KNOWLEDGE, ATTITUDE AND WILLINGNESS OF STAFF OF IBADAN NORTHWEST LOCAL GOVERNMENT SECRETARIAT TO BE TRAINED TO SELF MONITOR THEIR BLOOD PRESSURE

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ABSTRACT

The risk of High Blood Pressure (HBP) increases with age and the awareness rate in Nigeria is about 18.55%. Early detection and treatment of hypertension reduces the risk of cardiovascular diseases. Self-monitoring of blood pressure (SMBP) is indispensable for the prevention and improvement of hypertension management in medical practice. This study therefore investigated knowledge, attitudes and willingness towards training on self-monitoring of blood pressure among secretariat staff in Ibadan North West Local Government Area, Ibadan.

A cross-sectional survey involving 280 willing staffs of Ibadan North West Local Government Secretariat was conducted. All willing secretariat staff of the Local Government was recruited for the study. Respondents were interviewed using a semi-structured pre-tested self-administered questionnaires collecting socio-demographic information, assessing knowledge of HBP, attitude and willingness to be trained to self-monitor blood pressure. Knowledge was assessed on a 56- point scale and score $\geq$ 30 was regarded as good. Attitude was assessed on a 13-point scale and scores ≥ 7 was categorized as positive. Willingness was also assessed on a 4-point scale and score ≥ 2 was categorized as willing. Data were analyzed using descriptive statistics, Chi-square test and Correlation at p=0.05.

Respondents' age was 35.7±10.6 years and 57.5% were female. Majority (90.4%) were Yoruba, 51.4% were married and 72.1% were Christians. Most of them (86.8%) had tertiary education. Majority of the respondents (65.7%) had poor knowledge about high blood pressure. Only 22.5% correctly defined HBP and 66.8% could identify normal BP readings. Most (66.4%) reported headache, dizziness and general tiredness as symptoms of HBP but only 1.8% recognized the symptomless nature of HBP. Majority (87.1%) perceived high blood pressure as dangerous although 90.0% believed HBP results from anxiety and stress. Most of them (93.9%) said HBP could cause stroke and heart failure while majority (81.5%) said overweight could also cause HBP. Majority (93.9%) believed that HBP is preventable although (81.0%) believed that the use of local home remedies could prevent HBP. Many 78.2% and 86.1% also said HBP could be prevented by diets modification and leisure physical exercise respectively. Majority (78.9%) believed that SMBP could help to prevent high blood pressure out of which 36.7% said it would do so by ensuring early detection and medication and 87.1% were ready to start (SMBP) if needed to prevent high blood pressure. Majority (77.9%) had positive attitude towards training. Most (89.6%) reported willingness

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to start SMBP. Most of them 90.0% were willing to be trained to SMBP and 82.1% were willing to buy self-monitoring devices. The main factor that could prevent the adoption of SMBP was inadequate knowledge to operate the devices with (44.7%) agreeing. The result also showed that there was an association between the attitudes of the respondents and willingness to self-monitor their blood pressure.

Knowledge of HBP is poor among the respondents Although they have positive attitudes and enthusiastic about starting SMBP, more efforts should still be geared towards improving the skills and levels of knowledge of the respondents through adequate information, education and communication and awareness creation.

Keywords: Self-monitoring, Blood pressure, Attitude, Willingness

Word count: 495

DEDICATION

I dedicate this work to the Almighty God, the Alpha and Omega for giving me the grace to commence and eventually complete this MPH programme.

I also dedicate this work to all my family members especially my father Overseer J.A Adebanjo, my loving mother Mrs. M.A. Adebanjo, my brothers (Bro Dayo and Odunayo) and sisters (Gbemi and Sade) for believing in me and their ever present support.

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CERTIFICATION

I certify that this work was carried out by **Adetosoye Moses ADEBANJO** in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria under my supervision**.**

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GLOSSARY OF ABBREVIATIONS

BP: Blood Pressure

SBP: Systolic blood pressure

HBP: High blood pressure

WHO: World Health Organization

NCD: Non communicable diseases

HTN: Hypertension

NIH: National Institute of Health

BMI: Body Mass Index

CVD: Cardio vascular diseases

SMBP: Self Monitoring Blood Pressure

ISH: International Society of Hypertension

DEFINITION OF TERMS

WHO: World Health Organization

Blood Pressure (BP): is a force exerted by circulating blood on the walls of blood vessels (Adri Boulle, 2009). It is a measure of the pressure exerted on the arterial walls by the blood when the heart is in systole (systolic pressure), and the pressure maintained by the elasticity of the arteries when the heart is in diastole (diastolic pressure)measured using a sphygmomanometer and the units of measure are millimeters of mercury (mmHg)

HYPERTENSION: Hypertension was defined as a measured blood pressure ≥140 mmHg systolic and/or ≥90 mmHg diastolic, or self-reported use of drug treatment for hypertension irrespective of measured blood pressure (Hendriks et al., 2012)

BODYMASS INDEX: BMI, a measure of someone`s weight in relation to their height. It is measured by dividing the subject`s weight by the square of the height. It is calculated as weight(kg) divided by height (m^2) (Agyemang & Bruijnzeels, 2006). It is the most widely used measurement for obesity. A BMI from 21-25 is considered normal, 25-29 is considered overweight and a BMI over 30 is considered obese

NUTRITION: Nutrition is the process in which one consumes food or nourishing liquids, digests and absorbs them and use them for health and growth (Secretariat, 2011).

SEDENTARY: a lifestyle of not engaging in any physical activity (Flack et al., 2010)

SELF MONITORING OF BLOOD PRESSURE: This more broadly refers to the regular use of a personal blood pressure measurement device that is used by the patient outside a clinical setting (Hadithi, Nazmi, & Khan, 2012)

PHYSICAL ACTIVITY: Physical activity is a broad term that encompasses all forms of muscle movements. These movements can range from sports to lifestyle activities (Society, 1996). Furthermore, exercise can be defined as physical activity that is a planned, structured movement of the body designed to enhance physical fitness. Regimented or purposeful exercise consists of a program that includes twenty to sixty minutes of activity at least three to five days a week. Some examples of this type of activity include walking, running, cycling, or swimming.

LIFESTYLE MODIFICATION: Adopting a healthy lifestyle. This includes losing weight if overweight or obese, limiting alcohol intake, increasing physical activity, reducing salt intake, limit alcohol intake and stop smoking (Flack et al., 2010)

ALCOHOL CONSUMPTION: The drinking of beverages containing ethyl alcohol. Because of the effects that alcohol has on the body, it is advisable that alcohol intake be limited to no more than 1 ounce (30 ml) ethanol (e.g., 24 ounces [720 ml] beer, 10 ounces [300 ml] wine, or 2 ounces [60 ml] 100-proof whiskey) per day or 0.5 ounces (15 ml) ethanol per day for women and lighter weight people.

CHAPTER ONE

INTRODUCTION

1.0   Background to the study

Hypertension has become a significant problem in many developing countries experiencing epidemiological transition from communicable to non-communicable chronic diseases. It is mainly due to an interaction of environmental and genetic factors. Although the precise genetic factors influencing blood pressure are largely unknown, many of the environmental and social factors that contribute to the development of high blood pressure are well known (Rakumakoe, 2011). 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(Society, 1996). The emergence of hypertension and other CVDs as a public health problem in these countries is strongly related to the aging of the populations, urbanization, and socioeconomic changes favoring sedentary habits, obesity, alcohol consumption, and salt intake, among others (Aubert et al., 1998). Hypertension 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). Hence a lot of evidence has pointed to the fact that hypertension and its related complications are major public health issues not only in Nigeria but globally.

The blood pressure is an index for the measurement and diagnosis of hypertension. The relationship between blood pressure (BP) and risk of cardiovascular disease events is continuous, consistent and independent of other risk factors (Ekwunife, Udeogaranya, & Nwatu, 2010). The higher the BP, the greater is the chance of heart attack, heart failure and kidney diseases (Ekwunife et al., 2010). A lot of studies have shown that the proportion of people who are aware of their blood pressure is usually low since the condition is often without symptoms. It was reported that the awareness rate of hypertension in Nigeria is 18.55% (Faronbi et al., 2014). According to (Omuemu, Okojie, & Omuemu, 2007), 64% out of those aware of their high blood pressure were on treatment.

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Monitoring of blood pressure (BP) is an important aspect of the diagnosis and management of High blood pressure. Self-monitoring of Blood pressure by patients at home is one strategy by which hypertensive patients can participate in the management of their own disease and possibly help them cope with the disease. People that are not hypertensive but perceived themselves to be prone to it can also use it as a preventive strategy. Self-monitoring of blood pressure may increase adherence to pharmacological and non-pharmacological interventions and may decrease the incidence of fatal diseases such as stroke, myocardial infarction, heart failure, renal dysfunction. The World Health Organization -International Society of Hypertension Guidelines proposes use of self measurement of BP at home as an important means to evaluate the response to antihypertensive treatment, to improve compliance with therapy and most importantly, as an alternative for ambulatory BP (Hadithi, Nazmi, & Khan, 2012). This has made the awareness and importance of home monitoring device for BP to increase substantially in recent years.

Previous studies have focused mainly on knowledge, perception and attitudes of hypertensive patients in hospitals. Some other studies have also been carried out in a community based setting but studies on the knowledge, attitudes, and willingness of individuals to be taught self monitoring are sparse. This study was therefore aimed at determining the level of knowledge, attitudes and willingness towards training on self-monitoring of blood pressure among secretariat staff in Ibadan Northwest Local Governments, Ibadan.

1.1   Statement of the problem

According to the World Health Report (2001), Non communicable diseases (NCDs) accounted for about 22% of total death in Africa in the year 2000. Despite all the effort to diagnose and treat patients with high blood pressure, hypertension remains a leading cause of cardiovascular morbidity and mortality. 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). The burden of non communicable diseases such as hypertension is increasing in epidemic proportion in Africa. The situation is further compounded by the fact that as in many populations of the world, the awareness of hypertension is low in

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Nigeria. In four of the studies, the reported awareness rates were 14.2% in rural areas by Oladapo et al, 18.5% in Edo State, and 29.4% and 30.0% in semi-urban and urban populations in Enugu State (Okechukwu *et al*.2012)

Successful hypertension management has been described as having three important dimensions: awareness (whether individuals have been told by their physicians that they have hypertension or high blood pressure), treatment (whether individuals report using a prescribed medication to control their hypertension), and control (whether they are maintaining their average systolic blood pressure at less than 140 mm Hg and their diastolic blood pressure at less than 90 mm Hg, and report currently using an antihypertensive medication) (Department of Health and Human Services, 2010). In Nigeria, more than 17-20% of adults are living with the illness with about 5 – 7% in rural area while it is about 17 – 20% in the urban. The risk of hypertension increases with age and the awareness rate in Nigeria is about 18.55% (Faronbi et al., 2014). High blood pressure is uncontrolled in more than half of adults with the condition. Only 61% of adults with uncontrolled High blood pressure are aware they have High blood pressure, and just under half (45%) of the uncontrolled both know they have High blood pressure and are being treated with medications to lower their blood pressure. Uncontrolled High blood pressure is associated with increased cardiovascular morbidity and mortality and increased use of health care resources, with direct health care costs related to High blood pressure amounting to approximately $131 billion each year.

Effective management and control of Hypertension (HTN) can reduce the risks of heart attack, stroke, and heart failure. Adequate blood pressure control and compliance are other major issues in hypertension management in Nigeria (Akintunde, Oyedeji, Familoni, Ayodele, & Opadijo, 2012).

1.2   Justification

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 promotive 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

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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. One of the ways of keeping the blood pressure down is by monitoring the blood pressure regularly so as to keep it regulated. According to (Ambakederemo, Ebuenyi, & Jumbo, 2014) knowledge of Self-monitoring of blood pressure is still sub-optimal in most developing countries. This is why this study is aimed at determining the knowledge, attitudes and willingness towards training on self-monitoring of blood pressure among secretariat staff in Ibadan North West Local government Area, Ibadan. Documented research that looked at how willing staffs of a Local Government are to be taught how to self-monitor their blood pressure is sparse. The result gathered from the study can be used in designing health education strategy for the management of high blood pressure.

1.3   Research questions

- What is the level of knowledge of staff of Ibadan Northwest Local Government Secretariat about blood pressure?

- What is their attitude towards regular monitoring of their blood pressure?

- Are the Ibadan Northwest Local Government Secretariat Staffs willing to be taught how to self monitor their Blood Pressure?

- What are those factors that can prevent them from self monitoring of their blood pressure?

1.4   Objectives of the study

The broad objective of the study was to investigate the level of knowledge, attitudes and willingness towards training on self-monitoring of blood pressure among secretariat staff in Ibadan North West Local government Area, Ibadan.

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1.5   Specific objectives of the study

The specific objectives of the study were to:

1. Assess the level of knowledge of staff in Ibadan Northwest Local Government Secretariat about blood pressure (BP).

2. Examine the attitudes of staffs in Ibadan Northwest Local Government Secretariat to self monitoring of their Blood Pressure.

3. Determine the willingness of staff in Ibadan Northwest Local Government Secretariat to be taught how to self-monitor their Blood Pressure.

4. Identify factors that can prevent Ibadan Northwest Local Government Secretariat's Staff from self monitoring of their blood pressure.

1.6   Research hypotheses

The following hypotheses were tested by the study

H_o1 There is no association between sex and the knowledge of respondents

H_o2 There is no association between the knowledge of respondents and their attitude towards self-monitoring of their blood pressure.

H_o3 There is no association between gender/ sex and attitude of respondents towards self-monitoring of blood pressure.

Ho4   There is no association between the knowledge of respondents and their willingness to self-monitor their blood pressure

Ho5   There is no association between the attitude of respondents and their willingness to self-monitor their blood pressure

Ho6   There is no association between the level of education of respondents and their willingness to self-monitor their blood pressure.

2.0   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 that occurs as a result of 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.

2.1   Prevalence of hypertension

Hypertension is a major public health problem. Worldwide, prevalence estimates for hypertension is about 1 billion individuals. It causes about 7.1 million deaths per year and 4.5% of the disease burden which translates to 64 million disability adjusted life years (DALYs) (Ekwunife et al., 2010). Hypertension is a major health challenge of the 21st century because as of year 2000, more than 900 million people were living with hypertension worldwide and it was also predicted that this number could increase to more than 1.5 billion in 2025 if drastic measures are not taken to control hypertension (Abdullahi & Amzat, 2011). Burden of Hypertension or High blood pressure is a major risk factor for heart disease, stroke, and kidney disease. It affects nearly one-third of American adults aged 18 or older (67 million people).

Developing countries experiencing epidemiological transition from communicable to non-communicable chronic diseases often bear the brunt of hypertension most especially in Sub-Saharan Africa, hypertension affects over 20million people and remains a leading cause of hospitalization and mortality (Abdullahi & Amzat, 2011). The level of detection, treatment and control of hypertension in West Africa is low and worrisome. Faronbi etal 2014 even further explained that there is a gender inequality in the detection of hypertension and reiterated that that proper education through programs will heighten sense of responsibility for the successful management/prevention of hypertension.

