

**KNOWLEDGE AND PERCEPTION ABOUT HYPERTENSION AND ITS RISK  
FACTORS AMONG STAFF OF IBADAN NORTH LOCAL GOVERNMENT,  
IBADAN, NIGERIA**

**BY**

**Adunola Funke AKINLADE  
B.Sc Public Health (Babcock)  
MATRIC NO: 181472**

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## CERTIFICATION

I certify that this was carried out by AdunolaFunke AKINLADE under my supervisor at the Department of Health Promotion and Education, Faculty of Public Health College of Medicine, University of Ibadan, Ibadan, Nigeria.

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Supervisor

Prof. Oladimeji Oladepo

B.Sc., MPH, Ph.D (Ibadan), FRSPH (UK)

Department of Health Promotion and Education

Faculty of Public Health, College of Medicine

University of Ibadan, Ibadan, Nigeria

## DEDICATION

This project work is dedicated to God Almighty for the previous gift of life, hope, wisdom strength and courage and for giving me the grace to complete this project work

Also to my beloved parent for being supportive financially, prayerfully and for their continual love and untiring care.

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## ABSTRACT

Hypertension and other non-communicable diseases are currently responsible for at least 20% of all deaths in Nigeria. It cannot be denied that early detection and treatment of hypertension reduces the risk of cardiovascular diseases. Healthy behavioral life style is indispensable for the prevention and improvement of hypertension management. This study therefore investigated knowledge, perception and behavioral risk of hypertension among staff of Ibadan North Local Government Secretariat.

A cross-sectional survey involving 288 consenting staffs of Ibadan North Local Government Secretariat was conducted. Participants were recruited using multistage sampling from the 7 departments in the local government secretariat. Respondents were interviewed using a semi-structured pre-tested self-administered questionnaires collecting socio-demographic information, assessing knowledge, perception and behavioral risk factors of hypertension. Data were analyzed using descriptive statistics, Chi-square and Correlation at  $p=0.05$ . Knowledge was assessed on a 22- point scale and scores  $\geq 15$  were regarded as good. Perception was assessed on a 12-point scale and scores  $\geq 7$  were categorized as High perception. Practice of behavioral risk factors among the respondent were also analyzed using appropriate statistical indices.

Age of respondent was  $38.80 \pm 8.70$  years and 55.6% were male. Majority of the respondents (93.1%) were Yoruba, 80.2% were married and 51.4% were Muslims. Most of them (72.6%) had tertiary education. About half (51.0%) correctly defined HBP and few (29.5%) could identify normal BP readings. Majority of the respondent (60.4%) knows that hypertension cannot be contracted from someone who has it while 62.2% reported that taking too much of alcohol can predispose someone to hypertension. Majority of the respondents (70.0%) reported that exercising regularly could prevent the onset of hypertension but 61.5% agreed for individual with increased blood pressure to fried food or eat diet rich in cholesterol. About 79.9% believed that monitoring blood pressure is very important to prevent high blood pressure Majority of the respondents (79.2%) perceived hypertension to be a silent killer but Majority of the respondents (56.6%) stated that hypertension is as a result of ageing and no need for treatment. Majority 62.5% do not perceive change in lifestyle as a way of controlling blood pressure. About 40.3% perceived witches and witchcraft as cause of hypertension. Majority of the respondents (66.7%) reported that being permanently disabled due to hypertension would be so dangerous and make

one become a burden to one's family. The practice among the respondent on risk of hypertension is encouraging among the studied participant as fruits (60.1%) and vegetable (67%) were consumed often. Majority (89.9%) do not smoke and 80.6% do not take alcohol. About 87.8% do not eat food with high salt and 59.7% reported not to eat junks or fast foods.

Respondents' knowledge about hypertension was fair yet the respondents abstains from some of the risk behaviours of hypertension. Health-oriented health education that focus on diseases and risk factors should be encouraged and maintained in workplaces to increase knowledge and to ensure workers lives a healthy lifestyle which will invariably increase productivity.

**Keywords:** Hypertension, knowledge, perception, risk factors.

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## ACRONYMS

AHA	American Health Association
BP	Blood Pressure
CDC	Center for Disease
CHD	Chronic Heart Disease
CKD	Chronic Kidney Disease
CRF	Chronic Renal Failure
CVD	Cardiovascular Disease
DALY	Daily Life Adjusted Years
DASH	Dietary Approach to Stop Hypertension
HBP	High Blood Pressure
HF	Heart Failure
HT	Hypertension
MMHG	Millimeter Mercury
NCD	Non Communicable Disease
WHO	World Health Organization

## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background of the Study

Hypertension (HPT) is a non-infectious disease of the cardio-vascular system which is shown by a consistently elevated systolic blood pressure of 140mmHg (Millimeter of Mercury) and diastolic of over 90mmHg. The term is synonymous to the medical condition “High Blood Pressure (HBP)” which could be mild, moderate and severe (Egan et al., 2003). Ideally, there are two different types of hypertension according to Oscar et al., (2015), they are essential or primary hypertension and secondary hypertension; whereas, primary hypertension is the most common type and over 90% of hypertension cases fall within this category whilst the causes are deeply rooted in genetic, socioeconomic and environmental factors (Goodfriend, 1983; Mlunde, 2007). Secondary hypertension may be due to renal, endocrine and cardiovascular causes.

Hypertension is classified as a chronic or non-infectious disease meaning that it is not caused by a pathogen or organism of parasitic or non-parasitic nature, rather it is caused by gradual degradation of single or multiple body systems by factors some of which are controllable with healthy lifestyle and health promoting policies. (Bi et al., 2014) Current studies by the Institute of Medicine of the United States of America (2010) estimated that over 20 million adults in sub-Saharan Africa suffer from High BP and that adequate treatment could prevent up to 250, 000 deaths yearly from HPB/HPB related causes. Also that it is under-diagnosed due to lack of subject matter specialists/adequate health work force to develop effective preventive methods including dissemination of the knowledge and awareness of the disease (Abdullahi&Amzat), 2011.

Hypertension is a leading risk factor for morbidity and mortality (Wang et al 2010). Hypertension has a major economic impact ranging from medical costs to human capital loss and decrease in productivity (He et al., 1999).Hypertension is a common medical condition worldwide. It is an important public health challenge because of the associated morbidity, mortality, and the cost to the society.(Gudina, Michael, & Assegid, 2013). Hypertension and related cardiovascular diseases are today the world’s Public Health principal enemy, because they account for more than six million deaths every year in developing country (Adebanjo and Arulogun 2015). The

emergence of hypertension and other Cardio Vascular Diseases as a public health problem in these countries is strongly related to the aging of the populations, urbanization, and socioeconomic changes favouring sedentary habits, obesity, alcohol consumption, and salt intake, among others (Aubert et al., 1998). The disease has been confirmed by many studies as a primary cause of stroke and a major cause of cardiovascular disease, coronary heart disease, heart failure, heart disease and blindness (Faronbi, Oladepo, Faronbi, & Olaogun, 2014). It is also associated with diabetes and renal morbidity (Lam & Guirguis, 2010).

According to (Shaikh et al., 2011), risk factors of Hypertension appear wide spread over regions and may differ within regions. It is higher in urban areas comparative to rural areas and lesser in the poor than the rich or low socio-economic status; those with higher salt intake especially sodium consumption to the detriment of potassium found in fruits and vegetables; co-existence of other chronic diseases such as diabetes; those with organ damage from any cause and those who do not have access to health promotion information are all at higher risks. (Shaikh et al., 2011)

There are increasing evidences that High Blood Pressure reflects acquisition of cumulative risks over time rather than a one-stop-shop of a single risk value. According to Yach et al., (2012) a high level of knowledge and awareness of these risk factors and pattern of accumulation among community members enhances health promotion efforts and interventions.

### **1.1 Statement of the Problem**

Hypertension is the most common chronic disease with sudden onset, and it is called the “silent killer” because it progressively and permanently damages organs. Hypertension causes several heart, brain and kidney diseases, resulting in severe and life-threatening complications, as well as death (Wilson, 1973). Non-communicable diseases including hypertension are among the leading causes of preventable morbidity and related disability.

The burden of Non-Communicable Diseases (NCDs) such as hypertension is increasing in epidemic proportions in Africa. According to the World Health Report 2001, NCDs accounted for 22% of the total deaths in the region in the year 2000; cardiovascular diseases alone accounted for 9.2% of the total deaths, killing even more than malaria (Gudina et al., 2013). It causes about 7.1 million deaths per year

(Ekwunife et al., 2010). High blood pressure represented 5.6% of the global DALY loss with more than five-sixth of this burden occurring in low and middle-income countries (Faronbi et al., 2014). The estimated number of adults with hypertension in 2001 was 957 to 987 million of which 625 to 654 million were in economically developing countries like Nigeria. The number is predicted to increase to 1.56 billion by the year 2025 (Faronbi, 2014).

In Nigeria, hypertension is the number one risk factor for stroke, heart failure, ischemic heart disease, and kidney failure. With an increasing adult population as well as rising prevalence of hypertension, Nigeria will experience economic and health challenges due to the disease if the tide is not arrested (CDC, 2010) Nigeria is classified as a low-middle income country with a Gini Index of 43.7 and income per capital of \$1490. 49% of the population is living in urban areas; the gross national income per capita is \$2070. Life expectancy at birth is 51 years for both sexes (53 for men and 54 for women). The probability of dying between 15 and 60 years for men and women (per 1000 population) is 377 and 365 respectively. Non-communicable diseases contribute about 14% of the number of years of life lost (CDC, 2010).

In Nigeria, hypertension is by far the commonest risk factor for congestive heart failure. In the Abeokuta heart failure (HF) registry, hypertension was responsible for 78.7% of Heart Failure in the city. It was also responsible for 62.6%, 56.3%, 57% and 44.1% of heart failure cases in Abuja, Port Harcourt, Jos, and Uyo respectively. The situation is further compounded by the fact that as in many populations of the world, the awareness of hypertension is low in Nigeria. In four of the studies, the reported awareness rates were 14.2% in rural areas by Oladapo et al,(2013) 18.5% in Edo State, and 29.4% and 30.0% in semi-urban and urban populations in Enugu State (Okechukwu et al., 2012)

## **1.2 Justification of the Study**

In order to improve the quality of life and decrease mortality and disability in middle-aged and older persons, there is a need to reduce the prevalence of hypertension. One of the challenges and limitations to effective blood pressure control in Nigeria is the inability to develop cost-effective, population-based, health promoting strategies for primary prevention of hypertension (Adebisi & Samali, 2013). It cannot be denied

that early detection and treatment of hypertension reduces the risk of cardiovascular diseases.

In Nigeria, less than one- third of people with hypertension undergo medications and less than one-third of those undergoing treatments have their problems being absolutely managed (Abdullahi & Amzat, 2011). Results have showed a poor detection, treatment and control of hypertension in Africa (Ekwunife et al., 2010). The inability to adequately manage hypertension in Nigeria can be attributed to inadequate knowledge about the risk factors and the relevance of regular monitoring of blood pressure. Adequate knowledge of a disease condition has been reported to influence patients 'attitude and practice in the management of their illnesses, and improving knowledge is known to improve compliance with treatment in conditions such as hypertension(Awotidebe et al., 2013).

Oyo State Hypertension morbidity rates have been put roughly at about 60% of all hospital admissions and 20% of all-cause mortality in 2010 with a disproportionate loss of income for most of the households whose bread winners are victims of the said mortality and morbidity (WHO, 2010). Therefore, there is a need to assess the knowledge, prevalence, perception and the risk factors of hypertension to be able to deduce the level of knowledge and the kind of intervention that fits best.

This is why this study is aimed at determining the knowledge, perception and practice of behavioral risk factors on hypertension among secretariat staff in Ibadan North West Local government Area, Ibadan. The result gathered from the study can be used in designing effective health education strategy for the management of high blood pressure for specific subpopulation. The information when published can also be used by policy makers to formulate healthy policies to for future control effort.

### **1.3 Research Questions**

- What is the level of Knowledge of hypertension amongst the staff Local Government Secretariats in Ibadan?
- What are the perceptions of the staff in Local Government Secretariats in Ibadan about Hypertension and its risk factors?
- What are the practices of behavioural risk factors associated with Hypertension among staff of the Local Government Secretariats in Ibadan?



#### **1.4 Broad Objectives**

The broad objective of this study is to assess knowledge and explore perception about Hypertension and its risk factors among the Staff of Ibadan North Local Government Secretariat.

#### **1.5 Specific Objectives**

The specific objectives of the study are:

- To assess respondents knowledge of hypertension among the staff of Ibadan North Local Government Secretariats in Ibadan.
- To explore the perception of the staff of Local Government Secretariats in Ibadan about hypertension.
- To identify the risk factors for Hypertension among Local Government Secretariats in Ibadan.

#### **1.6 Research Hypotheses**

The following hypotheses were tested by the study

Ho1 There is no association between knowledge of hypertension and gender.

Ho2 There is no association between knowledge of hypertension and level of education

Ho3 There is no association between knowledge of hypertension and perception about hypertension

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Overview of Hypertension

Hypertension is a public health problem and a term used to describe High Blood pressure (HBP). It has been called a silent killer as it is usually without symptoms. It is a condition in which the arteries have persistently elevated blood pressure. Every time the human heart beats, it pumps blood to the whole body through the arteries (Shaikh et al., 2011) resulting to repeatedly elevated blood pressure exceeding 140 over 90 mmHg whereby a systolic pressure is above 140 with a diastolic pressure above 90. However, normal blood pressure is below 120/80mmHg; readings between 120/80mmHg and 139/89mmHg is called pre-hypertension. The systolic blood pressure is particularly important and is the basis for diagnosis in most patients (Michael, Weber, 2013).

According to the WHO, hypertension is divided into three grades. Grade one is assigned to a systolic blood pressure between 140 and 159mmHg and a diastolic pressure between 90 and 99mmHg. Grade two Hypertension is assigned to a systolic blood pressure between 160 and 179mmHg and a diastolic pressure between 100-109mmHg. Grade three on the other hand is assigned to a systolic blood pressure of 180mmHg and above and a diastolic pressure of 110mmHg or greater. According to (Michael et al., 2013), there is a close relationship between blood pressure levels and the risk of cardiovascular events, strokes, and kidney disease. The risk of these outcomes is lowest at a blood pressure of around 115/75 mm and for every 20mmHg increase in systolic blood pressure or 10 mm Hg increase in diastolic blood pressure, the risk of major cardiovascular and stroke events doubles.

Hypertension may also be classified as essential or secondary. Essential hypertension is the term for high blood pressure with unknown cause. It accounts for about 95% of cases. Secondary hypertension is the term for high blood pressure with a known direct cause, such as kidney disease, tumours, or birth control pills. "Essential" hypertension has no identifiable cause. It may have genetic factors and environmental factors, such as salt intake or others. Essential hypertension comprises over 95% of all hypertension. "Secondary" hypertension on the other hand is hypertension caused by another disorder. (Shaikh et al., 2011).

Hypertension takes a long time before diagnosed thereby causing major health problems as stroke and other cardiovascular diseases. Damage to organs as the brain, heart, kidneys and eye and so on are the long term effect of high blood pressure disease. (Kofi, 2011)

## 2.1 Stages of hypertension

According to (Ekwunife, 2010), the elevation in blood pressure can be divided into three classes of hypertension which include the prehypertension stage which describes blood pressure measurements of greater than 120 mm Hg systolic or 80 mm Hg diastolic and less than 130 mm Hg systolic or 90 mm Hg diastolic. The second classification of hypertension is Stage 1 hypertension and is defined by a blood pressure of over 130 mm Hg systolic or 90 mm Hg diastolic but less than 160 mm Hg systolic or 100 mm Hg diastolic. Stage 2 hypertension is defined by a blood pressure greater than 160 mm Hg systolic or 100 mm Hg diastolic. Persons with Stage 2 hypertension are encouraged to make life-style modifications.

**Table 2.1 Shows the stages of hypertension**

Classification	Normal Stage 1	Stage 1 Hypertension	Stage 2 Hypertension	Stage 3 Hypertension
Descriptive category	Normal blood pressure or rare blood pressure elevations and no identifiable cardiovascular disease	Occasional or intermittent blood pressure elevations and early cardiovascular disease	Sustained blood pressure elevations or progressive cardiovascular disease	Marked and sustained blood pressure elevations or advanced cardiovascular disease event
Cardiovascular risk factors (Table II)	None or few	Several risk factors	Many risk factors present	Many risk factors present
Early disease markers	None	Usually present	Overtly present	Overtly present with progression
Target organ disease (Table IV)	None	None	Early signs present	Overtly present with or without CVD events

(CDC 2010)

## 2.2 Global Burden of Hypertension

According to the Global Burden of Disease Analysis (2010), Hypertension was said to be common worldwide, affecting an estimated billion people, nearly three-quarters of these people live in low or middle income countries. Hypertension is second, after smoking. In most individuals it is easily treated and controlled, with effective control reducing deaths and disability from a number of conditions, including cerebrovascular, cardiovascular, and renal disease. Yet in both developed and developing countries, a significant proportion of people with Hypertension remain unaware of their diagnosis, and of those who are aware, only a minority are treated and have their Hypertension successfully controlled (Aung et al., 2012).

Hypertension is a worldwide epidemic. Moreover, hypertension is the most important modifiable risk factor for coronary heart disease (the leading cause of death in the U.S. population), stroke (the third leading cause of death), congestive heart failure, end-stage renal disease,

According to the World Health Organization (WHO), in 2008, an estimated 36 million of the 57 million worldwide deaths were due to non-communicable diseases (NCD). These diseases included primarily cardiovascular diseases, cancers, chronic respiratory diseases and diabetes, including approximately 9 million deaths before the age of 60, with nearly 80% of these deaths occurring in developing countries (Ekwunife, 2010). Hypertension had a prevalence of 26.4% in the worldwide adult population in 2000 (26.6% in men and 26.1% in women). The total number of hypertensive adults was 972 million: 333 million were in more economically developed countries, and 639 million were in less economically developed countries (Sani et al., 2010) Furthermore, hypertension is one of the leading causes of premature death worldwide, accounting for 7.6 million deaths in 2001 (Ekwunife, 2010). The number of adults with hypertension in 2025 was predicted to increase by 60% to a total of 1.56 billion adult (Kearney 2004).

