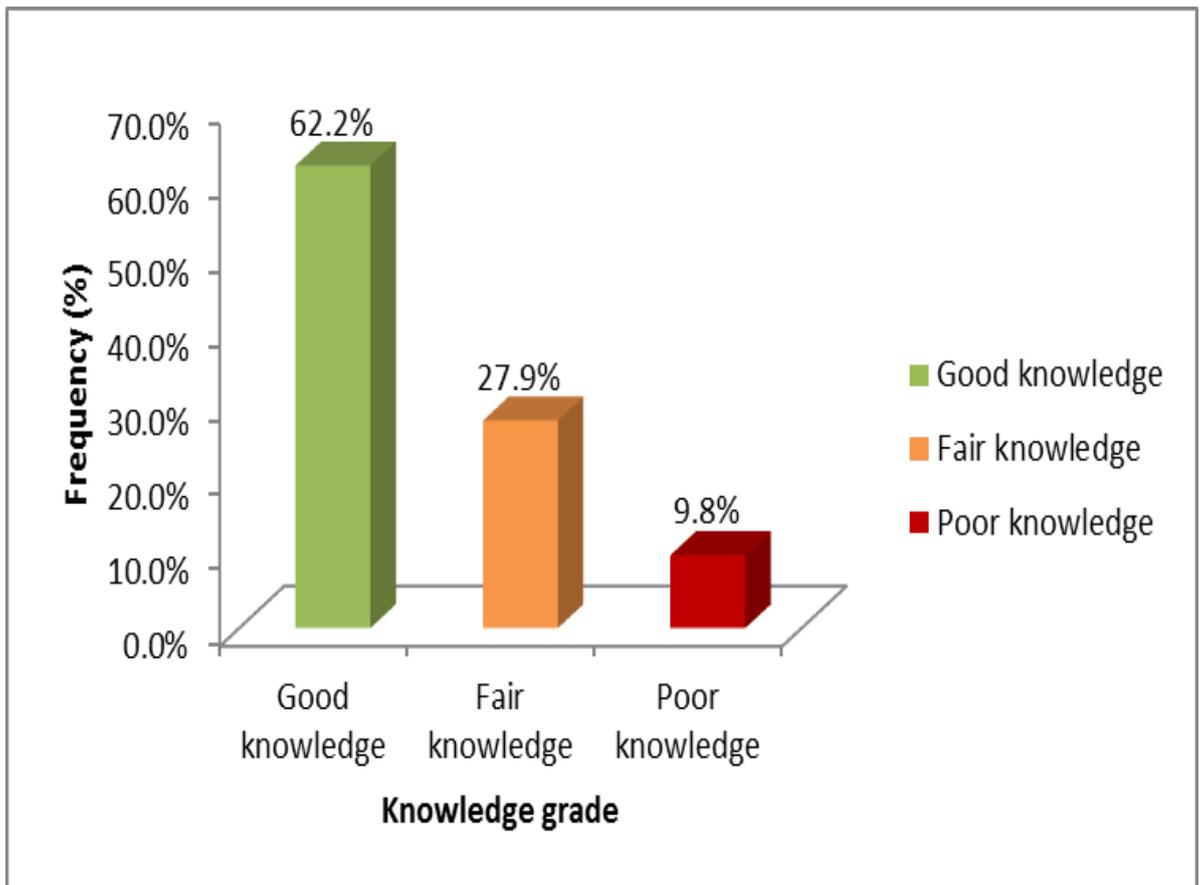
**Table 4.4: Percentage of respondents with correct responses to knowledge questions**

<b>Knowledge items</b>	<b>Percentage (%)</b>
<b>Definition of Hypertension</b> An increase /elevation in the blood pressure above normal	<b>57.5</b>
<b>Normal range of blood pressure</b> 120/ 80 mmHg	72.1
<b>Organs in the body not affected/damaged by hypertension</b> Ear	73.7
<b>Symptom of hypertension</b>	

Head ache	69.5
<b>The best way to prevent hypertension</b> All of the above (Screening/early detection, cessation from drinking too much alcohol and cigarette smoking, regular exercise and healthy diet)	43.8
<b>Those at risk of hypertension</b> Men and women of all age who indulge in an unhealthy life style	91.4
<b>Disease that is not caused by hypertension</b> Diarrhoea	83.2
<b>Non- risk factor of hypertension</b> Talking too much	73.3
<b>True statement about hypertension</b> Healthy behaviour including routine screening for blood pressure and healthy life style and diet can prevent hypertension	51.7
<b>Non- true statement about hypertension</b> Complication of hypertension is not always severe	45.4

Based on this table more than half of the respondents (62.2%) had an above average knowledge score (good knowledge score), 27.9% had fair knowledge score and 9.8% had poor knowledge score. The mean knowledge score for male was  $12.6 \pm 3.9$  while that of female was  $14.1 \pm 3.5$ . (See figure 4.2 for details)

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**Fig 4.2: Respondents' knowledge of hypertension and its risk factors**

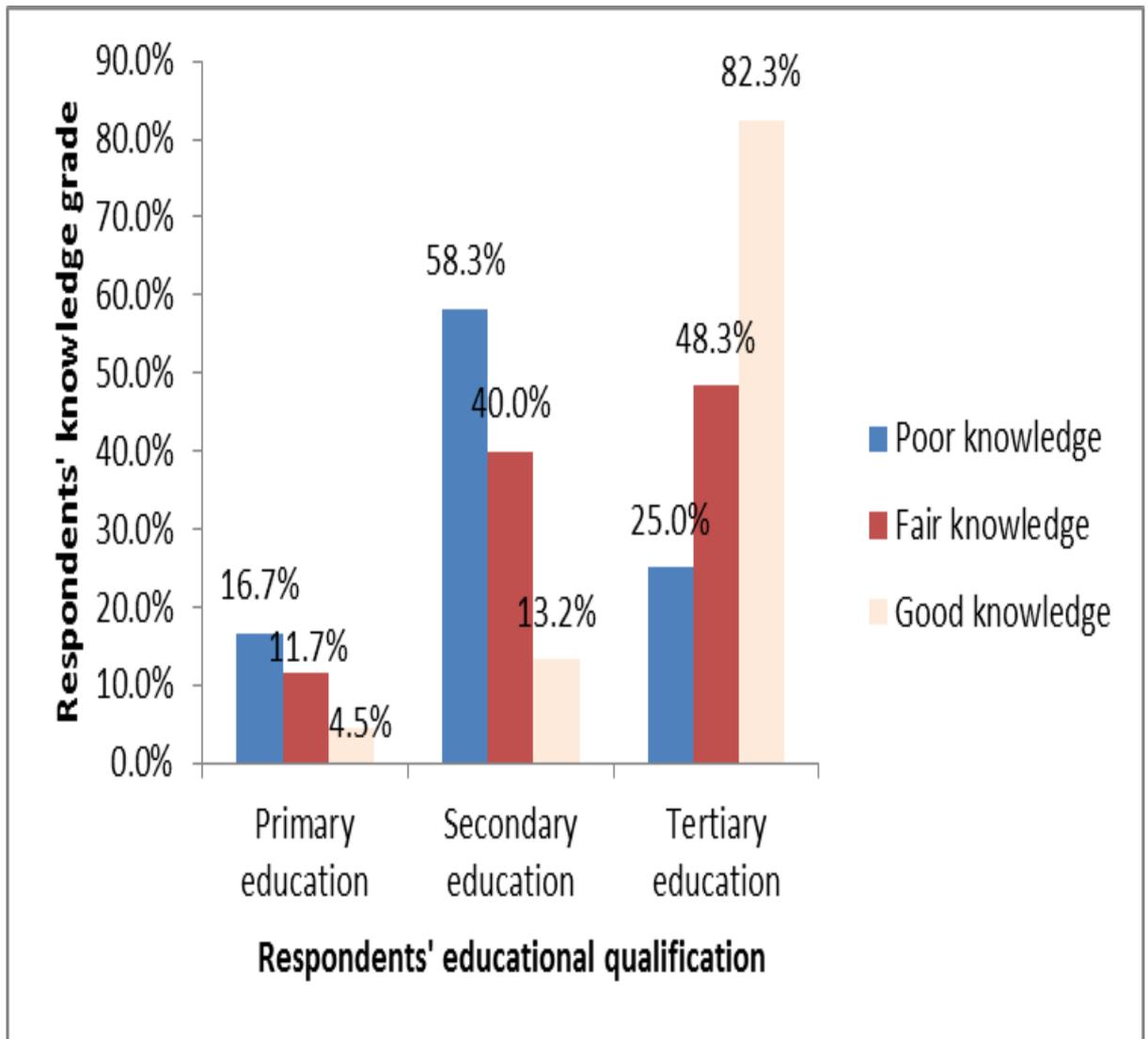
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More male respondents were found to have good knowledge (50.5%) about hypertension and its risk factors than female (49.5%). The mean knowledge score for age 21-30 was  $13.7 \pm 3.7$ , 31-40 was  $13.3 \pm 3.8$ , 41-50 was  $13.4 \pm 3.7$  and 51-60 was  $12.3 \pm 4.2$ . The mean knowledge score for those who had primary education was  $10.0 \pm 4.0$ , those with secondary education had a mean knowledge score of  $10.5 \pm 3.8$  while for those with tertiary education was  $14.3 \pm 3.3$  (See Table 4.5). Also, data showed that those with higher educational qualification have more knowledge of hypertension than those with lower educational qualification (see Figure 4.3). This implied that the higher the educational qualification, the higher the knowledge.