In Nigeria, more than 11% of adult populations are living with hypertension with more reported cases among people living in urban areas of Nigeria. Less than one-third of people with hypertension in Nigeria undergo medications and less than one-third of those undergoing treatment have their problem being efficiently managed (Abdullahi & Amzat, 2011). A recent community based study of rural and semi urban population in Enugu reported that put the prevalence rate of hypertension in Nigeria at 32.68. Working class adults constitute the main risk group for hypertension with the prevalence rate among working class adults in a university community in the South West, Nigeria is 21% (Faronbi et al., 2014).

2.2   Hypertension and the black race (ancestral inheritance)

Research has shown that higher proportion of black people are sensitive to the blood pressure–raising effects of salt in the diet than white patients, and this, together with obesity, may be part of the reasons it is believed that young black people tend to have earlier and more severe hypertension than other groups (Michael et al., 2013). Black patients with hypertension are particularly vulnerable to strokes and hypertensive kidney disease. They are 3 to 5 times more likely than whites to have renal complications and end-stage kidney disease. There is a tendency for black patients to have differing blood pressure responses to the available anti-hypertensive drug classes.

2.3   Risk factors of hypertension

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). 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. This increase in systolic blood pressure and decrease in diastolic blood pressure with aging reflects the progressive stiffening of the arterial circulation. The reason for this effect of aging is not well understood, but high systolic blood pressures in older people represent a major risk factor for cardiovascular and stroke events and kidney disease progression.

Based on causes, hypertension is classified into two namely the primary and secondary hypertension. The primary or essential hypertension is the most common type and about 95%f hypertension cases in adults fall within this category (Abdullahi & Amzat, 2011). Primary hypertension is deep-rooted in genetic, socioeconomic and other social determinants of health and environmental factors. Environmental factors include excess intake of salt, obesity, and perhaps sedentary lifestyle. Some genetically related factors could include inappropriately high activity of the renin-angiotensinaldosterone system and the sympathetic nervous system and susceptibility to the effects of dietary salt on blood pressure (Michael et al., 2013). Another common cause of hypertension is stiffening of the aorta with increasing age resulting in a type of hypertension referred to as isolated or predominant systolic hypertension characterized by high systolic pressures (often with normal diastolic pressures). This is mostly found in elderly people (Michael et al., 2013). Secondary Hypertension has identifiable causes and can sometimes be treated. It constitutes about 5% of all hypertension. The main causes of secondary hypertension are chronic kidney disease, renal artery stenosis, excessive aldosterone secretion, pheochromocytoma, and sleep apnea (Michael et al., 2013).

2.4   Behavioural risk factors

Life-style is an important determinant of physical health and it depends mainly on the knowledge, perception and attitudes of people to make informed decisions about their health. A patient's perception of illness may be influenced by their subjective beliefs. A lot of people perhaps due to their poor educational background, still believed that hypertension could be caused by evil spirits, enemy remote attacks, or food poisoning (Iyalomhe & Iyalomhe, 2010). This may result in decreased reliance on medication and subsequent non-adherence as the patients may go on a wild goose chase searching for what is responsible for their dilemmas. Also the symptomless nature of the disease (the silent killer) makes majority of the hypertensives to

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be unaware even the educated ones and this makes them to be caught unaware by the complications of a high blood pressure.

Unhealthy behaviours like smoking greatly increase the risk of heart attack or stroke. Smoking, eating or inhaling tobacco products predisposes a person to high blood pressure and other cardiovascular diseases. Tobacco contains about 5000 chemical compound of which about 50 are known carcinogens. Alcoholic drinks are also known to be high in calories, and too much alcohol also can raise blood pressure. This is due to the fact that, the kidney and liver works extra hard in getting rid of waste from the bloodstream therefore, more pressure is exerted on the arteries. Excessive alcohol intake can also increase the chance of other medical issues as obesity that may lead to an increase in blood pressure.

Unhealthy diet is also a factor. Consuming food rich in trans-fatty acids, saturated fats predisposes a person to hypertension. High salt consumption has also been known to increase blood pressure. 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 1500milligram 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 4500milligram which accounts for two fold of the maximum recommendation (Kofi, 2011).

Sedentary lifestyle is a medical term used to describe lifestyle with little or no physical activity. Sedentary lifestyle is dangerous to health as smoking. This is due to the fact that it contributes to most death as a result from heart diseases. 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). When energy intake is not balanced with expenditure through physical activities and exercise, it may lead to high blood pressure.

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).

2.5   Knowledge, attitudes and beliefs about hypertension

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. (Oladapo, Salako, Sadiq, Soyinka, & Falase, 2013) reported a general lack of knowledge about hypertension and other modifiable CVD risk factors among adults living in rural southwestern Nigeria. In the study, more than half of the respondents were unable to identify a single risk factor. 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).

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 favorable outcome expectation, positive attitudes, and appropriate practices for hypertension and relevant healthy lifestyles. He further stated that even hypertensive persons with other concurrent cardiovascular risk factors affecting the overall heart risk knew the detrimental effects of these negative attitudes and unhealthy practices, but they only made little changes to control them (particularly regarding overweight and sedentary habits). Gelirli & Hipertansiyon, (2010) in a study conducted in a clinical setting also reported that more than half of patients with hypertension have poor knowledge of their disease although he found knowledge of hypertension to be better among female than males. (Iyalomhe & Iyalomhe, 2010) also reported that patients' knowledge of hypertension is low, their attitudes to treatment negative and their life-style practices grossly inadequate.

Among the most significant problems affecting hypertension control are differences between patients and providers in beliefs and attitudes about health. It has been theorized that health

beliefs of patients are of principal importance in influencing behavior change. Thus, understanding the role of beliefs and attitudes in communicating information about hypertension is essential (Department of health and Human Services, 2010). Abdullahi & Amzat (2011) reported that despite the fact that majority considered hypertension as a very serious health problem, quite a number of them still adopted lifestyles contradicting their perception about hypertension. This category of people included those in the habit of smoking cigarettes and taking alcohol with some of them within this category believing that there was nothing they could do to change their drinking and smoking lifestyles.

Africans' beliefs about hypertension are varied but are often nonclinical in origin, particularly among those of lower socioeconomic status, older age, and lower educational attainment. Health beliefs can also have a significant effect on adherence to treatment. These include beliefs about severity of the disease, susceptibility, and effectiveness of treatment. This may in turn affect both confidence in the medical establishment and compliance with medical recommendations (Department of health and Human Services, 2010). According to (Iyalomhe & Iyalomhe, 2010) in a study carried out among patients in a sub- urban Nigerian community, some people still believe hypertension is caused by witches and wizards. Some also believe it was caused by juju(remote enemy attack) although majority of them saw it as a condition with dangerous complications. Another troubling belief when it comes to treatment and management of people with hypertension is that many of them believe in traditional drugs and treatment because they perceived them to have no side effects (Lotika, Mabuza, & Okonta, 2013). Although the validity of the medicinal values to the traditional concoctions have not been determined yet but many of them prefer and rely on them for the prevention and treatment of hypertension. Many of the people going for traditional treatment actually expressed their satisfaction with traditional healer's patient care while they expressed disappointment with the conventional health service. They believed that the traditional medicine was accessible, could counteract western medicine side effects and that both of them can complement one another (Lotika et al., 2013).

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 counseling patients and their families about preventing hypertension and the positive

influence of lifestyle modification. All patients would benefit from general advice on healthy lifestyle habits, in particular healthy body weight, moderate consumption of alcohol and regular exercise. Building a trusting relationship between the healthcare worker and the patient is one of the most important aspects when motivating patients. He also pointed out that adherence to lifestyle interventions by the healthcare workers themselves is probably the best starting point when attempting to motivate and convince patients to adopt healthy lifestyles (Rakumakoe, 2011).

2.6   Detection and measurement of high blood pressure

As a result of the fact that hypertension is often symptomless and complications may not arise early, many people are living with hypertension unaware. Often they become aware when they visit a hospital for other ailments or for other reasons. Sometimes it can be discovered during a screening exercise and when its complications set in.

Blood pressure can be measured by either a conventional sphygmomanometer using a stethoscope or by an automated electronic device. The electronic device, if available, is preferred because it provides more reproducible results than the older method and is not influenced by variations in technique or by the bias of the observers. During measurement, it is necessary to make sure that the correct size of the arm cuff is used (in particular, a wider cuff in patients with large arms [≥34 cm circumference]) (Aubert et al., 1998). Three readings can be taken and the average of the last two can be taken as the measurement. The blood pressure should be taken after patients have emptied their bladders. Patients should be seated with their backs supported and with their legs resting on the ground and in the uncrossed position for 5 minutes. The patient's arm being used for the measurement should be at the same level as the heart, with the arm resting comfortably on a table. It is preferable to take 2 readings, 1 to 2 minutes apart, and use the average of these measurements (Michael et al., 2013).

Another approach is to use ambulatory blood pressure monitoring, if it is available. In this procedure, the patient wears an arm cuff connected to a device that automatically measures and records blood pressures at regular intervals usually over a 24-hour period. It can be helpful to measure blood pressures at home. If available, the electronic device is simpler to use at home and is probably more reliable than the sphygmomanometer (Michael et al., 2013).

2.7   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.

2.7.1   Non pharmacologic treatment

The WHO and International Society of Hypertension (ISH) recommended that all individuals, particularly hypertensives and those at risk, should adopt appropriate life-style 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, 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, 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 gastro-intestinal 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).

2.7.2 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≥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 ≥150/90mmHg. Thus, the target of treatment should be <140/90 mm Hg for most patients but <150/90mmHg 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).

2.8   Nigeria and control efforts

The prevention and control of hypertension has not received due attention in many developing countries although it is one of the most modifiable risk factors for cardiovascular disease (Olufemi et al., 2013). Awareness, treatment and control of hypertension are extremely low in these countries as health care resources are overwhelmed by other priorities including HIV/AIDS, tuberculosis and malaria.

It is therefore good to see that the Nigeria Heart-care Foundation in 1996 took the initiative to challenge medical scientists from the Federal Ministry of Health and other health associations and societies like the Nigerian Cardiac Society, Nigerian Hypertension Society, Nigerian Medical Association, Medical Colleges, Guild of Medical Directors, pharmacists Societies, National Agency for Food and Drug Administration & Control, and others to give a critical look at how hypertension can be controlled and managed in Nigeria and other Sub-saharan African countries. The Medical experts who prepared the guidelines did not only describe causes and nature of hypertension, but also how to detect, evaluate and manage it. Thus, the Guideline is a useful tool in the hands of health care providers for the detection, evaluation and management of hypertension in Nigeria. The Guidelines are recommended to all health care providers – doctors, nurses, pharmacist and all other health workers. In March 1996, the Nigerian Heartcare Foundation at the instance of the Nigerian Hypertension society, sponsored a consensus meeting to develop guidelines for the detection, evaluation and management of hypertension in Nigeria (Society, 1996). The consensus group examined current hypertension guidelines from the United

States (US), the United Kingdom (UK) and the World Health Organization/International Society of Hypertension (WHO/ISH) as a guide in preparing this document (Society, 1996).

According to the guideline, hypertension control begins with detection and requires continued surveillance. Health care professionals are strongly advised to measure blood pressure at each patient visit. This is to make sure that those that do not self monitor their blood pressure have it checked at every visit made to the hospital (Society, 1996). Hypertension should not be diagnosed on the basis of a single measurement. Once hypertension is detected, the next step is treatment in order to prevent morbidity and mortality associated with high blood pressure. This should be accomplished by achieving and maintaining SBP below 140mm Hg and DBP below 90 mm Hg, while concurrently controlling other modifiable cardiovascular risk factors. Further reduction to levels of 130/85mm Hg may be pursued, with due regard for cardiovascular function, especially in the elderly. Another proposed management option is Life-style modification which includes weight reduction, increase physical activity, moderation of dietary sodium and alcohol intake. Physicians were encouraged to actively encourage their patients to adopt these life-style habits. The group also recommended primary prevention strategies that involve application of interventions to the general population (population-based strategy) with the objectives of achieving a downward shift in the distribution of blood pressure. This approach can be complemented by special attempts to lower blood pressure among those who are most likely to develop hypertension (targeted strategy). The latter includes persons with Borderline Hypertension, a family history of hypertension, and one or more of the several life style factors that are important contributors to age-related increases in blood pressure. These life style factors include a high salt intake, an excessive consumption of calories, physical inactivity, excessive alcohol consumption, and low intake of potassium (Society, 1996).

NIGERIAN CONSENSUS ON THE MANAGEMENT OF HYPERTENSION
GOAL:

Systolic Blood pressure

≥160mmHg

Target organ damage

Target organ damage absent

Systolic pressure ≥ 200mmHg

Or Systolic pressure 160-199mmHg

And Diastolic pressure ≥95mmHg

Systolic pressure 160-199mmHg and Diastolic pressure <95mmHg

Follow up for

3-6 months

TREAT

Systolic pressure ≥160mmHg

TREAT
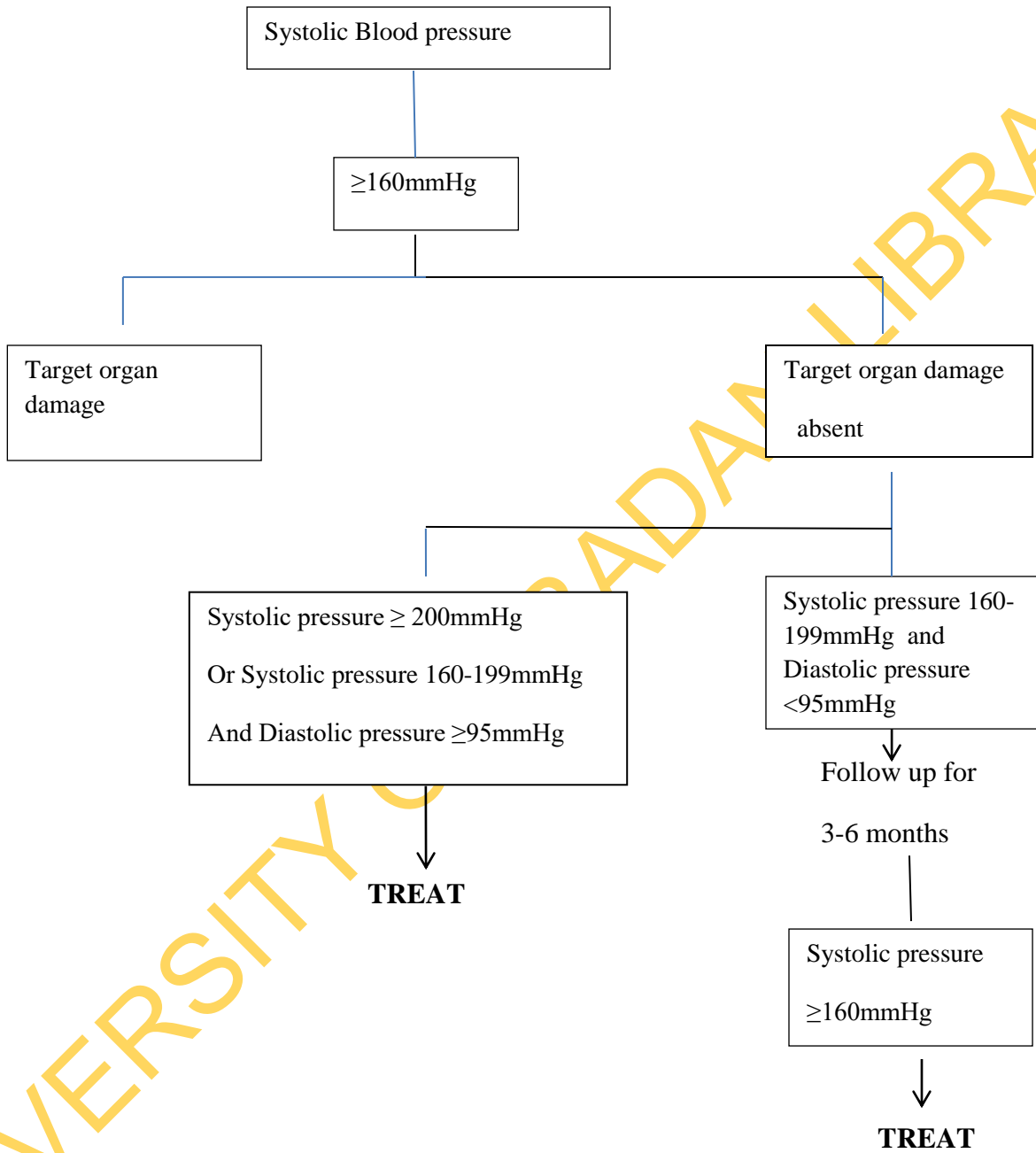
Society (1996)