According to Enabulele, (2000), the prevalence of hypertension is also increasing globally. "In 2000, 972 million people had hypertension with a prevalence rate of 26.4 percent. These are projected to increase to 1.54 billion affected individuals and a prevalence rate of 29.2 percent in 2025. Incidence rates of hypertension range from three to 18 percent depending on the age, gender, ethnicity, and body size of the population studied.

Incidence rates of hypertension range from 3% to 18% depending on the age, gender, ethnicity, and body size of the population studied (Ifeoma et al., 2011). The reported prevalence of hypertension varied around the world affecting both developed, developing and under developed countries.

### **2.3 Prevalence of Hypertension in Africa and Nigeria**

Hypertension remains the most rapidly rising cardiovascular disease in Africa (Ike, Aniebue&Aniebue, 2010). The prevalence of high blood pressure is at its peak in some low-income countries in Africa, with over 40 percent of adults in many African countries at risk of being affected(Addo, Smeeth, & Leon, 2007).

The excess of hypertension among blacks has been recognized since early in this century and explains a substantial portion of the black health disadvantage. In a cohort study begun in the 1970s, hypertension accounted for 20% of all-cause mortality among blacks, compared to 10% among whites. National data on trends in hypertension (140/90 mm Hg or treatment) prevalence from 1960 to 1990 suggest a decline from 44% to 32%, although differences in survey technique likely account for this pattern. During this period the prevalence ratio of black: white remained constant at 1.5, suggesting that secular trends in causal factors, if any, effected both groups equally (Kayima, Wanyenze, Katamba, Leontsini, & Nuwaha, 2013).

The overall prevalence of hypertension in Nigeria ranges from 8% to 64% (Ogah, 2012), depending on the study target population, type of measurement and cut-off value used for defining hypertension(Egbi, Rotifa& Jumbo, 2015). This difference in prevalence is partly due to changes in definition of hypertension from 160/95 mmHg earlier to 140/90 mmHg. In a study of the prevalence and patterns of hypertension in a semi-urban community in South Western Nigeria, Adedoyin et al (2008) demonstrated that with a cut-off value of  $\geq 140/90$  mmHg for the diagnosis of hypertension, the prevalence was 36.6% (isolated systolic hypertension (ISH) in 22.1% and isolated diastolic hypertension (IDH) in 14.5%).In a recent study carried out among adult of 18years and above, in southern Nigeria, the overall prevalence of hypertension was 37.6% (males 43.7%, females 35.1%,  $p = 0.018$ )Hypertension was defined as systolic BP  $\geq 140$  mmHg and/or diastolic BP  $\geq 90$  mmHg according to the Joint National Committee on Hypertension(Isara& Okundia, 2015). In another study conducted among rural adult population in south western Nigeria by Adebayo et al., (2013)The prevalence of hypertension, based on the 140/90 mmHg definition, was

26.4% (Male: 27.3%; Female: 25.4%). The prevalence of hypertension, based on the 160/95 mmHg definition, was 11.8% (Male: 13.5%; Female: 10.1%).

A study conducted by Egbi, Rotifa & Jumbo, (2015) in Yenegoa, Nigeria reported crude and age-adjusted prevalence of hypertension among the hospital employee was 21.3% and 23.8% respectively. Similar studies, among civil servants working in the Bayelsa State, South-South Nigeria had put the prevalence of hypertension at 27.8%. (Egbi, et al., 2013), in Port Harcourt, a nearby town in Rivers State, Onwuchekwa et al., (2012) have reported prevalence of 32.0% among civil servants and 30.0% among professionals including engineers, lawyers and accountants. Furthermore in Port Harcourt, Ordinioha et al., (2013) revealed prevalence of 21.3% among lecturers.

High blood pressure also contributed to the burden of adult medical admissions in Uyo (Southern Nigeria): hypertension related heart failure, stroke or severe uncontrolled hypertension. This was shown to be commoner in the wet seasons of the year. In Sokoto (Northwestern Nigeria), Isezuo et al documented hypertension related admissions in 440 subjects admitted in a tertiary centre between 1995 and 2000. Hypertension related morbidities included heart failure (36.4%), stroke (34.8%) and chronic renal failure in 7.1% and other conditions in 21.7%. Hospital admissions for hypertension related morbidities were more generally higher in the rainy season than the dry season.

Kolo et al., (2012) studied hypertension related admissions and outcomes in a tertiary hospital in Bauchi (North Eastern Nigeria). They documented that out of the 3108 admissions into the medical ward of the hospital, 735 (23.7%) were related to hypertension with an excess mortality of 42.9%. Stroke was the commonest complication, accounting for 44.4% of cases and had the highest mortality (39.3%). This was followed by chronic kidney disease (36.6%), hypertensive emergencies (30.9%) and heart failure which had the least intra hospital mortality of 27.5%. According to a sport capture study by Abdulsalam et al., (2014), it was deduced that prevalence of hypertension in Oyo State was high (22.9%) and the awareness was low (10.71%). The earliest and first large scale study of blood pressure in Nigerians was by Abrahams et al. The study was conducted in a rural town of Ilora which is about 50 km north of Ibadan. They noted, like most other studies conducted during that period,

in Caucasians and American Blacks that blood pressure rose with age in both men and women.

#### **2.4 Knowledge about Hypertension among Workers**

According to Abdullahi & Amzat (2011), the inability to adequately manage hypertension in Nigeria can be traced to inadequate knowledge about the risk factors and its associated complications. In a study carried out among staff of University of Ibadan, the knowledge of the risk factors attributed to hypertension was relatively low and inadequate although knowledge about complications was considerably high with more than 80% of them believing that hypertension can cause stroke, heart-attack which could eventually lead to death (Abdullahi & Amzat, 2011). In another study among non-academic staff elsewhere in Nigeria, Adika et al. (2011) reported over half the respondents to have correctly reported the link between hypertension and heredity. On the other hand, findings of this study slightly over half of the respondents could not link positive family history of hypertension and acquiring of hypertension.

A study carried out among bankers and traffic wardens in Ilorin revealed that over 25% of the bankers do not know whether cigarette smoking, alcohol or high salt intake is a risk factor for hypertension and at least 20% of them do not know of obesity being a risk factor while at least 25% of the traffic wardens do not know if cigarette smoking, obesity, family history or sedentary lifestyle is a risk factor for hypertension (Salaudeen, Musa et al., 2014). This shows the need for workers to be better educated about the risk factors of hypertension and should be encouraged to create time for exercise.

Aubert et al., (1998) also reported similar finding that most people in countries undergoing epidemiological transition had good basic knowledge related to hypertension determinants and consequences, possibly due to nationwide cardiovascular disease prevention programs that are getting little attention recently. However, it does not translate to favourable outcome expectation, positive attitudes, and appropriate practices for hypertension and relevant healthy lifestyles. Among staff and students of a tertiary institution in Nigeria, the level of awareness was found to be 21.6% while 78.4% were unaware of their hypertensive state (Mwuese & Chinyere, 2013). In Tanzania, a study by Mbuya, Fredrick and Kundi (2014) among staff of higher learning institutions, of the respondents, 43.2% (60/139) were able

to identified heredity as cause of hypertension. Increasing age was correctly identified as one of risk factors for hypertension by 36.7% (51/139) respondents. The study concluded that the knowledge of the causes, signs and symptoms, risk factors and complications was not as high as expected. It is important that this group of professionals is appropriately informed as regards to hypertension and other non-communicable diseases.

Health care workers can only assess and manage hypertension adequately if the patient is educated and convinced that monitoring of blood pressure and lifestyle changes when necessary are essential and the most cost effective method of preventing and managing hypertension. Health care workers can help their patients by checking blood pressure at every opportunity and by counselling patients and their families about preventing hypertension and the positive influence of lifestyle modification(Rakumakoe, 2011).

## **2.5 Perceptions about Hypertension among Workers**

Hypertension has been perceived as a common and serious problem in the community. Lay conceptions have identified hypertension as symptomatic with ambiguity over perceived symptoms. Environmental factors have been perceived as a major predisposing factor for developing hypertension. Pollution and adulteration of food, stress, high fat diet along with physical inactivity and certain attitudes are corroborated with lifestyle and environmental factors associated with the development of hypertension(Kusuma, 2009).

In a study in Nigeria by Ike, Aniebue&Aniebue (2010) found a poor level of perception of hypertension and awareness of the lifestyle modification measures, but discovered a high level of enthusiasm on the part of the participants to adopt the lifestyle measures to avoid complications. But in another study that assessed determinants and perception of cardiovascular risk factors among secondary school teachers in Oyo state Nigeria, more of the civil servant controls patronized fast food joints, over 80% of the teachers performed exercise regularly, majority were involved in brisk walking. Their high perception of risks of hypertension can be likely to the nature of their occupation.in the study, the longer the years of teaching, specialization in pure science and being male the more likely the knowledge of sedentary living as a risk factor(Familoni&Familoni, 2011).



Understanding the lay beliefs and perceptions are important as prevention and control of chronic conditions such as hypertension requires life-long adoption of healthy lifestyles.

## **2.6 Risk factors of Hypertension and its Prevalence**

Risk factors for hypertension consist of 2 categories: non modifiable risk factors and modifiable risk factors(Datta, Sen, Das, & Basu, 2015). The non-modifiable risk factors are attributes or characteristics in the individual that cannot be changed or adjusted, hence they are out of our control and little or nothing can be done to control them. such factors include age, sex, race, family history, genetic composition, etc. they including age, gender, race, genetic factors, and modifiable factors such as physical inactivity, obesity and high intake of calories, high levels of dietary sodium intake and alcohol consumption. On the other hand modifiable risk factors of hypertension are attributes, characteristics, exposures or life style patterns that can be adjusted or changed to prevent the development of the disease (Ibekwe, 2015.).

Hypertension, once rare in traditional African societies, has become a major public health problem because of high prevalence rates contrasting with low awareness, treatment and control rates. The high prevalence of hypertension in Africa is due to both urbanization and a shift towards western habits such as smoking, unhealthy diets with excess salt and fat intake, physical inactivity and consequential increased adiposity, and increasingly recognized non-traditional risk factors such as air pollution(Essouma et al., 2015). The prevalence of hypertension in Nigeria may form a substantial proportion of the total burden in Africa because of the large population of the country currently estimated to be over 170 million( Adeloye, Basquill, Aderemi, Thompson, Obi, 2015; Akinlua, Meakin, Umar, & Freemantle, 2015). Study aimed to determine the prevalence of modifiable risk factors of hypertension and to ascertain if any association exists with these risk factors and socio-demographic variables in a rural community; Oghara, Nigeria. The prevalence of hypertension was 21.0% (57/272), while the prevalence of modifiable risk factors of hypertension such as smoking, alcohol consumption and obesity are 15.8% (43/272), 43.4% (118/272) and 18.8% (51/272) respectively. There is a statistical significant association between hypertension and smoking ( $P < 0.001$ ), as well as hypertension and alcohol. ( $P < 0.001$ ) (Ibekwe, 2015). In another study in Igbeagu, a rural community in South-Eastern Nigeria, Age, consumption of red meat, body mass index (BMI), and the

number of children in the family were associated with hypertension. Regression analysis showed that only BMI and age were independent risk factors for hypertension (Ugwuja, Ezenkwa, Nwibo, Ogbanshi, Idoko, Nnabu. 2015). The prevalence of hypertension was 21.33%; out of which 12 (75.00%) were already aware of their status, and were on appropriate therapy. Only 13 (17.33%) of the lecturers were of normal weight, 45 (60.00%) were overweight, while 17 (22.67%) were obese. Only 2 (2.67%) currently smoke, while most (94.67%) drank less than three standard units of alcohol in a day, mainly in social occasions. hypertension among the lecturers in the medical school was concluded to be due to their better health-seeking behaviour and healthy lifestyle(Ordinioha, 2013).

Similar risk factors were found in studies in other countries. In the univariate analysis, done in a study among Alaska in US, female sex, aging, and living in the Yukon-Kuskokwim region were associated with having hypertension. However, in the multivariate analysis, being female and having prevalent diabetes were no longer significant correlates. Increasing age, obesity, elevated triglycerides, impaired fasting glucose, and living in the Yukon-Kuskokwim region were independently associated with hypertension prevalence(Jolly et al., 2014). In Iran, The study showed that age, metabolic syndrome and family history of disease are the risk factors of hypertension in Ahvaz population. About half of patients were unaware of their disease and only about one-fifth of them had controlled Blood pressure. Health promotion programs were suggested to improve hypertension diagnosis and management(Yazdanpanah, Shahbazian, Shahbazian, & Latifi, 2015).

In a study considering environmental and lifestyle risk factors, the conclusions were that prevalence of alcohol consumption (40.6%); sedentary lifestyle (24.8%), abnormal weight (24.0%), inadequate sleep (33.2), smoking (3.8%), significant stress (17.7%), and female use of hormonal contraceptives was 26.5%. Overweight, sex, inadequate sleep, and stress were established as positive predictors of hypertension (Bi et al., 2014).

Another study in India to assess Prevalence of hypertension and its associated risk factors among Kolkata-based policemen showed with Regression analysis identified age, body mass index (BMI), SBP, history of parental hypertension, and consumption of smokeless tobacco as the risk factors of hypertension(Datta et al., 2015).

### 2.6.1: Age

The high prevalence of hypertension in the community is currently being driven by two phenomena: the increased age of our population and the growing prevalence of obesity, which is seen in developing as well as developed countries (Michael et al., 2013). Systolic blood pressure (BP) has a progressive rise during lifetime with a difference of 20-30 mm Hg between early and late adulthood. Diastolic BP tends to be consistent until the fifth decade. The mean systolic and diastolic BP in men is higher than women in early adulthood, but this difference reverses by the sixth or seventh decade.(Yazdanpanah et al., 2015). Women are about as likely as men to develop high blood pressure during their lifetimes. However, for people younger than 45 years old, the condition affects more men than women. For people 65 years old or older, high blood pressure affects more women than men (Mozzafaria, Benjamin & Go, 2015).

A study of urban and rural communities of AkwaIbom State for the prevalence of hypertension and its predictors showed that age was also found as independent predictors of hypertension occurrence. Mean arterial blood pressure (MABP) was rising as age was increasing in both groups(Akpan, Ekrikpo, Udo, & Bassey, 2015). The life insurance data indicate that at a blood pressure level of 150/100 mm Hg men aged 50 to 59 years have twice the 20 year mortality rate as do nor ostensive persons in the same age group. In the 40 to 49 year age group for the same blood pressure level (150/100 mm Hg) the 20 year mortality increases to 3.6 times the standard risk for that age; and at ages 30 to 39 the 20 year mortality rises to 5 times the normal. Thus, even a modest elevation of blood pressure is associated with greatly increased risk when the hypertension appears at a relatively early age. Another study was conducted to assess the prevalence and determinants of hypertension and other cardiovascular disease (CVD) risk factors among a semi-nomadic Fulani population in Kano, Nigeria. In the study the most prevalent CVD risk factor was hypertension found in 28.5% of the subjects. Only 39.3% of the hypertensive were aware of it, and only 25% of the known hypertensive were taking anti-hypertensive treatment. Age was the only independent predictor of hypertension after controlling for confounding factors, and for every increase in age by 1 year, the risk of developing hypertension was increased by 6.6% (Kamilu et al., 2015).A study in Ibadan (Nigeria) among also demonstrated a highly significant correlation between increased age and the

prevalence of hypertension (Olatunbosun, Kaufman, Cooper & Bella, 2000). In a study in Bayelsa, the prevalence of hypertension was 27.8%. Obesity was found in 22.0% of participants. Age, was also found to be positively associated with blood pressure (Egbi, Okafor, Meibodei, Kunle-olowu, & Unuigbe, 2013). The increase in blood pressure with age is associated mostly with structural changes (such as stiffness) in the arteries (Channanath, Farran, Behbehani, & Thanaraj, 2015).

### **2.6.2 Race**

High blood pressure is particularly common among blacks, often developing at an earlier age than it does in whites. Serious complications, such as stroke, heart attack and kidney failure, also are more common in blacks (Mozzafaria, Benjamin & Go, 2015). A study conducted reported that race/ethnicity was a single independent predictor of hypertension, with non-Hispanic black more likely to be hypertensive compare with Hispanic, prevalence odds ratio (POR), 2.38, 99% Confidence Interval (CI), 2.17–2.61 and non-Hispanic white, POR, 1.64, 99% CI, 1.52–1.77 (Holmes, Hossain, Ward, & Opara, 2013).

The challenges to understanding the science of racial differences and disparities in cardiovascular disease are substantial. Race and ethnicity are difficult to define and classify. The biology is driven by a complex set of gene/gene, environment/environment, and gene/environment interactions. Among the environmental influences are social issues that may induce stress and potentially influence multiple physiological functions. These are difficult to measure, and understanding the biological consequences is difficult. Other social issues such as access to care have less interaction with biology, but these issues drive some of the differences in outcome (Jones & Hall, 2010).

### **2.6.3 Genetics / Family History**

Genetics accounts for more than 90 percent of hypertension cases. Hypertension tends to cluster in families and represents a collection of genetically based diseases or syndromes with several resultant inherited biochemical abnormalities. A family history of high blood pressure raises the risk of developing prehypertension or high blood pressure. Some people have a high sensitivity to sodium and salt, which may increase their risk for high blood pressure and may run in families. Genetic causes of this condition are why family history is a risk factor for this condition (NHLBI, 2015).

A study conducted to determine prevalence of childhood and adolescent hypertension and its risk factors using children and adolescents aged 5 to 19 years. Prevalence of hypertension was found to be 4.7%. It was significantly associated with family history of hypertension. High blood pressure was categorized as pre-hypertension and hypertension. Pre-hypertension was considered as blood pressure (BP) equal or greater than the age and gender specific 90th percentile after adjusting for weight and height or BP equal or more than 120/80 mm of Hg. When BP was equal or over the age and gender specific 95th percentile value, it was considered as hypertension (Essouma et al., 2015). A history of relatively early death in a parent or sibling from a hypertensive complication such as a stroke, renal failure or congestive heart failure makes it more likely that the patient with borderline or mild hypertension will progress to a more severe stage (Freis, 2013).