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**Table 4.5: Respondents' mean knowledge score by age group and educational qualification**

Variables	Knowledge score			F-test
	Frequency	Mean $\pm$ SD	P-value	
<b>Age group</b>				
21-30	57	13.7 $\pm$ 3.7	0.213	1.5
31-40	107	13.3 $\pm$ 3.8		
41-50	96	13.4 $\pm$ 3.7		
51-60	55	12.3 $\pm$ 4.2		
<b>Total</b>	<b>315</b>	<b>13.3 <math>\pm</math> 3.8</b>		
<b>Educational qualification</b>				
Primary education	20	10.0 $\pm$ 4.0	0.000	37.5
Secondary school	63	10.5 $\pm$ 3.8		
Tertiary education	232	14.3 $\pm$ 3.3		
<b>Total</b>	<b>315</b>	<b>13.3 <math>\pm</math> 3.8</b>		



**Fig 4.3: Respondents' knowledge of hypertension and educational qualification**

**P-value = 0.000**

**$\chi^2 = 43.9$**

### 4.3: Preventive behaviours towards hypertension

Regarding preventive behaviour in relation to hypertension, the key informant interviewees gave various responses. The first respondent admitted that he checks his blood pressure regularly and he does not smoke or drink alcohol. He said:

*“I check my blood pressure often (weekly) because a person working hard should check his BP”.*

He admitted that he does not take fruits always because he has no money to buy them; *“I don’t eat fruits always because they are not easy to get and no money to buy”.*

The second interviewee responded on his preventive health seeking behaviour by saying:

*“I do not smoke, take alcohol, and eat fast foods. I do not exercise because no time for that, but I trek a lot. I do not check my weight because I know am okay and it’s only fat people that check their weight. I check my blood pressure, but not regularly”.*

He also believes that hypertension can be prevented by eating fruits everyday and by taking white meat.

*“I take fast foods once in a while and I believe it can cause hypertension because of the ingredients used in cooking them. I don’t smoke but I take alcohol before, but stopped because I became born again. Visit the hospital every three months for medical check up”.*

These were the responses from the third interviewee on his preventive health seeking behaviour. He further stated that for you to prevent hypertension, you must be taking onions, garlic and honey once in a while.

The fourth interviewee do not check his blood pressure regularly, do not smoke or take alcohol, do not exercise regularly because there is no time for that. In the case of fast food, he said:

*“I take fast food, but it is not scientifically proven that it can cause hypertension”.*

The sixth interviewee is hypertensive and also admitted that he takes alcohol sparingly and not drunk. He believes that it is when you take it too much that it can cause hypertension.

Almost all the interviewee unanimously agrees that for one to prevent hypertension and be healthy, one must not take alcohol or smoke cigarette. One should also exercise regularly and eat healthy food including fruits of different kinds.

Akin to the information presented above, result from the survey showed that the respondents were aware of behaviours which can pre-dispose to hypertension but practice less of regular exercise and fast-food consumption as represented in Tables 4.6 and 4.7

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**Table 4.6: Respondents' preventive behaviours in relation to hypertension using attitudinal scale**

<b>Statement</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>	<b>Disagree (%)</b>	<b>Strongly Disagree (%)</b>	<b>Total (%)</b>	<b>score</b>
I consume alcohol because is good for the body no matter the quantity	6 (1.9)	34 (10.8)	70 (22.2)	205 (65.1)	315 (100.0)	
I do not smoke cigarette because it can cause hypertension.	119 (37.8)	126 (40.0)	40 (12.7)	30 (9.5)	315 (100.0)	
I consume fast foods regularly and I don't think I can develop hypertension through that.	65 (20.6)	78 (24.8)	107 (34.0)	65 (20.6)	315 (100.0)	
I exercise regularly to prevents the chances of developing hypertension	110 (34.9)	132 (41.9)	53 (16.8)	20 (6.3)	315 (100.0)	
I check my blood pressure regularly for early detection of hypertension	134 (42.5)	146 (46.3)	20 (6.3)	15 (4.8)	315 (100.0)	
I take too much cholesterol-containing food no matter how hard I try to stop it.	33 (10.5)	89 (28.3)	90 (28.6)	103 (32.7)	315 (100.0)	
I Consume a lot of alcohol whenever am stressed or depressed and it does not affect me.	11 (3.5)	26 (8.3)	64 (20.3)	214 (67.9)	315 (100.0)	
I put salt in my food while eating at all time and I don't think it has anything to do with hypertension	44 (14.0)	50 (15.9)	72 (22.9)	149 (47.3)	315 (100.0)	
I smoke cigarette and I can't develop hypertension through that	30 (9.5)	38 (12.1)	88 (27.9)	159 (50.5)	315 (100.0)	
I never eat fast foods because I may likely develop hypertension if I do.	70 (22.2)	48 (15.2)	79 (25.1)	118 (37.5)	315 (100.0)	

**Table 4.7: Percentage of respondents' with correct preventive behaviour towards hypertension**

<b>Statement</b>	<b>Agree (%)</b>	<b>Strongly Agree (%)</b>	<b>Disagree (%)</b>	<b>Strongly Disagree (%)</b>
I consume alcohol because is good for the body no matter the quantity			22.2	65.1
I do not smoke cigarette because it can cause hypertension.	37.8	40.0		
I consume fast foods regularly and I don't think I can develop hypertension through that.			34.0	20.6
I exercise regularly to prevent the chances of developing hypertension	34.9	41.9		
I check my blood pressure regularly for early detection of hypertension	42.5	46.3		
I take too much cholesterol- containing food no matter how hard I try to stop it.			28.6	32.7
I Consume a lot of alcohol whenever am stressed or depressed and it does not affect me.			20.3	67.9
I put salt in my food while eating at all time and I don't think it has anything to do with hypertension			22.9	47.3
I smoke cigarette and I can't develop hypertension through that			27.9	50.5
I never eat fast foods because I may likely develop hypertension if I do.	22.2	15.2		

Based on the Tables 4.6 and 4.7, a good number (65.1%) of the respondents showed preventive behaviour towards alcohol consumption by strongly disagreeing to consume alcohol no matter the quantity. Also, only 41.95% of the respondents strongly agreed that they exercise regularly to prevent the chances of developing hypertension and 46.3% check their blood pressure regularly for early detection of hypertension.

Furthermore, logistic regression analyses on the contribution of each behaviour towards hypertension prevention shows that low alcohol consumption contribute more than other behaviours. This implies that more respondents practiced non-alcohol consumption than other behaviour. (Table 4.8)

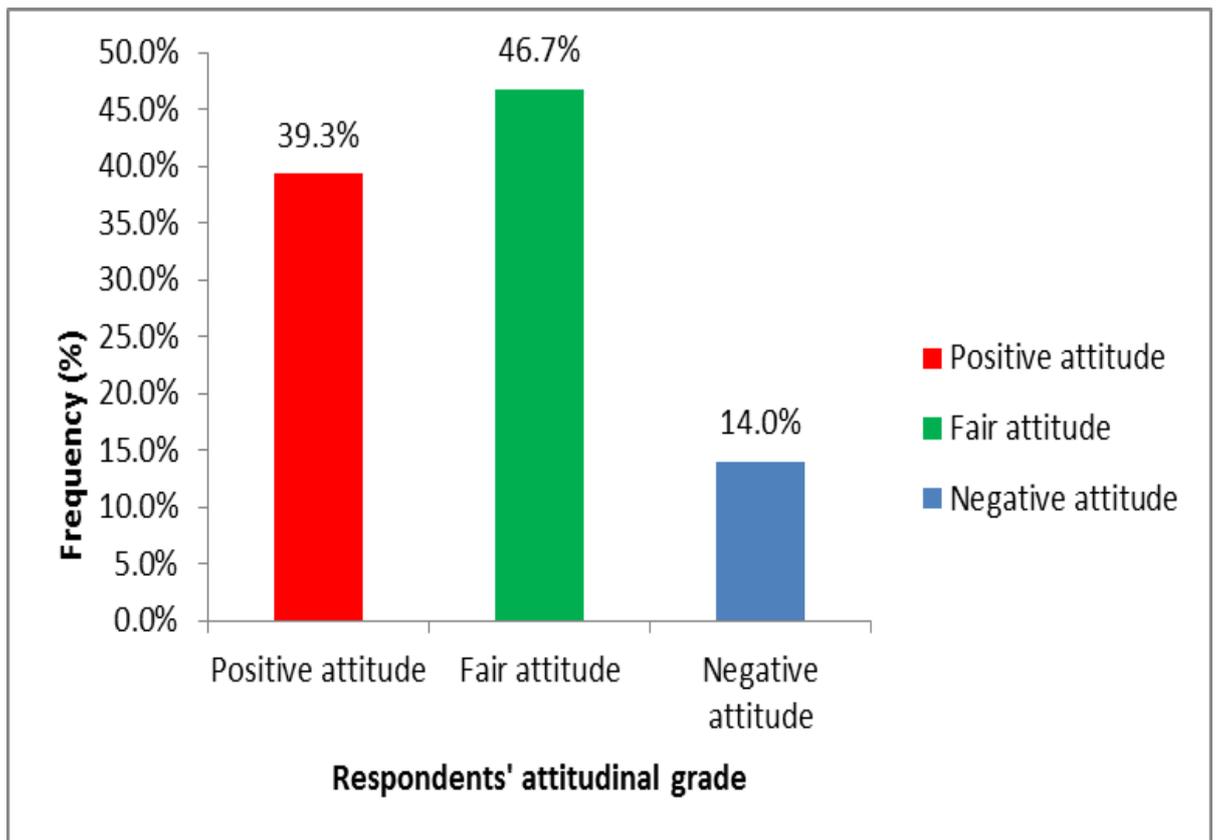
**Table 4.8: Logistic regression of respondents' preventive behaviours**

<b>Behaviours</b>	<b>Odd ratio</b>	<b>P-value</b>	<b>95% CI</b>
Low Alcohol consumption	4.220	0.000	2.574-6.918
Regular exercise	0.469	0.000	0.312-0.707
Regular Blood Pressure check-up	0.855	0.510	0.536-1.363
Low salt intake	3.287	0.000	2.407-4.487
Less fast food consumption	0.881	0.390	0.660-1.176

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However, owing to the fact that preventive health-seeking behaviour refers to their attitude in this study, attitudinal scale was used to measure the respondents' behaviour towards the prevention of hypertension. Figure 4.4 shows the attitudinal grade of the respondents' towards the preventive behaviour.