Figure 2: Therapeutic action– to reduce the systolic Blood pressure to below 140mmHg

Also a National High Blood Pressure Education Programme which includes promotion of foods that are low in salt and calories and high in potassium, moderation in alcohol consumption and promotion of physical activity was proposed. Community screening activities for population subgroups at especially high risk for developing CVD, and with limited access to medical care was also proposed. This will help in primary prevention of hypertension, monitoring the progress and promoting compliance by hypertensive persons already receiving therapy. Ideally, community programmes are encouraged to include as many of the following that their resources will allow:

- Detection, education and referral for other cardiovascular risk factors.

- Multiple strategies to improve compliance with treatment, including public, patient, and professional education activities incorporating culturally sensitive approaches as well as environmental supports, such as informative food labeling, heart-healthy menus in restaurants, and safe trails for walking and cycling.

- Multiple centers to reach all segments of the population, including all health care setting, schools, worksites, churches, mosques, community centers, supermarkets, and Pharmacies.

- Extensive use of media promotion in conjunction with these activities.

It is however worthy of mentioning that though these guidelines have been proposed since 1996. It has not been fully implemented, evaluated and modified to suit the present challenges of non communicable diseases. This is one of the problems facing developing nations where systems are not very organized (Society, 1996).

2.9   Self-monitoring/ home-based healthcare technology

High blood pressure is one of the most readily preventable causes of stroke and other cardiovascular complications. Unlike many other common, chronic conditions, there are very effective ways of treating high blood pressure and clear evidence of the benefits of such interventions exists. However, despite a great deal of time and effort, hypertension is still underdiagnosed and undertreated. Also there are high losses to follow up. Blood pressure is usually measured and monitored in the healthcare system by doctors or nurses in hospital but there are new electronic devices that have been introduced and validated in the clinical setting to replace the mercury sphygmomanometer and to overcome the large variations in measurement due to variability between observers. This has made measuring blood pressure at home to

become increasingly popular with both doctors and patients (Cappuccio, Kerry, Forbes, & Donald, 2004). Self monitoring of blood pressure more broadly refers to the regular use of a personal blood pressure measurement device that is used by the patient outside a clinical setting (Beistle, Harben, Blair, & Lindley, 2013). Agency for Healthcare Research and Quality (AHRQ) found strong evidence that SMBP plus additional support was more effective than usual care in lowering blood pressure among patients with hypertension recently. This is why some national and international guidelines also recommend these home monitoring devices and technologies in certain circumstances (Cappuccio et al., 2004). These technologies and instruments aim to improve quality of life by empowering people to take an active role and responsibility in their own health management. According to (Gronvall & Verdezoto, 2013), Self-monitoring technology can support the shift from managing illness to maintaining wellness through preventive care. Many older adults do not perceive that healthcare technologies can significantly improve their health (Gronvall & Verdezoto, 2013). A positive influence in quality of life, safety, acceptance and empowerment when home monitoring fits into a person's everyday life was reported by Gronvall 2013. Self-blood pressure monitoring (SBPM) at home creates greater awareness and patient participation in their treatment prevents hypertensive complications and helps facilitate doctors to make decisions on treatment (Rani, Beth, Low, & Chung, 2012). Also according to (Ambakederemo et al., 2014), home BP measurements brings an improvement of the accuracy of screening for hypertension, improves drug compliance, increases accurate assessment of BP control during treatment, involves patient in their care and reduces the need for patients to see their general practitioner if BP is adequately controlled

Acceptance and adoption of technology in private homes is often faced with some challenges such as fitting it into everyday life, transporting and installing medical and rehabilitation devices in homes, reliability of self-measurement, and individual barriers to early detection (e.g. underestimation of health variability, fear of diagnosis labels and stigmatization, privacy, lack of understanding clinical terms and health parameters) (Gronvall & Verdezoto, 2013). This is why features such as simplicity, a person's ability to control the technology and its perceived benefits should be considered when designing for healthcare technology adoption in order to avoid increasing the amount of care management work instead of supporting and integrating care activities into everyday life (Gronvall & Verdezoto, 2013). Public health practitioners can play an integral role in garnering support and changing systems to assist in the widespread

implementation of SMBP plus support programs. Such practitioners can bring partners to the table, share relevant data and information, and make recommendations for changing health care payer and provider systems. To promote SMBP in their communities, public health practitioners may choose to:

- Explore the Environment by conducting an environmental scan to find existing efforts in the state, county, or municipality that encourage the use of SMBP plus additional support and determine who the primary stakeholders and potential champions are in the state (e.g., payers, purchasers, health care providers).

- Work with Payers and Purchasers

- Work with Health Care Providers by collaborating with state and local chapters of provider organizations, state primary health care and other relevant associations, and quality improvement organizations to promote the role of SMBP in the prevention and clinical management of high blood pressure. State and local public health programs can provide such technical assistance to their partners

- Help Spread the Word to the Public by encouraging health advocacy organizations, community- and faith-based organizations, and patient advocacy groups to share resources to educate the public about the importance of SMBP plus additional support in controlling high blood pressure and to incorporate these messages into broader efforts related to High blood pressure.

- Monitor and Assess Progress Evaluate efforts to expand use of Self-monitoring devices

Nevertheless Self Blood Pressure Monitoring requires careful training on blood pressure measurement, instruction on recording and interpretation of blood pressure reading. Therefore further training, reinforcement and education by the nurses are needed for hypertensive patients to prevent error in measurement and help the physician to tailor the treatment accurately.

2.10   Attitude towards self monitoring of blood pressure

It has been suggested that self-monitoring moderates attitude-behavior relations by influencing the perceived relevance of attitudes as guides for action (Ajzen, Timko, & White 1982). (Seto et al., 2010) reported that patients and clinicians were willing to use the self blood pressure monitoring system as long as several conditions were met, including providing a system that was easy to use with clear tangible benefits, maintaining good patient-provider communication, and not increasing clinical workload. Clinicians cited several barriers to implementation of such a system, including lack of remuneration for telephone interactions with patients and medicolegal implications. In another study conducted by (Ambakederemo et al., 2014), 88% of the patient's agreed that SMBP is important in optimal management of hypertension as stated in most studies.

In another study conducted by (Hadithi et al., 2012), majority of the respondents were convinced with the performance of the self monitoring devices it was still observed that the frequency of BP monitoring was poor among the participants. Overall the participants had a positive attitude towards SMBP but the frequency of BP monitoring was poor among the participants and had room for improvement.

2.11   Conceptual framework

The PRECEDE framework principles were applied to this study

2.11.1 THE PRECEDE FRAMEWORK

This outlines and describes the antecedent factors that influence behaviours. These factors are: Predisposing factors, Enabling factors and Reinforcing factors.

Predisposing factors: These are the antecedents to behaviour that provide rationale for the behaviour. They are knowledge, values, beliefs, attitudes, perceptions, norms, and behavioural intensions. Most adults do not have enough knowledge about the relevance of regular monitoring of the blood pressure. Predisposing factors have the potential to influence the decisions people take about their health and their given health behaviour. They do this by ether encouraging the behaviour or by inhibiting the behaviour from occurring.

Enabling factors: These factors are also antecedents to behaviour because they also influence the realization of motives, aspirations and decisions. These include skills, everyday routines, personal resources, community resources (e.g. availability of health resources, accessibility of health resources), and ability to source for these resources, government policies and access to health related skills.

Reinforcing Factors: This comprises of the feedback or influence of significant orders or people that influence the continuance or discontinuance of a particular behaviour. Examples of these factors include pressure from peers, siblings, co-workers, policy makers, patients, peer groups and other social support group. They are also factors subsequent to behaviour that provide perpetual rewards or incentives for the behaviour and contribute to its persistence or extraction.

THE PRECEDE FRAMEWORK

Predisposing factors

Attitudes & belief about regular checking of blood pressure

Perceived need s and capacity for regular monitoring of blood pressure

Knowledge about monitoring of blood pressure

Enabling factors

Training
Money and time
Facilities and quality of service Policies and programs
Skills

Reinforcing factors

Positive or negative feedbacks from peers, family, friends and other people of significant orders

Behavioural diagnosis

Adoption of regular monitoring of blood pressure

Epidemiological diagnosis

Reduction in the number of people suffering from hypertension

Reduction of hypertension associated morbidity

Quality of life diagnosis

Enhanced family and community life

Increased productivity

Figure 2.1: The PRECEDE Model Adapted to suit the study

CHAPTER THREE

METHODOLOGY

3.0   Study design and scope

A descriptive cross- sectional design was used for the purpose of this research which was limited in scope to the investigation of the knowledge, attitude, and willingness of Ibadan North West Local Government's staff to be trained to self monitor their blood pressure.

3.1   Description of study site

Ibadan is located in the Southwestern 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 $3123.30km^2$, 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 by the then Military Head of State Major General Ibrahim Gbadamosi Babangida (Rtd). during the nationwide local government reforms. 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 government are Akinyele, Lagelu, Egbeda,, Ona ara, Oluyole and Ido.

Ibadan North West Local government covers a large area of land with a population of 152,834 according to 2006 National Population Census. It is divided into 11 wards and has its administrative headquarters at Onireke. It is bounded in the North by Ido Local government, n the west by Ibadan South west LG, in the east by Ibadan Northeast and in the south by Ibadan South east Local Government. Its inhabitants include Yoruba, Hausa, Ibo and other tribes who engage in trading, farming and civil service.

The local government secretariat is made up of 8 departments and has about 488 staffs working in the different department. 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 consists of staffs working in Ibadan Northwest Local government Secretariat that consented to participate in the study.

3.3   Inclusion criteria

For the purpose of this study, staffs in Ibadan Northwest Local Government Secretariat were involved in the study. Staffs include everybody that is employed to perform a particular function in the local government.

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. The two research assistants recruited from the secretariat were also excluded from the research

3.5   Determination of sample size

The sample size (n) was calculated using Epi-Info version 7.1.3.3 at a 95% confidence interval and a sample size of 163 was calculated. However as the total number of staff was small, a total sampling was done for all staff who were willing and who volunteered to be part of the study

3.6   Sampling technique

A total sampling was used which involved all willing staff who volunteered to be part of the study from all the departments were used.

3.7   Method & instruments for data collection

Quantitative instruments of data collection was be used.

3.7.1   Quantitative instrument for data collection

Semi- structured questionnaire was designed using the information gathered through the review of literature was used in the study. It was designed in such a way that it could be self-administered. The questionnaire was made up of both open ended and closed ended questions. The questionnaire was made up of 5 sections. The first section was for demographic data while the 2nd, 3rd, 4th and 5th sections were to determine the knowledge, attitude, willingness to be

taught how to self monitor their blood pressure and factors that can prevent self- monitoring of the blood pressure respectively (Appendix 1).

3.8   Validity of the instrument

The instrument was validated by ensuring that a comprehensive review of related literatures was conducted and salient variables relating to attitude, knowledge and willingness of career officers to be taught to self monitor their blood pressure teased out from them. Literature for this research was acquired from reliable sources. SCIENCEDIRECT and PUBMED were mostly used as well as WHO search box. It was limited to recent journals. The result of the literature review was used to develop the questionnaire. After development of the questionnaire, it was extensively revised after thorough expert review by the researcher's supervisor and other staff and lecturers in the Department of Health Promotion and Education of the Faculty of Public Health, University of Ibadan. The questionnaire was then pre-texted in a similar sample population to Ibadan North Local Government. After pretext, any errors (systematic or otherwise) in the structure of the questionnaire were corrected before the final questionnaire was produced and employed for the research.

3.9   Reliability

This refers to the measure of internal consistency. A measure is said to have a high reliability if it produces consistent results under consistent conditions. Reliability was ensured by coding copies of the pre- texted questionnaires and then entered them into a computer for analysis. Measure of Internal consistency was determined using the Cronbach's Alpha coefficient method. For this method of reliability measurement, any result which shows a 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 0.728 which is greater than 0.5. This shows that the instrument has a high degree of reliability.

3.10   Data collection process

Two Research assistants were recruited, a male and a female. They were graduates and work within the local government secretariat. This was really helpful as they already knew the terrain very well and had little problem in getting the respondents. The research assistants were trained for 1hours a day for two days to ensure proper understanding and administration of the

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instrument. Visits were made to the study site to seek permission. Informed consent and signing of the informed consent forms by the respondents after which copies of the questionnaires were administered and each copy of the questionnaire was reviewed by research assistant for completion.

3.11   Data management and analysis

Copies of the questionnaires were reviewed after completion for accuracy and serial number was written on the copies of questionnaires for easy identification and recall. Coding guide was then developed 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. After that the entered data was cleaned and analyzed using descriptive statistics (chi-square and correlation analysis). Knowledge was assessed on a 56- point scale and scores ≥ 30 were regarded as good. Attitudes were assessed on a 13-point scale and scores ≥ 7 were categorized as positive. Willingness was also assessed on a 4-point scale and score ≥ 2 were categorized as willing.

3.12   Ethical consideration

Participants were provided with enough information about the objectives and nature of the research in order to gain full consent. This was achieved through a letter of consent attached to each questionnaire stating the basis of the research, duration of participating, confidentiality as well as benefits. Contact information was also provided in the letter of consent for necessary further clarification enabling the achievement of reliability. (Holloway & Wheeler 2010; Houser 2008.)