#### **2.6.4 Overweight or Obesity**

Obesity is a major public health problem and one of the causative factors of high blood pressure and it is the excessive storage of body fat and weight. Even though genes can put one at risk of gaining weight, the balance of energy intake and exercise is an important determinant. Body Mass Index (BMI) is calculated from weight and height. As suggested by the National Institute of Health (NIH) and WHO, the normal weight for an adult over 18 years is less than or equal to 18.5-24.9. BMI that is greater than this puts one at risk of obesity related diseases as high blood pressure (NIH, 1996). A study in Igbeagu, a rural community in South-Eastern Nigeria, found that body mass index (BMI), was associated with hypertension. Regression analysis showed that BMI is independent risk factors for hypertension. The prevalence of hypertension was 27.8%. Obesity was found in 22.0% of participants. Body mass index and blood glucose were positively associated with blood pressure (Egbi et al., 2013). Obese individuals have increased fatty tissue which elevates vascular resistance and subsequently increases the workload on the heart to pump blood. Obesity provides an impetus for sympathetic nervous system activation as well as for changes in renal structure and function. The arterial-pressure control mechanism of diuresis and natriuretic seems to shift to higher blood pressure levels in obese individuals (Channanath et al., 2015). Another designed to establish the relationship between body mass index (BMI) and blood pressure (BP) in an increasingly industrialized town in Nigeria due to the rising prevalence of hypertension in non-

industrialized countries. Factors associated with BMI and BP levels were determined in three hundred adult male and female subjects in Ota community of Ogun State, Nigeria. The levels of the overweight among the male and female subjects were 53.03% and 47.37% respectively. The levels of hypertensive male and female subjects were 40.91% and 35.34% respectively. The overweight and underweight among the hypertensive male were 54.29% and 0% respectively; while the overweight and underweight among the hypertensive female were 42.86% and 28.57% respectively. The study concluded that hypertension among the overweight, and hypotension among the underweight, are major health concern in Ota that requires intensive medical care(Afolabi, Chinedu, Iweala, Ogunlana, & Azuh, 2015).

### **2.6.5 Physically Inactive or Sedentary Lifestyle**

Operationally, sedentary behavior can be referred to as 'sitting time' rather than simply low levels of physical activity which involves activities such as lying down, sitting, watching television, using computer and other screen based entertainment(Kaur & Kaur, 2015). Physical inactivity has become a public health problem all over the world. Globally, around 31% of adults aged 15 years and over were insufficiently active in 2008 (men 28% and women 34%). Approximately 3.2 million deaths each year are attributable to insufficient physical activity. The current high level of physical inactivity is believed to be partly due to insufficient participation in physical activity during leisure time and an increase in sedentary behaviour during occupational and domestic activities (WHO, 2013).The high growing rate of sedentary lifestyle could be attributed to economic growth, modernization, urbanization as well as globalization of food. Advance in technology today has also reduced level of morbidity at work. Most jobs demand sitting behind the desks for long hours during the day. This is followed by long hours enjoying television or video games at leisure time (Kofi, 2011).

Exercise is an activity requiring physical effort/activities that is planned, structured, and repetitive and consistent for the purpose of conditioning any part of the body. Exercise is carried out to sustain or improve health, maintain fitness and is important as a means of physical rehabilitation. Kaur & Kaur, (2015)

A study conducted in India by Kaur & Kaur, (2015) found higher prevalence of metabolic syndrome, hypertension and obesity was observed in sedentary than active

subject. In a research work designed to assess the role of stress, physical exercise and diet as risk factors for developing cardiovascular diseases among civil servants in Port Harcourt, Nigeria. A sample of 500 civil servants was randomly selected from ten out of twenty-two ministries systematically drawn in Rivers State secretariat, Port Harcourt. Lack of exercise was also found to be a significant health risk factor (Gonsi, 2015)

Environment plays a major role in influencing the physical activity through significant changes in the form of rapid urbanization, automobile dominance for the personal travel, introduction of labour-saving devices in the home and the workplace, surplus availability of energy dense-calorie foods, satellite TV, increased reliance on computers and telecommunication technology as well as decreased occupational-work demands. Incorporating physical activity into the working day during transport to and from work, and during lunch and other breaks between productive work time; and elaborating weight loss associations with physical activities may make an important contribution to increase physical activity and reduce sedentary behaviour(Kaur & Kaur, 2015).

#### **2.6.6 Tobacco Use**

Hypertension has been commonly and is still considered one of the major coronary risk factors, which is often associated with others, including cigarette smoking(Aurelio, 2015). Smoking interdependently raises BP, although epidemiologically the relationship between smoking and hypertension is often confounded by factor associated with both. Not only does smoking tobacco immediately raise blood pressure temporarily, but the chemicals in tobacco can damage the artery walls. This can cause the arteries to become barrow, increasing the blood pressure (Mayo Clinic, 2010). A study conducted by Ibekwe, (2015) to determine the prevalence of modifiable risk factors of hypertension in a rural community; Oghara and to ascertain if any association exists with these risk factors and socio-demographic variables. The prevalence of hypertension was 21.0% and there was statistical significant association between hypertension and smoking ( $P < 0.001$ ), as well as hypertension and alcohol. ( $P < 0.001$ ).

A large number of observations identify cigarette smoke as a factor able to cause a functional and initially transient damage primarily of the endothelium and reduced

tolerance to exercise stress testing because of the effects of nicotine and carbon monoxide. At the time, the functional damage became an irreversible pathological damage with ischemic lesions of the myocardium and artery vessel atherosclerosis. (Aurelio, 2015).

### **2.6.7 Too Much Salt (Sodium) in Diet**

High salt consumption has also been known to increase blood pressure. In many communities, high dietary salt intake is also a major factor. The main risk of events is tied to an increased systolic blood pressure; after age 50 or 60 years, diastolic blood pressure may actually start to decrease, but systolic pressure continues to rise throughout life. Several studies conducted over the years recommend reduction of salt intake as the key to prevention and control of high blood pressure. Sodium consumption should be 1500 milligram per day; equivalent to a teaspoon. The maximum level researched not to pose risk for consumption is 2500 milligrams per day. However, research estimates daily consumption on the average westernized meal as 3000 to 4500 milligram which accounts for two fold of the maximum recommendation (Kofi, 2011).

### **2.6.8 Too Little Potassium in the Diet**

High blood pressure (hypertension) is a major risk for CVDs, especially heart attack and stroke. Evidence shows that increasing potassium intake significantly reduces blood pressure in adults. Potassium is found in a variety of unrefined foods, including beans and peas, nuts, vegetables such as spinach, cabbage and parsley and fruits such as bananas, papayas and dates. Food processing reduces the amount of potassium in many food products, and a diet high in processed foods and low in fresh fruits and vegetables is often lacking in potassium. WHO recommends an increase in potassium intake from food to reduce blood pressure and risk of cardiovascular disease (stroke and coronary heart disease) in adults? Potassium intake of at least 90 mol/day (3510 mg/day) for adults (WHO, 2012)

### **2.6.9 The little Vitamin D in the Diet**

Vitamin D has been considered, due to its various effects on health, and numerous studies have been conducted on its various effects on different parts of body and proper functioning of different organs and systems. It's uncertain if having too little



vitamin D in your diet can lead to high blood pressure. Vitamin D may affect an enzyme produced by your kidneys that affects your blood pressure(Jafari, Paknahad, Sciences, Sciences, & Sciences, 2014).

#### **2.6.10 Excessive Alcohol Consumption**

The blood pressure elevating effect of alcohol is indisputable and depends on drinking pattern. In brief, daily intake of three to five drinks increases both systolic and diastolic BP. The effect is seen in both men and women and among smokers and non-smokers. Intervention studies have confirmed that reducing alcohol intake is linked to a significant fall in blood pressure. Heavy weekend drinkers and regular drinkers both have hypertension, and elevated BP is frequently seen during acute alcohol withdrawal. Cessation of drinking is followed by normalization of blood pressure(Hillbom, Saloheimo, & Juvela, 2011). Relationship of blood pressure with some cardiovascular disease risk factors in a rural population of Plateau State, North Central Nigeria showed using alcohol was diastolic blood pressure (DBP). The study recommended that To reduce cardiovascular morbidity in this and probably other rural sub-Saharan African communities, BMI, total cholesterol, Using Alcohol and salt intake in diet should be targeted for reduction (Basil et al., 2015).Clinical studies with small sample sizes of subjects have suggested that alcohol consumption over several days may cause a more sustained rise in blood pressure. In alcoholics, hypertension is common but settles after withdrawal from alcohol. This raises the possibility that alcohol may only exert a short-term effect on blood pressure. The hypothesis that the effect of alcohol on blood pressure is mainly due to alcohol consumed in the few days preceding measurement of blood pressure was therefore examined in this study. (Aung et al., 2012).

### **2.7 Complications/ Long Term Effects of Hypertension**

#### **2.7.1 Heart Failure**

A research team at the Indiana University School of Medicine found that certain chronic conditions may increase your risk of high blood pressure, including diabetes, kidney disease and sleep apnea. Hypertension as a risk factor for heart failure in Nigeria: In the recently published transnational study of HF in sub-Saharan Africa, hypertension was clearly shown as the predominant cause of HF in the region,

especially in Nigeria(Ogah, 2012). Onwuchekwa & Chinenye, (2010) reviewed records which were retrieved from the ward and medical records of all patients admitted to the medical wards of the UPTH over a 5-year period with essential hypertension or any of its complications. Heart failure occurred in 97 (22%) cases. There were 99 deaths out of which 14 (14.12%) were due to heart failure in the study. In another study, Data from the Abeokuta Heart Failure Registry were used to determine the clinical characteristics, mode of treatment, and short- and medium-term outcomes of patients with hypertensive heart failure. A total of 320 patients were consecutively studied, comprising 184 men (57.5%) and 136 women (42.5%) aged 58.4, 62.4 and 60.6, 64.5 years, respectively. Most patients (80%) presented with New York Heart Association functional class III or IV and around one third (35%) had preserved systolic function. Median hospital stay was 9 days (interquartile range 5–21) while intra-hospital mortality was 3.4%. The 30-day, 90-day, and 180 day mortality rates were 0.9% (95% confidence interval, 0.2 to 3.5), 3.5% (95% confidence interval, 1.7 to 7.3), and 11.7% (95% confidence interval, 7.8 to 17.5), respectively. It was concluded in the study that Hypertension is the most common etiological risk factor for heart failure in Nigeria as most patients present in the fourth decade of life with severe heart failure and secondary valvular dysfunction and significant in-hospital mortality(Ogah, Sliwa, Akinyemi, & Falase, 2015).

### **2.7.2 Stroke**

Stroke is currently a major public health problem in Nigeria. As in many developing countries of the world it has some peculiarities. It occurs at a younger age with associated high mortality and disability adjusted life years.

Available hospital based studies in Nigeria suggest there are rising rates of stroke in the country(Aung et al., 2012). Onwuchekwa&Chinenye, (2010) reviewed records of all patients admitted to the medical wards of the UPTH over a 5-year period with essential hypertension or any of its complications. The study found out that there were 99 deaths out of which 51 (51.5%) were due to stroke in the study.

In Nigeria, as in most developing countries, hypertension is the most important modifiable risk factor for stroke. It is present in almost 80% of cases. Unfortunately most victims are unaware of their blood pressure status prior to the event(Samal, Greisenegger, Auff, Lang, & Lalouschek, 2007). A study on Stroke risk factors, subtypes, and 30-day case fatality in Abuja, Nigeria was carried out. Patients were

recruited prospectively presenting with acute stroke at the National Hospital Abuja between January 2010 and June 2012. Stroke risk factors as found in the study included hypertension (82.7%), obesity (32.6%), diabetes (23.5%), hyperlipidaemia (18.4%), atrial fibrillation (9.2%), and cigarette smoking (7.7%) (Alkali et al., 2013).

### **2.7.3 Chronic Kidney**

Hypertension is a major cause of Chronic Kidney Disease (CKD) and Chronic Renal Failure (CRF) in Nigeria. In Enugu (South East) and Benin City (South South), hypertension is the commonest cause of Chronic Kidney Disease and Chronic Renal Failure (Aung et al., 2012). Hypertension induced Chronic Renal Failure in Nigeria is four times commoner in men than women with a male: female ratio of 4.3:1. Severe throbbing frontal headache are common. The duration of hypertension is usually between 2-15 years. It is associated with a history of cigarette smoking, poor compliance to anti-hypertensive medications, and family history of hypertension, severe/accelerated hypertension and severe uraemia. The presence of other hypertension related outcome, such as heart failure and retinopathy, is common (Ogah, 2012). Onwuchekwa & Chinenye, (2010) reviewed records of all patients admitted to the medical wards of the UPTH over a 5-year period with essential hypertension or any of its complications were retrieved from the ward and medical records. Renal failure and encephalopathy accounted for 40 (9.4%) and 7 (1.7%) hypertensive complications respectively. There were 99 deaths out of which 12 (12.1%) were due to renal failure in the study.

### **2.7.4 Coronary Artery Disease**

Hypertension is a major risk factor for coronary artery disease (CAD) in Nigeria. Anjorin et al., (2006) reviewed 87 patients with Coronary Artery Disease seen over a period of 22 years (1983-2004) at the University of Maiduguri teaching hospital. Hypertension was identified as a risk factor in 53%, diabetes in 41%, cigarette smoking in 39%, and hypercholesterolemia in 29% and obesity in 20%. A more recent study examined the autopsy reports of 747 coroner cases and 41 consecutive clinically diagnosed cases of ischemic heart disease seen in South-South Nigeria. Coronary Artery Disease was diagnosed in 13 (1.6%) of 747 autopsies. They were predominantly males, urban residents, and of high social class with combination of Coronary Artery Disease risk factors of hypertension, alcohol use, diabetes mellitus,

cigarette smoking, poor physical activities, and obesity. The study Concluded that Coronary Artery Disease and its risk factors are contributing to mortality and morbidity in South South, Nigeria. These risk factors include hypertension, alcohol use, diabetes mellitus, cigarette smoking, poor physical activity, and obesity(Essien, Andy, Ansa, Otu, & Udoh, 2014). High blood pressure is associated with coronary heart disease as another study carried out in Lagos state also established this fact(Lano-maduagu, Oguntona, Oguntona, Agbonlahor, & Onabanjo, 2015)

#### **2.7.5 Aneurysm**

Increased blood pressure can cause your blood vessels to weaken and bulge, forming an aneurysm. An aneurysm that develops in the large artery that carries blood out of the heart, the aorta, can rupture, or pop, causing severe internal bleeding, and death. Symptoms of aortic aneurysm rupture depend on the part of the aorta that is bleeding. Excruciating pain in the front part of the chest if the upper part of the aorta is bleeding, or pain in the abdomen that migrates to the back if the lower part of the aorta is bleeding are symptoms of aneurysm. With proper treatment, this complications can be prevented(Benton, 2010).

#### **2.7.6 Metabolic Syndrome**

The metabolic syndrome is combination of health conditions (such as obesity, high blood pressure, type 2 diabetes, poor lipid profile) that contribute to cardiovascular illness and death (Angular, Bhuket, Torres, Liu, & Wong, 2015). Hypertension is associated with the laboratory and anthropometric findings linked to the metabolic syndrome. Insulin resistance and central obesity, recognized as the main factors involved in the pathophysiology of the metabolic syndrome, contribute to elevated blood pressure, which further promotes vascular damage in cardiac, renal, and brain tissue(Duvnjak& Bulum, 2008).

#### **2.7.7 Vascular Dementia**

Vascular dementia is caused by various factors, including increased age, diabetes, hypertension, atherosclerosis, and stroke. Adiponectin is an adipokine secreted by adipose tissue. Adiponectin is widely known as a regulating factor related to cardiovascular disease and diabetes. Adiponectin plasma levels decrease with age. Decreased adiponectin increases the risk of cardiovascular disease and diabetes.

Adiponectin improves hypertension and atherosclerosis by acting as a vasodilator and antiatherogenic factor. Case-control studies reviewed demonstrated the association between low adiponectin and increased risk of stroke, hypertension, and diabetes.(Song, Lee, Park, & Lee, 2014).

### **2.7.8 Facial Flushing**

Facial flushing occurs when blood vessels in the face dilate. The red, burning face can occur unpredictably or in response to certain triggers such as sun exposure, cold weather, spicy foods, wind, hot drinks and skin-care products. Facial flushing can also occur with emotional stress, exposure to heat or hot water, alcohol consumption and exercise, all of which can raise blood pressure temporarily(Kamiyama, 2013). A study assessed the role of the facial flushing response in the relationship between alcohol consumption and hypertension. The subjects were 1,763 men (288 non-drinkers, 527 flushing drinkers, 948 non-flushing drinkers) who had received a health check-up. Data were collected from the subjects' medical records. The risk of hypertension related to weekly drinking amount in non-flushers and flushers was analysed and compared with that in non-drinkers. After adjusting for age, body mass index, exercise status, and smoking status, the risk of hypertension was significantly increased when flushers consumed more than 4 drinks per week (more than 4 and up to 8 drinks: odds ratio [OR] = 2.23; above 8 drinks: OR = 2.35). In contrast, in non-flushers, the risk was increased with alcohol consumption of more than 8 drinks (OR = 1.61) per week. The OR (flushers/non-flushers) for hypertension was also increased: more than 4 and up to 8 drinks, 2.27 and above 8 drinks, 1.52. These findings suggest that hypertension associated with alcohol consumption has a lower threshold value and higher risk in flushers than in non-flushers. Clinicians should consider evaluating patients' flushing response as well as drinking amount in a daily practice for health promotion (Jung et al., 2013).

### **2.7.9 Dizziness**

Although it is not caused by HBP, dizziness can be a side effect of some high blood pressure medications. Nonetheless, dizziness should not be ignored, especially if you notice a sudden onset. Sudden dizziness, loss of balance or coordination and trouble walking are all warning signs of a stroke. HBP is one of the leading risk factors for stroke

## **2.8 Control and Management of Hypertension**

Hypertension presents a major area of intervention because it is a frequent condition and is amenable to control through both non-pharmacological lifestyle factors and pharmacological treatment.

### **2.8.1 Non Pharmacologic Treatment**

WHO and International Society of Hypertension (ISH) recommended that all individuals particularly hypertensive and those at risk should adopt appropriate lifestyle practices (WHO/ ISH, 2004). Several lifestyle interventions have been shown to reduce blood pressure. Apart from contributing to the treatment of hypertension, these strategies are beneficial in managing most of the other cardiovascular risk factors. However, it may be prudent to start treatment with drugs sooner if it is clear that the blood pressure is not responding to the lifestyle methods or if other risk factors appear (Bakris & Sowers, 2008). In general, lifestyle changes should be regarded as a complement to drug therapy rather than an alternative.