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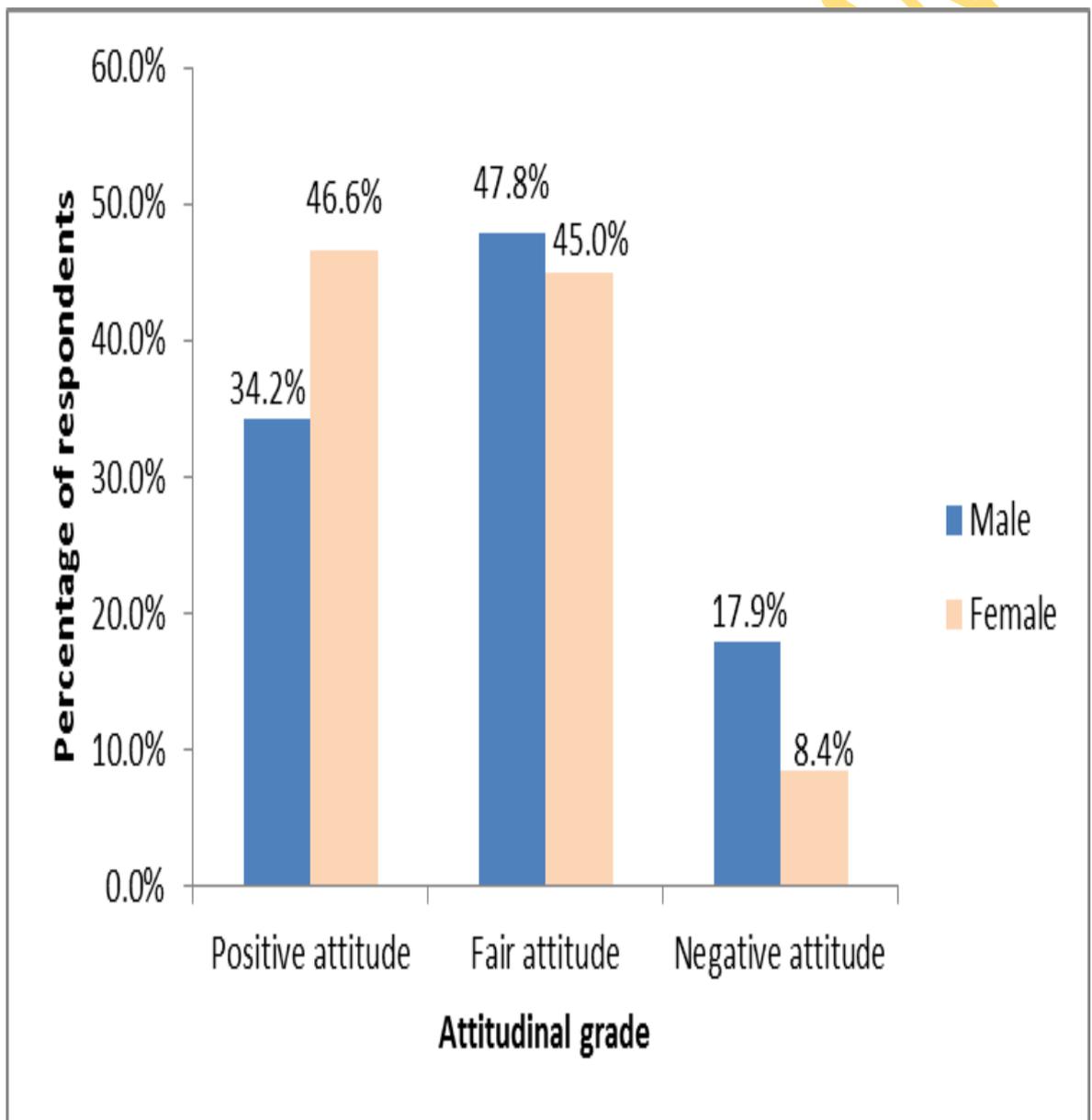
**Figure 4.4: Respondents' attitudinal grade towards hypertension prevention**

The attitudinal grade by age group shows that 20.2% of age group 21-30 years had positive attitude, 33.1% for age group 31-40 years, 32.3% for age group 41-50 years and 32.7% for age group 51-60 years (Table 4.9). More so, 50.8% and 49.2% of male and female respectively had positive attitude to preventive behaviour while 75.0% and 25.0% of male and female respectively had negative attitude (Figure 4.5). Among the various administrative ranks, it is discovered that greater percentage (66.9%) of senior staff had positive attitude towards preventive behaviour in relation to hypertension than intermediate (4.8%) and junior staff (28.2%) (Table 4.9).

The percentage of respondents with primary education who had positive attitude to preventive behaviour was 0.0%, secondary education was 7.3% while tertiary 92.7% indicating that the higher the educational qualification of the respondents, the more positive their attitude towards preventive behaviour. The attitudinal grade by years of service indicated that greater percentage (59.2%) of those who have been in service for more than 10 years had positive attitude while 40.8% of the respondents that worked for less than 10 years in the college had positive attitude ( Table 4.9).

**Table 4.9: Respondents attitudinal grade by age group, Administrative rank, Years of service and Educational qualification**

Variables	Attitudinal grade				P-value	X <sup>2</sup>
	Poor (%)	Fair (%)	Good (%)	Total		
<b>Age group</b>						
21-30	10 (22.7)	22 (15.0)	25 (20.2)	57 (18.1)	<b>0.286</b>	<b>7.388</b>
31-40	9 (20.5)	57 (38.8)	41 (33.1)	107 (34.0)		
41-50	14 (31.8)	42 (28.6)	40 (32.3)	96 (30.5)		
51-60	11 (25.0)	26 (17.7)	18 (14.5)	55 (17.5)		
Total	44 (100)	147 (100)	124 (100)	315 (100)		
<b>Administrative rank</b>						
Senior Staff	17 ( 38.6)	87 (59.2)	83 (66.9)	187 (59.4)	<b>0.013</b>	<b>12.621</b>
Intermediate Staff	6 (13.6)	16 (10.9)	6 (4.8)	28 (8.9)		
Junior Staff	21 ( 47.7)	44 (29.9)	35 (28.2)	100 (31.7)		
Total	44 (100)	147 (100)	124 (100)	315 (100)		
<b>Years of Service</b>						
<10 years	25 (56.8)	78 (53.1)	49 (40.8)	152 (48.9)	<b>0.073</b>	<b>5.248</b>
>10 years	19 (43.2)	69 (46.9)	71 (59.2)	159 (51.1)		
Total	44 (100)	147 (100)	120 (100)	311 (100)		
<b>Educational qualification</b>						
Primary education	9 (20.5)	11 (7.5)	0 (0.0)	20 (6.3)	<b>0.000</b>	<b>59.844</b>
Secondary education	19 (43.2)	35 (23.8)	9 (7.3)	63 (20.0)		
Tertiary education	16 ( 36.4)	101 (68.7)	115 (92.7)	232 (73.7)		
Total	44 (100)	147 (100)	124 (100)	315 (100)		



**Figure 4.5: Attitudinal grades of respondents by sex**

**P-value = 0.018**

**$X^2 = 8.064$**

#### **4.4: Factors influencing preventive health seeking behaviour**

Most of the interviewees from the key informant interview believed that their working environment has a way of influencing their preventive health seeking behaviour. The first man interviewed said:

*“There is no regulation, but we are encouraged to check our blood pressure. Some experience in hospital encourages people to check. It is not easy for staff to use health facilities because of the processes to pass through and money involved. No free medical care for staff”*

The second respondents alleged that there are no facilities available in the hospital where they work to encourage them to exercise. He also indicated that staff members are given free medical treatment though some are not aware and others hate U.C.H. He went further, saying that there are no health talks or seminars organised for non-teaching staff especially the junior staff.

The fifth interviewee said a staff checks his blood pressure regularly when he sees someone die of high blood pressure. Furthermore he continued:

*“There are free medical services for staff but it is at ones disposition, depending on individual, except, maybe volume of work. Though I have not been there, but people say it is very stressful and difficult and you pay some price as outsider”.*

The sixth interviewee also admitted that there are no free medical services for staff. He further said that to have access to health facilities within the hospital is not easy and the process and money involved even discourage people.

Furthermore, most of these comments made by the respondents were evidenced in the wealth of information captured through the survey and are presented below. In expressing their views on some factors believed to influence their preventive

behaviour both negatively and positively, one hundred and eight respondents (60.3%) reported that ill health is one of the factors that could influence staff to check their blood pressure regularly while some others (45.4%) reported that old age and desire to know one's health status could be another factor. A few of the respondents (8.6%) considered time as another factor which could influence regular checking of blood pressure by staff. Table 4.8 shows respondents response on this issue.

**Table 4.10: Responses of the respondents on the factors that can influence staff to check their blood pressure regularly (N=315)**

<b>Responses</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Ill health	190	60.3
Desire to know one's health status /age	143	45.4
Health information /enlightenment programme	65	20.6
Being a hypertensive patient	103	32.7
Stress	113	35.9
Mobile services	49	15.6
Personal commitment	46	14.6
Being part of rules and regulations	33	10.5
Time	27	8.6

**\* Multiple responses**

Abstaining from food that could predispose to hypertension, 64.8% of the respondents acknowledged that providing health information or health education to complement self-discipline remains one of the strongest factors while 60.3% recognised being concern for one's health as another factor. Few (21.3%) of the respondents stated that abstaining from food that could predispose to hypertension is not easy when a staff has some financial constraints coupled with his or her belief (Table 4.11).

**Table 4.11: Respondents' views on the factors that could influence staff to abstain from eating food that could predispose to hypertension (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Health information/health education/self-discipline	204	64.8
Habit of bringing food from home	42	13.3
Enlightenment/ awareness programme	124	39.4
Being a hypertensive patient	65	20.6
Concern about one's health	190	60.3
Financial constraints and belief	67	21.3

**\* Multiple responses**

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Responding to how staff could be motivated to checking their blood pressure regularly, 382 (121.3%) of the respondents reported that providing health education for the staff and also health information is one of the factors while 58.1% reported free and easy access to health facilities as another factor (Table 4.12).

**Table 4.12: Respondents' views on how staff could be motivated to check their blood pressure regularly (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Personal commitment	96	30.5
Conducting health research	25	7.9
Free and easy access to health services	183	58.1
Health information/ health education	382	121.3
Self-care skill	84	26.7
Making it compulsory for staff	46	14.6

**\* Multiple responses**

One hundred and sixty-six (52.7%) respondents indicated that working in the hospital environment automatically gives them regular access to health information and hence affect their preventive behaviour in relation to hypertension. Three hundred and twenty (101.6%) respondents did not know how work environment affects the preventive health behaviour of the staff while 47.9% reported that non-conducive environment and unfavourable working condition affects them negatively from practicing preventive health behaviour (Tables 4.13)

**Table 4.13: Respondents' views on how work environment affects staff to practise preventive health behaviour in relation to hypertension (N=315)**

Responses	Frequency	Percentage of cases
Too much work and lack of rest	136	43.2
Busy work environment predisposes staff to eating fast food	80	25.4
Working over time	72	22.9
Conducive environment and favourable working condition	151	47.9
Regular access to health information due to hospital environment	166	52.7
I don't know	320	101.6

**\* Multiple responses**

Two hundred and twenty six (71.7%) of the respondents reported ill health as one of the factors that can make a staff to abstain from too much alcohol consumption while health information/ enlightenment programme was reported by two hundred and four (64.8%) of the respondents (Table 4.14).