In addition, permission for the research was obtained from the Chairman of the Local Government through his personal Secretary. All required documents (research plan and a copy of questionnaire) were sent for one week. These were studied and signed before the commencement of the questionnaire distribution. Consent of the head of each unit was also taken before the commencement of distribution of the questionnaire in each of the units.

3.13   Limitations of the study

The only limitation of this study is the fact that there are no standardized instruments to assess hypertension knowledge, attitudes and willingness to self-monitor blood pressure. Hence the existing literature and experts were utilized in designing a data collection instrument that was validated before use.

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,

- Attitude about self- monitoring of the blood pressure

- Willingness to self-monitor the blood pressure and factors that can prevent them from self-monitoring of their blood pressure.

- Factors that can prevent the respondents from self-monitoring of blood pressure

4.0   Socio-demographic characteristics

The ages of respondents ranged from 17 to 58 years with a mean of 35.7 ± 10.6 years. The majority (39.3%) fell between 31 to 45 years age group. Most of the respondents (57.5%) were female. Larger percentages (72.1%) of the respondents were Christians while (27.5) were muslims. Most of the respondents (51.4%) were married, (46.8%) single and (1.1%) widowed. The respondents were mostly educated with 86.8% of them having completed tertiary education, 11.4% with secondary education and just 1.1% without formal education.

 All the 8 departments in the local government were represented in the study. Majority (90.4%) of the respondents were Yorubas while (8.6%) were Igbos.

Table 4.1: Socio-demographic characteristics of the respondents (N=280)

Socio-demographic variable	Frequency	Percentage
Age (in years)		
30 years and below	109	38.9
31- 45 years	110	39.3
46-60 years	61	21.8
Sex		
Male	119	42.5
Female	161	57.5
Marital status		
Married	144	51.4
Single	131	46.8
Widowed	3	1.1
Separated	1	0.4
Divorced	1	0.3
Religion		
Christianity	202	72.1
Islam	77	27.5
Traditional	1	0.4
Highest level of education		
No formal education	3	1.1
Primary	2	0.7
Secondary	32	11.4
Tertiary	243	86.8
Ethnic Group		
Yoruba	253	90.4
Igbo	24	8.6
Hausa	3	1.0

4.1   Respondents knowledge about blood pressure

Majority of the respondents (53.6%) reported high blood pressure as high level of stress or tension while only 22.5% reported it as force of blood pushing against blood vessels walls. Few (9.3%) defined it as rapid breathing or rising blood looking for a way out while about 14.6% did not know what high blood pressure was. When asked what normal blood pressure should be, majority (66.8) said it should be less than or equal to 120/80mmHg, (4.6%) said greater than 120/80mmHg but less than or equal to 139/89mmHg while (3.9%) of the respondents said it should be greater than 139/89mmHg but less than or equal to 160/100mmHg. Some (24.3%) of the respondents admitted not knowing what the normal blood pressure should be.

Majority of the respondents (56.4%) knew that too much of salt can affect blood pressure. Although majority of them (56.4%) reported that Alcohol consumption does not affect the blood pressure. 67.1%, 63.9%, 60.0%, and 73.6% of the respondents also reported that smoking, consumption of food high in fats, overweight and diabetes do not affect the blood pressure respectively. Although majority of them (56.1%) admitted that too much stress can affect the blood pressure. About 2.1% also added too much thinking as a factor that can affect the blood pressure.

The three highest source of information of the respondents about blood pressure are Health workers (64.3%), relative (24.6%) and friends (5.0%). Table 4.5 shows other details on sources of respondents' information. When asked how dangerous they thought high blood pressure was to health, majority of them (82.5%) reported correctly that high blood pressure is extremely dangerous, (4.6%) said it is somewhat dangerous while 4.3% claimed high blood pressure is not dangerous. About 8.2% admitted not knowing if high blood pressure is dangerous or not. Out of the respondents that reported high blood pressure to be extremely or somewhat dangerous, 44.3% of them claimed it is dangerous because it can lead to death. Few (5.3%) reported that it is very dangerous while 12.3% said it was dangerous because it can lead to some other deadly illnesses and 34.5% gave no response. Other details are presented in table 4.2a.

Regarding the signs and symptoms of high blood pressure, majority of the respondents (66.4%) knew that headache, dizziness and general tiredness while (20.0%) reported tense feeling in the chest as the symptom. Very few (1.8%) of the respondents claimed there are no symptoms while

about (11.8%) admitted not knowing the signs and symptoms of high blood pressure (Table 4.2b).

When asked about factors that can make a person more likely to have high blood pressure, some of the respondents agreed that family history (47.1%), drinking alcohol (44.6%), age(30.0%), lack of exercise (28.2%), ethnicity(6.4%), nationality(2.9%), genes (18.2%), diet(27.5%), obesity(42.9%), smoking (31.8%), occupation(22.5%) and depression (2.9%) can make a person more likely to have high blood pressure. Interestingly (76.8%) of the respondents reported that excess gain of weight can cause high blood pressure. 82.9%, 74.3%, and 83.2% of the respondents also reported that excessive alcohol consumption, smoking and excessive salt intake can cause high blood pressure respectively (Table 4.3a).

Majority of the respondents (93.9%) reported that high blood pressure can cause stroke and heart failure. About 62.5% believed high blood pressure can also cause diabetes and 93.9% of them believed high blood pressure is preventable. Although, only 88.9% of the respondents reported that high blood pressure can be prevented through lifestyle changes. 32.1% strongly agree that the only way to prevent high blood pressure is by taking medication, 33.2% agreed while 15.7% strongly disagree while 18.9% disagree that high blood pressure can only be prevented by taking medication (Table 4.4).

Majority of the respondents (81.5%) agreed that diets rich in salt cause high blood pressure. 89.6% agreed that high blood pressure causes stroke and about 90.0% of the respondents agreed that high blood pressure is a condition that results from anxiety, stress or anger. 81.0% of the respondents agreed that being overweight can cause high blood pressure while just 41.1% of the respondents agreed that persons with high blood pressure never or rarely feel symptoms. 78.2% of the respondents reported that high blood pressure can be reduced by diets modifications with about 86.1% of them also agreeing that leisure physical exercise prevents high blood pressure.

Some (59.6%) of the respondents wrongly agreed that there is a difference between hypertension and high blood pressure while about 74.3% of them agreed that high blood pressure causes cardiovascular diseases. Although, about 81.0% of the respondents agreed that the use of home remedies prevent hypertension. Mean knowledge score obtained by the respondents was 28.8 ±6.1

Table 4.2a: Respondents' Knowledge of Concept of High Blood Pressure (N=280)

Knowledge Variable	Frequency	Percentage
Meaning of High Blood Pressure		
High level of stress or tension	150	53.6
Rapid breathing or rising blood looking for a way out	26	9.3
Force of blood pushing against blood vessels walls	63	22.5
I dont know	41	14.6
What Normal blood pressure should be		
Less than or equal to 120/80	187	66.8
Greater than 120/80 but Less than or equal to 139/89	13	4.6
Greater than 139/89 but Less than or equal to 160/100	11	3.9
I don't know	6	24.7
No response	63	10.0
Factors Affecting Blood Pressure		
Too much Salt		
Yes	158	56.4
No	122	43.6
Alcohol		
Yes	122	43.6
No	158	56.4
Smoking		
Yes	92	32.9
No	188	67.1
Consumption of food high in fat		
Yes	101	36.1
No	179	63.9
Overweight		
Yes	112	40.0
No	168	60.0
Too much stress		
Yes	157	56.1
No	123	43.9
Diabetes		
Yes	74	26.4
No	206	73.6
Too much thinking		
Yes	6	2.1
No	274	97.9

Table 4.2b: Respondents' Knowledge of Concept of High Blood Pressure (N=280)

Knowledge variable	Frequency	Percentage
Symptoms of High Blood Pressure		
Headache, dizziness and general tiredness	186	66.4
Tense feeling in the chest	56	20.0
There are no symptoms	5	1.8
I don't know	33	11.8
Persons with high blood pressure never or rarely feel symptoms		
Strongly Agree	27	9.6
Agree	91	32.5
Strongly Disagree	61	21.8
Disagree	101	36.1
There is a difference between hypertension and high blood pressure		
Strongly Agree	53	18.9
Agree	114	40.7
Strongly disagree	33	11.8
Disagree	80	28.6

Table 4.3a: Respondents' Knowledge of Causation of High Blood Pressure (N=280)

Knowledge Variable	Yes	No	Total
Factors that can make a person more likely to have high blood pressure			
Family History	132(47.0%)	148(53.0%)	280(100.0%)
Drinking Alcohol	125(55.4%)	155(44.6%)	280(100.0%)
Age	84(30.0%)	196(70.0%)	280(100.0%)
Lack of Exercise	79(28.2%)	201(71.8%)	280(100.0%)
Ethnicity	18(6.4%)	262(93.6%)	280(100.0%)
Nationality	8(2.9%)	272(97.1%)	280(100.0%)
Genes	51(18.2%)	229(81.8%)	280(100.0%)
Obesity	120(42.9%)	160(57.1%)	280(100.0%)
Smoking	89(31.8%)	191(68.2%)	280(100.0%)
Occupation or Workshop	63(22.5%)	217(77.5%)	280(100.0%)
Depression	8(2.9%)	272(97.1%)	280(100.0%)
Factors that can cause high blood pressure			
Excess Gain of Weight	215(76.8%)	65(23.2%)	280(100.0%)
Excessive alcohol Consumption	232(82.9%)	48(17.1%)	280(100.0%)
Smoking	208(74.3%)	72(25.7%)	280(100.0%)
Excessive salt intake	233(83.2%)	47(16.8%)	280(100.0%)

Table 4.3b: Respondents' Knowledge of Causation of High Blood Pressure (N=280)

Knowledge Variable	Frequency	Percentage
Diet rich in salt causes high blood pressure		
Strongly Agree	87	31.1
Agree	141	50.4
Strongly disagree	18	6.4
Disagree	34	12.1
Being overweight can cause high blood pressure		
Strongly Agree	111	39.6
Agree	116	41.4
Strongly disagree	20	7.1
Disagree	33	11.9
High blood pressure is a condition that results from anxiety, stress or anger		
Strongly Agree	138	49.3
Agree	114	40.7
Strongly disagree	11	3.9
Disagree	17	6.1

Table 4.4: Respondents' Knowledge of Prevention of High Blood Pressure (N=280)

Knowledge Variable	Frequency	Percentage
Do you think high blood pressure is preventable		
Yes	263	93.9
No	17	6.1
Can high blood pressure be prevented through lifestyle changes		
Yes	249	88.9
No	31	11.1
High blood pressure can be reduced by making changes in your diet		
Strongly Agree	87	31.1
Agree	160	57.1
Strongly disagree	15	5.4
Disagree	18	6.4
Leisure physical exercise prevents high blood pressure		
Strongly Agree	80	28.6
Agree	161	57.5
Strongly disagree	24	8.6
Disagree	15	5.3
The use of home remedies prevents hypertension		
Strongly Agree	76	27.2
Agree	151	53.9
Strongly disagree	25	8.9
Disagree	28	10.0
The only way to prevent high blood pressure is by taking medication		
Strongly Agree	90	32.1
Agree	93	33.2
Strongly disagree	44	15.7
Disagree	53	18.8

Table 4.5: Respondents' Knowledge of complication of High Blood Pressure (N=280)

Knowledge Variable	Frequency	Percentage
How dangerous do you think high blood pressure is (N=280)		
Extremely	231	82.5
Somewhat	13	4.6
Not at all	12	4.3
I don't know	24	8.6
If extremely or somewhat dangerous, explain how(N=244)		
It can lead to death	108	44.3
It is very dangerous	13	5.3
It can lead to some other deadly illness	30	12.3
It comes little by little and get into the body system	3	1.2
If one consumes food rich in fat, it will result to high blood pressure and heart attack	4	1.6
I have seen a relative suffer from it before and I don't like the outcome(collapse after intense pain in the chest)	1	0.4
It weakens the person	1	0.4
Don't know how	84	34.5
Do you know if high blood pressure can cause Stroke		
Yes	263	93.9
No	17	6.1
Do you know if high blood pressure can cause Heart Failure		
Yes	263	93.9
No	17	6.1
Do you know if high blood pressure can cause Diabetes		
Yes	175	62.5
No	105	37.5
High blood pressure causes cardiovascular diseases		
Strongly Agree	85	30.4
Agree	123	43.9
Strongly disagree	43	15.4
Disagree	29	10.3

4.2   Respondents attitude towards self-monitoring of blood pressure

Table 4.6 shows the respondents attitude towards self -monitoring of their blood pressure. Majority of the respondents (78.9%) reported that self-monitoring of blood pressure can help to prevent blood pressure while 16.8% disagreed that self- monitoring of the blood pressure can help to prevent high blood pressure. When asked how self -monitoring of the blood pressure can help in preventing high blood pressure, 36.7% stated that it self –monitoring ensure that early detection and medication are given. 21.7% reported that self- monitoring of the blood pressure will enable control of high blood pressure through diet modifications and other ways of life. 41.1% did not know how. Majority of the respondents (80.0%) stated that self-monitoring of blood pressure was important to them in order to prevent heart diseases although about 10.7% disagreed. 87.1% of the respondents would start self-monitoring of their blood pressure if needed to prevent high blood pressure.

About 7.9% of the respondents stated that they would never start self-monitoring of their blood pressure while 5.0% were undecided. When asked for reasons why they would not, 0.7% said they could not because they didn't know how to use or do it by themselves. 0.4% of the respondents said they wouldn't because they didn't know how to use or do operate the instrument by themselves. 0.7% also said a person cannot monitor blood pressure alone. Other responses are illustrated in Table 4.6.

Some of the respondents (24.6%) reported that self-monitoring of blood pressure cannot prevent high blood pressure because high blood pressure is an evil attack. Although 75.4% disagreed. Few (23.2%) of the respondents reported self-monitoring devices to be inconvenient and time wasting. 76.8% of the respondents disagreed that self-monitoring devices are inconvenient and time wasting. Some of the respondents (43.2%) also believed that if someone is meant to have high blood pressure, they will get it even if they always self-monitor their blood pressure while about 56.8% disagreed. The fear of knowing that they may be dying of high blood pressure prevented 21.4% of the respondents from self monitoring their blood pressure but 78.6% disagreed and reported that the fear of death cannot prevent them from self monitoring of their blood pressure. Although 25.4% of the respondents stated that the self monitoring devices for blood pressure are costly and a waste of resources while 74.6% reported that the devices are not costly and waste of resources.

When asked if self-monitoring of blood pressure can scare them that they may really have high blood pressure, 21.1% of the respondents said yes while 78.9% said no. Few of the respondents (22.1%) agreed that it is already too late to start treatment and self-monitoring of the blood pressure if someone has high blood pressure while majority of them (77.9%) disagreed that it is already too late. 28.9% of the respondents said it will be difficult to self-monitor blood pressure because to learn how to use the devices on their own will be difficult. Although 71.1% of them disagreed.