Lifestyle modification involves adopting a healthy lifestyle. This includes losing weight if overweight or obese, limiting alcohol intake, increasing physical activity, reducing salt intake, and stopping smoking (Rakumakoe, 2011). This can be facilitated by substituting fresh fruits and vegetables for more traditional diet. Unfortunately, these diets can be relatively expensive and inconvenient for patients (Michael et al., 2013).

Reduction of salt intake is recommended because it can reduce blood pressure and decrease the need for medications in patients who are “salt sensitive,” which may be a fairly common finding in black communities as mentioned earlier. Results from animal studies, epidemiologic studies and clinical trials have documented that a reduced sodium intake can prevent hypertension and facilitate hypertension control in older-aged persons on medication and also potentially prevent cardiovascular events in overweight individuals (Rakumakoe.M.D, 2011). Often, patients are unaware that there is a large amount of salt in foods such as bread, canned goods, fast foods, pickles, soups, and processed meats. This intake can be difficult to change because salty foods are often part of the traditional diets found in many cultures. (Rakumakoe.M.D, 2011) stated that sodium reduction alone or combined with weight

loss effectively reduced BP and the need for antihypertensive medication in older persons.

Generally, excess intake of alcohol has long been linked to a number of serious medical conditions as well as social problems. These conditions range from gastrointestinal complications to cancer, diabetes, liver damage as well as other cardiovascular diseases that can result to death (Kofi, 2011). Reduced consumption of alcohol should be encouraged. Patients must be strongly urged to discontinue smoking habit. Finally regular aerobic exercise can help reduce blood pressure, so patients should be encouraged to walk, use bicycles, climb stairs, and pursue means of integrating physical activity into their daily routines (Kofi, 2011).

### **2.8.2 Drug Treatment of Hypertension**

Sometimes lifestyle modification may not be enough to treat hypertension, therefore medication is needed. According to (Adri Boulle, 2009), hypertensive patients with low risk factors should be first treated with life style modifications for 6- 12 months and if the blood pressure remains high, then drug therapy should commence. According to Michael et al., (2013), treatment with drugs should be started in patients with blood pressures  $>140/90$  mmHg in whom lifestyle treatments have not been effective. Drug treatment can be delayed for some months in patients with stage 1 hypertension who do not have evidence of abnormal cardiovascular findings or other risk factors but drug treatment must be started immediately in patients with stage 2 hypertension (blood pressure  $\geq 160/100$  mmHg) upon diagnosis.

The drugs used to treat hypertension include; angiotensin-converting enzyme Inhibitors, angiotensin receptor blockers, thiazide and thiazide-like diuretics, calcium channel blockers, b-Blockers, direct vasodilators, a-Blockers, mineralocorticoid receptor antagonists. The choice of which drug to use will be influenced by other conditions (e.g. diabetes and coronary disease) that may be associated with the hypertension and the availability and affordability of the drugs (Michael et al., 2013). Some patients may however be intolerant to ACE- inhibitors. In such patients it can be replaced by an angiotensin receptor blocker (Adri Boulle, 2009)

For patients older than 80 years, the suggested threshold for starting treatment is at levels  $\geq 150/90$  mmHg. Thus, the target of treatment should be  $<140/90$  mm Hg for most patients but  $<150/90$  mmHg for older patients (unless these patients have chronic

kidney disease or diabetes, when  $<140/90$  mm Hg can be considered). Most patients will require more than one drug to achieve control of their blood pressure. In general, increase the dose of drugs or add new drugs at approximately 2- to 3-week intervals. This frequency can be faster or slower depending on the judgment of the practitioner.

Long-acting drugs that need to be taken only once daily are preferred to shorter-acting drugs that require multiple doses because patients are more likely to follow a simple treatment regimen. For the same reason, when more than one drug is prescribed, the use of a combination product with two appropriate medications in a single tablet can simplify treatment for patients, although these products can sometimes be more expensive than individual drugs. Once-daily drugs can be taken at any time during the day, most usually either in the morning or in the evening before sleep. If multiple drugs are needed, it is possible to divide them between the morning and the evening (Michael et al., 2013).

## **2.9 Health Promotion and Education role in the prevention and control of Hypertension**

High blood pressure can be prevented by making healthy choices and managing any health conditions to prevent complications. By living a healthy lifestyle, the blood pressure could be kept and maintained in a healthy range and lower your risk for heart disease and stroke. A healthy lifestyle includes: Eating a healthy diet, maintaining a healthy weight, getting enough physical activity, not smoking, Limiting alcohol use, Healthy Diet, Choosing healthful meal and snack options, Consumption of fresh fruits and vegetables. These can help to avoid high blood pressure and its complications. (Abdullahi & Amzat, 2011).

Also, making sure individuals consume foods low in salt (sodium) and high in potassium can lower the blood pressure. Eating plan is one healthy diet that is proven to help people lower their blood pressure. Healthy weight; being overweight or obese increases one's risk for high blood pressure.

Individuals should also be taught how to determine if their weight is in a healthy range by calculating the body mass index (BMI) and measurements to measure excess body fat (NHLBI, 2009).

Studies have demonstrated that physical activity can lower blood pressure and decrease the prevalence and incidence of hypertension regardless of associated risk



factor (Bento et al., 2015). For adults, the Surgeon General recommends 2 hours and 30 minutes of moderate-intensity exercise, like brisk walking or bicycling, every week. Children and adolescents should get 1 hour of physical activities. However, this should be encouraged.

More so, cigarette smoking raises your blood pressure and puts individuals at higher risk for heart attack and stroke. Cigarette smoking acutely exerts a hypertensive effect, mainly through the stimulation of the sympathetic nervous system (Virdis, Giannarelli, Neves, & Ghiadoni, 2010). Observational studies and clinical trials have documented a direct, dose-dependent relationship between alcohol intake and Blood Pressure, particularly as the intake of alcohol increases above  $\approx 2$  drinks per day. Importantly, this relationship has been shown to be independent of potential confounders such as age, obesity, and salt intake. Although some studies have shown that the alcohol-hypertension relationship also extends into the light drinking range ( $\leq 2$  drinks per day), this is the range in which alcohol may reduce coronary heart disease risk. (Bi et al., 2014)

In aggregate, available evidence supports moderation of alcohol intake as an effective approach to lower BP. Alcohol consumption should be limited to  $\leq 2$  alcoholic drinks per day in most men and  $\leq 1$  alcoholic drink per day in women and lighter-weight persons. Note that 1 drink is defined as 12oz of regular beer, 5oz of wine (12% alcohol), and 1.5oz of 80-proof distilled spirits.

Vegetarian diets have been associated with low BP. In industrialized countries, where elevated BP is common, individuals who consume a vegetarian diet have markedly lower blood pressures than the non-vegetarians. In these observational studies, vegetarians also experience a lower age-related rise in BP. Some of the lowest BPs observed in industrialized countries have been documented in strict vegetarians (macrobiotics) living in Massachusetts. Several aspects of a vegetarian lifestyle might lower BP, including non-dietary factors (e.g physical activity), established dietary risk factors (e.g., reduced weight, increased potassium, and low-to-moderate alcohol intake), and other aspects of vegetarian diets (e.g., high fibre, no meat) (Appel et al., 2006).

## **2.10 Conceptual Framework**

The Precede-Proceed model is a framework that has been successfully used for planning of health interventions and delivery in communities where behaviour change

is implied and needed. This is a framework proposed in 1974 by Dr. Lawrence W. Green, that can help health program planners, policy makers, and other evaluators analyse situations and design health programs efficiently. It provides a comprehensive structure for assessing health and quality of life needs, and for designing, implementing, and evaluating health promotion and other public health programs to meet those needs.

Malto (2012) described it as a model comprising of individual level theories, community level engagements and interpersonal communication and these combine with applicable interactive technologies such as internet or social media network applications and grass roots campaign. Thus it is a very useful tool to design, implement and evaluate health behaviour changes.

PRECEDE is an acronym for “Predisposing”; “Reinforcing”; “Enabling” “Constructs” In “Educational / Environmental” “Diagnosis” and “Evaluation”. These are those factors predisposing, reinforcing and enabling the disease at work places. .

**Predisposing factors:** any characteristics of a person or population that motivates behaviour prior to the occurrence of that behaviour for example knowledge, beliefs, values and attitudes

**Enabling factors:** characteristic of the environment that facilitate action and any skill or resource required to attain specific behaviour for example accessibility, availability, skills and laws (local, state, federal)

**Reinforcing factors:** Rewards or punishments following or anticipated as a consequence of a behaviour. They serve to strengthen the motivation for behaviour for example family, peers and teacher.

**Epidemiological Diagnosis:** this helps determine health issues associated with the quality of life. It helps identify behavioural and environmental factors related to the quality of life issues. The focus of this phase is to identify specific health problem and non-health factors which are associated with a poor quality of life. Describing these health problems can:

- 1) Help establish relationships between health problems, other health conditions, and the quality of life.

2) Lead to the setting of priorities which will guide the focus of program development and resources utilization.

3) make possible the delineation of responsibilities between professionals and organizations and agencies.

**Behavioural and environmental diagnosis:** This phase focuses on the systematic identification of health practices and other factors which seem to be linked to health problems. This includes non-behavioural causes (personal and environmental factors) that can contribute to health problems, but are not controlled by behaviour. These could include genetic predisposition, age, gender, existing disease, climate, and workplace, the adequacy of healthcare facilities, etc. Also assessed are the behaviours which cause health problems in the target population. Another important component of this phase is the determination of the importance and relative changeability of each behavioural cause. It is critical that a behavioural diagnosis completed for each identified health problem. This will allow all the planners to choose target behaviours which will become the focus of specific educational interventions.

**Administrative and Policy Diagnosis:** This phase focuses on the administrative and organizational concerns which must be addresses prior to program implementation. This includes the assessment of resources, budget development and allocation, development of an implementation timetable, organization or personnel within programs, and coordination of the program with all other departments, and institutional organizations and the community. It can also said to be the analysis of policies, resources and circumstances prevailing organizational situations that could hinder or facilitate the development of the health program.

### **2.11 Application of PRECEDE model to the Study.**

In the context of this study, the PRECEDE Model will be adopted. In its application to the Staff of the Ibadan North Local Government Secretariat, regarding the knowledge and perception about the risk factors relating to Hypertension, the PRECEDE arm of the model which has been successfully applied by health promotion practitioners and practices shall be fully applicable to design the study, implement and evaluate it.

**Predisposing factors:** For this study they include:

- Knowledge. In the perspective of assessing the Knowledge of the Staff of the Ibadan North Local Government Secretariat on Hypertension, its risk factors, complication and prevention of Hypertension.
- Attitudes. The predisposing factor also includes the attitude of the Staff of the Ibadan North Local Government Secretariat towards the risk factors, and prevention of Hypertension. These include attitudes and behaviours of friends, family members, policy makers, head of departments, organization, group members towards the factors responsible for hypertension.
- Beliefs. These has to do with what is believed of perceived to be the risk factors of Hypertension and what is perceived to be ways of preventing the disease or closely held beliefs based on religion or culture.
- Confidence. This has to do with failing to change risky behaviour of Hypertension simply because of feelings of incapability of doing so.

**Enabling factors:** Enabling factors are those characteristics of the environment that facilitate action and any skill or resource required to attain specific behaviour. For this study they include programs, services, availability and accessibility of resources, or new skills required to enable behaviour change. Among them are: Availability of resources, services, Community, Government laws and policies binding the risky behaviour of hypertension.

**Reinforcing factors,** these are largely the attitudes of influential people: family, peers, teachers, employers, health or human service providers, the media, community leaders, and politicians and other decision makers to prevent hypertension. They serve to strengthen the motivation for behaviour. Some of the reinforcing factors include social support, peer support, and colleague at work.

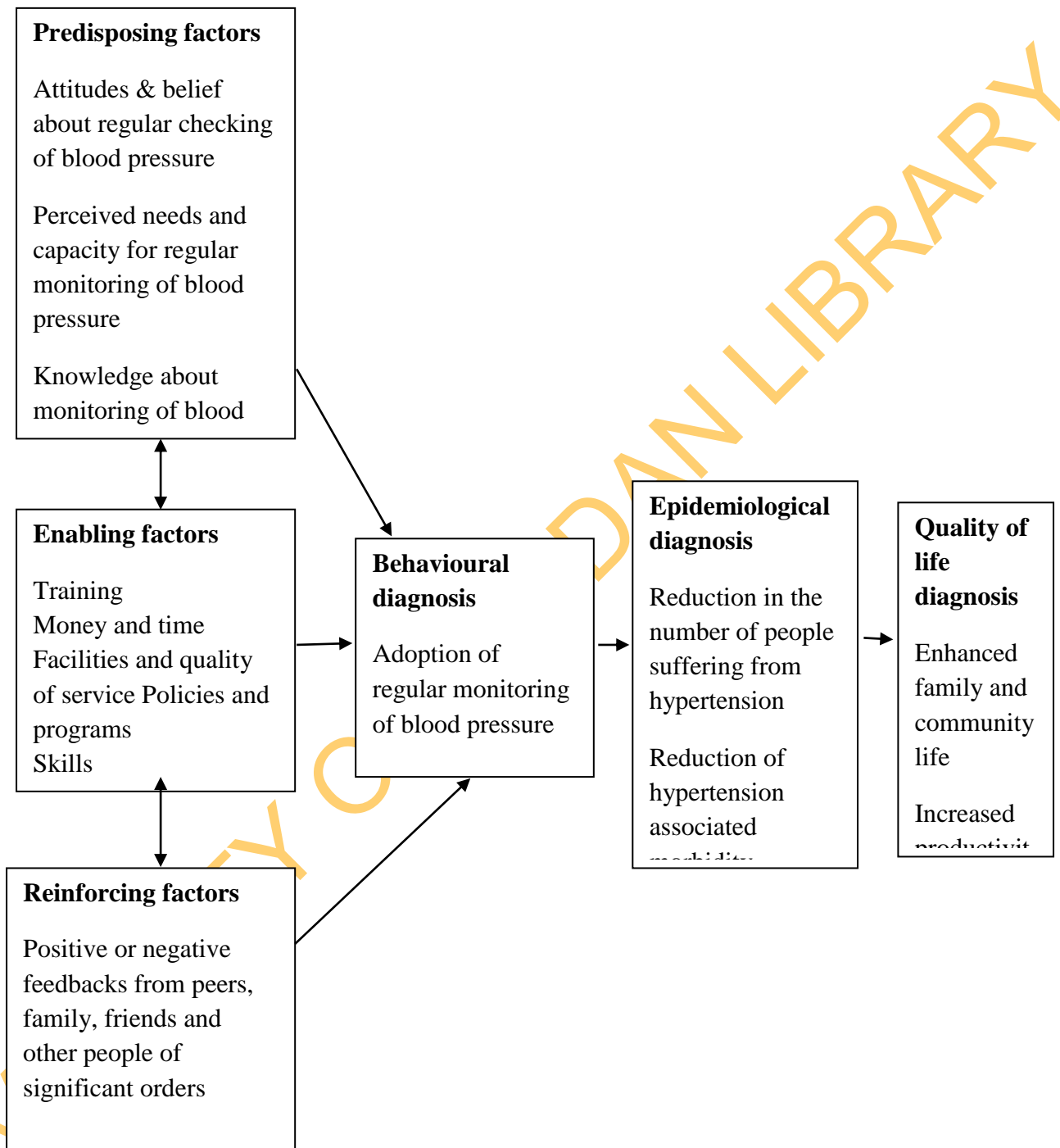
**Epidemiological Diagnosis:** Epidemiological assessment deals with determining and focusing on specific health issue(s) at the work place, which is the increase in knowledge on hypertension, reduction in mortality and morbidity, caused by hypertension counselling people with genetic risks, or may be useful in identifying high-risk groups for intervention

**Behavioural Diagnosis:** This is seeking healthy behavioural which include the adoption of regular exercises, eating of a balanced/regular diet, limiting alcohol use, cessation from tobacco.

This is the analysis of behavioural links to the goals or problems that are identified in the social or epidemiological diagnosis. The behavioural ascertainment of a health issue is understood firstly through those behaviours that exemplify the severity of the disease (e.g. tobacco use among the staff). Secondly, through the behaviour of the individuals who directly affect the individual at risk (for example colleague of the staff who keeps cigarettes at work). Thirdly, through the actions of the decision-makers that affects the environment of the individuals at risk (societal permissiveness to public smoking).

**Administrative and Policy Diagnosis:** This phase focuses on the administrative and organizational concerns, which must be addressed prior to program implementation. This includes assessment of resources, looking at organizational barriers; also, all members of staff would be informed on the need for healthy living, risk factors, complications and prevention of Hypertension.

## 2.12 The PRECEDE Framework



**The PRECEED Model Adapted to suit the study**

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Study design

A descriptive cross-sectional design was used for this study which involved the use of quantitative methods to obtain information on the knowledge and perception about the risk factors of Hypertension among staff of Ibadan North Local Government.

#### 3.1 Description of Study Site

Oyo State covers approximately an area of 28,454 square kilometres and is ranked 14th by size. The landscape consists of old hard rocks and dome shaped hills, which rise gently from about 500 meters in the southern part and reaching a height of about 1,219 metre above sea level in the northern part.

Ibadan is located in the South western part of Nigeria. It is the largest city in West Africa and the capital of Oyo State. Ibadan was formally called Igbori- Ipara that is the forest of Ipara. This is because the forest acted as the boundary between towns where the Ijebus, Egbas and the Oyos occupied. As more and more people settle and live there, the name was changed to Ibadan.

Ibadan occupied a large area of 3123.30km<sup>2</sup>, 15% of which falls within the urban sector. The remaining 85% are in the rural setting. 11 local government areas were created in Ibadan in August 1991. During the nationwide local government reforms, there are 11 local governments in Ibadan town. Out of the 11, 5 are urban while the remaining 6 are rural based. The urban local governments are Ibadan North, Ibadan Northwest, Ibadan Northeast, Ibadan Southeast and Ibadan Southwest while the rural local governments are Akinyele, Lagelu, Egbeda, Onaara, Oluyole and Ido. The research was carried out in Ibadan North Local Government. Ibadan North local government secretariat is located in the city of Ibadan. The local government is made up of 8 departments and has 540 staffs altogether working in the different departments. They are Administration/general service, finance & supplies, environmental service, works, land and survey, educational service, primary health care, agriculture, budget planning, research & statistic.