Table 4.15 shows some motivating factors to regular exercise as reported by the respondents. Personal commitment (60.6%), health information about exercises (56.8%) and concern about one's body weight (47.6%) were some of the motivating factors to regular exercises mentioned by the respondents.

**Table 4.14: Respondents' views on what can make staff abstain from too much alcohol consumption (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Ill health	226	71.7
Desire to eat good food	26	8.3
Health information/enlightenment programme	204	64.8
Self-discipline	123	39.0
Religion	113	35.9
Being afraid of danger associated with too much alcohol consumption	114	36.2
Positive influence from friends and colleagues	32	10.2

**\* Multiple responses**

**Table 4.15: Respondents' views on the motivating factors to regular exercises (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Personal commitment	191	60.6
Time	96	30.5
To prevent ill health	155	49.2
Health information about exercises	179	56.8
Conducive work environment	74	23.5
Concern about one's body weight	150	47.6

**\* Multiple responses**

Having relaxation lounge and recreational periods for staff (30.5%), fitness facilities within the work environment (18.7 %) and easy access to health facility for check-up (49.2%) were some of the ways by which work environment can encourage staff to practice preventive behaviour in relation to hypertension (Table 16).

Respondents identified things in the work environment that can promote healthy lifestyle towards hypertension prevention. Easy access to health information (46.3%), and hospital/staff clinic (43.5%) were some of the things mentioned by the respondents (Table 17).

**Table 4.16: Respondent's comments on how work environment could encourage staff to practice preventive health behaviour in relation to hypertension (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Having relaxation lounge and recreational periods for staff	96	30.5
Having fitness facilities within the work environment	59	18.7
Motivation by the higher authority	155	49.2
Access to health information	396	125.7
Easy access to health facility for check up	116	36.8
Good working tools/good communication system	44	14.0
I don't know	31	9.8

**\* Multiple responses**

**Table 4.17: Respondent response to the things in this work environment that can promote healthy lifestyle towards hypertension prevention (N=315)**

<b>Response</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Appropriate working tools	37	11.7
None	322	102.2
Easy access to medical treatment	21	6.7
Easy access to health information	147	46.3
Hospital/staff clinic	137	43.5

**\* Multiple responses**

Ninety seven (30.8%) of the respondents said that it is not easy for staff to have access to health information in the work environment while 39.4% said is very easy (Table 4.18).

To access the facility in relation to hypertension, 31.4% of the respondents said it is not easy at all while 49.8% said it is very easy (4.19).

**Table 4.18: Respondent's response to how easy it is for staff to have access to health information in relation to hypertension in the work environment**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Easy	59	18.7
Fairly easy	35	11.1
Very easy	124	39.4
Not easy	97	30.8
<b>Total</b>	<b>315</b>	<b>100.0</b>

**Table 4.19: Respondent's response to how easy it is for staff to have access to health facilities within the work place in relation to hypertension**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Not very easy	59	18.7
Not easy at all	99	31.4
very easy	157	49.8
<b>Total</b>	<b>315</b>	<b>100.0</b>

#### **4.5: Possible ways of making staff to practice preventive behaviour**

In the key informant interview conducted, the first interviewee made a suggestion by saying:

*“Encourage staff to do a medical check up. Authority should provide everything necessary for staff free medical services”.*

The second respondents recommended that staff should be given proper orientation at the point of employing them in respect to their right for free medical treatment. He further said:

*“Access to Information (they should be educated), they should also be given permission to attend, provide enabling and conducive environment for staff”.*

The third respondents gave the following suggestions:

*“The most important thing is awareness. Create awareness of risk involved; ensure that rapport between medical doctors and staff are cordial. Subsidise medical fees and ensure that people are encouraged to go for medical check up”.*

The fifth interviewee gave suggestion where he said:

*“It should be made mandatory for every staff to have a file with the hospital. It is easy, you don’t need to pay. The management should reimburse staff when they pay for services. Make it compulsory that at least once a month; every staff will bring a report from the doctor because most of the staff will not deliberately go for check up except if they are sick”.*

In addition to these comments, good working environment and good regulations (6.0%), living a healthy life style (120%) and organising enlightenment programme among the staff (102.9%), among some other suggestions, were the responses captured through survey. (Table 4.20)

**Table 4.20: Suggestions on what could be done to prevent hypertension (N=315)**

<b>Suggestions</b>	<b>Frequency</b>	<b>Percentage of cases (%)</b>
Good working environment and good regulations	19	6.0
Healthy lifestyle/healthy diet	378	120.0
Enlightenment program	324	102.9
Avoiding deep thinking and stress	55	17.5

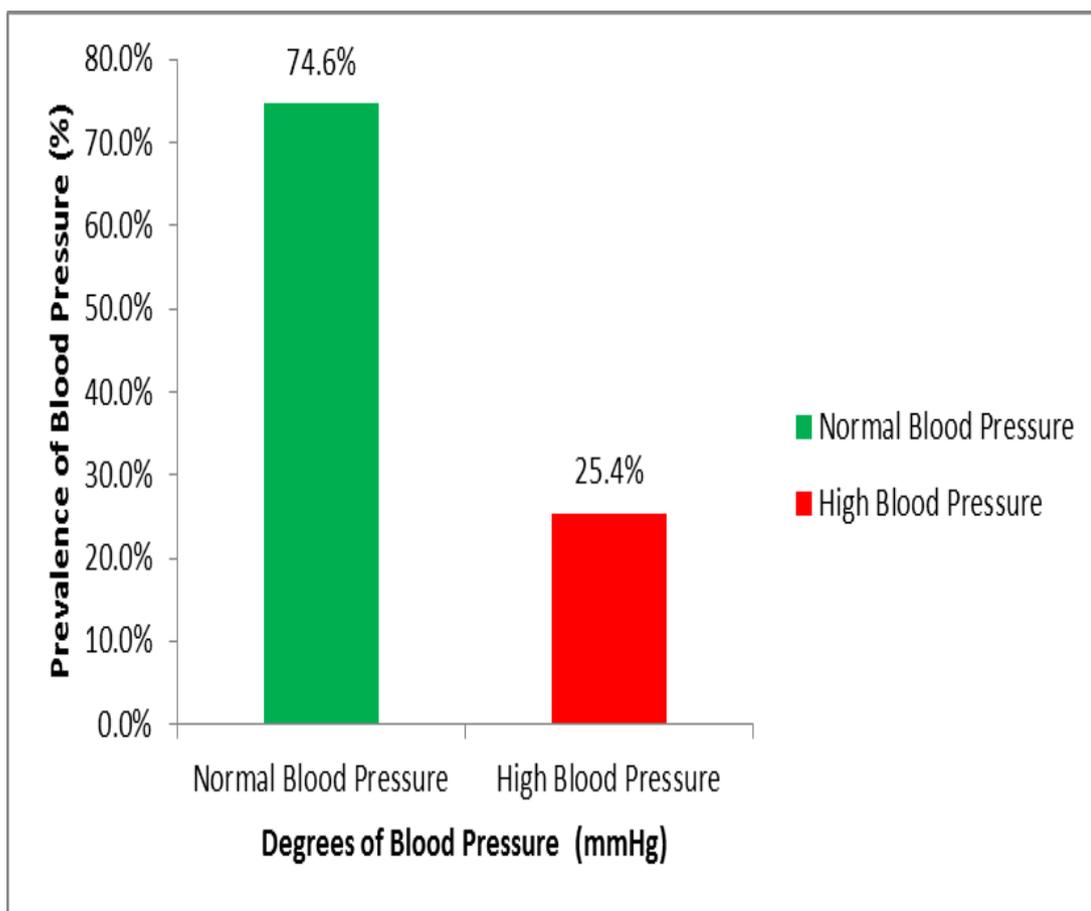
Free medical services	22	7.0
I don't know	24	7.6

**\* Multiple responses**

#### **4.6: Prevalence of hypertension among the respondents**

Prevalence of hypertension was determined using the standard manual sphygmomanometer. Blood pressure was measured at least twice for accuracy and consistency. The overall prevalence of hypertension was 25.4% (80/315) with grade 1HT 14.0%, grade 2HT 9.5% and grade 3HT 1.9%. The prevalence of hypertension across gender was 68.8% for male and 31.3% for female. Prevalence of hypertension steadily increased across different age groups with 6.5% for 21-30, 28.6% for 31-40, 37.7% for 41-50 and 27.3% for 51-60. Figure 4.6 shows the prevalence of hypertension.