Few of the respondents (23.2%) reported that they cannot self-monitor their blood pressure because when other people see the monitoring devices, they will think they already have high blood pressure. About 76.8% disagreed and maintained that seeing the monitoring devices will not prevent them from self-monitoring of the blood pressure. Few of the respondents (28.6%) felt they don't need to self monitor their blood pressure because they don't have hypertension in their families.

Table 4.6: Respondents Attitude towards self-monitoring of blood pressure (N=280)

Variable	Frequency	Percentage
Self-monitoring of blood pressure help to prevent high blood pressure		
Yes	221	78.9
No	47	16.8
No response	12	4.3
If yes, state how (N=221)		
It ensures that early detection and medication are given	81	36.7
It enables its control through diet and way of life	48	21.7
I don't know	91	41.1
Taking of local herbs and concoction	1	0.5
Self-monitoring of blood pressure is important to you to prevent heart diseases		
Yes	224	80.0
No	30	10.7
Cant say	26	9.3
Commencement of self-monitoring of blood pressure is needed to prevent high blood pressure		
Yes	244	87.1
No	22	7.9
Cant say	14	5.0
If no why? (N=22)		
I don't know how to use or do it by myself	1	4.5
Because we cannot monitor our blood pressure regularly	3	13.6
Yourself only cannot monitor blood pressure	2	9.1
Go to the clinic	7	31.9
No response	9	40.9

Table 4.7: Respondents Attitude towards Self-Monitoring of Blood Pressure (N=280)

Attitudinal Statements	True	False	Total
Self-monitoring blood pressure cannot prevent high blood pressure because high blood pressure is an evil attack	69(24.6%)	211(75.4%)	280(100.0%)
Self-monitoring devices are not convenient and waste time	65(23.2%)	215(76.8%)	280(100.0%)
If someone is meant to have high blood pressure, they will get it even if they always self-monitor their blood pressure	121(43.2%)	159(56.8%)	280(100.0%)
I don't want to self-monitor my blood pressure because i don't want to know I may be dying from high blood pressure	60(21.4%)	220(78.6%)	280(100.0%)
Self-monitoring devices for blood pressure are costly and a waste of resources	71(25.4%)	209(74.6%)	280(100.0%)
Self-monitoring of blood pressure will scare me that I may really have high blood pressure	59(21.1%)	221(78.9%)	280(100.0%)
I think if someone has high blood pressure, it is already too late to start self-monitoring of the blood pressure and get treated	62(22.1%)	218(77.9)	280(100.0%)
Self-monitoring my blood pressure will be difficult because l cannot learn how to use the devices on my own	81(28.9%)	199(71.1%)	280(100.0%)
When people see the devices used to self-monitor, they will think I have high blood pressure already so I cant self-monitor	65(23.3%)	215(76.7%)	280(100.0%)
I don't need to self-monitor my blood pressure because we don't have hypertension in my family	80(28.6%)	200(71.4%)	280(100.0%)

4.3   Respondents willingness to self monitor blood pressure

Majority (89.6%) of respondents reported that they will be willing to start self-monitoring of their blood pressure (figure 4.1). About 5.0% said they were not willing to start self-monitoring while about 5.4% reported that they didn't know if they will be willing to start self monitoring of the blood pressure. Majority (90.0%) of the respondents are willing to be trained to self-monitor their blood pressure, 7.5% are not willing to be trained while 2.5% were undecided (Figure 4.2). About 82.1% of the respondents are willing to buy self-monitoring devices for monitoring their blood pressure (Figure 4.3). Almost all the respondents (96.4%) are willing to have their blood pressure checked at least once in a month. 2.5% were not willing to have their blood pressure checked at least once in a month (Figure 4.4).
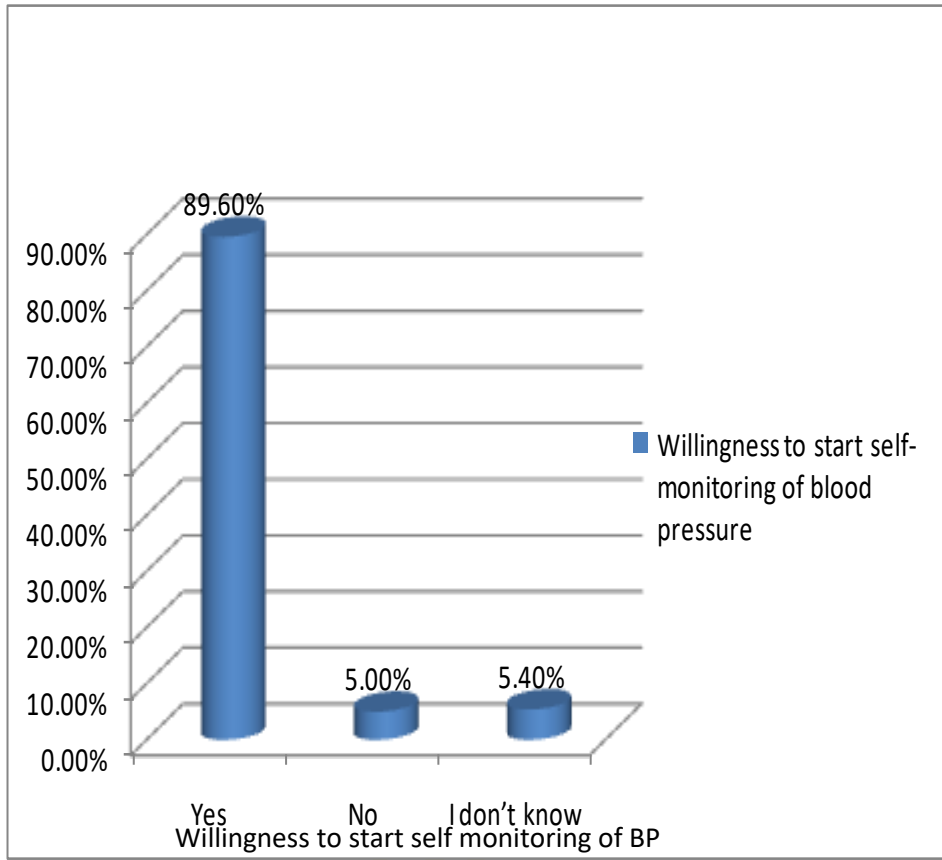
Figure 4.1: Respondents' willingness to start self –monitoring of Blood Pressure

90.00%
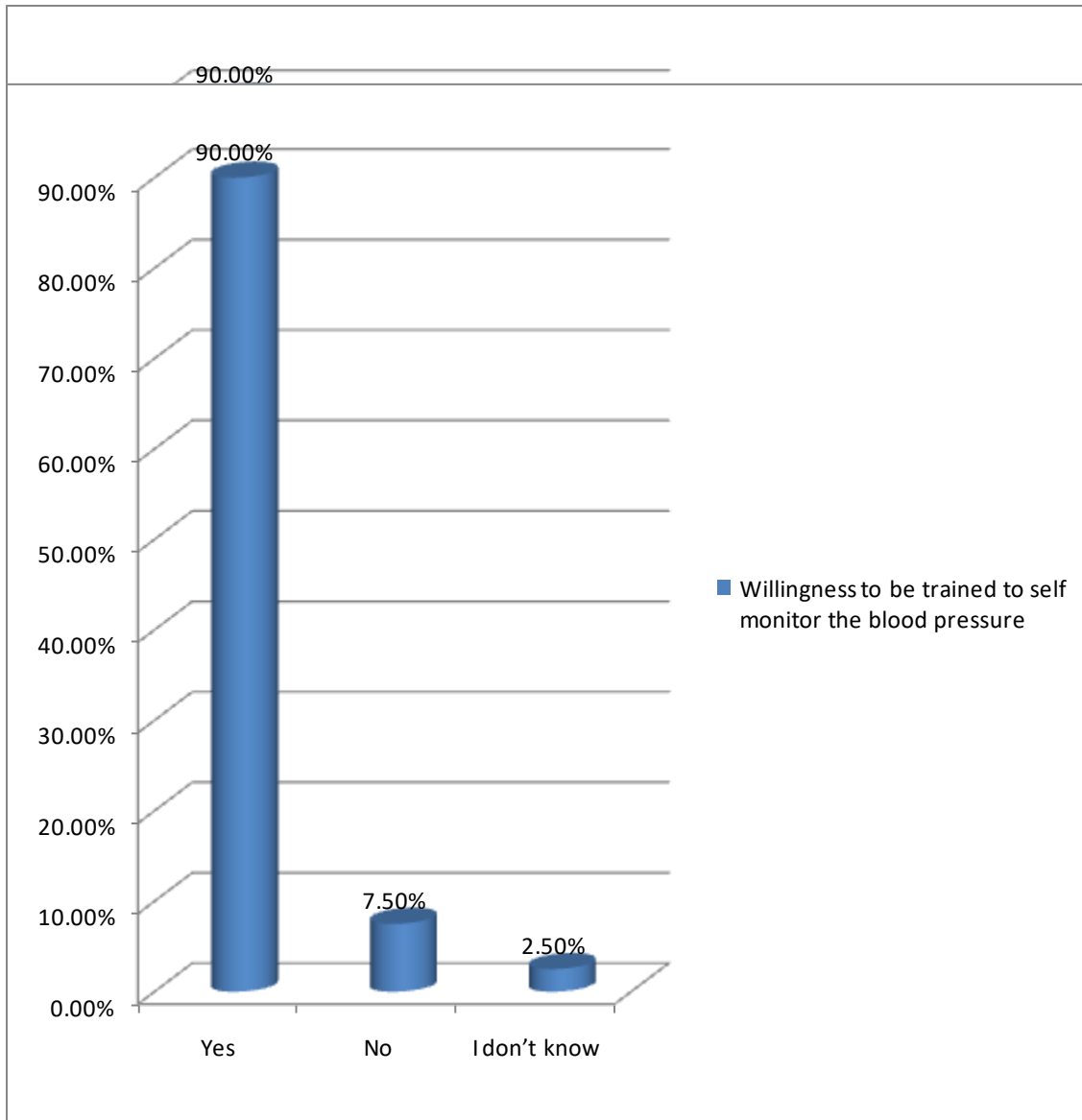
Figure 4.2: Respondents' willingness to be trained to self-monitor Blood Pressure
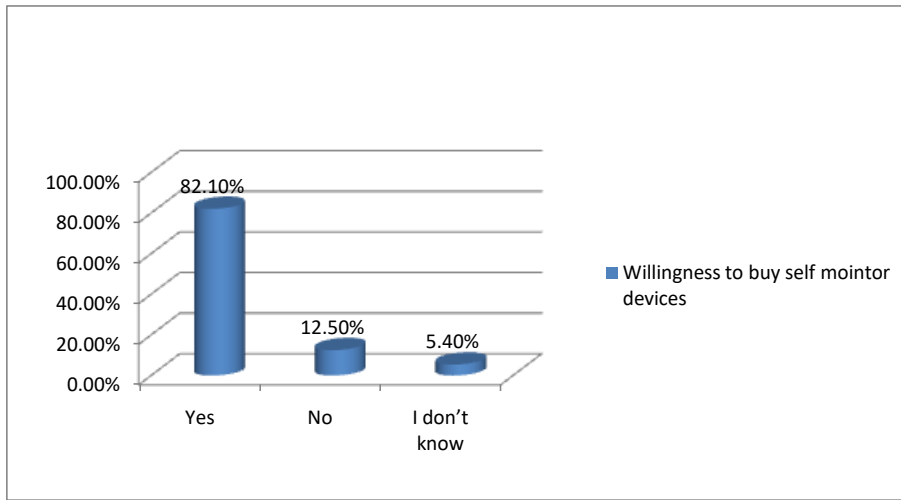
Figure 4.3: Respondents' willingness to buy self monitoring devices
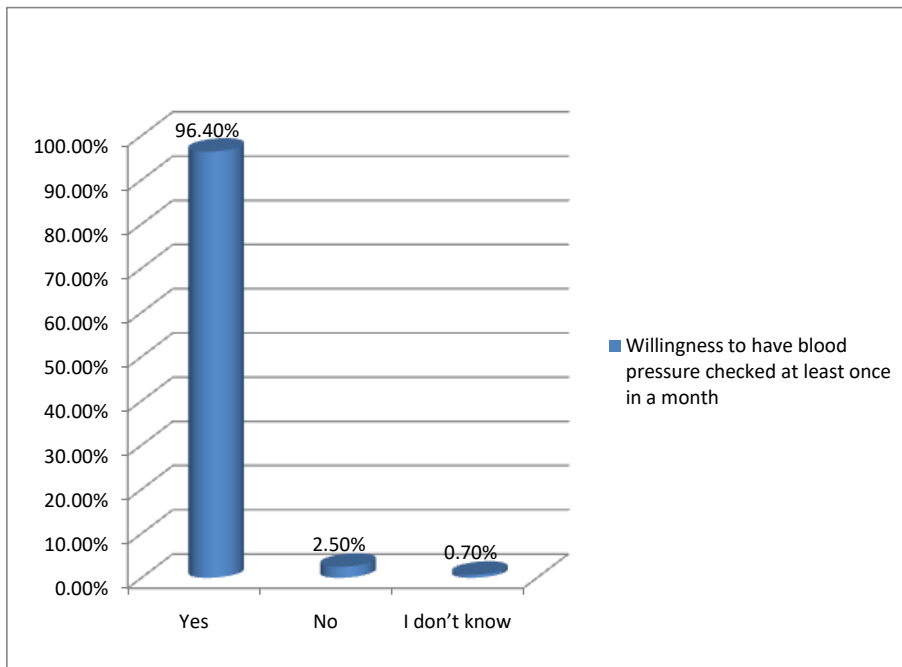
Figure 4.4: Respondents' willingness to have blood pressure checked at least once in a month.

4.4   Factors that can prevent self monitoring of blood pressure

When asked about factors that can prevent them from self-monitoring blood pressure, 31.8% of the respondents reported that they don't have money to get the required devices for self-monitoring. Some (54.3%) of the respondents disagreed that they didn't have the money to buy the devices for self-monitoring of the blood pressure while about 13.6% were undecided. Some of the respondents (41.4%) stated that they didn't have the required knowledge on how to use the instrument even if they can afford it. Some (48.6%) of the respondents claimed to have the required knowledge on how to use the instrument while about 10.0% were undecided. Few of the respondents (17.5%) reported that they are busy and don't even have time for self-monitoring of their blood pressure. Although quite the majority of them (77.1%) disagreed that they didn't have time for self-monitoring of the blood pressure (Table 4.7).

About 12.9% of the respondents agreed that the fear of what the result might be is the reason why they can't self monitor their blood pressure. Majority of them (81.1%) disagreed that fear of what the result might be is a factor that can prevent them from self-monitoring of their blood pressure while 6.0% of them were undecided. Some (27.5%) stated that what you don't know cannot kill while 69.3% disagreed while about 69.3% disagreed that what we don't know cannot kill us. About 2.9% were undecided. Few (13.9%) of the respondents did not trust the instruments, doctors and their treatment (Table 4.7).