### 3.2 Study population

The sample population was staffs working in Ibadan North Local Government Secretariat in Ibadan that consented to participate in the study.

### 3.3 Study variables

The independent variables consists of the socio-demographic characteristics of the respondents which include age, gender, occupation, residence, fathers' level of education, estimated income, religion, ethnicity, state of origin, and marital status.

The dependent variables are the general concept of Hypertension, knowledge of causation of Hypertension, Knowledge of prevention of Hypertension, Knowledge of the complications of Hypertension, perception towards Hypertension, and the practice of the risk behaviours of Hypertension

### 3.3 Inclusion criteria

For the purpose of this study, only staffs of Ibadan North Local Government Secretariat were included in the study. Staffs include everybody that is employed to perform a particular function or operation in the local government at the secretariat.

### 3.4 Exclusion criteria

This study excluded non staffs like visitors, traders in the secretariat and other people working in the compound but not gainfully employed by the Local government. Staff of the Local Government who are not domicile in the Local Government are excluded in the study.

### 3.5 Determination of Sample Size

The study sample for this research was calculated using the model used by Daniel (1978), and Kibikiwa (2008) which is:

$$n = \frac{z^2 pq}{d^2}$$

n = minimum sample size that would be required

z = confidence limit of survey at 95% (1.96)

p- The prevalence of hypertension according to Afolabi, 2012 ranges

79

From 60-90%. Average prevalence =  $\frac{60+90}{2} = 75\%$  (0.75)

2

d = absolute deviation from true value (degree of accuracy) = 0.05 (5%)



$$p+q = 1$$

$$d = 1 - 0.75 = 0.25$$

$$N = \frac{z^2 pq}{d^2}$$

$$\frac{(1.96)^2 \times 0.75 \times 0.25}{(0.05)^2} = 288$$

$$(0.05)^2$$

$$\text{A non-response of 10\% of 288} = \frac{288 \times 10}{100} = 28.8$$

$$100$$

The sample size was increased to 316 to account for the non-response rate of 10%. After sorting and cleaning the total valid questionnaire used for this study was 288.

### **3.6 Sampling Technique**

The total number of staff working in the Local Government is 540. But due to the fact that some of the study participants were not domiciled at the local government secretariat, all could not be reached. However, all the study participants who met the inclusion criteria of this current study were recruited and the questionnaires were administered on them.

### **3.7 Instrument for Data Collection**

A quantitative instrument of data collection was used. A semi-structured questionnaire was developed and used for data collection and designing of all sections of the questionnaire were guided by the study objectives, review of literatures and guidance from my supervisor. The questionnaire contained 4 sections. The first section would elicit the socio-demographic characteristics of the respondents. The section B assessed the level of knowledge of hypertension; section C assessed perception about hypertension and its risk factor respectively while section D assessed the practice of the risk factors/behaviours of hypertension by the staff (Appendix 1).

### **3.8 Validity of the instrument**

Validity of the instrument was ensured through the development of a draft instrument by consulting relevant literature, adopting questions from relevant questionnaires of researches related to the study with the help of the supervisor and subjecting the draft to independent, peer and expert reviews, particularly experts in public health

The questionnaire was also translated to Yoruba and back translation to English Language for consistency

### **3.9 Reliability of the instrument**

The instrument used for data collection was pretested in a similar sample population, Lagelu Local Government. The questionnaire was administered among 32 staffs. After which the questionnaires were subjected to the measure of internal consistency which was determined using the Cronbach's Alpha coefficient method. For this method of reliability measurement, any result with correlation coefficient greater than 0.5 is said to be reliable depending on the researcher's specific requirement. For this study, the result obtained was 0.708 which is greater than 0.5. This shows that the instrument has a high degree of reliability.

### **3.10 Data collection procedure**

Visits were made to the study site to seek permission to carry out the research work. Two Graduate research assistants who had once worked within the Local Government were recruited. After which they were trained for 2hours a day for two days to ensure proper understanding and skills needed in administering instrument. The administration of the instrument took 15days. Collection of data commenced only on working days between 10am and 1pm in workers' respective offices after which copies of the questionnaires were reviewed by research assistant for completion.

### **3.11 Data management and Analysis**

Copies of the questionnaires were retrieved and reviewed after completion. After which the instruments were sorted out and cleaned. Instruments were numbered serially for easy identification and recall. A Coding guide was then developed and approved by the research supervisor to facilitate the entry of the responses into the computer. The coded responses of the respondents were entered into SPSS Version 20 on the computer. The entered data was analysed using descriptive statistics (chi-square and correlation analysis). Knowledge was assessed on a 22- point scale and scores  $\geq 15$  were regarded as good. Perception was assessed on a 12-point scale and scores  $\geq 7$  were categorized as High perception. Practice of behavioural risk factors among the respondents were also analysed using appropriate statistical indices.

### **3.12 Ethical considerations.**

An informed consent form was signed by those who are interested in participating in the research. The informed consent contained simple languages and void of any technical terms to ensure full understanding.

The confidentiality of the respondents was ensured and protected as there was no request for names and personal addresses. The researcher and the research assistants were of good conduct and did not act coercively or in any unethically unacceptable manner. The nature, purpose and processes involved in the study were well explained to the participants with emphasis on confidentiality, privacy and anonymity of information provided. In other to ensure anonymity of responses, code numbers was given to each participant and any form of identification was not included in the questionnaire. Information gathered from the respondents was stored in the computer package for analysis by the principal investigator and with no access to unauthorized persons while the questionnaires that were filled by the respondents were kept and stored in a safe place. Informed consent was obtained from the respondents before administration of the questionnaire. Also, participants were assured that data collect will ONLY be used for the purpose of the study.

Ethical approval for this study was also sought and obtained from the Oyo State Ethical Review Committee. The participants were informed of their right to decline or withdraw from the research without any undesirable effects.

## CHAPTER FOUR

### RESULTS

The findings from this study are presented in this section. They are organized into the following subsections:

- Socio demographic characteristics
- Knowledge about high blood pressure,
- Perception of Ibadan North Local Government staff about hypertension.
- Risk behaviour for Hypertension among Local Government Secretariats in Ibadan.

#### 4.0 Socio-demographic characteristics

The ages of respondents ranged from 20 to 63 years with a mean of  $38.8 \pm 8.7$  years. The majority (55.6%) fell between 31 to 45 years age group. Slightly above half of the respondents (55.6%) were males. Larger percentages (51.4%) of the respondents were Muslim while (44.8%) were Christians. Most of the respondents (80.2%) were married, (13.5%) single and (4.2%) divorced. The respondents were mostly educated with 72.6% of them having completed tertiary education, 24.7% with secondary education, 2.4% with primary education and just 0.3% without formal education. Majority (93.1%) of the respondents were Yorubas while (3.1%) were Igbo and 1% Hausas. These are shown in table 4.1a and 4.1b below.

**Table 4.0a: Socio-demographic characteristics of the respondents (N=288)**

<b>variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age ( in years)</b>		
30 years and below	40	24.0
31- 45 years	168	55.6
46-60 years	80	20.5
<b>Sex</b>		
Male	160	55.6
Female	128	44.4
<b>Marital status</b>		
Married	231	80.2
Single	39	13.5
Divorced	12	4.2
Cohabiting	6	2.1
<b>Religion</b>		
Christianity	129	44.8
Islam	148	51.4
Traditional	3	1.0

Note: All non-responses are excluded

**Table 4.0b: Socio-demographic characteristics of the respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Highest level of education</b>		
No formal education	1	0.3
Primary	7	2.4
Secondary	71	24.7
Tertiary	209	72.6
<b>Ethnic Group</b>		
Yoruba	268	93.1
Igbo	8	2.8
Hausa	9	3.1
Others	3	1.0

\*Other (Urhobo, Tiv)

#### 4.1 Respondents knowledge about high blood pressure

In table 4.2a below, more than half of the respondents (51.0%) reported high blood pressure as high level of stress or tension while only 19.4% reported it as force of blood pushing against blood vessels walls. Few (17.0%) defined it as rapid breathing or rising blood looking for a way out while about 12.5% did not know what high blood pressure was. When asked what normal blood pressure should be, more than half (52.8%) said it should be greater than 120/80mmHg but less than or equal to 139/89mmHg, (29.5%) said it should be less than or equal to 120/80mmHg while (4.9%) of the respondents said it should be greater than 139/89mmHg but less than or equal to 160/100mmHg. Some (12.8%) of the respondents admitted not knowing what the normal blood pressure should be. More than half of the respondents (54.9% and 53.1 %,) admitted that overweight and too much stress can affect the blood pressure. Interestingly, majority of the respondent (64.6% and 70.5%) do not agree that inadequate exercise and poor nutritional intake affect blood pressure (Table 4.2b below).

One-third of the respondents (31.3%) knew that too much of salt can affect blood pressure. Also about 33.0% reported that Alcohol consumption affect the blood pressure, 19.8% reported smoking while 16.0% reported that taking food high in fat increase blood pressure. When asked how dangerous they thought high blood pressure was to health, about half of them (46,5%) reported correctly that high blood pressure is extremely dangerous, (37.8%) said it is somewhat dangerous while 5.9% claimed high blood pressure is not dangerous. About 9.7% admitted not knowing if high blood pressure is dangerous or not. Regarding the signs and symptoms of high blood pressure, majority of the respondents (44.4%) reported tense feeling in the chest as the symptom, only 33.7% knew that headache, dizziness and general tiredness is associated cause of high blood pressure. few (10.8%) of the respondents claimed there are no symptoms while about (10.1%) admitted not knowing the signs and symptoms of high blood pressure (Table 4.2b).

Majority of the respondents (71.5%) reported that diets rich in salt cause high blood pressure. Also, 89.6% reported that being overweight can cause high blood pressure. About 80% of the respondents agreed that high blood pressure is a condition that results from anxiety, stress or anger. Majority of the respondent (60.4%) knows that hypertension cannot be contracted from someone who has it while 62.2% reported

that taking too much of alcohol can predispose someone to hypertension. More than half (60.1%) of the respondents reported that individuals who smoke are more at risk of increased blood pressure as shown in table 4.3 below.

Majority of the respondents (70.0%) reported that exercising regularly could prevent the onset of hypertension. About 79.9% believed that monitoring blood pressure is very important to prevent high blood pressure. Also, 72.2% of the respondents reported that high blood pressure can be prevented by reducing stress level. When asked if Individuals with increased blood pressure should fried food/diet rich in cholesterol, 61.5% said yes .Some (50.7%) of the respondents reported reducing salt intake can prevent hypertension (shown in table 4.4 below).

In table 4.5 below assessing respondent knowledge on hypertension complication, majority of the respondents reported that high blood pressure could cause cardiovascular disease and 67.7% also believed that increased blood pressure can cause visual impairment if left untreated. When asked about if increase blood pressure can cause heart disease such as heart attack if left untreated, more than half of the respondents (67.7%) affirm the statement. Majority of the respondents (67.7%) reported that high blood pressure can cause stroke, while about 52.8% also reported that high blood pressure can cause kidney failure. Majority of the respondent (69.6%) were with the view that increased blood pressure can cause premature death, if left untreated.

Mean knowledge score obtained by the respondents was  $14.68 \pm 3.09$ . Level of knowledge on hypertension showed that 33.7% have good knowledge, 64.2% have average knowledge and 2.1% have poor knowledge on hypertension. As shown in Fig.4.1 below



**Table 4.2a: Respondents' Knowledge of Concept of High Blood Pressure (N=288)**

<b>Knowledge Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Meaning of High Blood Pressure</b>		
High level of stress or tension	147	51.0
Rapid breathing or rising blood looking for a way out	49	17.0
Force of blood pushing against blood vessels walls	56	19.4
I don't know	36	12.5
<b>What Normal blood pressure should be</b>		
Less than or equal to 120/80	85	29.5
Greater than 120/80 but Less than or equal to 139/89	152	52.8
Greater than 139/89 but Less than or equal to 160/100	14	4.9
I don't know	37	12.8
<b>Factors Affecting Blood Pressure</b>		
<b>Overweight</b>		
Yes	158	54.9
No	114	39.6
I don't know	16	5.6
<b>Too much stress</b>		
Yes	153	53.1
No	133	46.2
I don't know	2	0.7
<b>Inadequate exercise</b>		
Yes	97	33.7
No	186	64.6
Don't know	5	1.7
<b>Poor nutritional intake</b>		
Yes	81	28.1
No	203	70.5
Don't know	4	1.4
<b>Factors that can increase the blood pressure</b>		
Too much salt	90	31.3
Alcohol	95	33.0
Smoking	57	19.8
Taking food high in fat	46	16.0
<b>How dangerous do you think blood pressure is to health?</b>		
Extremely	134	46.5
Somewhat	109	37.8
Not at all	17	5.9
I don't know	29	9.7

**Table 4.2b: Respondents' Knowledge of Concept of High Blood Pressure**  
(N=288)

<b>Knowledge variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Symptoms of High Blood Pressure</b>		
Headache, dizziness and general tiredness	97	33.7
Tense feeling in the chest	128	44.4
There are no symptoms	31	10.8
I don't know	29	10.1

Note: All non-responses were excluded

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**Table 4.3: Respondents' Knowledge of Causation of High Blood Pressure**  
(N=288)

<b>Knowledge Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Diet rich in salt causes high blood pressure</b>		
Yes	206	71.5
No	61	21.2
Don't know	13	4.5
No response	8	2.8
<b>Being overweight can cause high blood pressure</b>		
Yes	172	57.9
No	97	33.7
Don't know	19	6.6
<b>High blood pressure is a condition that results from anxiety, stress or anger</b>		
Yes	237	82.3
No	43	14.9
Don't know	8	2.8
<b>Hypertension can be contacted from someone who has it?</b>		
Yes	106	36.8
No	174	60.4
Don't know	8	2.7
<b>Too much drinking of alcoholic beverages can predispose a person to hypertension e.g. caffeine/alcohol consumption</b>		
Yes	179	62.2
No	99	34.4
Don't know	10	3.5
<b>Individuals who smoke are more at risk of increased blood pressure</b>		
Yes	173	60.1
No	98	34.0
Don't know	17	5.9

**Table 4.4: Respondents' Knowledge of Prevention of High Blood Pressure (N=288)**

<b>Knowledge Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Exercising regularly could prevent the onset of Hypertension</b>		
Yes	201	70.0
No	72	25.1
Don't know	14	4.9
<b>Monitoring of blood pressure is very important in order to prevent high blood pressure?</b>		
Yes	230	79.9
No	48	16.7
Don't know	10	3.4
<b>High blood pressure can be prevented by reducing stress level</b>		
Yes	208	72.2
No	67	23.3
Don't know	13	4.5
<b>Individuals with increased blood pressure should fried food/diet rich in cholesterol.</b>		
Yes	177	61.5
No	86	29.9
Don't know	25	8.6
<b>Reducing the amount of salt intake can prevent hypertension</b>		
Yes	146	50.7
No	117	40.6
Don't know	25	8.6

**Table 4.5: Respondents' Knowledge of complication of High Blood Pressure**  
(N=288)

<b>Knowledge Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>High Blood pressure could cause cardiovascular diseases</b>		
Yes	157	54.5
No	106	36.8
Don't know	25	8.7
<b>Increased blood pressure can cause visual impairment, if left untreated</b>		
Yes	195	67.7
No	71	24.7
Don't know	20	6.9
<b>Increased blood pressure can cause heart diseases, such as heart attack, if left untreated.</b>		
Yes	195	67.7
No	71	24.7
Don't know	22	7.6
<b>Increased blood pressure can cause heart disease such as heart attack, if left untreated</b>		
Yes	210	72.9
No	66	22.9
Don't know	12	4.2
<b>high blood pressure can cause Stroke</b>		
Yes	195	67.7
No	70	24.4
Don't know	22	7.9
<b>Do you know if high blood pressure can cause kidney Failure</b>		
Yes	152	52.8
No	104	36.1
Don't know	32	11.1
<b>Increased blood pressure can cause premature death if left untreated.</b>		
Yes	200	69.4
No	69	24.0
Don't know	19	6.6

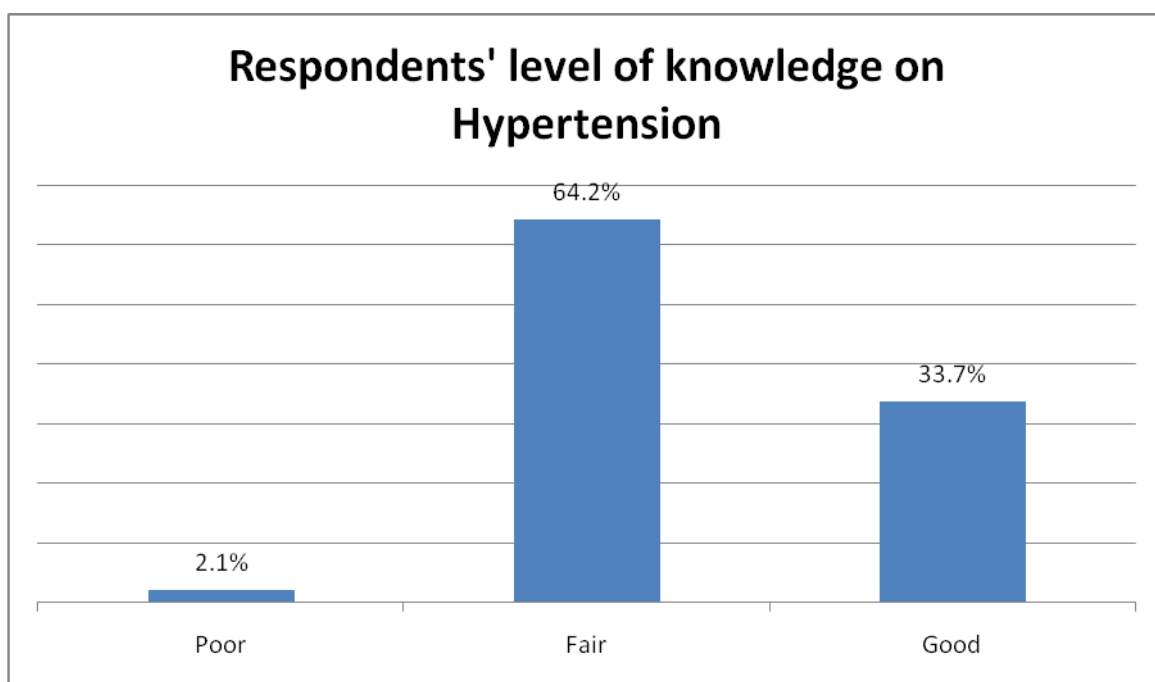


Figure 4.1: Chart showing respondents' level of knowledge on hypertension

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#### 4.2 Respondents Perception of Hypertension and its risk factors

Table 4.6a shows the respondents perception of hypertension. Majority of the respondents (79.2%) reported that hypertension is a silent killer while 13.2% were not of the opinion that hypertension is a silent killer. Few (7.6%) admitted not knowing if hypertension can kill silently. When asked if the drug for hypertension can control blood pressure and there is no need to change life style, 62.5% stated that there is no need for change in lifestyle. 28.1% reported that there is also a need for change in life style even if drug can control blood pressure. 9.4% did not know how. More than half of the respondents (56.6%) stated that hypertension is as a result of ageing and no need for treatment although about 33.3% disagreed while 10.1% did not know. About half of the respondents (51.7%) view hypertension as a disease of both male and female while only 37.2% reported that it is more prevalent in women than in men.