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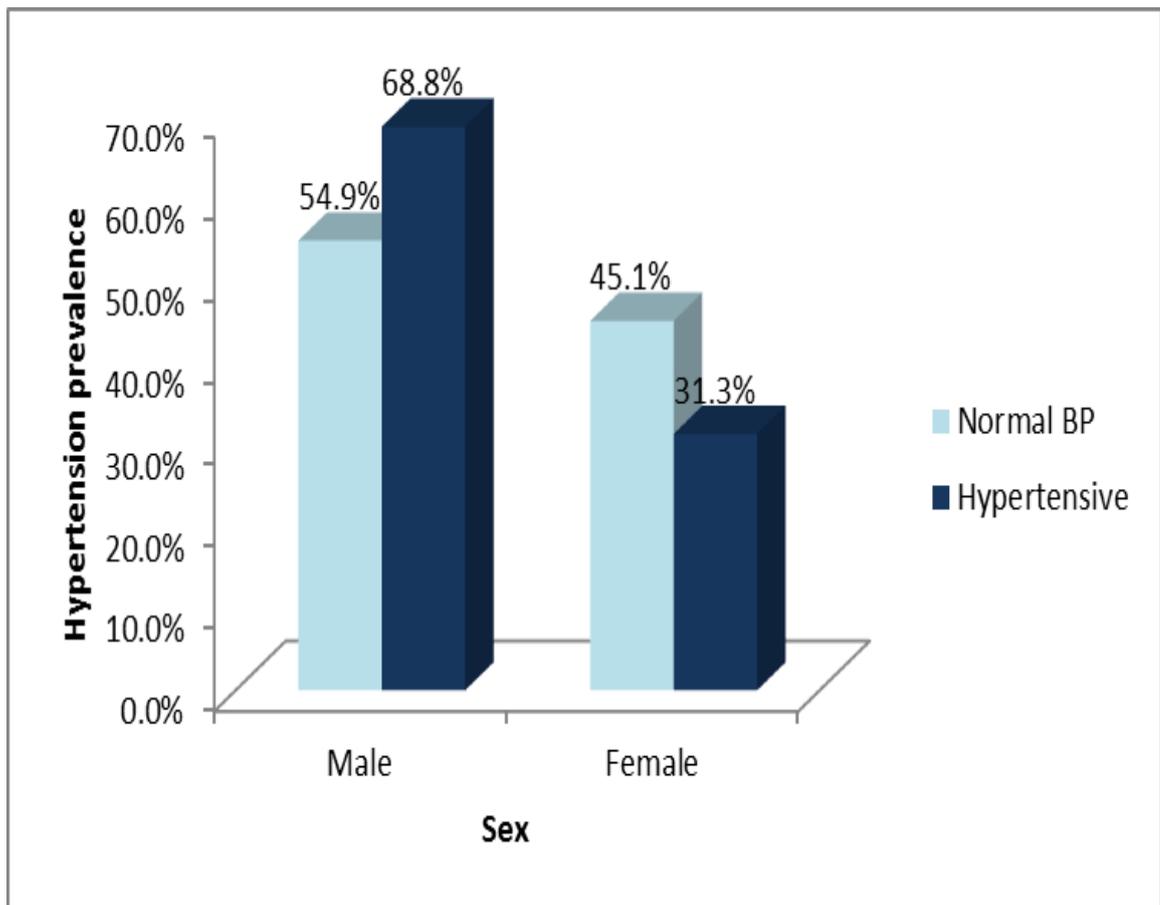


**Figure 4.6: Prevalence of Hypertension**

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The prevalence of hypertension among respondents by sex, age, and Body Mass Index are represented in the figures 4.6, 4.7 and 4.8 respectively.

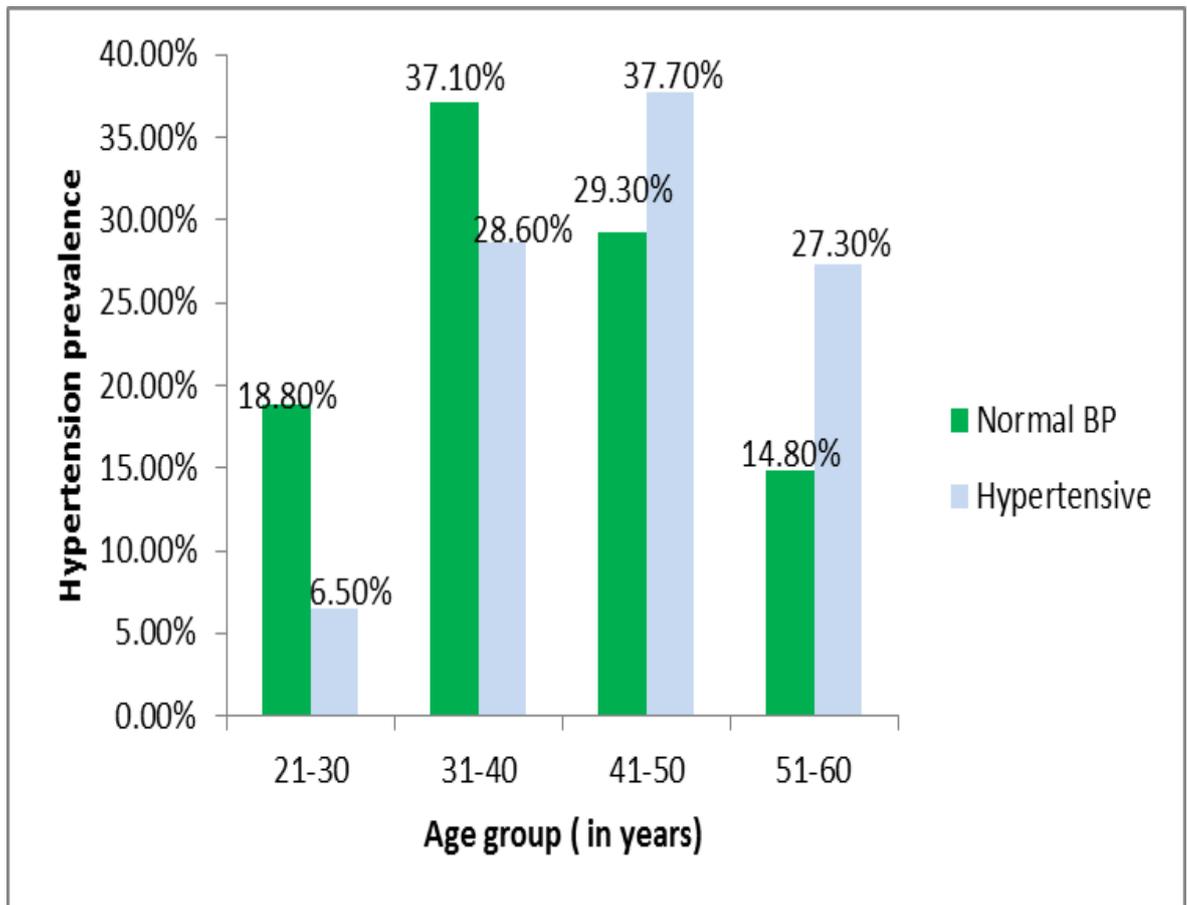
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**Figure 4.6: Prevalence of hypertension among participants by sex**

$X^2 = 4.717$

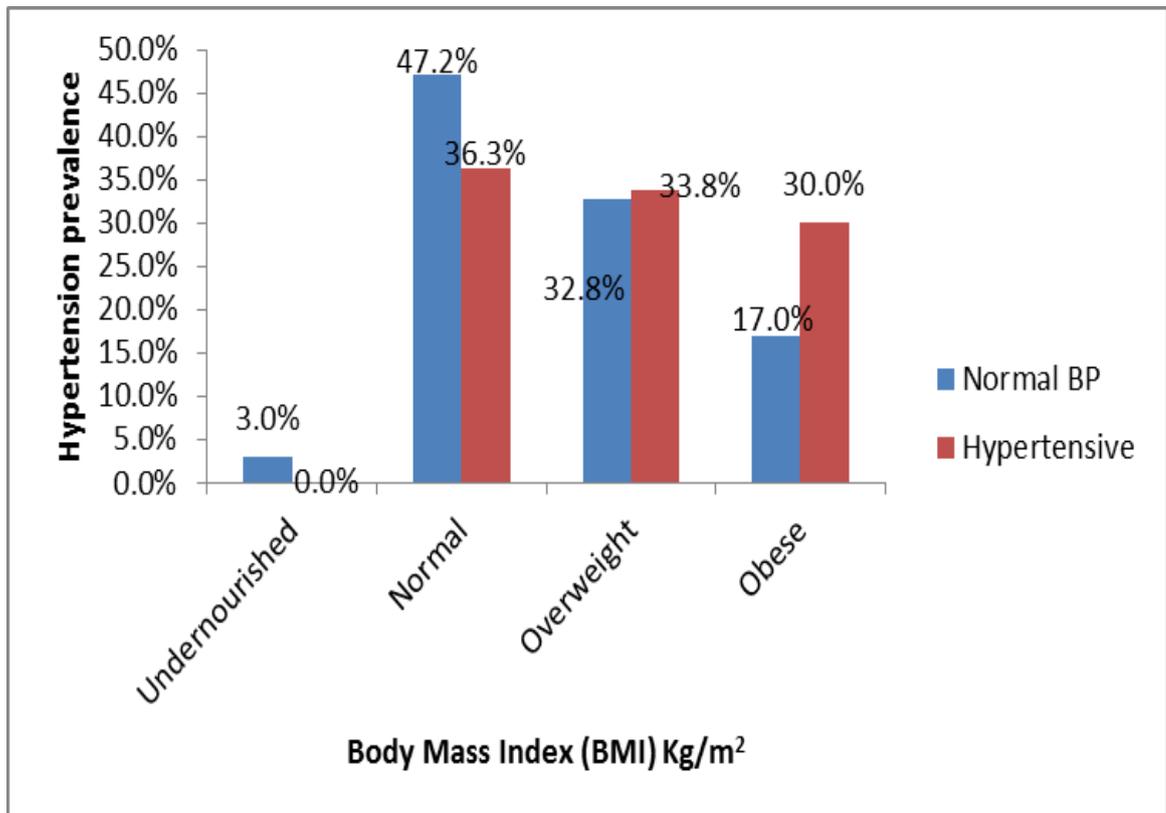
**P-value = 0.030**



**Figure 4.7: Prevalence of hypertension among participants by age**

**$\chi^2 = 0.005$**

**P-value = 12.994**



**Figure 4.8: Prevalence of hypertension among participants by BMI**

$\chi^2 = 0.030$

**P-value = 8.969**

#### **4.7: Test of Hypotheses**

The following hypotheses were tested in this study

1. There is no significant relationship between the nutritional status of the respondents using BMI and the prevalence of hypertension among them
2. There is no significant relationship between gender and knowledge of risk factors of hypertension among the respondents
3. There is no significant relationship between years of service and knowledge of risk factors of hypertension among the respondents
4. There is no significant relationship between educational status of the respondents and their knowledge of risk factors of hypertension
5. There is no significant relationship between respondent's knowledge of risk factors of hypertension and their preventive health-seeking behaviour

**4.8.1: There is no significant relationship between the nutritional status of the respondents using BMI and the prevalence of hypertension among them.**

This relationship was found to be statistically significant (P-Value =0.030). Therefore the null hypothesis was rejected, indicating that their nutritional status which was assessed using BMI predisposes them to hypertension (see table 4.21).