When asked of other factors that can prevent self-monitoring of blood pressure, 11.4% of the respondents reported illiteracy and ignorance, 13.2 % of respondents reported that only doctors can prescribe or treat high blood pressure and they are not medical doctors. Very few of the respondents (0.7%) stated that if someone is in detention or prison and has no freedom to go the clinic or consult a health practitioner while 2.5% of the respondent stated "nothing "as factors that can prevent them from self-monitoring of their blood pressure. Very few (0.4 %) reported that work and activities prevented them from self-monitoring of their blood pressure. Few (4.6%) of the respondents said God and Prayer is the only thing that can prevent high blood pressure that self-monitoring of the blood pressure cannot do anything.

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Table 4.8: Factors that prevent Respondents from self monitoring of blood pressure (N=280)

Variable	Frequency	Percentage
No money to get the required instruments and devices		
Agree	89	31.8
Disagree	152	54.3
Undecided	39	13.9
No knowledge on how to use the devices even if I can afford to buy it		
Agree	116	41.4
Disagree	136	48.6
Undecided	28	10.0
No time for self monitoring blood pressure		
Agree	49	17.5
Disagree	216	77.1
Undecided	15	5.4
Afraid of what the result may be, that is why I can't self monitor my blood pressure		
Agree	36	12.9
Disagree	227	81.1
Undecided	17	6.0
Believe that what is not known cannot kill		
Agree	77	27.5
Disagree	194	69.3
Undecided	9	3.2

Table 4.9: Factor that prevent respondents from self monitoring of blood pressure(N=280)

Variable	Frequency	Percentage
Lack of trust in the instrument, the doctors and their treatment		
Agree	39	13.9
Disagree	225	80.4
Undecided	16	5.7
Other factors that can prevent self monitoring of blood pressure		
Illiteracy/Ignorance	32	11.4
I am not a doctor,only doctor can prescribe or treat high blood pressure	37	13.2
Someone in detention or prison with no freedom to go to the clinic or consult a doctor	2	0.7
Nothing	7	2.5
Work and other activities	1	0.4
God factor/ Prayer	13	4.6

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4.5   Test of hypothesis

Hypothesis 1

The Null hypothesis states that there is no association between gender/ sex and the knowledge of the respondents. Knowledge was categorized into poor and good knowledge. Chi-square was used to test for association and the result is presented below

Table 4.12: Association between respondents' level of knowledge and sex

Socio-demographic characteristic	Poor Knowledge (%)	Good knowledge (%)	X^2	Df	P-value
Sex					
Male	82	37	0.937	1	0.326
Female	102	59			

P-value is more than 0.05, therefore there is no significant association between knowledge of the respondents and their sex. Hence we will fail to reject the null hypothesis

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HYPOTHESIS 2

This hypothesis states that there would be no association between the knowledge of respondents and their attitude towards self-monitoring of their blood pressure. Correlation test was used to check for the association between the attitude scores and the knowledge scores and the result is presented in the table below.

Table 4.13   Association between respondents' knowledge and attitude towards training on self monitor blood pressure

	Positive Attitude	Negative Attitude	X^2	Df	P-value
Knowledge					
Poor knowledge	145	39	0.279	1	0.597
Good knowledge	73	23			

P- Value is 0.597 and is more than 0.05. Therefore there is therefore no significant association between the knowledge of the respondents about blood pressure and their attitude towards self-monitoring of their blood pressure. Hence we reject the null hypothesis

HYPOTHESIS 3

This hypothesis states that there is no association between gender of the respondents and their attitude towards self-monitoring of blood pressure. Attitude was categorized into negative and positive attitude. Chi-square was used to test for the association and the result was presented in the table below

Table 4.14: Association between respondents' attitude towards self monitoring of the blood pressure and sex

Socio-demographic characteristic	Negative Attitude (%)	Positive Attitude (%)	X^2	Df	P-value
Sex					
Male	31	88	1.833	1	0.192
Female	31	130			

P-value is 0.192 and is more than 0.05. Therefore there is no association between the attitude of the respondents towards self-monitoring of blood pressure and their sex. Hence we fail to reject the null hypothesis

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HYPOTHESIS 4

This states that there would be no association between the knowledge of respondents and their willingness to self-monitor their blood pressure. Willingness was categorized into willing and not willing while knowledge was also categorized into poor knowledge and good knowledge. Chi-square was used to test for the association and the result is presented in the table below

Table 4.15: Association between respondents' knowledge and willingness to self monitor blood pressure

	Not willing	Willing	X^2	Df	P-value
Knowledge					
Poor knowledge	14	170	3.575	1	0.059
Good knowledge	2	94			

P- value is 0.059 and is more than 0.05. Therefore there is no significant association between the knowledge of the respondents about blood pressure and their willingness to self monitor blood pressure. Hence we fail to reject the null hypothesis

HYPOTHESIS 5

This states that there is no association between the attitudes of the respondents and their willingness to self-monitor their blood pressure. Attitude was categorized into negative and positive attitude while willingness too was categorized into those willing and those not willing. Chi-square was used to test for the association and the result was presented in the table below

Table 4.16: Association between respondents' attitude and their willingness to self monitor their blood pressure

Attitude	Not willing	Willing	X^2	Df	P-value
Negative Attitude	7	55	4.596	1	0.032
Positive Attitude	9	209			

P-value is 0.032 and is less than 0.05. Therefore there is significant association between the Attitude of the respondents towards self monitoring of blood pressure and their willingness to self monitor blood pressure. Hence we reject the null hypothesis.

HYPOTHESIS 6

This states that there is no association between the level of education of respondents and their willingness to self monitor their blood pressure. Chi- square was used to test for the association and the result is presented in the table below

Table 4.17: Association between respondents' level of education and their willingness to self monitor their blood pressure.

Socio-demographic characteristic	Not willing (%)	Willing (%)	X^2	Df	P-value
Level of education					
Never went to school	0	3	2.584	3	0.460
Primary Level	0	2			
Secondary level	0	32			
Tertiary level	16	227			

P- value is more than 0.05. Therefore there is no significant association between the level of education of the respondents about blood pressure and their willingness to self monitor blood pressure. Hence we fail to reject the null hypothesis

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This cross-sectional descriptive study was conducted to understand the knowledge, attitudes and willingness of Ibadan North West Local Government Secretariat's Staff with regard to self-monitoring of their blood pressure as a way of preventing and controlling hypertension. This chapter will focus on the findings of the study. It is organized into the following subsections: socio-demographic information; Knowledge relating to blood pressure; attitude towards self-monitoring of blood pressure; willingness to self-monitor the blood pressure and factors/ barriers that can prevent respondents from self-monitoring their blood pressure. Other sub-sections are the implications of the findings for health education and social policy, conclusion, recommendation and suggestion for further research.

5.0   Socio demographic characteristics of the respondents

The socio-demographic table shows that greater number of those studied were within the age range of 31-45 years (39.3%), followed by 30yrs and below (38.9%). The mean age of the respondents was 35.7±10.6years. The mean age is similar to the study conducted by (Adebayo et al., 2013) in three rural communities in Ife and that of (Oladapo et al., 2013) among Yoruba rural southwestern Nigerian population. Majority of the respondents were female (57.5%) compared to the 41.5% male. This is a trend that has also been observed in similar studies conducted on high blood pressure by (Oladapo et al., 2013), (Hu, Li, & Arao, 2013a). A little more than half of the respondents (51.4%) were married with about 46.8% single. This may be attributed to the tendency to delay marriage that is usually associated with increasing civilization and industrialization. The dominant religion is Christianity (72.1%) compared to the 27.5% who were Muslims. This may be due to the strong presence of Christianity in Ibadan North West. The respondents' levels of education indicate that tertiary education is highest with (86.8%) followed by Secondary education (11.4%) with just 0.7% with primary education. This is due to the minimum entry requirement for civil service office job which ensured that a good number of the respondents were enlightened. The predominant ethnic group is Yoruba (90.4%) as expected since the local government is in the South western part of Nigeria**.**

5.1 Knowledge of the respondents about 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 about one quarter of the participants 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 them defined it as 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.

Although more than half of the proportion of participants (66.8%) could identify normal blood pressure readings, very few of them (4.6%) stated pre-hypertensive reading (greater than 120/80mmHg but less than or equals 139/89mmHg) as normal readings. In addition, 3.9% said it should be greater than 139/89mmHg but less than or equal to 160/100mmHg while 24.3% had no knowledge at all about the readings. These findings confirmed a study by (Kofi, 2011) in which only 50% answered correct values for normal blood pressure. A high percentage of participants showed low level of knowledge especially about the asymptomatic nature of the High blood pressure as only 1.8% knew about the asymptomatic nature of the disease. 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 the majority of the respondents (66.4%). About 20.0% also reported tense feeling in the chest as symptoms of high blood pressure while 11.8% 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). Rice and beans and jollof rice were amongst the list of food mentioned. Findings further revealed that high levels of salt were in food both in

meals from restaurants and homemade meals. This is due to the fact that most seasonings as cubes used for preparing meals at home had about 5.4g of salt per cube. 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, about 56.4% of the respondents recognized too much salt as a factor affecting blood pressure, 43.6% also reported alcohol also as a factor, 32.9% said smoking, 36.1% reported consumption of food high in fat, 40.0% mentioned overweight, 56.1% mentioned too much stress, 26.4% mentioned diabetes with just 2.1% mentioning too much thinking. Good awareness of salt as a risk factor has been widely reported. 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 salt as a risk factor for high blood pressure, most of them did not see smoking, overweight and consumption of food rich in fats as potential risk factors for high blood pressure. This is an indication that more emphasis and efforts

should be put on educating them on the risks of smoking, intake of fat laden foods and alcohol consumption 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.

When we talk about creating awareness and other health promotion and education activities, the importance of health workers as points of contact with people in dissemination of health information cannot be overemphasized. This is reflected in the study as majority of the respondents (64.3%) reported health workers as their source of information about high blood pressure. This result may suggest that health care workers approach will hold great potential for the successful dissemination of Information about self-monitoring of blood pressure. Some of them (24.6%) also said they got their information from relatives. Only 5% said they got their information from friends. This collaborates findings of other studies on High blood pressure that the health care workers are the primary source of information especially in the study conducted by (Kofi, 2011).

Majority of the respondents (87.1%) actually saw high blood pressure as dangerous which is in line with the what Abdullahi & Amzat, (2011) reported in his study conducted in Ibadan. High awareness of the danger of high blood pressure can be attributed to the increase in the prevalence of hypertension and other associated non communicable diseases in Africa in recent time and their experiences. About 4.3% of the respondents said high blood pressure is not dangerous though 8.2% admitted not knowing. A little below average (44.3%) said that high blood pressure is dangerous because it can lead to death while 12.3% said it could lead to some other deadly illness. It is interesting to see that 34.5% of respondents actually knew correctly that hypertension is dangerous, but when asked why they felt it was dangerous, they could not give a reason. This shows that there are still some gaps to be filled as far as educating about the dangers of high blood pressure.

Majority of the respondents (93.9%) reported that high blood pressure can cause stroke and about the same percentage reported that it could cause heart failure too. This is similar though a little above what (Abdullahi & Amzat, 2011) reported in his study among Staff of University of Ibadan. About 62.5% believed high blood pressure can also cause diabetes and 93.9% of them believed high blood pressure is preventable. Majority (81.5%) also agreed that diets rich in salt

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can cause high blood pressure. Quite many of them also reported that high blood pressure causes stroke and about 90.0% of the respondents agreed that high blood pressure is a condition that results from anxiety, stress or anger. Majority (81.0%) also implicated overweight as a cause of high blood pressure while just 41.1% of the respondents agreed that persons with high blood pressure never or rarely feel symptoms.

Some of the respondents identified family history (47%), age (30.0%), Alcohol consumption (44.6%), lack of exercise (28.2), obesity (42.9%), Smoking (31.8%), occupation or workshop (22.5%) and depression (2.9%) as factors that can make a person more likely to have high blood pressure. There are some misconceptions about high blood pressure among the respondents as some of them still thought ethnicity(6.4%) and nationality(2.9%) can make a person more likely to have high blood pressure. Majority of the respondents (76.8%) were aware of the fact that excess gain of weight can cause high blood pressure. A larger percentage also understood that excessive alcohol consumption (82.9%), excessive salt intake (83.2%) and smoking (74.3%) are also causes of high blood pressure. A little above average (59.6%) wrongly agreed that there is a difference between hypertension and high blood pressure.

Sadly, majority of the respondents (81.0%) agreed that the use of home remedies can prevent hypertension. According to Iyalomhe & Iyalomhe, 2010, the patients' perception of illness may be influenced by their subjective beliefs. This may result in decreased reliance on self-monitoring of the blood pressure and taking of medication. Therefore health-care professionals should promote patients' knowledge, correct perception, beliefs and attitude towards high blood pressure prevention and treatment by explaining in sufficient detail the nature, consequences, prevention and the pharmacological management of the disease including the benefits of self-monitoring and life- style adjustments. This is not to say that all the home remedies are not potent or bad. One important factor in efficacy of drugs, food supplements or local herbs is the correct quantity that will be suitable for the normal body metabolism. Most of the time these local concoction are either underused or abused in such a way that can destabilized the body metabolism and cause more havoc than good for the body. So in many cases, these local concoctions are either abused or misused.

According to Iyalomhe & Iyalomhe, (2010), life-style is an important determinant of our physical health and its modification is an effective public health tool for successful treatment and

control of high blood pressure. The WHO and International Society of Hypertension (ISH) have even recommended that all individuals, particularly hypertensives and those at risk, should adopt appropriate life-style practices (WHO/ ISH, 2004). So it is very interesting to see that about 88.9% of the respondents recognized that high blood pressure can be prevented through lifestyle changes. Most (78.2%) of the respondents reported that high blood pressure can be reduced by diets modifications with about 86.1% of them also agreeing that leisure physical exercise prevents high blood pressure. This is similar to what was reported by (Kofi, 2011) in a study conducted among women of child bearing age. (Rakumakoe, 2011) also reported similar result.

The result showed that there is no association between gender and the knowledge of the respondents. That means that the knowledge of the respondents about blood pressure does not depend on their sex. This may be as a result of the fact that high blood pressure affects both male and female and sex is not a predisposing factors. It may also be as a result of the fact that in recent times, both male and female children are allowed access to education unlike in the olden days when there was reluntance to send the female children to school. So both of them have equal access to education

5.2   Attitude towards self monitoring of blood pressure

According to Cappuccio et al.,(2004) self-blood pressure monitoring at home results in better blood pressure control and greater achievement of blood pressure targets than "usual" blood pressure monitoring in the healthcare system. Interestingly majority of the respondents (78.9%) reported that self -monitoring of blood pressure can help to prevent high blood pressure while 80.0% said it was important to them in order to prevent heart diseases. This is close to the 88% reported by Ambakederemo et al.,(2014) in his study conducted in a cardiology clinic in Nigeria. Although, few of our respondents (16.8%) did not believe that self- monitoring of the blood pressure can help to prevent high blood pressure.