About half (49.0%) of the respondents stated Hypertension is not caused by witches and witchcraft? So treatment is not necessary while 40.3% believe witches and witchcraft are responsible. When asked if Hypertension could cause further damage if not properly controlled/treated, majority of the respondents (75.0%) stated yes while only 18.4% stated 'No'. Half of the respondents (50.0%) stated that Hypertension arises as a result of a long standing disease while 37.8% disagreed. About 12.2% admitted not to know.

When the respondent were asked if Hypertension is a serious health concern and it should be taken seriously, almost all the respondents (75/0%) agreed while few(18.4%) did not accept hypertension as a serious health concern. Majority of the respondents (72.2%) reported that Complication from High Blood Pressure could adversely affect ones career and that makes it very dangerous, while 25.3% reported that it will not affect ones career.

About 54.2% of the respondent started that Hypertension has is no known symptoms; it presents itself in term of complication and cannot be prevented while 41.0% did not agree that hypertension has no symptoms. Majority of the respondents (66.7%) reported that being permanently disabled due to hypertension would be so dangerous and make one become a burden to one's family. About 26.4 had a contrary opinion while 6.9% admitted not to know. More so, majority (64.2%) of the respondents reported that hypertension management doesn't differ with gender while 23.0%

reported that it is easier to manage hypertension in women than in men (As shown in table 4.6b below).

The mean perception score is  $6.98 \pm 1.83$ . The perception level among the respondents shows that 37.8% has low perception and 62.2% has high perception on risk of hypertension. This is shown in figure 4.2 below

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**Table 4.6a: Respondents perception of hypertension (N=288)**

<b>Perception Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Hypertension is a silent killer</b>		
Yes	228	79.2
No	38	13.2
Don't know	22	7.6
<b>If the drug/medication for hypertension can control blood pressure, there is no need to change lifestyles.</b>		
Yes	180	62.5
No	81	28.1
Don't know	27	9.4
<b>Hypertension is the result of aging, so treatment is unnecessary</b>		
Yes	163	56.6
No	96	33.3
Don't know	29	10.1
<b>Hypertension is only prevalent in Women and not Men?</b>		
Yes	107	37.2
No	149	51.7
Don't know	32	11.1
<b>Hypertension is caused by witches and witchcraft? So treatment is not necessary</b>		
Yes	116	40.3
No	141	49.0
Don't know	31	10.7
<b>Hypertension could cause further damage if not properly controlled/treated.</b>		
Yes	216	75.0
No	53	18.4
Don't know	19	6.6
<b>Hypertension arises as a result of a long standing disease</b>		
Yes	144	50.0
No	109	37.8
Don't know	35	12.2
<b>Hypertension is a serious health concern and it should be taken seriously</b>		
Yes	216	75.0
No	53	18.4
Don't know	19	6.6
<b>Complication from High Blood Pressure could adversely affect ones career and that makes it very dangerous</b>		
Yes	208	72.2
No	73	25.3
Don't know	7	2.4

**Table 4.6b: Respondents perception on hypertension (N=288)**

<b>Perception Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Hypertension has is no known symptoms. It presents itself in term of complication and cannot be prevented</b>		
Yes	156	54.2
No	118	41.0
Don't know	13	4.8
<b>Being permanently disabled due to hypertension would be so dangerous and make one become a burden to one's family.</b>		
Yes	192	66.7
No	76	26.4
Don't know	20	6.9
<b>It is easier to manage Hypertension in Women than in Men</b>		
Yes	67	23
No	185	64.2
Don't know	31	10.8

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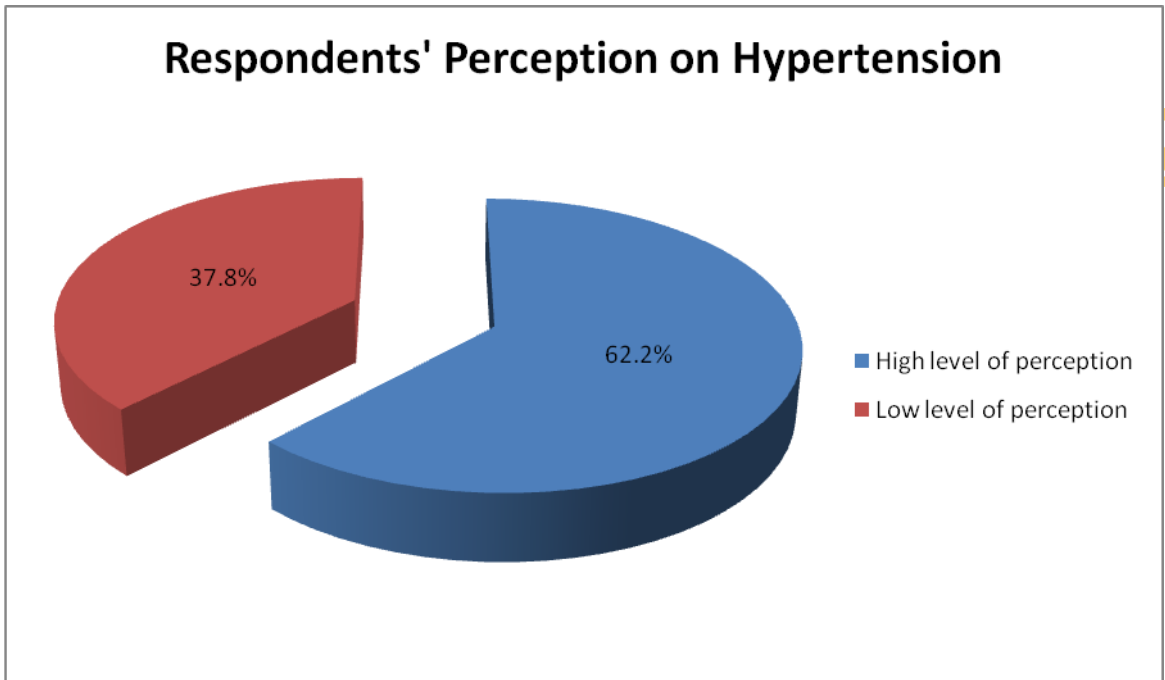


Figure 4.2: Level of perception among respondents

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### **4.3 Practice of the Risk Behaviour of Hypertension**

In the figure 4.3 below, Majority of the respondent (60.1%) reported to take fruit often. About 24.7% says daily, and 12.8% reported rarely. Only about 0.3% reported to never have taken fruits.

Assessing vegetable consumption frequency, about 67% of the respondents take vegetable often and only 16.3% takes vegetable daily. Few of the respondents (14.2%) reported rarely and 0.3% never took vegetable in this study. As shown in figure 4.4 below.

In figure 4.5, majority of the respondents(75%) are involve in exercise out of which 39.2% exercise daily, 32.3% reported often while 21.1% reported rarely as shown in the graph above.

### Frequency of Fruits Intake

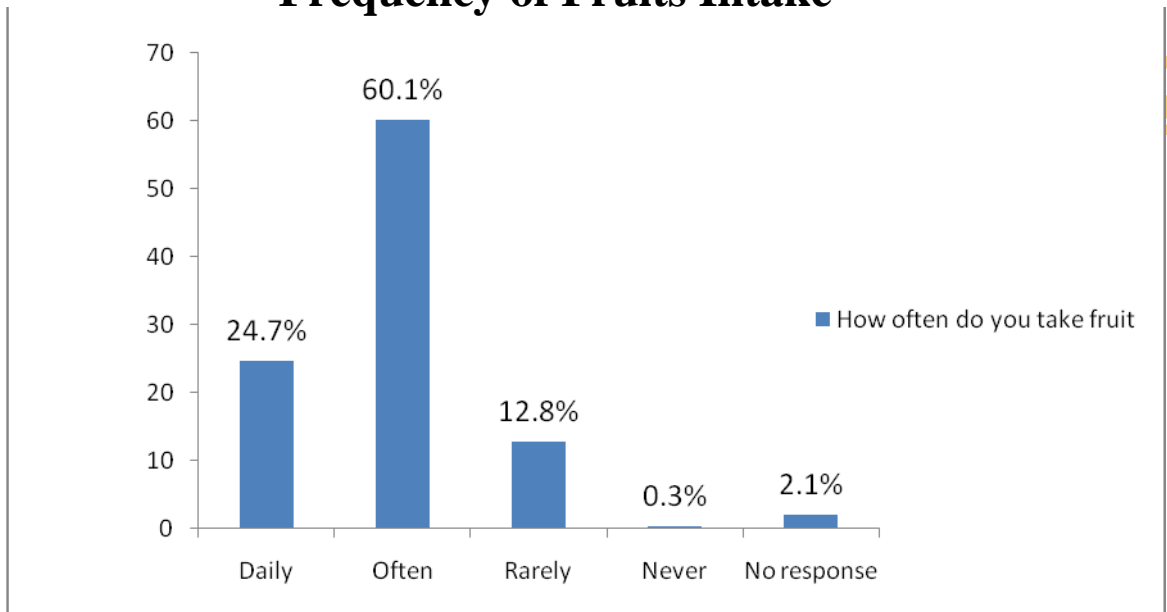


Figure 4.3: Frequency of fruits intake among respondents

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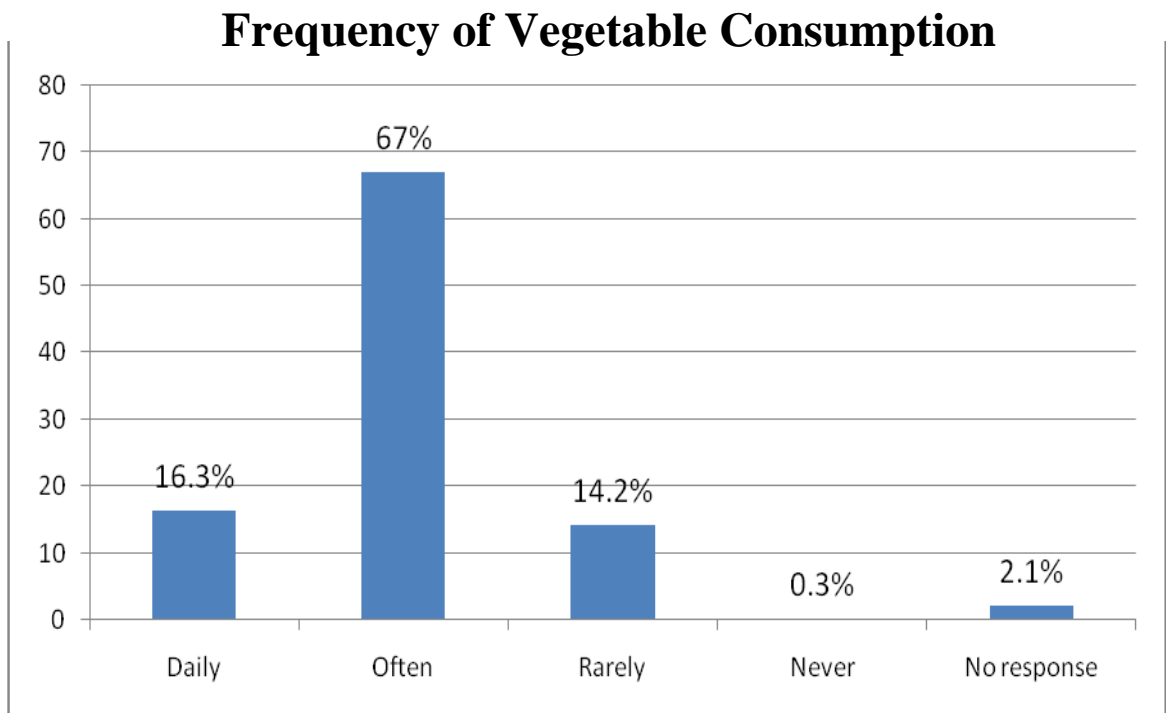


Figure 4.4: Frequency of vegetable consumption among respondents

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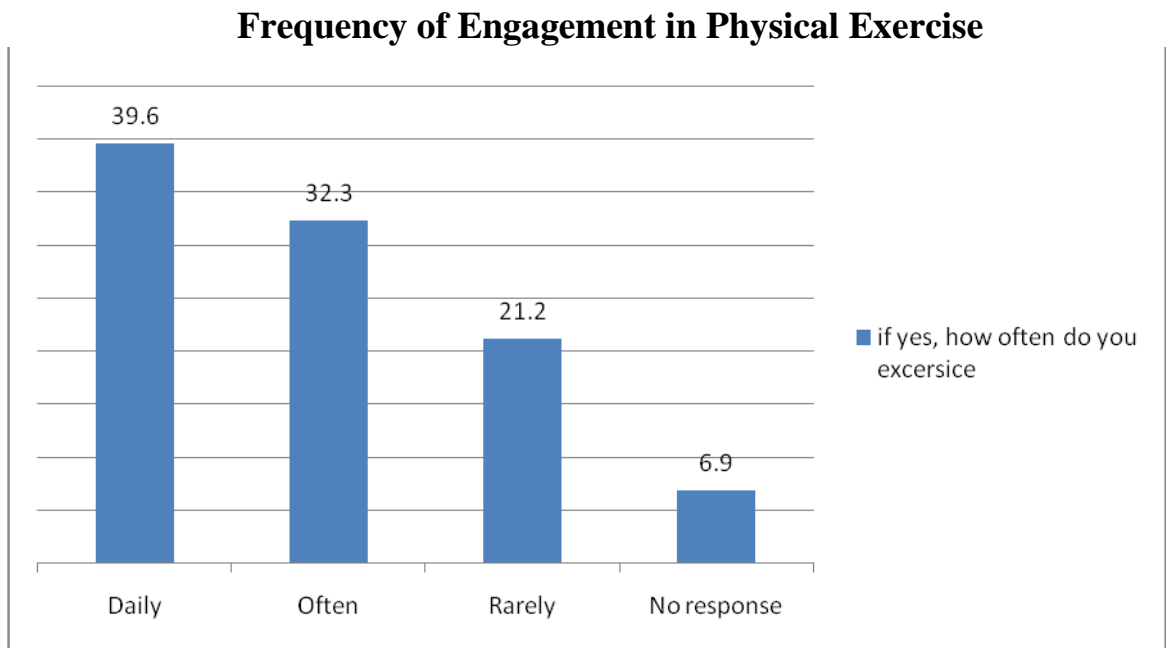


Figure 4.5: Frequency of respondents' involvement in physical exercise

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In the figure 4.6 below, when asked if the respondents smoke, majority of the respondents (89.9%) reported not smoking while 8.0% reported to be smoking.

Figure 4.7 shows that majority of the respondents (80.6%) do not consumes alcohol while (17.4%) of the respondent do consume alcohol. As shown above

In the figure 4.8 below, majority of the respondents (87.8%) do not consume diet high in salt whereby 9.4% of the respondent feed on low salt diet and 2.8% did not respond to the particular question.