**Table 4.21: There is no significant relationship between the nutritional status of the respondents using BMI and the prevalence of hypertension among them**

<b>BMI of Respondents</b>	<b>Normal Blood Pressure (%)</b>	<b>Hypertensive (%)</b>	<b>Total</b>	<b>X<sup>2</sup> Value</b>	<b>df</b>	<b>P-Value</b>
Undernourished	7(3.0)	0 (0.0)	7 (2.2)	8.969	3	0.030
Normal	111 (47.7)	29 (36.2)	140 (44.4)			
Overweight	77 (38.7)	24(33.8)	104 (33.0)			
Obese	40 (12.9)	24 (30.0)	64 (20.3)			
<b>Total</b>	<b>235 (100.0)</b>	<b>80 (100.0)</b>	<b>315 (100.0)</b>			

**4.8.2: There is no significant relationship between gender and knowledge of risk factors of hypertension among the respondents.** Respondent's knowledge about the risk factors of hypertension was cross tabulated with their gender using Chi-square statistic. A significant relationship was found, indicating that more male (50.5%) had good knowledge than female (49.5%), (P-Value = 0.001). Therefore the null hypothesis was rejected (see table 4.22).

**Table 4.22: There is no significant relationship between gender and knowledge of risk factors of hypertension among the respondents**

Variables	Knowledge grade				X <sup>2</sup> Value	df	p-value
	Poor (%)	Fair (%)	Good (%)	Total (%)			
Sex							
Male	23(74.2)	62(70.5)	99(50.5)	184(58.4)	13.470	2	0.001
Female	8(25.8)	26(29.5)	97(49.5)	131(41.6)			
Total	31(100.0)	88(100.0)	196(100.0)	315(100.0)			

**4.8.3: There is no significant relationship between years of service and knowledge of risk factors of hypertension.** A significant relationship was found between years of service and respondents knowledge of risk factors of hypertension (P-Value = 0.021); hence the null hypothesis was rejected signifying that the number of years the respondents had spent working in the hospital and academic environment may likely influence their knowledge about hypertension and its risk factors (see table 4.23).

**Table 4.23: There is no significant relationship between years of service and knowledge of risk factors of hypertension among the respondents**

Variables	Knowledge grade				X <sup>2</sup> Value	Df	p-value
	Poor (%)	Fair (%)	Good (%)	Total (%)			
<b>Years of service</b>							
>10 years	25(83.3)	35(40.2)	92(47.4)	152(48.9)	17.022	2	0.021
<10 years	5(16.7)	52(59.8)	102(102)	159(51.1)			
Total	30(100.0)	87(100.0)	194(100.0)	311(100.0)			

**4.8.4: There is no significant relationship between educational status of respondents and their knowledge of risk factors of hypertension.** A statistically significant association was found between educational status of the respondents and their knowledge about the risk factors of hypertension (P-Value = 0.000). Thus, the null hypothesis was rejected, signifying that attainment of higher level of education may likely be a factor influencing the knowledge of the respondents on the risk factors of hypertension ( Table 4.24).

**Table 4.24: There is no significant relationship between educational status of the respondents and their knowledge of risk factors of hypertension**

Educational status of respondents	Knowledge of respondent on the risk factors of hypertension.			Total	X <sup>2</sup> value	Df	P-value
	Poor knowledge (%)	Fair knowledge (%)	Good knowledge (%)				
Primary education	5 (16.1)	12 (13.6)	3(1.5)	20 (6.3)	60.419	4	0.000
Secondary education	16 (51.6)	25 (28.4)	22(11.2)	63(20.0)			
Tertiary education	10 (32.3)	51 (58.0)	171(87.2)	232 (73.7)			
<b>Total</b>	<b>31 (100.0)</b>	<b>88 (100.0)</b>	<b>196(100.0)</b>	<b>315 (100.0)</b>			

**4.8.5: There is no significant relationship between respondent’s knowledge of risk factors of hypertension and their attitude towards the risk factors.** This relationship was statistically significant (P-Value = 0.000), therefore the null hypothesis was rejected indicating that there is a possibility that the knowledge of the respondents on the risk factor of hypertension may have influence on their attitudes towards these risk factors (Table 4.25).

**Table 4.25: There is no significant relationship between respondent’s knowledge of risk factors of hypertension and their Preventive health-seeking**

Attitude of respondents towards risk factors of hypertension	Knowledge of respondent on the risk factors of hypertension.			Total	X <sup>2</sup> value	Df	p-value
	Poor knowledge (%)	Fair knowledge (%)	Good knowledge (%)				
Poor attitude	8 (25.8)	22(25.0)	14(7.1)	44 (14.0)	45.122	4	0.000
Fair attitude	19 (61.3)	49(55.7)	79(40.3)	147(46.7)			
Good attitude	4 (12.9)	17(19.3)	103 (52.6)	124 (39.4)			
<b>Total</b>	<b>31 (100.0)</b>	<b>88(100.0)</b>	<b>196 (100.0)</b>	<b>315 (100.0)</b>			

## **CHAPTER FIVE**

### **DISCUSSION**

The study surveyed the knowledge and attitude of non-teaching staff on the risk factors of hypertension as well as the predisposing factors to preventive behaviour. In this section, the results presented in the preceding chapter are well explained. Explanation of the socio-demographic characteristics of the respondents, their knowledge and attitude about the risk factors of hypertension, factors that can predispose to preventive behaviour as well as suggestions on how hypertension could be prevented were also given.

#### **5.1: Socio-demographic characteristics of participants**

In this study, the respondents mean age was  $42.8 \pm 13.3$  years. This is consistent with the findings of an earlier study of  $44.2 \pm 11.6$  years (Adedoyin, Mbada, Balogun, Martins, Adebayo, Akintomide, Akinwusi and Patience, 2008).

#### **5.2: Prevalence of hypertension**

Prevalence of hypertension was found to be 25.2% thus one quarter of the non-teaching staff of College of Medicine who is working within the University College Hospital are hypertensive. This is similar to the findings of Mohan, Deepa, Farooq, Prabhakaran and Reddy, (2010) and findings of the World Health Organization (WHO) and Indian Council of Medical Research (ICMR) on non-communicable disease (NCD) risk factor surveillance where the prevalence of hypertension among the industrial population was 26% in all ten centres in India and 25.4% in Chennai.

Their findings suggest that hypertension is more obvious in workplace than in the general community given the prevalence of 8-10% reported by Akinkugbe (1992) in rural communities in Africa, the prevalence of 5.9% reported by Oviasu (1978) in a rural community in mid-western Nigeria and 11.0% reported by Kuti (1993) in Aiyetoro community (also rural) in Ondo state.

The prevalence of hypertension among the respondents was seen to be higher in males (68.8%) than in females (33.1%). This is in line with the study conducted by Omuemu, Okojie and Omuemu (2006) where the prevalence of hypertension was higher in males than in females (24.8% male; 13.2% female). Also, study on the systematic review of hypertension in Sub-Saharan African by Juliet, Liam and David (2007) reported a higher prevalence in males than in females (21.6% male; 12.5% female). The lower prevalence of hypertension observed in women could be attributed to the hormonal factor. Research has shown that oestrogen which is females hormone has a regulatory effect on hypertension (Radwanska, 1993). Even in the present study, the prevalence is higher among the obese. This also could have contributed to the low prevalence of hypertension in females than in males because sex hormone binding globulin concentration is lower in obese women thus increasing the amount of bioavailable oestrogen (Annalia, Ross and Henderson (1988).

Prevalence of hypertension is seen to increase with age. It was also observed that the prevalence of hypertension increased with age which is in agreement with reports from several studies (Okojie, Isah and Okoro, 2000). This was expected since blood pressure tends to increase with advancing age due to hardening of the arteries. This trend of increasing blood pressure with age could also be a reflection of increasing risk factors for hypertension such as obesity which also increases with age (Carghron, Smith and McClellan-Holm, 2001).

The study also showed that there is significant relationship between BMI and hypertension. A BMI of 25 correlates closely with increased blood pressure (Abdul-Rahim, Abu-Rmeilehnu, Husseini, Holmboe, Sen, Jarvell and Bjertness, 2002). Other studies also support the fact that weight gain is associated with increased blood pressure and increased incidence of hypertension (Mertens and Van Gaal, 2000). In

general, being overweight is associated with a two to six-fold increase in the risk of developing hypertension (Dickey and Janick, 2001). Clinical trials have proved that weight loss is effective in the primary prevention of hypertension as well as in the reduction of both systolic and diastolic blood pressure in patients with normal and high blood pressure (Dickey and Janick, 2001). Several epidemiological studies have shown an association between BMI and blood pressure in normal and overweight patients. Weight loss has been recommended for the obese hypertensive patient and has been shown to be the most effective non-pharmacological treatment approach (Patel, 2000).

### **5.3: Knowledge of hypertension and its risk factors**

From the study, it was found that 62.2% of the study population had good knowledge of hypertension and its risk factors. This is similar to the community based study done in Kinondoni, Dar es Salaam where it was seen that 66.8% had knowledge of hypertension and only 19.8% had knowledge of the risk factors of hypertension (Mlunde Linda, 2007). The result in the study also indicated that the knowledge of risk factors of hypertension increased with educational status of the respondent. The possible reason being that the higher the educational attainment, the more advanced in knowledge. A similar study which considered knowledge with respect to educational attainment, though not on hypertension, but on risk factors of stroke among hypertensive patients recorded low knowledge among the participants as a result of low educational attainment (John, 2006).

Many of the respondents were of the opinion that headache remains a symptom of hypertension. This correlate with the findings from a similar study conducted in Ogun State, Nigeria which found out that only one in every ten respondent knew that hypertension is a disease that for most times runs a symptomless course (Oluranti; Abayomi and Olutoyin 2004). Conversely, it contradicts the findings by Godfrey, Iyalomhe and Sarah (2010) that discovered that 60.2% of the participants did not recognise headache as a symptom of hypertension. The differences could result from the fact that the current study is hospital- based, thus working in the hospital environment may have influenced the respondents by having regular contacts with

hypertensive patients who complain of headache. However most of the symptoms experienced are due to the target organ which has been damaged.

Additionally, this study found male respondents to have more knowledge than female, which is in contrast to the study conducted in Indian Ocean islands where female participants were found to have more knowledge (13%) than male (8%).