Out of those that said self-monitoring of blood pressure can help to prevent high blood pressure, about (36.7%) of them said it would do so by ensuring early detection and medication. Few of them (21.7%) reported that self- monitoring of the blood pressure will enable control of high blood pressure through diet modifications and other ways of life.

Majority of our respondents (87.1%) would start self-monitoring of their blood pressure if needed to prevent high blood pressure. This may be due to the fact that the study was conducted among civil servants. In a study conducted by Ambakederemo et al.,(2014) a significant relationship was established between knowledge about self- monitoring and higher education status. He reported that majority of those who know (62.1%) about SMBP, think that SMBP is important (56.8%) and own (60.7%) a BP machine were civil servants. This correlated with similar studies which showed that higher socioeconomic status and higher level of education were associated with better acceptance of Self-monitoring of blood pressure practices (Baghianimoghadam et al, 2010).

Very few (7.9%) of the respondents although stated that they would never start self-monitoring of their blood pressure. Majority of them (31.9%) said it is actually better to go to the clinic for check-up. It is not that this is not a good way of monitoring the blood pressure but most of the time people only go to the clinic when they are feeling sick or when the symptoms are already manifesting. Few of our respondents (13.6%) however said they cannot self-monitor their blood pressure because they cannot do it regularly, (9.1%) said only one person cannot carry out the process of monitoring the blood pressure while very few of them (4.5%) claimed they didn't know how to use the device by themselves.

A reasonable number of our respondents (24.6%) believed that self-monitoring of the blood pressure cannot prevent high blood pressure because it is caused by evil attack. Some of the respondents (43.2%) also believed that if someone is meant to have high blood pressure, they will get it even if they always self-monitor their blood pressure. Fear of knowing that they may be dying of high blood pressure prevented 21.4% of the respondents from self-monitoring their blood pressure. Few (23.2%) of the respondents also reported that self-monitoring devices are not convenient and waste a lot of time. Although 25.4% of the respondents stated that the self-monitoring devices for blood pressure are costly and a waste of resources. This may be due to their poor educational background or cultural beliefs and the fact that most of them still believe in traditional medicine. This is an indication that there is a need for more educative intervention in order to improve the knowledge of respondents.

Few of the respondents (22.1%) believed that it is already too late to start treatment and self-monitoring of the blood pressure. Few 28.9% of the respondents said it will be difficult to self-

monitor blood pressure because it will be difficult to learn how to use the devices. Few of the respondents (23.2%) feared that people will think they already have high blood pressure when they see the monitoring devices with them. Few of the respondents (28.6%) still believed they don't need to self-monitor their blood pressure because they don't have hypertension in their families. This poor attitude of the respondents towards self-monitoring of the blood pressure may be due to inadequate educative and awareness programmes by government of the developing countries especially when it comes to the issue of non-communicable diseases as reported by Olufemi et al., (2013). Many developing countries have not woken up to the reality that non communicable diseases are on the increase.

The study also found out that the attitude of the respondent towards self-monitoring of their blood pressure is not influenced by their knowledge of blood pressure. This is contrary to Hu, Li, & Arao, 2013 who reported that people with high level of education tend to have a positive attitude towards the monitoring of their blood pressure. Gender was also found to have no association with their attitude towards self-monitoring of their blood pressure.

The result also showed that there is an association between knowledge about blood pressure and the attitude of the respondents towards self-monitoring of their blood pressure. Since many of the respondents perceived high blood pressure as a dangerous condition and a risk factor for other cardio-vascular diseases, most of them have a positive attitude about self-monitoring as a preventive strategy for high blood pressure. This was also seen in their high enthusiasm about starting self-monitoring of the blood pressure if needed to prevent high blood pressure. This is in line with the study carried out by (McGillicuddy et al., 2013: Seto et al., 2010 ; Tan et al., 2005).

There is no association between the attitude of the respondents towards self monitoring of blood pressure and the gender. This means that gender does not have an effect on the respondents attitude towards self-monitoring of the blood pressure. Both males and females have the same attitudes towards self-monitoring of the blood pressure. Likewise knowledge of the respondents about blood pressure has no association with their willingness to self monitor blood pressure. This may be due to the fact that many of them perceived high blood pressure as dangerous although they don't have enough knowledge concerning the risk factors of high blood pressure. The fact that they have seen or heard cases where unchecked blood pressure led to cases of

stroke and other cardiovascular diseases, they were willing to start self monitoring if needed to prevent high blood pressure.

5.3   Willingness to self monitor blood pressure

Hypertension is an enormous public health issue, because it is a reversible risk factor for stroke, ischemic heart disease, congestive heart failure, renal failure and peripheral vascular disease. Risk of high blood pressure and other cardiovascular disease can be reduced by self- monitoring the blood pressure. This could decrease the cost of health care by preventing the occurrence of high blood pressure. This is why Health promotion and disease prevention should be the mainstay for public health and treatment of diseases (Rakumakoe, 2011)

Respondents have a high level of enthusiasm to adopt self monitoring of their blood pressure in order to avoid high blood pressure complications. Majority (89.6%) of the respondents reported that they will be willing to start self-monitoring of their blood pressure. This high enthusiasm may be as a result of the fact that majority of the respondents are young and educated because previous studies reported that people with a higher education level, higher income, and younger age were more likely to adopt self monitoring blood pressure (Hu, Li, & Arao, 2013). Most of the respondents (90.0%) are willing to be trained to self-monitor their blood pressure. This is also in line with what Emily, Kevin, Caterina , Joseph & Jan Heather (2010) reported in their study among health care providers. Training is important so as to equip them with skills to be able to measure the blood pressure readings correctly. According to Fung, Wong, Wong, & Lam, (2013), self-monitoring of blood pressure although appears to have the potential of enhancing the management and control of Blood pressure, a training program provided in the primary care setting has the potential to produce greater reductions in the BP of hypertensive patient and prevent high blood pressure. About 82.1% of the respondents are willing to buy self-monitoring devices for monitoring their blood pressure. Almost all the respondents (96.4%) are willing to have their blood pressure checked at least once in a month.

There is however an association between the attitude of the respondents towards self-monitoring of the blood pressure and the willingness to self monitor blood pressure. This as said earlier was due to the fact that majority of them perceived high blood pressure as a dangerous disease. Although the result showed no association between level of education of the respondents and their willingness to self monitor the blood pressure. This shows that interventions to promote self

monitoring blood pressure can target both educated and non-educated. That is level of education is not a barrier. Although in designing training programs for them, steps should be taken to make sure that it is designed to suit their various levels of education.

5.4 Factors that can prevent respondents from self monitoring their blood pressure

Iyalomhe & Iyalomhe, (2010) have shown that competing problems such as poverty, depression and anxiety from the heavy financial burden that may be imposed by high blood pressure management, fear especially of premature death and addiction, the threat of concomitant diseases such as diabetes and the lure of alternative (traditional) healers who claim to have permanent cure of high blood pressure are factors mitigating against self monitoring of blood pressure.

No wonder few (31.8%) of the respondents reported that they don't have money to get the required devices for self-monitoring. This percentage is actually higher than what was reported by Hu et al.,(2013) in a study conducted in a rural area of china where he reported that 16.8% of participants in the study were unable to afford the device. A little below average (41.4%) claimed that they didn't have the required knowledge on how to use the instrument even if they can afford it and that that will definitely prevent them from self-monitoring their blood pressure. This is very close to what was reported by Hu et al., (2013) where he said majority of non-users (44.7%) did not understand how to operate the device and opted not self-monitoring their blood pressure. This is an indication that health promotion and education interventions, awareness and training should be provided in order to promote efficient self-monitoring of the blood pressure. Just a few of the respondents (17.5%) reported that they are busy and don't even have time for self-monitoring of their blood pressure.

The belief that high blood pressure is a terminal disease that will definitely kill no matter what the sufferer does made about 12.9% of the respondents fear what the result might be and hence prefer not to self monitor their blood pressure. They believed that what they didn't know could not kill with about 27.5% of the respondents agreeing. Few of the respondents (13.9%) said they did not trust the instruments, doctors and their treatment which is close to the 10.5% reported by Tan, Khin, & Pagi, (2005) that perceived the self-monitoring devices to be inaccurate. This is also reinforced by the report of Grönvall & Verdezoto, (2013). Rakumakoe, (2011) also emphasized that building a trusting relationship between the healthcare worker and the patient is one of the most important aspects when motivating patients.

Few of the respondents (11.4%) admitted that illiteracy and ignorance are additional factors that can prevent self-monitoring of blood pressure, although may not be a factor among the respondents since majority are educated. Few (13.2 %) of respondents still believed that only doctors can prescribe or treat high blood pressure and that they are not supposed to self-monitor their blood pressure. This is where the assistance of the health workers is needed to educate and enlighten about the importance of self-monitoring of blood pressure. Very few saw work or activities as a stumbling block to self-monitoring while very few (4.6%) reported that God and prayer are the only things that prevent the occurrence of high blood pressure and that self-monitoring cannot prevent high blood pressure. This is an indication that religious leaders should also be incorporated into any intervention to promote self-monitoring of blood pressure to educate on the place of religion and faith especially when it has to do with health seeking behaviours.

5.5   Implication for health promotion and education

The findings of this present study provide important information on knowledge, attitude and willingness of staffs of Ibadan North West Local Government Secretariat to self-monitor their blood pressure where information is especially lacking. The limited detailed knowledge indicates the need to develop more specific health education programs. In addition the respondents' enthusiasm to be trained to self monitor their blood pressure is an opportunity for governmental and non – governmental bodies to develop training programmes targeted at skill acquisition on how to self monitor their blood pressure and adoption of healthy lifestyles while developing an environment conducive to such healthy lifestyles through formulation of healthy policies.

5.6   Conclusion

The study has demonstrated that the majority of the respondents had a poor knowledge about high blood pressure. Although majority could identify what normal blood pressure should be but they 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 the use of home remedies can prevent hypertension.

One strategy that is being promoted by numerous national and international health organizations in the prevention and management of high blood pressure is self-monitoring of blood pressure. So it was interesting when this study showed that Staffs in Ibadan Northwest Local Government have positive attitudes towards self-monitoring of their blood pressure as majority of them believed that self –monitoring can help to prevent and manage high blood pressure. This also showed in their high enthusiasm about starting self-monitoring their blood pressure. This may be largely due to their high perception of high blood pressure as a dangerous health condition.

Nevertheless, 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.

5.7   Recommendations

Firstly, understanding the etiology of HBP is very important. The public's view of "tension" as one of the main causes of HBP must also be addressed by health care workers. Lifestyle modification education must be one of the main focuses of education. Knowledge of risky lifestyle/behaviors (excess alcohol, excess salt intake, sedentary lifestyle, smoking, unhealthy nutrition) that are antecedent factors of HBP should be promoted.

Since information is power and health is the first wealth, health-care professionals as recognized as the leading source of information should promote patients' knowledge, correct perception, beliefs and attitude towards self-monitoring of blood pressure as a preventive strategy by explaining in sufficient detail the nature, consequences, and how to prevent high blood pressure through self- monitoring of the blood pressure. Health care workers must utilize this opportunity to the fullest.

Awareness of possible self-monitoring devices can be proposed. This can in turn empower the individual as care takers of their own health. For those who will prefer hospital based monitoring, readings from blood pressure measurements should be explained. This will assist in improving the general knowledge of normal blood pressure readings. It will also create awareness as differences between measurements can be accessed independently.

A nationwide health promotion campaign on the reduction of salt intake as well as self-monitoring of the blood pressure should be prioritized. This is a cost effective public health approach that has a long term effect on the general health of the population.

REFERENCES

Abdullahi, A. A., & Amzat, J. (2011). Knowledge of hypertension among the staff of University of Ibadan, Nigeria. *Journal of Public Health and Epidemiology*, *3*(5), 204–209.

Adebayo, R. A., Balogun, M. O., Adedoyin, R. A., Obashoro-John, O. A., Bisiriyu, L. A., & Abiodun, O. O. (2013). Prevalence of hypertension in three rural communities of Ife North Local Government Area of Osun State, South West Nigeria. *International Journal of General Medicine*, *6*, 863–868. doi:10.2147/IJGM.S51906

Adebisi, O., & Samali A. (2013). Poverty and hypertension in Nigerian adults: A barrier to its control and treatment. A review. *Unique Research Journals*, *1*(3), 14–20.

Adri Boulle. (2009). Knowledge of the hypertensive person regarding prevention strategies for coronary diseases: Health Studies. *University of South Africa*, (March).

Ajzen, I., Timko, C., & White, J. B. (1982). Self-monitoring and the attitude-behavior relation. *Journal of Personality and Social Psychology*. doi:10.1037/0022-3514.42.3.426

Akintunde, A., Oyedeji, A., Familoni, O., Ayodele, O., & Opadijo, O. (2012). QT Interval prolongation and dispersion: Epidemiology and clinical correlates in subjects with newly diagnosed systemic hypertension in Nigeria. *Journal of Cardiovascular Disease Research*, *3*(4), 290–295.

Ambakederemo, T., Ebuenyi, I. ., & Jumbo, J. (2014). Knowledge and Attitude to Self-Monitoring Of Blood Pressure in a Cardiology Clinic in Nigeria. *IOSR Journal of Dental and Medical Sciences*, *13*(5), 63–65. doi:10.9790/0853-13556365

Aubert, L., Bovet, P., Gervasoni, J.-P., Rwebogora, A., Waeber, B., & Paccaud, F. (1998). Knowledge, Attitudes, and Practices on Hypertension in a Country in Epidemiological Transition. *Hypertension*, *31*, 1136–1145. doi:10.1161/01.HYP.31.5.1136

Azubuike, S. O., & Kurmi, R. (2014). Awareness , practices , and prevalence of hypertension among rural Nigerian women. *Archives of Medicine and Health Science*, *2*(1), 23–28. doi:10.4103/2321-4848.133791

Baghianimoghadam M.H, Rahaee Z, Morowatisharifabad M.A, Sharifirad G, Andishmand A, Azadbakht L (2010): Effects of education on self-monitoring of blood pressure based on BASNEF model in hypertensive patients. *J Res Med Sci.* 2010 Mar-Apr; 15(2): 70–77. [internet]Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3082790/. Assessed on April 6, 201

Bakris, G.L.,& Sowers, J. R. (2008). ASH Position Paper: Treatment of Hypertension in Patients With Diabetes—An Update. *Journal of Clinical Hypertension*, *10*(9), 707–713.

Beistle, D., Harben, K., Blair, N., & Lindley, M. C. (2013). Self-Measured Blood Pressure Monitoring. *A million hearts action guide action guide*, 1–40.