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### Percentage of Smokers

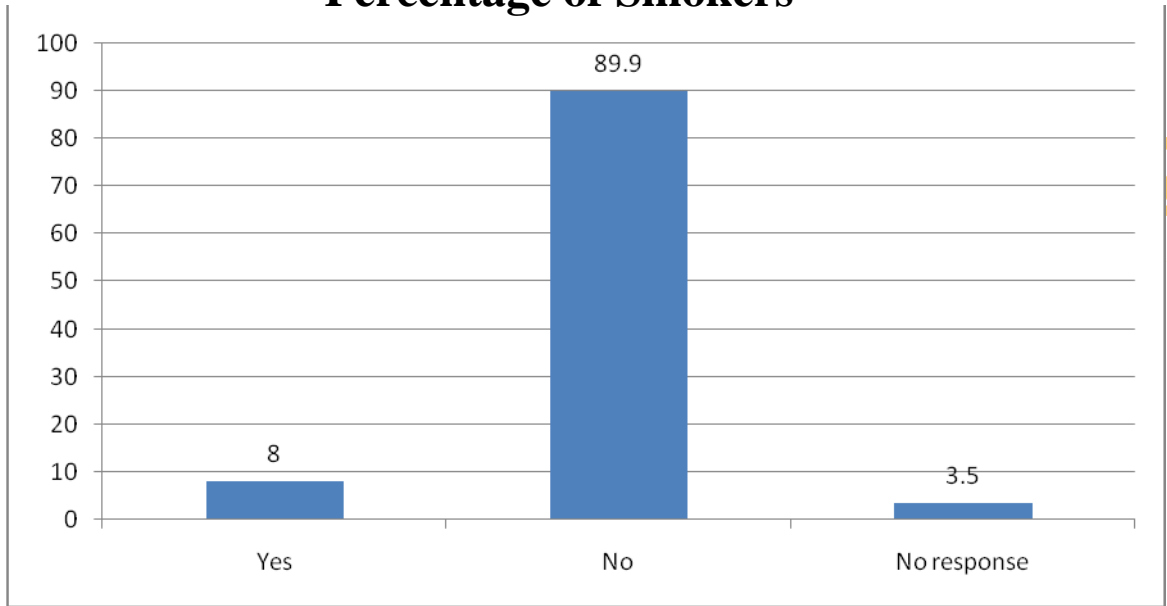


Figure 4.6: Percentage of respondents who smoke

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## Percentage of Alcohol Users

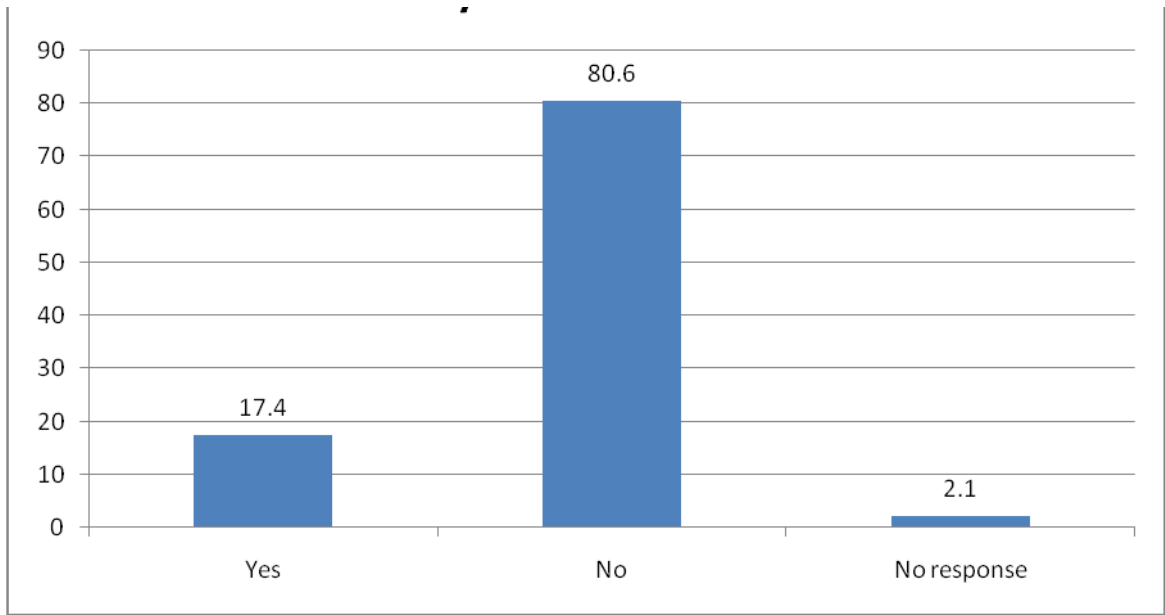


Figure 4.7: Percentage of respondent that drink alcohol.

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## Consumption of Food with High Salt Content

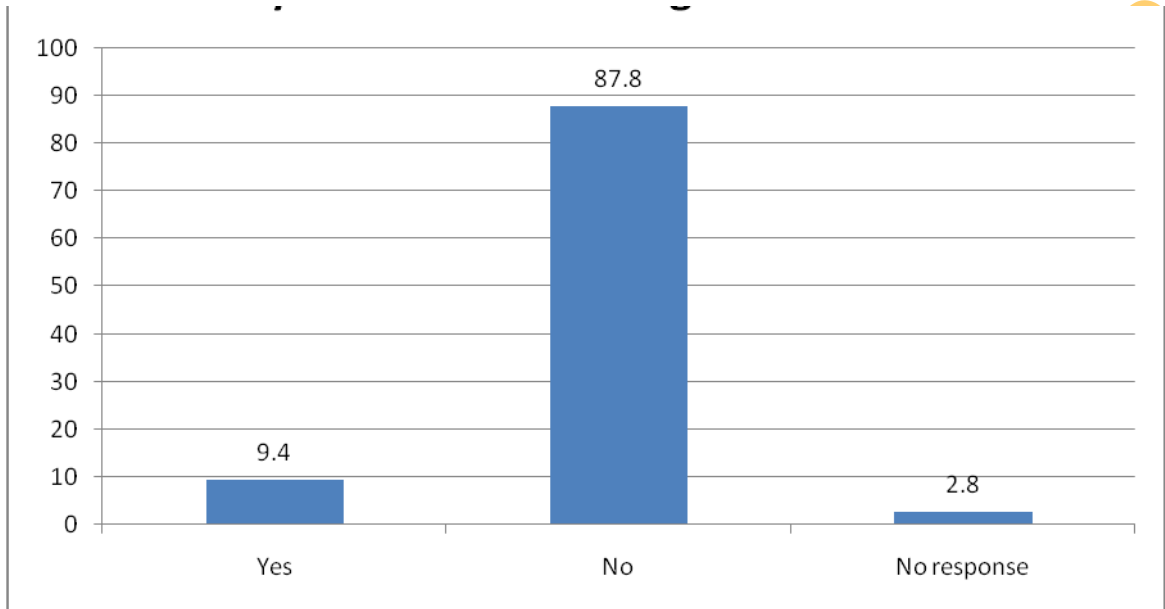


Figure 4.8: Respondents who are involved in eating food with high salt content

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Represented in figure 4.9 below is the frequency of how respondents eat junk and fast food. More than half of the respondent (59.7%) stated that they do not eat junk or fast foods while 37.5% reported eating fast foods or junks. About 2.8% did not respond to the question when asked.

Majority of the respondent (61.1%) reported to have average perception on stress while 27.1% reported low perceived stress level. Very few (9%) of the respondent perceived themselves of having high stress level, with 2.8% of the respondent did not respond to the question. As shown in the figure 4.10 below

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## Percentage of Fast Food Consumers

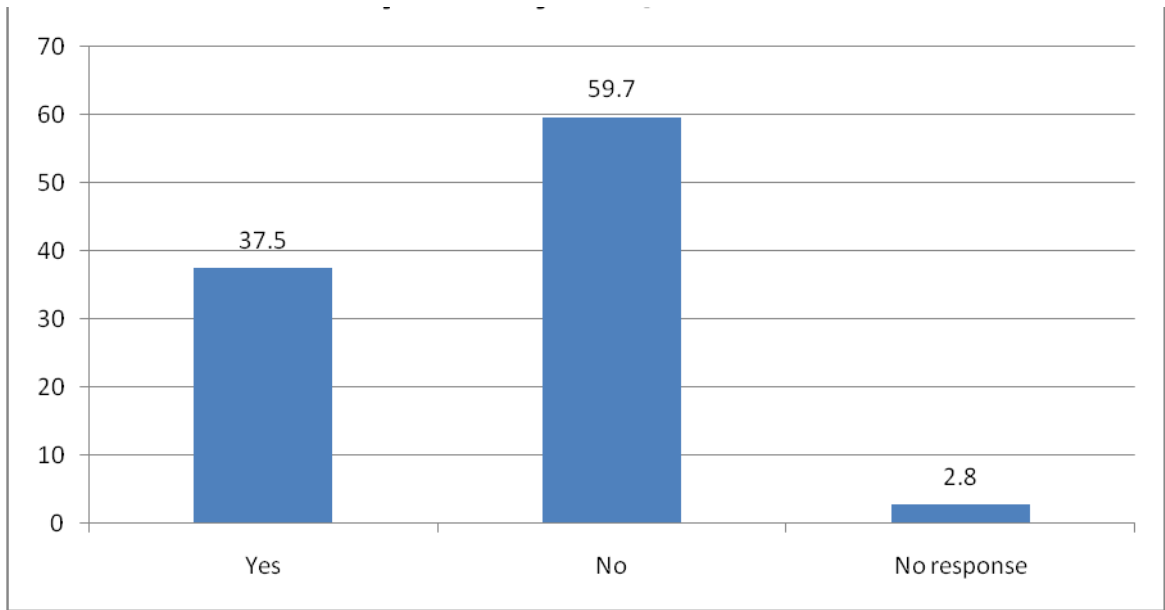


Figure 4.9: Percentage of respondents who eat junks/fast foods.

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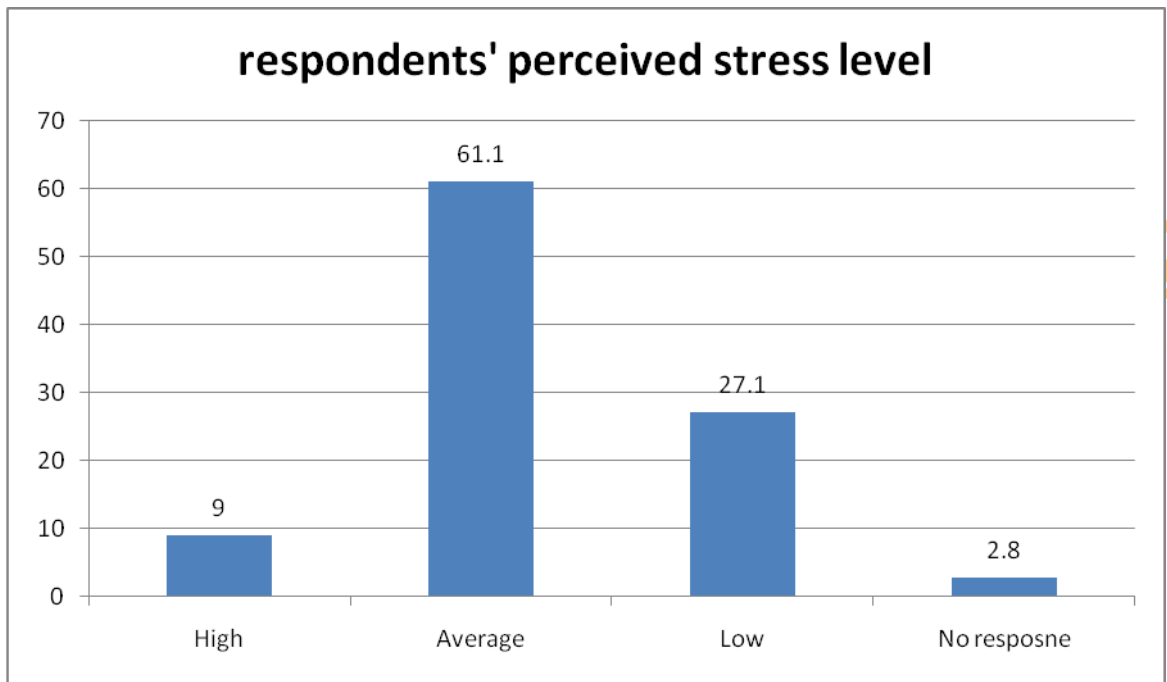


Figure 4.10: Perceived stress level of the respondents

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#### **4.4 Results of Hypotheses Testing**

The level of significance used for testing all hypotheses was set at an alpha level of 0.05

##### **Hypothesis 1**

The null hypothesis ( $H_0$ ) states that there is no significant difference between gender and knowledge of hypertension. Sex is categorized into male and female while knowledge score is a continuous variable. T-test was used to test for the association and the result is presented below

##### **Hypothesis 2**

The null hypothesis ( $H_0$ ) states that there is no association between level of education and knowledge level on Hypertension. Level of education is categorized into primary, secondary and tertiary level of education while knowledge is categorized into good, fair and poor. Chi- square test ( $X^2$ ) was used to determine the association and the result is presented in the table below

##### **Hypothesis 3**

The null hypothesis ( $H_0$ ) states that there is no association between workers knowledge and perception on Hypertension. Respondent's knowledge is categorized into good, fair and poor while perception is stratified into low and high perception. Chi-square test ( $X^2$ ) is used to determine the association and result is shown in the table below

**Table 4.7: Association between gender and knowledge on Hypertension**

<b>Socio-demographic characteristic</b>	<b>N</b>	<b>Mean knowledge</b>	<b>df</b>	<b>T</b>	<b>P-value</b>
<b>Sex</b>					
Male	160	14.60±3.05	286	0.427	0.619
Female	128	14.78±3.14			

P-value is 0.619 and is greater than 0.05. Therefore there is no significant difference between male and female workers knowledge on Hypertension. Hence we fail to reject the null hypothesis



**Table 4.8: Association between respondents' level of education and knowledge on Hypertension**

Socio-demographic characteristic	Level of knowledge			X <sup>2</sup>	df	P-value
	Good (%)	Fair (%)	Poor (%)			
<b>Level of education</b>						
No formal Education	0	1	0	13.880 <sup>a</sup>	2	0.031
Primary Level	1	6	0			
Secondary level	15	52	4			
Tertiary level	81	126	2			

P-value is 0.031 and is less than 0.05. Therefore there is significant association between workers Educational level and level of knowledge on Hypertension. Hence we reject the null hypothesis.

**Table 4.9: Association between workers knowledge and perception on Hypertension**

Socio-demographic characteristic	Low perception (%)	High perception (%)	X <sup>2</sup>	df	P-value
<b>Level of knowledge</b>					
Poor	0.9	2.8	28.290 <sup>a</sup>	2	0.000
Fair	83.5	52.5			
Good	15.6	44.7			

The chi-square test shows that P- value is less than 0.05. Therefore indicating there is significant association between various respondents' knowledge and perception level on Hypertension. Hence, we reject the null hypothesis.

## CHAPTER FIVE

### DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Socio Demographic Characteristics of the Respondents

The socio-demographic table shows that greater number of the respondents were within the age range of 31-45 years (55.6%), followed by 30yrs and below (24.0%). The mean age of the respondents was  $38.80 \pm 8.70$  years. The mean age is similar to the study conducted by (Adebayo et al., 2013) in three rural communities in Ife and that of (Oladapo, Salako, Sadiq, Soyinka, & Falase, 2013) among Yoruba rural south western Nigerian population. More than half of the respondents were male (55.6%) what do you think could have been responsible? This is a trend that has also been observed in similar study conducted on high blood pressure by (Ulasi et al., 2011) in Owerri, south east, Nigeria. But in contrast to study conducted by (Oladapo et al., 2013), (Hu, Li, & Arao, 2013) where female respondents were more than males. There was significant association between gender and perception on hypertension. Male workers were found to have higher perception on hypertension compared to the female workers. The predominant ethnic group in this study is Yoruba as expected since the local government is in the South western part of Nigeria. This was found to be significantly associated with the knowledge of the respondents. Age, sex, marital status and religion were not associated with respondents' level of education in this study.

#### 5.1 Knowledge of the Respondents about High Blood Pressure

Hypertension means different things to different people. The level of variation of the definition of hypertension is high and can be due to uncertainty regarding definition of hypertension. Only few (19.4%) of the respondents were able to correctly indicate that high blood pressure was force of blood pushing against blood vessel walls. A little more than half of the respondents thought high blood pressure meant high level of stress; tension or over thinking. Few of the respondents defined high blood pressure as a rapid breathing or rising blood looking for a way out. This may be due to different sources where people got their information. This is why it is necessary to get information from reliable sources. Health workers have a role to play in ensuring they give reliable and credible information to patients as they come for tests or treatments.

More so, more than half of the proportion of participants (52.8%) stated pre-hypertensive reading greater than 120/80mmHg but less than or equals 139/89mmHg) as normal readings. While only few (29.5%) could identify normal blood pressure readings as less than or equal to 120/80. This is similar to the trend observed in a study by (Osuala, Oluwatosin, & Kadiri, 2014) where only 20% is aware of blood pressure reading. Although, this finding is lower compare to what was observed in a study by (Kofi, 2011) in which only 50% answered correct values for normal blood pressure. This shows an urgent need for educational program on hypertension among the study population. A considerable percentage of respondents showed high level of knowledge especially about the asymptomatic nature of the High blood pressure. Generally, the initial onset of hypertension is asymptotic (Kofi, 2011). For instance, symptoms of markedly elevated hypertension such as headache, dizziness and general tiredness were reported as symptoms of hypertension by one-third of the respondents (33.7%). About 44.4% also reported tense feeling in the chest as symptoms of high blood pressure while 10.1% admitted not knowing the symptoms of blood pressure.

Epidemiologic, clinical and experimental studies have established that ingestion of a diet habitually high in salt plays a role in the aetiology and pathogenesis of hypertension. Sodium chloride is the most abundant salt occurring naturally in food. Salt reduction has been suggested as a possible adjunct to pharmacologic treatment to enhance blood pressure control. A research conducted by Balogun et al. (2006) revealed that popular Nigerian, Ghanaian, and Caribbean meals had high levels of salt (8.6-12g per portion). This was reported by only one-third of the respondent in this study. More efforts should be put on creating more awareness and education of the populace on the possible negative impacts of high salt consumption on health.

An increased prevalence of hypertension in groups with high alcohol consumption has also been recognized for a number of years. More recently, several studies have suggested an independent association between alcohol consumption and blood pressure levels in samples from general populations (Rakumakoe, 2011). Smoking too has been implicated as a risk factor for high blood pressure. According to Boulle, (2009) the risk of CVD is in smokers proportional to the number of cigarettes smoked and how deeply the smoker inhales. Nicotine in cigarettes causes vasoconstriction and an increase in the heart rate, blood pressure and the force of contraction of the heart and therefore increased workload and oxygen demand. Reduced HDL cholesterol is

one of the results of cigarette smoking and the risk is greater in women than in men. The relationship between obesity and hypertension has also been investigated in a large number of studies and they have all shown that in most populations, blood pressure increases linearly with increasing relative body weight or body mass index. It is estimated that as much as one-third of all hypertension may be attributable to obesity in populations where hypertension and obesity are widely prevalent. (Rakumakoe, 2011).

In this cross-sectional study 33.0% reported alcohol also as a factor, 19.8% said smoking, and 16.0% reported consumption of food high in fat. A little above half of the respondent 54.9% mentioned overweight and 53.1% mentioned too much stress as part of the factors associated with blood pressure. Poor knowledge of alcohol as risk factor has also been reported (Azubuike & Kurmi, 2014). It can therefore be deduced that knowledge about the risk factors associated with high blood pressure is inadequate. This finding is supported by (Abdullahi & Amzat, 2011) although they carried out their study in different but similar settings.

Although majority of the respondents tend to reckon with high salt intake, being overweight and anxiety as a risk factor for high blood pressure, but most of the respondent did not see poor nutritional intake and inadequate exercise as potential risk factors for high blood pressure. This is an indication that more emphasis and efforts should be put on comprehensive education on the risks of high blood pressure as a strategy for preventing high blood pressure which may in turn prevent other cardiovascular diseases. This can be done through Health promotion and education activities. Awareness on the dangers of these factors should also be embarked upon.