#### **5.4: Preventive health-seeking behaviours in relation to hypertension**

Less than half (39.3%) of the participants had positive attitude to preventive behaviours in relation to hypertension. Majority of the respondent strongly disagreed that they do not consume alcohol because of the knowledge they have about its adverse effect in the body. This is also seen in the result of the logistic regression, which shows that among the behaviour practiced in order to prevent hypertension, non-alcohol consumption is more likely to be practiced by the respondents while regular exercise is less likely to be practiced. However, few others did not see anything wrong with alcohol no matter the quantity. This agrees with the previous study conducted in sub-urban Nigeria community by Godfrey and Sarah (2010) where more than half of the respondents were seen to disagree with the issue of alcohol consumption. Also, few of the respondents would exercise regularly in order to prevent the chances of developing hypertension.

The Key Informant Interview conducted revealed that almost all the interviewee recognised the fact that regular exercise is one of the ways of preventing hypertension. Although most of them do not practice it regularly due to their works, but some of them are committed to exercising once in a while. It is gratifying to know that the preventive behaviours of the respondents towards hypertension were not impressive. This could be due to their ignorance of the possible health information and services in the environment where they work. Furthermore it is expected that working in an academic and hospital environment also could have had a positive effect on them but the reverse was the case. Notwithstanding, the possibility that most of the non-teaching staff might be having good relationship with the teaching staff as well as the students and thus, get enlightened especially on the issue relating to hypertension and its preventive mechanism, yet their attitude proved otherwise. The low positive attitude of the respondents depicts their poor practices in the prevention of

hypertension. This is in relation to the previous study by Godfrey and Sarah (2010) where attitude and life style practices were assessed as one. This shows that the practices of preventive behaviour cannot be predicted from the knowledge of such behaviour.

### **5.5: Factors influencing health seeking behaviour**

Health information/health education/self-discipline and concern about one's health were spontaneously mentioned as factors that could influence staff to abstain from eating food capable of exposing them to hypertension. Most of the respondents did not see anything in their working environment that could help in promoting their health. Their inability to recognise anything that could help in promoting their health in the work environment is likely to have resulted from ignorant or improper orientation at the time of employment.

From the Key Informant Interview conducted in this study, most of the respondents reported that though they are being encouraged to go for medical check- up, it is always difficult to have access to health facilities. They also lamented that the money and the process involved is discouraging. Some other interviewees testified that their experience with hypertensive patients encouraged them to go for medical check- up regularly.

Finally, some of the respondents hammered on the issue of having access to health information through seminars and health talk. It is very obvious that without health information, practising good health seeking behaviour will not be possible.

### **5.6: Test of hypothesis**

The hypothesis of no relationship between nutritional status of the respondents using their BMI and the prevalence of hypertension among them which was tested in the study, showed a significant relationship. This indicated that those who are overweight and obese are at higher risk of developing hypertension. This was in agreement with the study conducted by Tesfaye, Nawi, Van Minh, Byass, Berhane, Bonita and Wall (2007), where a significant positive correlation between BMI and hypertension was observed in all the population sub-groups.

Furthermore, the hypothesis of no significant relationship between gender and knowledge of risk factors of hypertension among the respondents was also found to be significant. This might be supporting the fact that there were a lot of men than women in the higher cadre among the non-teaching staff who might be more prone to some vital information on health matters than those at the lower cadre.

Also, the test of hypothesis which accessed the relationship between years of service and knowledge of risk factors of hypertension showed that staff who has worked in the environment for more than 10years had more knowledge of hypertension than those who had worked for less than 10years. This supported the statement made by Kasl and Cobb (1966) that it is becoming increasingly recognized that individual unhealthy behaviours reflect the social, cultural, and environmental contexts within which they occur.

Educational status of the respondents and their knowledge of risk factors of hypertension was found to be statistically significant indicating that the higher one go in education, the more knowledgeable and versatile he become. Interestingly, knowledge has been shown to contribute to an extent, the practice of preventive behaviour as tested in the hypothesis. For every change in behaviour, there must be established information or knowledge about such behaviour.

### **5.7. Implications of Health Promotion and Education**

Promoting health and preventing diseases are important at all stages of life. There has been growing realization that health education can influence knowledge, but on its own may not result to behaviour change which has been proven in this work where majority of respondents have good knowledge of the risk factors of hypertension. Prevention of disease among people of working age in relation to hypertension require strategies to enhance behavioural change including the practices of healthy diets, encouraging physical activity and promoting policies that discourage smoking and curb alcohol consumption. Programmes to reduce stress and access to preventive health facilities are also key strategies.

It has been clearly established in this work that Health Promotion and Education is all that is required for the non-teaching staff of College of Medicine to practice

preventive behaviour in relation to hypertension. This is in line with the stipulated strategies of Ottawa Charter and United Nations General Assembly (discussed in literature review). Implementation of these measures will require an active and sustaining programme or Health Promotion focused on healthy behaviours in the work environment, addressing social and economic determinant of health problem including consumer rights, finance, environmental measures and gender rights.

### **5.8: Conclusion**

This study has once again highlighted the fact that hypertension is a problem in our society, even in the health environment. This study has shown that having good knowledge of a thing does not guarantee its practice. In this study, the respondents had remarkable knowledge of hypertension and its risk factors but their practice was poor. This is seen in the prevalence of hypertension among them whereby one out of every four non-teaching staff is hypertensive. A lot of attention is focused on the control of communicable diseases while the non-communicable ones like hypertension go unchecked. In the case of hypertension prevention, this study has proven that regular exercise is not taken seriously even among workers in the health environment who should be privy to health information. It has also shown that creating awareness and having access to health information on disease prevention and control is the key factor to preventing the occurrence of such disease especially hypertension. There is need for programmes targeted at control of non-communicable diseases like hypertension, which is symptomless. Members of non-teaching staff, both senior and junior should have access to Information Education and Communication (IEC) on hypertension to facilitate regular screening to detect and initiate treatment earlier as well as promotion of a healthy lifestyle that may prevent or delay its onset and complications.

### **5.9: Recommendations**

The following recommendations are made to address the findings of this research

1. The management should institute a work- place health policy that will reinforce health seeking behaviour of the staff in relation to hypertension; bearing in mind the fact that hypertension is a silent killer.
2. Health programmes should be institutionalized with the aim of encouraging regular exercises among the staff.

3. Health programmes including living a healthy life style should be regularly organized among the non-teaching staff at least once every month.
4. Staff should be properly oriented at the point of employment on their health benefits within the working environment
5. There should be mass screening for all non-teaching staff for at least once every month for early detection and treatment.
6. Establishing a health club among non-teaching will also go a long way in enlightening non-teaching staff, both senior and junior on the risk factors associated with non-communicable diseases including hypertension.
7. The non-teaching staff should be provided with work-place information handbills/sticker against hypertension ( See appendix 3)

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UNIVERSITY OF IBADAN

## **APPENDIX I**

### **QUESTIONNAIRE**

**DEPARTMENT OF HEALTH PROMOTION AND EDUCATION, FACULTY  
OF PUBLIC HEALTH, COLLEGE OF MEDICINE, UNIVERSITY OF  
IBADAN, IBADAN, OYO STATE, NIGERIA**

I am a postgraduate student of the University of Ibadan, College of Medicine, Faculty of Public Health, Department of Health Promotion and Education, Ibadan, Oyo State, Nigeria. I am conducting a study on PREVENTIVE HEALTH SEEKING BEHAVIOUR RELATING TO HYPERTENSION AMONG ADMINISTRATIVE NON-TEACHING STAFF OF COLLEGE OF MEDICINE, IBADAN, OYO STATE

Unlike HIV/AIDS, the silent nature of hypertension has contributed greatly to a high level of negligence in the preventive actions. Some have become socially incapacitated and physically challenged from the preventable complications of hypertension as a result of ignorance of the risk factors associated with it. This study therefore, will help to document the preventive health behaviour of Non-Teaching Staff in the hospital environment and their knowledge of hypertension and its risk factors.

However, your honest response to these questions will provide information to the issue being investigated. The questionnaire that you are requested to fill is anonymous and therefore does not require your name, address or any mode of identifying your person. The information is strictly confidential and it is for research purposes only. Kindly answer the questions correctly, accurately and sincerely.

Thanks for sparing your time.

DATE \_\_\_\_\_

Questionnaire number: _____
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#### SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

**Instruction:** Kindly respond correctly to the questions below without holding back any piece of information. Tick correctly against the option.

No	Question	Response/Options	Code
1	Sex	1. Male 2. Female	
2	Age in years		
3	Educational qualification	1. Primary education; 2. Secondary education; 3. HND/Bachelor; 4. Postgraduate	
4	Marital status	1. Single; 2. Married; 3. Divorced 4. widow/widower	
5	Religion:	1. Christianity; 2. Islam; 3. Traditional; 4. Other (Specify)	
6	Ethnic Group	1. Yoruba; 2. Hausa; 3. Igbo; 4. Other (Specify)	
7	Administrative rank	1. Senior staff; 2. intermediate; 3. Junior staff	
8	Department/unit		
9	How long have you worked in this Institution?		
10	When did you join the college/institution?		
11	What is your present position?		