Cappuccio, F. P., Kerry, S. M., Forbes, L., & Donald, A. (2004). Blood pressure control by home monitoring: Meta-analysis of Randomised Trials. *BMJ (Clinical Research Ed.)*, *329*(7458), 145. doi:10.1136/bmj.38121.684410.AE

Department of health and Human Services. (2010). A Closer Look at African American Men and High Blood Pressure Control. *Heart Disease & Stroke Prevention*, 1–128.

Ekwunife, O. I., & Aguwa, C. N. (2011). meta analysis of prevalence rate of hypertension in Nigerian populations. *Journal of Public Health Ad Epidemiology*, *3*(13), 604–607. doi:10.5897/JPHE11.104

Ekwunife, O. I., Udeogaranya, P. O., & Nwatu, I. L. (2010). Prevalence, awareness, treatment and control of hypertension in a Nigerian population. *Health*, *2*(7), 731–735. doi:10.4236/health.2010.27111

Emily S, Kevin J Caterina M, Joseph A. C, Jan BHeather J. R. (2010): Attitudes of Heart Failure Patients and Health care Providers towards Mobile Phone-Based Remote Monitoring. *J Med Internet Res* 2010;12(4):1-13

Faronbi, J., Oladepo, R., Faronbi, G., & Olaogun, A. (2014). Blood Pressure Monitoring Practices and Health Behaviour among University Staff in Nigeria. *International Journal of Caring Sciences*, *7*, 58– 65.

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Fung, C. S., Wong, W. C., Wong, C. K., & Lam, C. L. (2013). Home blood pressure monitoring A trial on the effect of a structured education program, *42*(4), 233–237.

Gelirli, A., & Hipertansiyon, T. (2010). Impact of Patients ' Knowledge , Attitude and Practices on Hypertension on Compliance with Antihypertensive Drugs in a Resource-poor Setting. *TAF Preventive Medicine Bulletin*, *9*(2), 87–92.

Gronvall, E., & Verdezoto, N. (2013). Beyond Self-Monitoring: Understanding Non-functional Aspects of Home-based Healthcare Technology. *ACM*, 1–10. doi: 10.1145/2493432.24 93495

Hadithi, D. Al, Nazmi, A. S., & Khan, S. A. (2012). Self Monitoring of Blood Pressure (SMBP) among Hypertensive patients in Muscat- A pilot study. *Journal of Applied Pharmaceutical Science*, *2*(9), 155–157. doi:10.7324/JAPS.2012.2930

Hu, H., Li, G., & Arao, T. (2013). How hypertensive patients in the rural areas use home blood pressure monitoring and its relationship with medication adherence: A primary care survey in China. *Open Journal of Preventive Medicine*, *03*(09), 510–516. doi:10.4236/ojp m.2013.39069

Iyalomhe, G. B. ., & Iyalomhe, S. I. (2010). Hypertension- related knowledge, attuitudes and life style practices among hypertensive patients in a sub-urban Nigerian community. *Journal of Public Health And Epidemiology*, *2*(4), 71–77.

Kayima, J., Wanyenze, R., Katamba, A., Leontisini, E., & Nuwaha, F. (2013). Hypertension awareness, treatment and control in Africa: a systematic review. *BMC Cardiovascular Disorders*, *13*(54), 1–11.

Kofi, J. O. (2011). Prevention and management of hypertension : A study on knowledge and attitudes of women of childbearing age Thesis Degree Programme in Nursing September 2011. *Central Ostrobothnia University of Applied Sciences*,

Lam, J. Y., & Guirguis, L. M. (2010). Patients Blood Pressure Knowledge , Perceptions and monitoring practices in community pharmacies.

Lotika, A. a., Mabuza, L. H., & Okonta, H. I. (2013). Reasons given by hypertensive patients for concurrently using traditional and Western medicine at Natalspruit Hospital in the Gauteng Province, South Africa. *African Journal of Primary Health Care & Family Medicine*, *5*(1), 1–7. doi:10.4102/phcfm.v5i1.458

McGillicuddy, J. W., Weiland, A. K., Frenzel, R. M., Mueller, M., Brunner-Jackson, B. M., Taber, D. J., … Treiber, F. A. (2013). Patient attitudes toward mobile phone-based health monitoring: questionnaire study among kidney transplant recipients. *Journal of Medical Internet Research*, *15*(1), e6. doi:10.2196/jmir.2284

Michael, A., Weber, M., L, S., & B, W. (2013). Clinical Practice Guidelines for the Management of hypertension in the community, A statement by the American Society of Hypertension and the International Society of Hypertension. *The Journal of Clinical Hypertension*. doi:10.1111/jch.12237

Okechukwu S.O, Okpechi, I. & Karen S. (2012). Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: A review. *World J cardiol*,4(12),327-340

Oladapo, O. O., Salako, L., Sadiq, L., Soyinka, K., & Falase, A. O. (2013). Knowledge of Hypertension and other Risk Factors for Heart Disease among Yoruba Rural Southwestern Nigerian Population. *British Journal of Medicine & Medical Research*, *3*(4), 993–1003.

Olufemi Sola, A., Chinyere, O. I., Stephen, A. O., & Kayode, Ji. A. (2013). Hypertension prevalence in an Urban and Rural area of Nigeria. *Journal of Medicine and Medical Sciences*, *4*(4), 149–154.

Omuemu, V., Okojie, O. & Omuemu, C. E. (2007). Awareness of High Blood Pressure Status, Treatment and Control in a Rural Community in Edo State. *Nigerian Journal of Clinical Practice*, *10*(3), 208–212.

Rakumakoe, M. . (2011). Knowledge, Attitude and Perceptions of Hypertensive patients towards lifestyle modification in controlling Hypertension. *University of the Witwatersrand,* (October), 1–61

Rani, M., Beth, M., Low, S. Y., & Chung, P. Y. (2012). A study to assess the knowledge on self-blood pressure monitoring (SBPM) among hypertensive patients in selected wards of Hospital Lam Wah Ee , Malaysia, *6*(2), 43–45.

Seto, E., Leonard, K. J., Masino, C., Cafazzo, J. A., Barnsley, J., & Ross, H. J. (2010). Attitudes of heart failure patients and health care providers towards mobile phone-based remote monitoring. *Journal of Medical Internet Research*, *12*(4), e55. doi:10.2196/jmir.1627

Society, H. (1996). Guidelines for the Management of Hypertension In Nigeria May 1996. *A Recommendation for Health Care Providers Prepared by the Nigerian Hypertension Society and Adopted at the Consensus Meeting Sponsored by The Nigerian Heartcare Foundation*.

Tan, N. C., Khin, L. W., & Pagi, R. (2005). Home blood-pressure monitoring among hypertensive patients in an Asian population. *Journal of Human Hypertension*, *19*(7), 559–64. doi:10.1038/sj.jhh.1001865

World Health Report (2002). Reducing risks, promoting healthy life. Geneva, Switzerland: *World Health Organization*. [Online] .

World Health Organization (WHO) (1993). 'Cardiovascular Diseases in Developing Countries. *World Health Stat*. Q., 46: 90-150.

WHO (2003). Diet, nutrition and the prevention of chronic diseases. *Technical Report Series* 916.

WHO/ International Society of Hypertension (2004). WHO/ISH statement on management of hypertension. *J. Hypertens*. 21: 1983- 1992

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<div align="center">**APPENDIX 1: QUESTIONNAIRE**</div>

KNOWLEDGE, ATTITUDE AND WILLINGNESS OF IBADAN NORTHWEST LOCAL GOVERNMENT SECRETARIAT'S STAFF TO BE TRAINED TO SELF MONITOR THEIR BLOOD PRESSURE.

QUESTIONAIRRE

Dear Respondent,

Greetings: My name is **Adebanjo Adetosoye Moses** 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, Attitude and Willingness of Ibadan Northwest Local Government Secretariat's staff to be trained to self monitor their blood pressure** 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 with me. Please feel free to share your beliefs and opinions.

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   [ ]

LGA NAME …………………………………………………………………. **S/N** …………

SECTION A (SOCIO-DEMOGRAPHIC INFORMATION)
INSTRUCTION: This is a self administered questionnaire and is to be completed by the respondent. Please mark (√) in boxes provided (as appropriate)
1   Age (at last birthday) ………………….
2   Sex   (1)   Male   [ ]   (2)   Female   [ ]
3   Religion   (1) Christianity [ ] (2) Muslim   [ ] (3) Traditional[ ] (4)Others specify………….
4   Marital Status: (1)   Single [ ]   (2)   Married   [ ]   (3)   Separated [ ] (4)   Divorced   [ ]   (5)   Widowed   [ ]

<div align="center">75</div>

5	Educational level: (1) Never went to school [ ] (2) Primary level [ ] (3) Secondary level [ ] (4) Tertiary level [ ] (5) Others (specify) ………	
6	Ethnic group (1) Yoruba [ ] (2) Hausa [ ] (3) Igbo [ ] (4) Others (specify)………………..	
	SECTION B:KNOWLEDEGE OF RESPONDENTS ABOUT BLOOD PRESSURE	
7	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 [ ]
8	What should normal high blood pressure be?	1. Less than or equals 120/80 [ ] 2. Greater than 120/80 but less than or equals 139/89 [ ] 3. Greater than 139/89 but Less than or equals 160/100 [ ] 4. I Don't know [ ]
9	Which of the following can affect the blood pressure (*you can tick more than one option*)	1. Too much salt [ ] 2. Alcohol [ ] 3. Smoking [ ] 4. Taking food high in fat [ ] 5 Overweight [ ] 6.Too much stress [ ] 7. Diabetes [ ] 8. Others (please specify)……........
10	Where did you get your information on high blood pressure?	1. Relative [ ] 2. Health worker (Doctor, nurse, midwife) [ ] 3. Friend [ ] 4. Pharmacy [ ] 5. Others (please specify)…………………….
11	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 [ ]
12	If you replied extremely/somewhat to the previous question, please explain how	………………………………..
13	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 [ ] 5.Others (please mention)
14	27. Which of the following factors can make a person more likely to have	1. Family history [ ] 2. Drinking alcohol [ ] 3. Age [ ] 4. Lack of exercise [ ] 5. Ethnicity [ ]

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	hypertension? (*kindly tick as many as applied to the question*)	6. Nationality [ ] 7. Genes [ ] 8. Diet [ ] 9. Obesity [ ] 10.Smoking [ ] 11. Occupation/ Workplace environment [ ] 12. Others (*please specify*)…………………
15	Do you think the following factors can cause high blood pressure?	
a	Excess gain of weight	1. Yes [ ] 2. No [ ]
b	Excessive alcohol consumption	1. Yes [ ] 2. No [ ]
c	. Smoking	1. Yes [ ] 2. No [ ]
d	Excessive salt intake	1. Yes [ ] 2. No [ ]
16	Do you know if high blood pressure disease can cause:	
a	Stroke	1. Yes [ ] 2. No [ ]
b	Heart failure	1. Yes [ ] 2. No [ ]
c	Diabetes	1. Yes [ ] 2. No [ ]
17	Do you think that high blood pressure is preventable?	1. Yes [ ] 2. No [ ]
18	Can high blood pressure be prevented through lifestyle changes	1. Yes [ ] 2. No [ ]

INSTRUCTION: Using the scale below, please indicate your beliefs related to the following. Note: SA- Strongly Agree A- Agree SD- Strongly disagree D- Disagree. Please mark (√) your response appropriately

	QUESTIONS	SA	A	SD	D
19	The only way to prevent high blood pressure is by taking medication				
20	Diet rich in salt causes high blood pressure				
21	High blood pressure causes stroke				

22	High blood pressure is a condition that results from anxiety, stress or anger				
23	Being overweight can cause high BP				
24	Persons with high BP never or rarely feel symptoms				
25	High blood pressure can be reduced by making changes in your diet				
26	Leisure physical exercise prevents high BP				
27	The use of home remedies (e.g vinegar, garlic) prevent hypertension				
28	High Blood pressure causes cardiovascular diseases				
29	There is a difference between hypertension and high blood pressure				

SECTION C: ATTITUDE TOWARDS SELF MONITORING OF BLOOD PRESSURE

Please mark (√) in boxes provided (as appropriate)

30	Can self monitoring of blood pressure help to prevent high blood pressure?(if no go to question 32)	1. Yes [ ] 2. No [ ] 3. Can't say [ ]
31	If yes state how	....
32	Is self monitoring of blood pressure important to you to prevent heart diseases?	1. Yes [ ] 2. No [ ] 3. Can't say [ ]
33	Would you start self monitoring your blood pressure if needed to prevent high blood pressure?	1. Yes [ ] 2. No [ ] 3. Can't say [ ]
34	If No why?	……………………………

Indicate True or False to the following questions on your attitude toward self monitoring of blood pressure

SN	STATEMENT	TRUE	FALSE

35	Self monitoring blood pressure cannot prevent hypertension because hypertension is an evil attack.		
36	Self monitoring devices are not convenient and waste time		
37	If someone is meant to have hypertension, they will get it even if they always self monitor their blood pressure.		
38	I don't want to self monitor my blood pressure because I don't want to know I may be dying from hypertension		
39	Self monitoring devices for blood pressure are costly and a waste of resources.		
40	Self monitoring of blood pressure will scare me that I may really have hypertension.		
41	I think if someone has hypertension, it is already too late to start self monitoring of the blood pressure and get treated for it.		
42	I can't self monitor my blood pressure because l cannot learn how to use the devices on my own.		
43	I cannot buy the self monitoring devices because when people see them with me they will think I have hypertension already		
44	I don't need to self monitor my blood pressure because we don't have hypertension in my family		

SECTION D: WILINGNESS TO SELF MONITOR BLOOD PRESSURE

Instruction: _Please mark (√) in boxes provided as appropriate_

45	Will you be willing to start self monitoring of your blood pressure?	1. Yes [ ] 2. No [ ] 3. Don't Know [ ]
46	Will you be willing to be trained to self monitor	1. Yes [ ] 2. No [ ] 3. Don't Know [ ]

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	your blood pressure?	
47	Will you be willing to buy instrument for monitoring your blood pressure?	1. Yes [ ] 2. No [ ] 3. Don't Know [ ]
48	Will you be willing to have your blood pressure checked at least once in a month	

SECTION E: FACTORS THAT CAN PREVENT SELF MONITORING OF BLOOD PRESSURE

**Instruction:** _**Please mark (√) in boxes provided (as appropriate)**_

SN	QUESTIONS	AGREE	DISAGREE	UNDECIDED
49	I can't self monitor my blood pressure because I don't have money to get the required instruments			
50	I don't have the required knowledge on how to use the instrument even if I can afford it			
51	I am the busy type. Don't even have time for self monitoring of my blood pressure			
52	I am afraid of what the result may be, that is why I can't self monitor my blood pressure			
53	What we don't know cannot kill us			
54	I don't even trust the instruments and the doctors and their treatment			
55	Other factors that can prevent you from self monitor your blood pressure. (_**Please specify**_) ………………………………………………			

55.   Other factors that can prevent you from self monitoring of your blood pressure.(*Please specify*)   …………………………………………………………………..

Thanks for your time.