In this study, knowledge on prevention of high blood pressure was high. Majority of the respondents agreed that avoiding fried food, reducing salt intake and reducing stress can prevent hypertension. Conclusive evidence of hypotensive efficacy and enormous benefits of exercise in the control and management of hypertension, knowledge of exercise for Blood Pressure control was high in this study. This is in contrast of what was found in a study in Ife, Osun state Nigeria where the knowledge among the respondent was low (Awotidebe et al., 2013). This can be justified due to high level of education among the respondent in this study. Monitoring of blood pressure is very important in order to prevent high blood pressure as early detection

and proper management will prevent complications, maintain workers in state of good health, improve productivity at work and reduce the economic burden of managing complications(Ojomu& Kuranga, 2013). This was agreed to by majority of the respondent in this study.

Raised blood pressure changes the structure of the arteries. As a result, risks of stroke, heart disease, kidney failure and other diseases increase, not only in people with hypertension but also in those with average, or even below-average, blood pressure(Stevens, 2009). In this study, more than half of the respondents could identify that increased blood pressure can leads to diseases such as heart attack, stroke, kidney failure and premature death if left untreated. This is similar though a little above what (Abdullahi&Amzat, 2011) reported in his study among Staff of University of Ibadan. A lot is still needed to be done to educate the general public with the aim to reinforce appropriate healthy life style.

Only 33.1% of the respondent has general good knowledge on hypertension. This is consistent with finding in a study conducted among patients receiving treatment at the cardiac care clinics of some selected government hospitals in Osun state, Southwest, Nigeria(Awotidebe et al., 2013). Concerted efforts are needed in improving general knowledge of the public in order to scale-up prevention and management of hypertension.

## **5.2 Perception on Hypertension**

High blood pressure is called the "silent killer" because it often has no warning signs or symptoms, and many people do not know they have it (CDC, 2015). About 79.2% reported in this study that hypertension is a silent killer. More than half of the respondents (56.6%) stated that hypertension is as a result of ageing and no need for treatment. Hypertension is a very important disorder in aged people and is associated with higher risk of cardiovascular morbidity and mortality. The fact of reducing blood pressure values decreases the risk for cardiac death as well as neurological, metabolic, and musculoskeletal system sequel in aged people(Gil-Extremera& Cia-Gomez, 2012). There is need to disseminate adequate information to the general public.

Both men and women are at risk of developing high blood pressure; however, 37.2% reported that it is more prevalent in women than in men in this study. Before age 55, men are more likely than women to develop high blood pressure. After age 55,

women are more likely than men to develop high blood pressure. Despite gender differences in the age-related risk of high blood pressure, both men and women are diagnosed and treated in the same way. So, it is thus important during educating the public on hypertension to emphasize on regular blood pressure screening, especially young or middle-aged man (20s to early 40s) and post-menopausal woman.

Misconception about Hypertension was also apparent in this study as in other studies(Ike et al., 2010; Osuala et al., 2014). For example, about one-quarter reported that hypertension can be caused by witches and witchcraft; so treatment is not necessary. Health education may improve general public knowledge on a disease leading to a more positive role in the management of their health

Hypertension is a serious public health concern. More than one-quarter of the adult population over the world has hypertension, a significant health burden in many countries which also include Nigeria(Lu et al., 2015). Hypertension is a serious health concern and it should be taken seriously, almost all the respondents (75/0%) agreed. About 54.2% of the respondent started that Hypertension has is no known symptoms; it presents itself in term of complication and cannot be prevented. Interesting, about 23.0% reported that it is easier to manage hypertension in women than in men. This obviously shows the urgent need for community-based health education programs for hypertensive patients in improving knowledge on hypertension and alleviating clinical risk factors for preventing hypertension-related complications.

In general, 37.8% of the respondents have low level perception on hypertension.

### **5.3 Practice of Risk Behaviour of Hypertension**

The relationship between fruit and vegetable dietary pattern and the risk for hypertension may be explained biochemically. Fruits, vegetables, tubers, and legumes are flavonoid rich food sources. Flavonoids are structurally diverse compounds that exhibit cardio protective properties which include antioxidant, anti-inflammatory, and induction of apoptotic effects(Mundan, Muiva, & Kimani, 2013).In this study, majority of the respondent reported to be taken fruit and vegetables often.

Exercise, is a subcategory of physical activity that is planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one

or more components of physical fitness is the objective. Regular and adequate levels of physical activity in adults: reduce the risk of hypertension, coronary heart disease, stroke, the risk of falls; improve bone and functional health;

In this study, it was found that a large number of people were doing physical exercises. About 71% are doing it regularly. This is higher than the proportion that exercised regularly in the port Harcourt study (Ordinioha, 2013). This finding is consistent with finding by (Mundan et al., 2013).

Many of the respondents reported not smoking or drink alcohol. The prevalence of smoking and drinking of alcohol is 8.0% and 17.4% respectively the prevalence of smoking in this study is higher than the prevalence reported in a study among lecturers of a medical school in port Harcourt, south-south, Nigeria (Ordinioha, 2013) but lower to the prevalence reported in a study by (Ibekwe, 2015) in Oghara, Delta state, Nigeria. In a study conducted involving adults aged 18 years and above, residents of Kinondoni, Dar es Salam, Kenya, similar findings were observed (Linda, 2010). Studies have demonstrated a direct relationship between alcohol intake and the elevation of blood pressure, while cigarette smoking is said to be responsible for at least 12% of all vascular diseases, including hypertension (WHO, 2002). Healthy lifestyle particularly needs to be encouraged among workers for the successful management of hypertension and other non-communicable diseases.

Respondents who are involved in eating food with high salt diet are just 9.4%. The prevalence of low salt intake was higher than what was observed in study carried out by in Olokoro, a semi-urban community in Umuahia South Local Government Area of Abia state, South-East Nigeria. Their findings showed that 64.5% of those with knowledge of salt reduction practiced it (Okwuonu, Emmanuel & Ojima (2014). Higher knowledge on hypertension among the study participant might be likely explanation for lower intake of salty food among respondents in this study.

About 37.5% reported eating fast foods or junks. This high prevalence of fast foods and junks consumption is of great concern, considering the fact that fast foods and junk consumption is a risks factor for hypertension. Fast food commonly contains unhealthy amounts of sodium and fat, which can negatively affect blood pressure. Diet is a modifiable risk factor; making healthier food choices helps decrease your risk. However, this prevalence is lower compared to prevalence reported in among



traders in Sokoto (Awosan, Ibrahim, Essien, Yusuf, & Okolo, 2014). This could be due to difference in level of education in the two study settings

Generally, the practice among the respondent on risk of hypertension is encouraging among the respondents, this means many people in the studied settings are at a reduced risk of being hypertensive. Yet, more effort is still needed on Health education and other interventions to promote healthy eating habits and lifestyle, especially among high risk groups are suggested.

#### **5.4 Implication for Health Promotion and Education**

The findings from this study showed that knowledge and perception on hypertension is inadequate. The limited detailed knowledge indicates the need to develop more specific health education programs. This can be achieved by using some of the components of health promotion such as health education and developing personal skills. Governmental and non – governmental bodies should help health educate individuals on hypertension in order to increase their knowledge through the use of Information, Education and Communication (IEC) materials. The impact of information, education and communication is very important in health promotion on behaviour change. The IEC material can be used to address the low knowledge about hypertension and its risk factors and perception about hypertension. By providing adequate and appropriate information, steps must be taken to ensure that structured guidelines are set to achieve effective communication. Using strategies such as community development should also be included by involving health promoters. Developing personal skills; governmental and non – governmental bodies should also develop training programmes targeted at skill acquisition on how to self-monitor their blood pressure and adoption of healthy lifestyles.

Health promotion is carried out by and with people, not on or to people. Ensuring this at work improves the ability of individuals to take action to influence the determinants of health. This is feasible and can be achieved by creating supportive environment; the relationship between work and health is crucial and it is been viewed in different ways. The workplace setting brings together a variety of group of people who have different agendas with regards to work and health. Also, there should be improvement in the quality of service availability, outreaches and input supplies. Creating an enabling and conducive environment for workers have a significant impact on health

and wellbeing. Moreover, developing strategies of health promoting policies is crucial in promoting health.

Attention should also be focused on public health issues at work places and resources for health such as peace, income and social justice. A wider understanding of health and of how people can contribute to health must be emphasized. Since health promotion is the process of enabling people to have control over their health. Better coordination and communication between the different cadres of staff could also be health promoting in public health since it involves knowledge sharing. Also, since people's health behaviour or lifestyles have been regarded as the cause of many diseases. Main focus of health promotion has to be on modifying those aspects of behaviour which are known to have impact health.

### **5.5 Conclusion**

Hypertension is a major contributor to the global disease burden. It possess an important public health challenge to both economically developing and developed countries. The prevalence and rate of diagnosis of hypertension in children and adolescents, and adults appears to be increasing.

Hypertension is an important public-health challenge worldwide. Prevention, detection, treatment, and control of this condition should receive high priority

The study has revealed that only few of the respondents have adequate knowledge about hypertension. Majority could not identify what normal blood pressure should be and showed low knowledge about the symptoms of the disease as many of them were not aware of the symptomless nature of the disease. A little above average saw salts and stress as factors affecting blood pressure but only a few recognized smoking, consumption of alcohol and fatty food as a factor that can affect blood pressure. Majority of the respondents saw high blood pressure as dangerous and believed it could cause stroke, heart failure and other cardiovascular problems. Quite interestingly, majority believed that hypertension can be caused by witchcraft.

From the finding, inadequate literacy is not a barrier to knowledge and perception about hypertension and the risk factors of hypertension. It is deduced that the risk behaviours of hypertension should be discouraged.

More efforts should be geared towards improving the levels of knowledge of the respondents through adequate information, education and communication and awareness creation. This will reduce their wrong perceptions and attitudes, particularly fear and the view of a chronic disease like high blood pressure as an intermittent illness that requires ephemeral treatment. To prevent high blood pressure and its associated cardio-vascular diseases, there is urgent need for government or its relevant agencies to initiate motivational strategies and interventions such as awareness and educational interventions.

As suggested in a study conducted by (Oladapo et al., 2013) there is an urgent need for public enlightenment program by way of health education and promotion which will focus on preventing this population from acquiring adverse risk profile.

## **5.6 Recommendation**

1. Based on the findings on the fact that majority of the respondents were unable to correctly define hypertension and high blood pressure, knowledge deficit, risk factors associated with hypertension as well as misconception about hypertension. It is recommended that practical education, access to resources and leadership training be put in place and addressed by public health workers at the local government secretariat. Therefore, educational programmes to be implemented should include those providing correct and appropriate information through training, exploration of attitude through small group work and development of skills that develops/strengthens workers decision-making skills and increasing knowledge and skills about healthy lifestyles. This could be through role plays or activities designed to explore options.

2. The result of the research also revealed that some of the respondents still smokes and few uses tobacco. In this vein, practical lifestyle modification education must be incorporated among workers in the secretariat. Knowledge of risky lifestyle/behaviours (excess alcohol, excess salt intake, sedentary lifestyle, smoking, unhealthy nutrition) that are antecedent factors of High Blood Pressure should be discouraged majorly by health professionals.

3. Results also shown that there is knowledge deficit on the general concept of hypertension and the behaviours that puts one at risk of having hypertension. Behaviour change which is to encourage individuals to take responsibilities for their

own healthy and choose healthy lifestyles through one-on-one advice information, mass campaign etc to develop the necessary skills that people needs to make an informed choice about their health behaviour. This can be achieved by working on clients to meet their perceived needs through advocacy, negotiation, networking and facilitation

4. Also, it was deduced from the result of the study that majority of the respondents believes/perceived hypertension/high blood pressure to be caused by witches and witchcrafts. Health professionals as recognized as the leading source of information givers should promote individuals knowledge, correct perception, beliefs and attitude towards

5. Lastly, medical actions at work places must be strengthened to identify those that are at risk of diseases at work places through the public health care consultant by measuring the body mass index of workers, first aid, medical treatment and pre-employment screening etc. In addition, the worker should be thought self-monitoring of blood pressure as a preventive strategy by explaining in sufficient details on how to measure blood pressure followed by demonstration and return demonstration until they are able to correctly measure their blood pressure.

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## QUESTIONNAIRE

### KNOWLEDGE AND PERCEPTION ABOUT HYPERTENSION AND ITS RISK FACTORS AMONG IBADAN NORTH LOCAL GOVERNMENT

#### STAFF

**Dear Respondent,**

Greetings: My name is ..... a Master of Public Health student in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine University of Ibadan. I am conducting a research project titled '**Knowledge and perception about hypertension and its risk factors among Ibadan North Local Government Staff**' as part of the requirement for the degree. I am here to learn from you and would be very glad if you can spare some minutes to share your experiences, beliefs and opinion.

Participation is voluntary. Your identity, responses and opinions will be kept confidential and no name is required in completing the questionnaire. You are requested to please give honest responses to the questions as much as possible.

I am willing to participate in this study. 1. Yes [ ] 2. No [ ]

#### **Section A: Socio-demographic information**

**Instruction: Please tick where appropriate**

- (1) Gender: 1. Male  2. Female
- (2) Age in Years \_\_\_\_\_
- (3) Ethnicity: 1. Yoruba  2. Hausa  3. Igbo   
4. Others, specify \_\_\_\_\_
- (4) Religion: 1. Christian  2. Muslim  3. Traditional Believers
- (5) Marital Status: 1. Married  2. Single  3. Divorced   
4. Cohabiting
- (6) Occupation \_\_\_\_\_
- (7) Educational Level: 1. No formal education  2. Primary School   
3. Secondary School  4. Tertiary Education
- (8) Estimated income from all sources in a month \_\_\_\_\_

## SECTION B: GENERAL KNOWLEDGE ABOUT HYPERTENSION

### *Knowledge of General Concept of Hypertension*

- 9 What does the term high blood pressure mean? 1. High level of stress or tension [ ]  
2. Rapid breathing or rising blood looking for a way out. [ ] 3 Force of blood pushing against blood vessel walls. [ ] 4. I Don't know [ ]
- 10 What should normal blood pressure be? 1. Less than or equal to 120/80 [ ]  
2. Greater than 120/80 but less than or equal to 139/89 [ ] 3. Greater than 139/89 but less than or equals 160/100 [ ] 4. I Don't know [ ]
- 11 Which of the following can affect the blood pressure (*you can tick more than one option*) 1 Overweight [ ] 2. Too much stress [ ] 3. Inadequate exercise [ ] 4. Poor Nutritional Intake
- 12 Which of the following factors can increase the blood pressure? 1. Too much salt [ ] 2. Alcohol [ ] 3. Smoking [ ] 4. Taking food high in fat [ ]
- 13 How dangerous do you think high blood pressure is to one's health? 1. Extremely [ ] 2. Somewhat [ ] 3. Not at all [ ] 4. I Don't know [ ]
- 14 What do you think are the symptoms of high blood pressure? 1. Headache, dizziness, general tiredness [ ] 2. Tense feeling in the chest (cannot breathe) [ ] 3. There are no symptoms [ ] 4. I Don't know [ ]
15. The following can make a person more likely to have Hypertension?[kindly tick as many as applied to the question. 1. Family History[ ] 2. Age[ ] 3. Genetics[ ] 4. Occupation/workplace environment[ ]



<i>SN</i>	<i>Knowledge Statement</i>	<i>Yes</i>	<i>No</i>	<i>I don't know</i>
<b><i>Knowledge of Causation of hypertension/predisposing factors of hypertension</i></b>				
16	Diet rich in salt causes High Blood Pressure			
17	High blood pressure is a condition that results from anxiety, stress or anger			
18	Being overweight can cause High Blood Pressure.			
19	Hypertension can be contacted from someone who has it?			
20	Too much drinking of alcoholic beverages can predispose a person to hypertension e.g caffeine/alcohol consumption			
21	Individuals who smoke are more at risk of increased blood pressure			
<b><i>Knowledge of Prevention of Hypertension</i></b>				
		<b>Yes</b>	<b>No</b>	<b>I don't know</b>
22	Exercising regularly could prevent the onset of Hypertension?			
23	Monitoring of blood pressure is very important in order to prevent high blood pressure?			
24	High blood pressure can be prevented by reducing stress level?			
25	Individuals with increased blood pressure should avoid fried food/diet rich in cholesterol.			
26	Reducing the amount of salt intake can prevent hypertension?			
<b><i>Knowledge of Complication of Hypertension</i></b>				
27	High Blood pressure could cause cardiovascular diseases			
28	Increased blood pressure can cause visual impairment, if left untreated			
29	Increased blood pressure can cause heart diseases, such as heart attack, if left untreated.			
30	High blood pressure causes stroke			
31	Increased blood pressure can cause kidney failure, if left untreated			
32	Increased blood pressure can cause premature death if left untreated.			

## SECTION C: PERCEPTION TOWARDS HYPERTENSION

33	Hypertension is a silent killer			
34	If the drug/medication for hypertension can control blood pressure, there is no need to change lifestyles.			
35	Hypertension is the result of aging, so treatment is necessary			
36	Hypertension is only prevalent in Women and not Men?			
37	Hypertension is caused by witches and witchcraft? So treatment is not necessary			
38	Hypertension could cause further damage if not properly controlled/treated.			
39	Hypertension arises as a result of a long standing disease			
40	Hypertension is a serious health concern and it should be taken seriously			
41	Complication from High Blood Pressure could adversely affect ones career and that makes it very dangerous			
42	Hypertension has is no known symptoms. It presents itself in term of complication and cannot be prevented			
43	Being permanently disabled due to hypertension would be so dangerous and make one become a burden to one's family.			
44	It is easier to manage Hypertension in Women than in Men			

**SECTION D: PRACTICE OF THE RISK FACTORS OF HYPERTENSION**

45. How often do you eat fruits? 1 Daily  2 Often  3 Rarely  4  
Never
46. How often do you eat vegetable? 1 Daily  2 Often  3 Rarely  4  
Never
47. Do you engage in physical activities? 1 Yes  2 No
48. If yes, how often do you engage in physical exercise? 1 Daily  2 Often   
3 Rarely  4 Never
49. Do you smoke? 1 Yes  2 No
50. Do you take alcohol? 1 Yes  2 No
51. Do you eat food with high salt content? 1 Yes  2 No
52. Do you eat junks/fast foods? 1 Yes  2 No
53. What is your perceived stress level? 1 Low  2 Average  3 High

*Thank you for your time*

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