#### SECTION B; KNOWLEDGE OF RISK FACTORS OF HYPERTENSION

No	Question	Response/Options	Code
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12	Hypertension is a -----	<ol style="list-style-type: none"> <li>1. Chronic condition that mainly affects the heart, brain and kidney (1pts)</li> <li>2. Disease that comes with old age only(1pts)</li> <li>3. An increase /elevation in the blood pressure above normal(2pts)</li> <li>4. Normal disease that could affect anybody (0pt)</li> </ol>	
13	Which of the following is the normal range of blood pressure?	<ol style="list-style-type: none"> <li>1. 130/85mmHg; (2pt)</li> <li>2.140/ 90 mmHg(0pts)</li> <li>3.160/100 mmHg; (0pt)</li> <li>4.180/110 mmHg (0pt)</li> </ol>	
14	The following organs in the body are affected/damaged by hypertension except	<ol style="list-style-type: none"> <li>1. Heart; (0pt)</li> <li>2.Ear; (2pts)</li> <li>3. Kidney; (0pt)</li> <li>4. Brain (0pt)</li> </ol>	
15	Which of the following is a symptom of hypertension	<ol style="list-style-type: none"> <li>1. Head arch; (0pts)</li> <li>2.malaria and typhoid(0pts)</li> <li>3. Diarrhoea; (0pts)</li> <li>4.none of the above(2pts)</li> </ol>	
16	The best way to prevent hypertension is	<ol style="list-style-type: none"> <li>2. screening/early detection(1pts)</li> <li>2.cessation from drinking too much alcohol and cigarette smoking(1pts)</li> <li>3.regular exercise and healthy diet(1pts)</li> <li>4.all of the above(2pts)</li> </ol>	
17	Who does hypertension affect?	<ol style="list-style-type: none"> <li>1. Men of all age(1pts)</li> <li>2. Women of all age(1pts)</li> <li>3. Men and women of all age who indulge in an unhealthy life style(1pts)</li> <li>4. All of the above(2pts)</li> </ol>	
18	Hypertension can lead to the following diseases except	<ol style="list-style-type: none"> <li>1. Heart attack(0pt)</li> <li>2. Stroke and blindness(0pt)</li> <li>3. Renal diseases(0pt)</li> <li>4. Diarrhoea(2pts)</li> </ol>	
19	The following are the risk factors of hypertension except	<ol style="list-style-type: none"> <li>1. Cigarette smoking and too much alcohol consumption(0pt)</li> <li>2. Too much salt in the diet(0pt)</li> <li>3. Physical inactivity(0pt)</li> <li>4 talking too much(2pts)</li> </ol>	
20	Which of the following statement is true about hypertension?	<ol style="list-style-type: none"> <li>1. Unhealthy diet including consumption of fast foods and high salt intake can never cause hypertension(0pts)</li> <li>2. One can decide not to exercise at all and yet will not develop hypertension(0pt)</li> <li>3. Healthy behaviour including routine screening for blood pressure and healthy life style and diet can prevent hypertension(2pts)</li> <li>4. You are liable to having hypertension at a certain age in your life no matter what you do(0pt)</li> </ol>	

21	Which of the following statement is not true about hypertension?	1. The higher the blood pressure, the higher the risk of stroke, renal failure and heart attack (0pt) 2. Hypertension is a silent disease(0pt) 3. Complication of hypertension is not always severe(2pts) 4. Hypertension can run in a family(0pt)	
<b>TOTAL KNOWLEDGE SCORE(X)=20</b>			
<b>MAXIMUM OBTAINABLE SCORE=</b>			

**SECTION C.: PREVENTION HEALTH-SEEKING BEHAVIOUR TOWARDS HYPERTENSION**

Kindly indicate on the 4-point scale how much you AGREE (A), STRONGLY AGREE (SA); DISAGREE (D), STRONGLY DISAGREE (SD) to the following statements.

S/N	STATEMENT	A	SA	D	SD	Code
23	I consume alcohol because is good for the body no matter the quantity A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
24	I do not smoke Cigarette because it can cause hypertension. A(1)- 1pt; SA(2)-2pts; D(3)-0pt; SD(4)-0pt					
25	I consume fast foods regularly and I don't think I can develop hypertension through that. A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
26	I exercise regularly to prevents the chances of developing hypertension A(1)- 1pts; SA(2)-2pts; D(3)-0pt; SD(4)-0pt					
27	I check my blood pressure regularly for early detection of hypertension A(1)- 1pts; SA(2)-2pts; D(3)-0pt; SD(4)-0pt					
28	I take too much cholesterol- containing food no matter how hard I try to stop it. A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
29	I Consume a lot of alcohol whenever am stressed or depressed and it does not affect me. A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
30	I put salt in my food while eating at all time and I don't think it has anything to do with hypertension A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
31	I do not develop hypertension through cigarette smoking A(1)- 0pt; SA(2)-0pt; D(3)-1pts; SD(4)-2pts					
32	I smoke cigarette and I can't develop hypertension through that A(1)- 1pt; SA(2)-2pt; D(3)-0pts; SD(4)-0spts					
<b>TOTAL ATTITUDE SCORE(M)=20</b>						
<b>MAXIMUM OBTAINABLE SCORE(N)=</b>						

No	Question	Response/option	Code
34	Are you hypertensive?	1.Yes; 2.No	
35	If yes to Q34, how did you know you are hypertensive		
36	Have you ever been told by a health professional that you are hypertensive?	1.Yes; 2.No	
37	Give reasons for your answer to question 30		
38	Have you ever been admitted because you are hypertensive?	1.Yes; 2.No; 3. Not applicable	
39	Are you on any drug to control your blood pressure?	1. Yes; 2. No 3. not applicable	

#### SECTION D: PREVALENCE OF HYPERTENSION

40. Body mass index (BMI) measurement

Weight(kg)	
Height (m <sup>2</sup> )	
Mean BMI (kg/ m <sup>2</sup> )	

< 18.5 kg/ m<sup>2</sup>-----Undernourished **(1)**

>18.5-25 kg/ m<sup>2</sup>---Normal **(2)**

>25 < 30 kg/ m<sup>2</sup>---Overweight **(3)**

> 30 kg/ m<sup>2</sup>-----Obesity **(4)**

410. Are there any known environmental factors that predispose you to hypertension?

1.Yes  2.No

42. If yes to the above question, what are the environmental factors? -----

43-.Hypertension measurement

CATEGORY	SYSTOLIC	DIASTOLIC	CODE
Optimal	<120	<80	<b>1</b>
Normal	<130	<85	<b>2</b>
High normal	130-139	85-89	<b>3</b>
Grade 1 HT	140-159	90-99	<b>4</b>
Grade 2 HT	160-179	100-109	<b>5</b>
Grade 3 HT	>180	>110	<b>6</b>

No	Questions	Response/Option	code
44	What can make a staff check his/her blood pressure regularly?		
45	What can make a staff abstain from eating food that can predispose to hypertension regularly?		
46	How could a Staff be motivated to check his/her blood pressure regularly?		
47	In what ways does the work environment affects the preventive health behaviour of the staff in relation to hypertension?		
48	How easy it is for you to practice preventive health behaviour?		

49	What can make a staff to abstain from too much alcohol consumption?		
50	What can motivate you to exercise regularly?		
51	How can the work environment encourage staff to practice preventive health behaviour in relation to hypertension?		
52	What are the things in this work environment that can promote healthy lifestyle towards hypertension prevention?		
53	How easy it is for Staff to have access to health information in relation to hypertension?		
54	How easy it is for Staff to have access to the health facilities within the work place in relation to hypertension?		
55	What do you think could be done to prevent hypertension?		

**SECTION E: FACTORS INFLUENCING PREVENTIVE HEALTH BEHAVIOUR**

**TOWARDS HYPERTENSION.**

**APPENDIX II**

**KEY INFORMANT INTERVIEW GUIDE**

**PREVENTIVE HEALTH SEEKING BEHAVIOUR RELATING TO HYPERTENSION  
AMONG ADMINISTRATIVE NON-TEACHING STAFF OF COLLEGE OF  
MEDICINE, IBADAN, OYO STATE**

**A. INTRODUCTION**

I am a postgraduate student from the Faculty of Public Health college of Medicine, University of Ibadan. I am grateful to you for accepting to be interviewed. This interview will focus on knowledge, attitude and prevalence of hypertension as well as factors influencing the

preventive health seeking behaviour of Administrative Staff. This interview is based on your good position in this College of Medicine. In this interview, your views will be respected and will not be used against anyone. No response will be judged right or wrong. I also seek your permission to use a tape recorder so that I can adequately capture all the views that will be expressed by you. This interview will last between 20 to 40 minutes. I assure you that all that will be discussed here will be confidential.

## **B. KEY INFORMANTS INTERVIEW QUESTIONS**

1. When did you join the college?
3. How long have you worked in this institution?
4. What is your status presently?
5. What are your educational qualifications?
6. What is hypertension?
7. How do you know if somebody is hypertensive?
8. What are the causes of hypertension and the signs and symptoms associated with it?
9. What organs in the body does hypertension affect/damage most?
10. What other diseases can result from hypertension?
11. How often do you check your blood pressure and when last did you check it?
12. Why should you encourage regular exercise
13. How much alcohol do you consume per day?
14. What body measurement can you use to determine your risk of becoming hypertensive?
15. What is your Body Mass Index?
16. How do you know your BMI and your blood pressure?
17. What can influence a staff to check his/her blood pressure regularly?
18. In what ways does the work environment affects the preventive health behaviour of the staff in relation to hypertension?
19. How easy is it using the health facilities within the work environment by staff?
20. What are the things in this work environment that can promote healthy lifestyle towards hypertension prevention?
21. What food items can predispose to hypertension?
22. What food items can prevent hypertension?
23. How often do you eat those food items?

**APPENDIX III**

**WORK-PLACE INFORMATION AGAINST HYPERTENSION**

- **Check your blood pressure once every month**
- **Check your Body Mass Index once every month**
- **Walk around after taking a lunch**

- **Exercise your feet by walking around after working for 2 to 3hrs**
- **Eat more of fruits and vegetable regularly**
- **Avoid late dinner (not later than 9am)**
- **Do not lie down immediately after eating your dinner**
- **Take at least 8 glasses of water every day**

**It takes discipline, determination and commitment to live and maintain a healthy lifestyle, remember health is wealth (John, 2002).**

UNIVERSITY OF IBADAN

#### **APPENDIX IV**



**INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IMRAT)**  
**COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN, IBADAN, NIGERIA.**

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**Ag. DIRECTOR: Professor Adeyinka G. Falusi, B.sc (Hons), M.Phil., Ph.D.**

UI/UCH EC Registration Number: NHREC/05/01/2008a

**NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW**

**Re: Preventive Health Seeking Behaviour on Hypertension among Non-Teaching Staff of College of Medicine, University College Hospital, Oyo State**

UI/UCH Ethics Committee assigned number: UI/EC/10/0131

Name of Principal Investigator: Uchechi M. Ukeni

Address of Principal Investigator: Department of Health Promotion & Education,  
College of Medicine,  
University of Ibadan, Ibadan

Date of receipt of valid application: 28/07/2010

Date of meeting when final determination on ethical approval was made: 21/10/2010

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from 21/10/2010 to 20/10/2011. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

*The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.*



**Dr. A. A. Adenipekun,**  
Chairman, Medical Advisory Committee,  
University College Hospital, Ibadan, Nigeria  
Vice- Chairman, UI/UCH Ethics Committee  
E-mail: [uinchire@yahoo.com](mailto:uinchire@yahoo.com)

**Research Units: • Genetics & Bioethics • Malaria • Environmental Sciences • Epidemiology Research & Service  
• Behavioural & Social Sciences • Pharmaceutical Sciences • Cancer Research & Services • HIV/AIDS.**